The GSMA mAgri Value Chain Assessment Tool

A FRAMEWORK FOR PRIORITISING DIGITAL INTERVENTIONS IN THE AGRICULTURAL LAST MILE

About GSMA

The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 operators with more than 300 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces industry-leading events such as Mobile World Congress, Mobile World Congress Shanghai and the Mobile 360 Series conferences.

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About GSMA mAgri

mAgri catalyses scalable, commercial mobile services that improve the productivity and incomes of smallholder farmers and benefit the agriculture sector in emerging markets. The GSMA mAgri Programme is in a unique position to bring together mobile operators, agricultural organisations and the development community to foster sustainable and scalable mobile services that improve the livelihoods of smallholder farmers.

For more information about GSMA mAgri Programme visit our website at:
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INTRODUCING THE VALUE CHAIN ASSESSMENT TOOL

THE **GSMA VALUE CHAIN ASSESSMENT TOOL (VCAT)** IS A FRAMEWORK FOR ANALYSING VALUE CHAINS AND SUPPORTING DIGITAL INTERVENTIONS IN AGRICULTURE, PARTICULARLY THE DIGITISATION OF AGRICULTURAL PROCUREMENT PAYMENTS. THE FOCUS OF THE TOOL IS PROVIDING INSTRUCTIONS, RECOMMENDATIONS AND EXAMPLES TO HELP ANALYSE VALUE CHAINS FOR POVERTY REDUCTION.

THE VCAT IS PRIMARILY **AIMED AT PROVIDERS OF DIGITAL FINANCIAL SERVICES** SEEKING TO DEVELOP A BETTER RURAL GROWTH STRATEGY, INCLUDING MOBILE OPERATORS AND OTHER NON-MNO MOBILE MONEY PROVIDERS. THE TOOL WOULD ALSO BE USEFUL FOR AGTECH COMPANIES AND OTHER DIGITAL AGRICULTURE IMPLEMENTERS WORKING TO DIGITISE THE LAST MILE.

TO DIGITISE THE AGRICULTURAL LAST MILE, IT IS VITAL TO UNDERSTAND VALUE CHAIN RELATIONSHIPS AND ACTIVITIES

The GSMA **VCAT** provides a framework for:

- ☑ Understanding the systemic factors and conditions under which value chains operate in the last mile;
- ☑ Identifying value chains and use cases suitable for last mile digital interventions, especially digital payments; and
- ☑ Building a pipeline of agricultural organisations operating in suitable value chains.

How to use the tool:

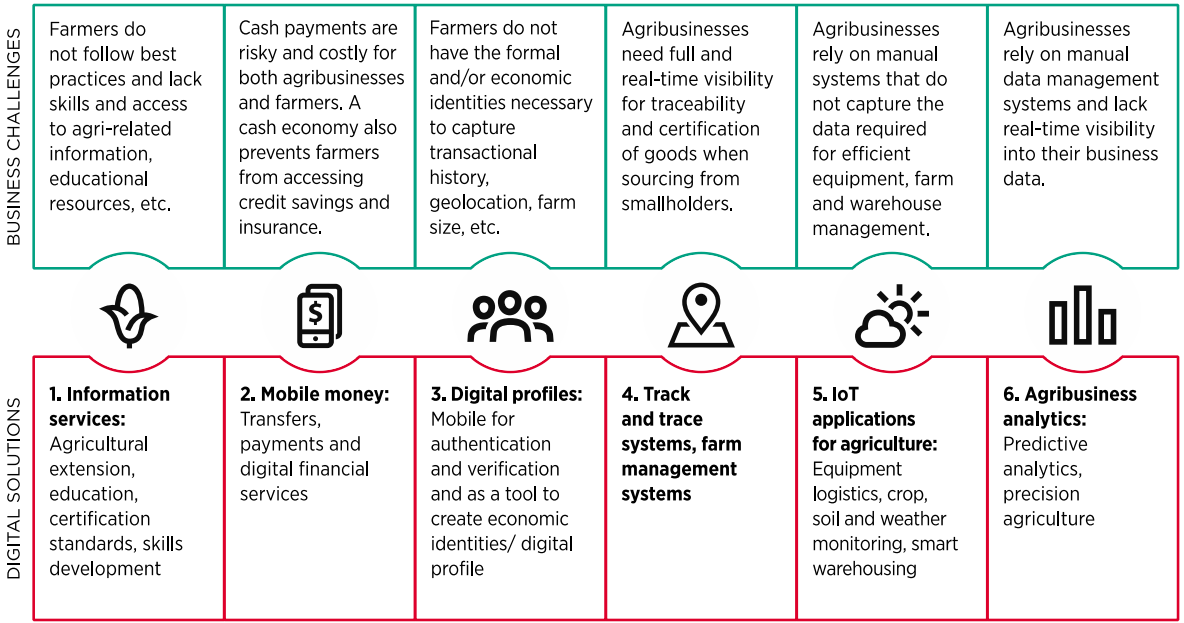
The VCAT employs a process used by the GSMA in engagement countries to advise mobile money providers on selecting suitable value chains and identifying agricultural organisation partners to digitise agricultural procurement payments. The step-by-step approach provides a structured way to analyse value chains and can be adjusted as necessary to align with your research objectives.

TRANSACTIONAL DATA FROM THE SALE OF AGRICULTURAL PRODUCE CAN HELP FARMERS ESTABLISH AN ECONOMIC IDENTITY

WHAT IS AN AGRICULTURAL VALUE CHAIN?	**Agricultural value chain** refers to the full range of activities and flows of products, information and money that aim to add value to a raw agricultural product and link farmers to end consumers.
WHAT IS THE AGRICULTURAL LAST MILE?	In agricultural value chains, the **last mile** is the web of relationships and transactions between buyers of crops, such as agribusinesses, cooperatives and middlemen, and the farmers who produce and sell them.[1] Most of this activity takes place in the developing world where about 1.3 billion people are employed in agriculture and involved in the production of most (at least 70 per cent) of the world's food. In the last mile, global markets connect with rural economies before transformation and value addition processes create the products that end up on consumers' tables.
WHAT IS ECONOMIC IDENTITY?	An **economic identity** is a dynamic citizen profile that captures an individual's life events, assets and transaction history. For farmers, digitising the procurement of crops helps to establish an economic identity through transactional data from the sale of agricultural produce. In combination with other farm and farmer-level data, this data opens up full financial inclusion to farmers, including access to credit, savings and insurance products.

1. GSMA mAgri (2017) "Opportunities in agricultural value chain digitisation: Learnings from Uganda". Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/01/Opportunities-in-agricultural-value-chain-digitisation-Learnings-from-Uganda.pdf

DIGITAL PAYMENTS ARE THE ENTRY POINT FOR ALL DIGITAL INTERVENTIONS IN AGRICULTURE

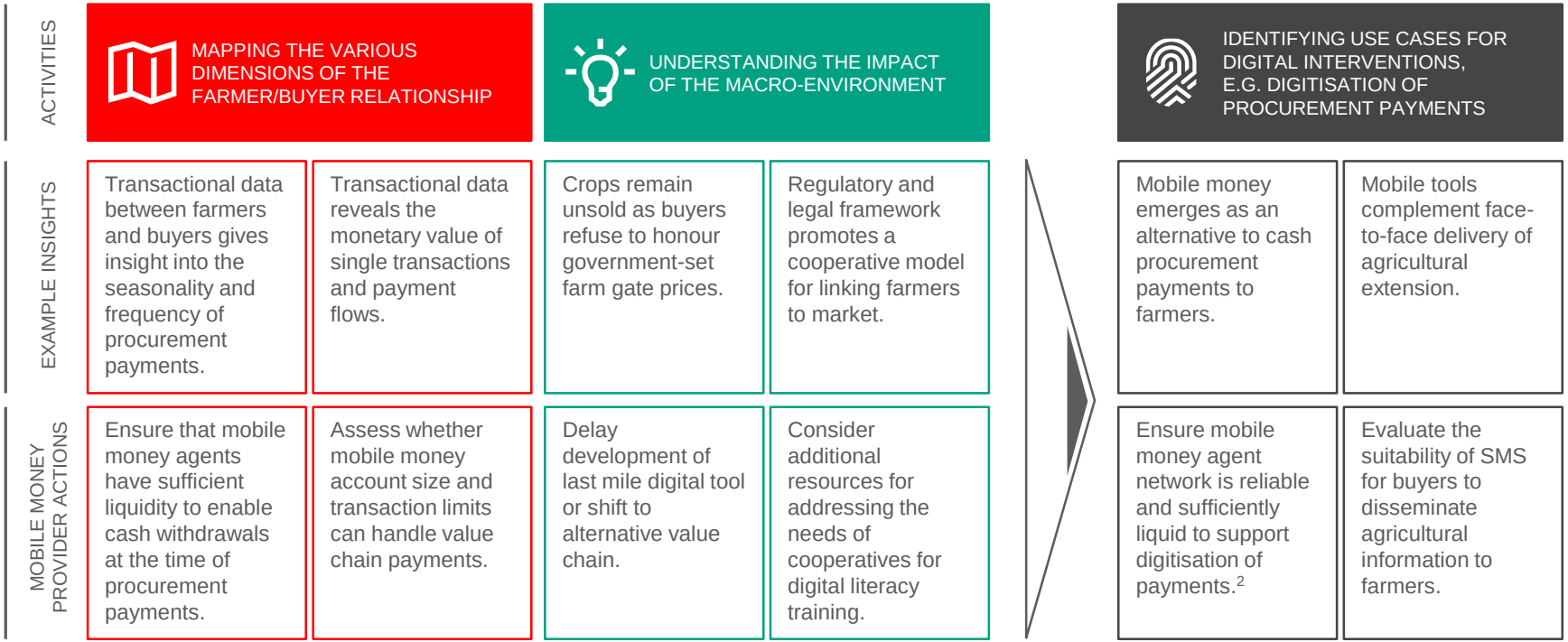


The digitisation of business-to-farmer payments for crops is at the heart of any digital intervention in agriculture. However, agricultural organisations require more than just digital payments – they also need digital solutions for keeping records on farmers, agricultural information and track and trace services.

The **first two steps** of VCAT — Value Chain Prioritisation and Value Chain Selection and Mapping — focus on the potential to deploy digital payments to farmers (Module 2 on the diagram).

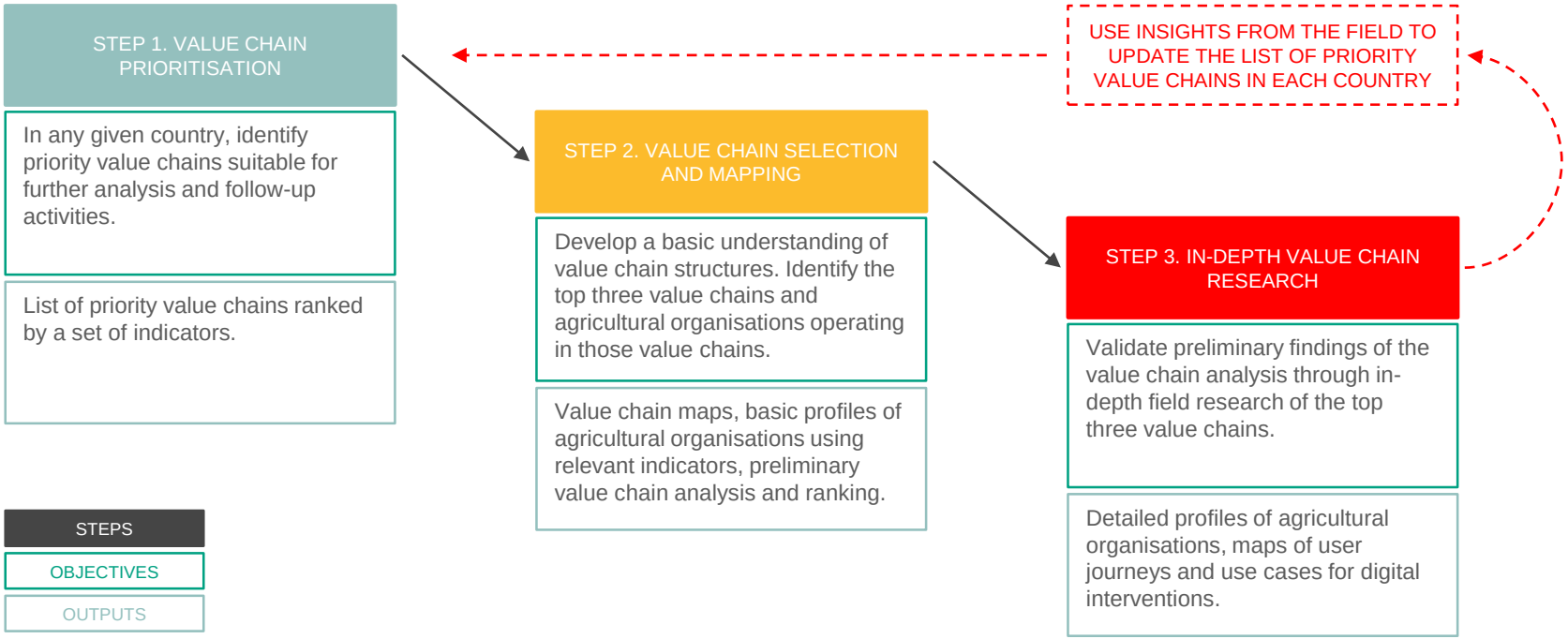
The **third step** — In-Depth Value Chain Research — considers holistic enterprise solutions that would empower agricultural organisations to better control and monitor field operations, make transactions more transparent and establish effective communication channels, both internally and with smallholder suppliers (Modules 1-4 on the diagram).

VCAT: THREE MAIN ACTIVITIES GUIDE THE ACTIONS OF MOBILE MONEY PROVIDERS



2. GSMA mAgri (2018) “Prerequisites to digitising the agricultural last mile”. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/07/mAgri-Toolkit-2018-Prerequsities-to-digitising-the-agricultural-last-mile.pdf

THE VCAT IS A STEP-BY-STEP GUIDE TO UNDERSTANDING AGRICULTURAL VALUE CHAINS

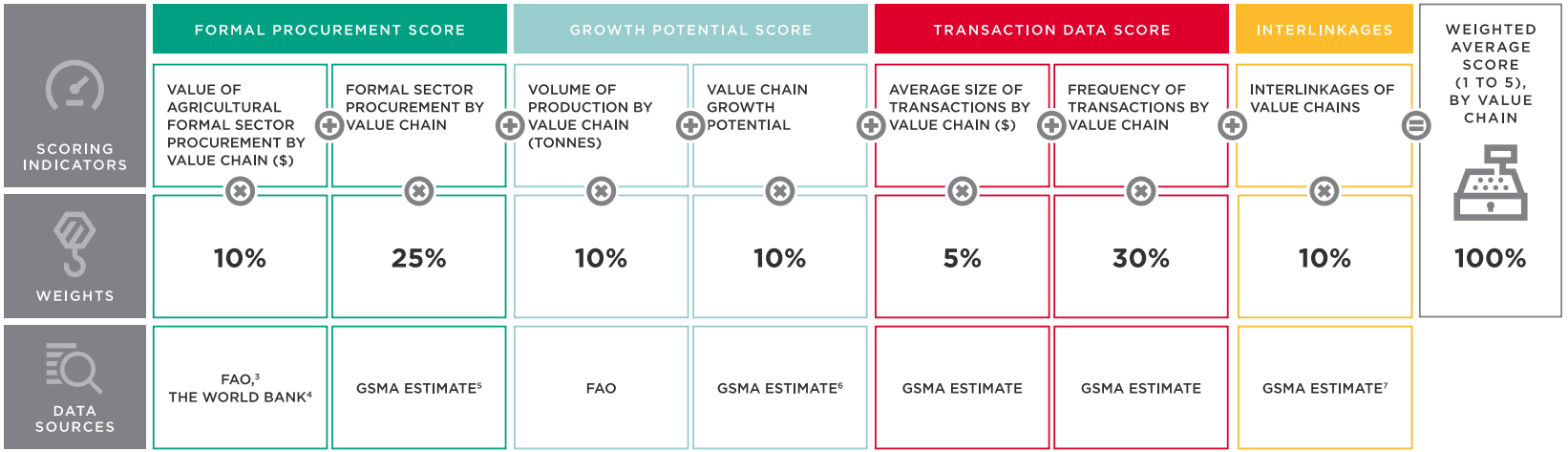


STEP 1. VALUE CHAIN PRIORITISATION

VALUE CHAIN PRIORITISATION BEGINS WITH AGGREGATING AND ANALYSING VALUE CHAIN DATA

STEP 1. VALUE CHAIN PRIORITISATION

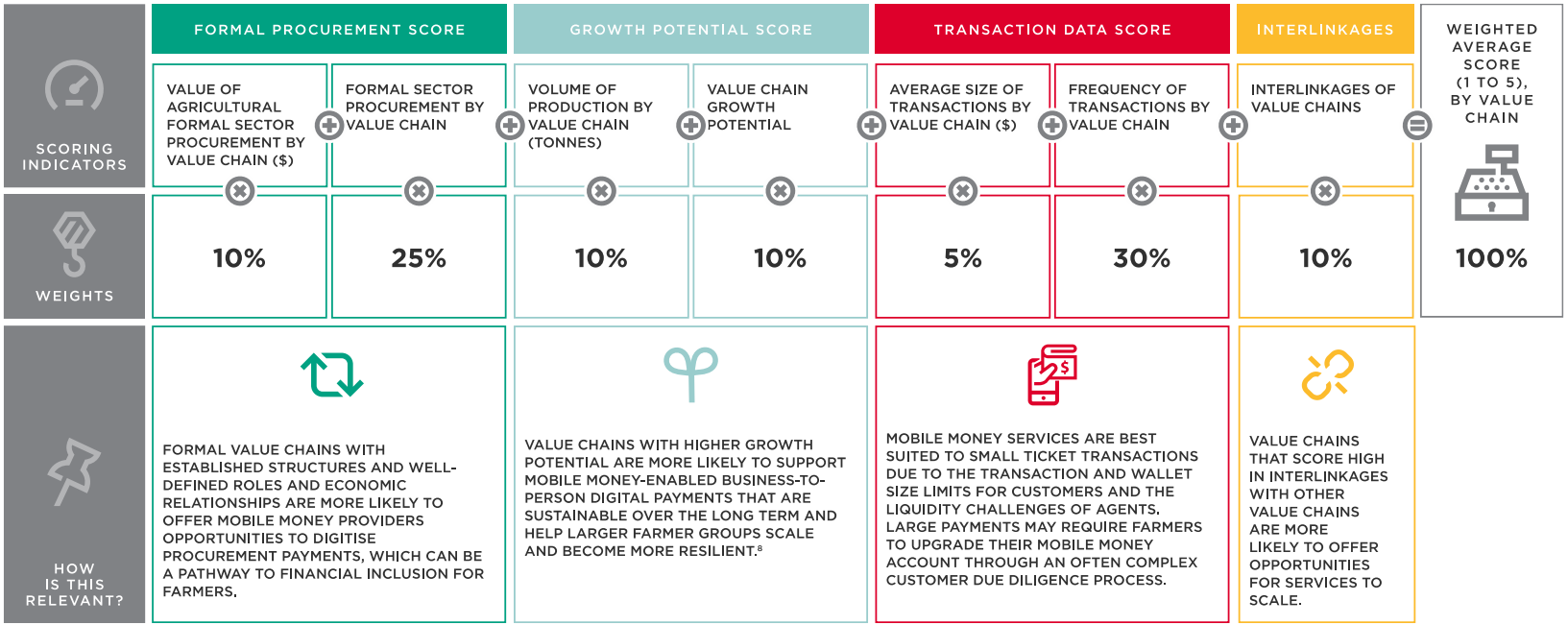
The GSMA has developed a model for identifying priority value chains for agricultural payment digitisation. The model calculates the weighted average score (1 to 5) of a value chain against seven indicators, by country. The data for these indicators comes from well-known sources such as FAO and The World Bank, or from estimates provided by the GSMA.



3. Local production quantity (by country), FAOSTAT. Available at: http://www.fao.org/faostat/en/#data
4. Local value of procurement (by country), The World Bank. Available at: https://data.worldbank.org/indicator
5. Weighted average of three global sub-indicators for each value chain estimated by GSMA: share of exports, commercial activity and level of formality in the value chain. This score does not change between countries.
6. Growth of historic volume and value of total agricultural output in the value chain, by country.
7. Level of intersection with other value chains, which is defined by the probability that a farmer cultivates one or more crops. This score does not change between countries.

FORMAL VALUE CHAINS WITH HIGH GROWTH POTENTIAL AND TRANSACTION FREQUENCY ARE BEST SUITED TO DIGITAL PAYMENTS

STEP 1. VALUE CHAIN PRIORITISATION



8. GSMA mAgri and GSMA Intelligence (2016) "Market size and opportunity in digitising payments in agricultural value chains". Available at: https://www.gsmaintelligence.com/research/?file=29e480e55371305d7b37fe48efb10cd6&download

OUTPUT EXAMPLE: OIL CROPS AND COCOA TOP LIST OF PRIORITY VALUE CHAINS FOR PAYMENT DIGITISATION IN GHANA

STEP 1. VALUE CHAIN PRIORITISATION

SCORING INDICATORS	FORMAL PROCUREMENT SCORE		GROWTH POTENTIAL SCORE		TRANSACTION DATA SCORE		INTERLINKAGES	FINAL SCORE (WEIGHTED AVERAGE)[9]
	VALUE OF AGRICULTURAL FORMAL SECTOR PROCUREMENT BY VALUE CHAIN ($)	FORMAL SECTOR PROCUREMENT BY VALUE CHAIN	VOLUME OF PRODUCTION BY VALUE CHAIN (TONNES)	VALUE CHAIN GROWTH POTENTIAL	AVERAGE SIZE OF TRANSACTIONS BY VALUE CHAIN ($)	FREQUENCY OF TRANSACTIONS BY VALUE CHAIN	INTERLINKAGES OF VALUE CHAINS	
WEIGHTS	10%	25%	10%	10%	5%	30%	10%	100%
OIL CROPS	4	4	5	5	4	4	3	4.2
COCOA	5	5	4	4	2	3	4	3.9
TROPICAL FRUITS	4	4	4	4	4	4	3	3.8
NUTS	4	4	4	4	4	4	2	3.7
PALM OIL	2	3	3	3	4	5	4	3.7
RUBBER	3	4	2	2	4	4	4	3.6
EGGS	3	2	2	3	5	5	4	3.5
SPICES	4	5	3	3	2	3	3	3.5
MILK	2	2	2	2	5	5	5	3.5
ROOTS AND TUBERS	5	3	5	5	4	3	2	3.5

9. All scores range between 1 and 5. The higher the score, the more suited the value chain is to digitising agricultural procurement payments.

STEP 2. VALUE CHAIN SELECTION AND MAPPING

VALUE CHAIN SELECTION IMPROVES STAKEHOLDERS' UNDERSTANDING OF AGRICULTURAL PROCUREMENT

Value Chain Selection focuses on the list of priority value chains identified in the first step. If you are a mobile money provider, select value chains from this list based on their suitability for digital payments and create basic profiles of agricultural organisations that include insights from semi-structured interviews with stakeholders in these organisations. In these profiles, include key procurement data and information on activities in the last mile that help you understand the potential to digitise particular value chains. To evaluate this potential:

- ☑ Assess mobile network coverage in areas where farmers are located;
- ☑ Estimate the proximity, availability, reliability and liquidity of mobile money agents in areas where farmers are located;
- ☑ Evaluate the suitability of transaction value limits and account balance limits to allow farmers to receive agricultural payments; and
- ☑ Determine whether current Know Your Customer (KYC) requirements will enable digital payments in that value chain.

VALUE CHAIN MAPPING MAKES VALUE CHAIN STRUCTURES AND ACTIVITIES MORE VISIBLE

Use **Value Chain Mapping** to develop a basic understanding of value chain structures and create maps of the most suitable value chains. In your value chain maps, include:

- ☑ Actors participating in value addition with a focus on those interacting with smallholder farmers (e.g. agribusinesses, cooperatives, middlemen);
- ☑ Core processes in a value chain and the interactions between the main actors involved in these processes (e.g. collection, processing, certification);
- ☑ Product, information and money flows in the value chain (e.g. agricultural extension services, procurement payments, certification premium payments);
- ☑ Crop sourcing by procurement channel (e.g. direct procurement, via middlemen, own plantations); and
- ☑ Total addressable market in the country (i.e. total number of farmers engaged in the value chain nationwide).

CREATE PROFILES OF AGRICULTURAL ORGANISATIONS ENGAGED IN DIRECT CROP PROCUREMENT

CRITERIA FOR SELECTING AGRICULTURAL ORGANISATIONS

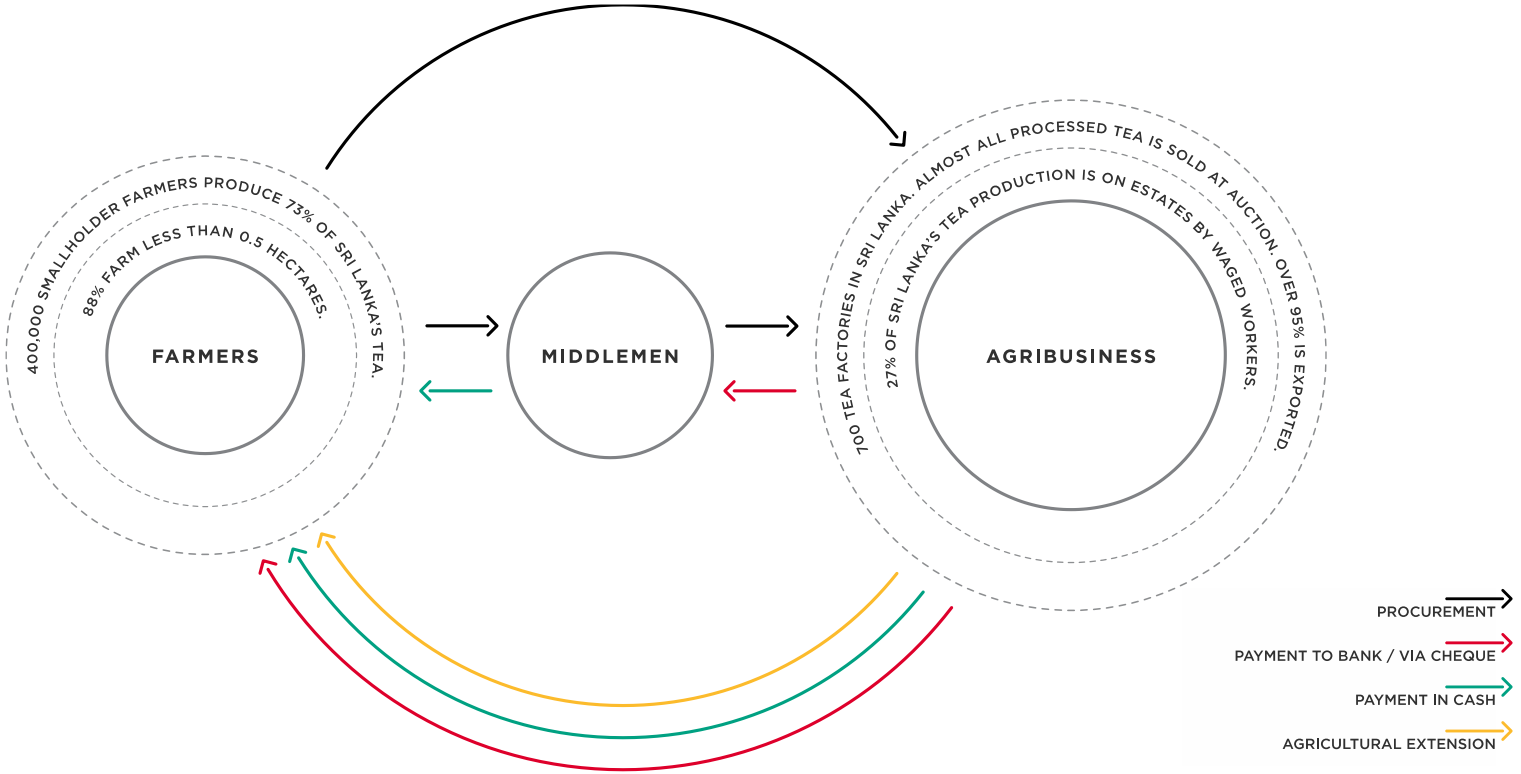
DIRECT PROCUREMENT	Loose and fragmented informal value chains that rely on middlemen make it challenging for mobile money providers to digitise procurement payments and promote financial inclusion for farmers. Create profiles and seek partnerships with agricultural organisations involved in direct procurement and operating in more formal value chains that show a higher degree of crop aggregation in bulking groups (in a cooperative-based model) and at the field clerk level (in vertically integrated agribusinesses).
LARGE SUPPLIER BASE	In any digitisation initiative, mobile money providers may have to commit significant capital expenditures (CapEx) and operating expenditures (OpEx) to improve their mobile network infrastructure and maintain the liquidity of their rural agent network. Focus on agricultural organisations that procure from a significant number of farmers (typically several hundred or more) as they are likely to offer the highest direct revenue opportunity for mobile money providers and economies of scale.
HIGH TRANSACTION FREQUENCY	As farmers are likely to cash out their payments immediately, managing cash liquidity often becomes the biggest challenge for mobile money providers in last mile digitisation initiatives. Focusing on agricultural organisations operating in value chains with high transaction frequency across a longer harvest season allows mobile money providers to ensure liquidity in rural areas and reduces the need for repeated digital literacy training between payments. Small numbers of large payments are likely to put a strain on the agent network at the peak of the harvest season and cause spikes in demand for cash.

OUTPUT EXAMPLE: PROFILE OF AN AGRICULTURAL ORGANISATION AND ITS PROCUREMENT ACTIVITIES

ORGANISATION DETAILS	Organisation name	Organisation type	Contact details
VALUE CHAIN DETAILS	Primary value chain	Location and number of farmers in direct procurement	Crop seasonality
PROCUREMENT ACTIVITIES	Number of direct payments to individual farmers	Single transaction value	Current payment method
KEY VALUE CHAIN ACTIVITIES	Details of contract farming	Description of farmer profiling process	Participation in certification or export schemes

OUTPUT EXAMPLE: MAP OF SRI LANKA'S TEA VALUE CHAIN SHOWS TOTAL ADDRESSABLE MARKET FOR LAST MILE DIGITAL TOOL

STEP 2. VALUE CHAIN SELECTION AND MAPPING



STEP 3. IN-DEPTH VALUE CHAIN RESEARCH

IN-DEPTH VALUE CHAIN RESEARCH CAN IDENTIFY SUITABLE MOBILE USE CASES

STEP 3. IN-DEPTH VALUE CHAIN RESEARCH

In-Depth Value Chain Research focuses on the agricultural organisations and value chains selected in Step 2. It allows digital agriculture implementers to assess the barriers to improved procurement performance and the competitiveness of farmers and buyers, as well as the potential role of mobile money and AgTech in addressing some of these limitations.

As part of your in-depth research, use semi-structured interviews with key stakeholders in the value chain, including farmers, office staff of agricultural organisations, buying agents and extension officers, among others, to generate the following outputs:

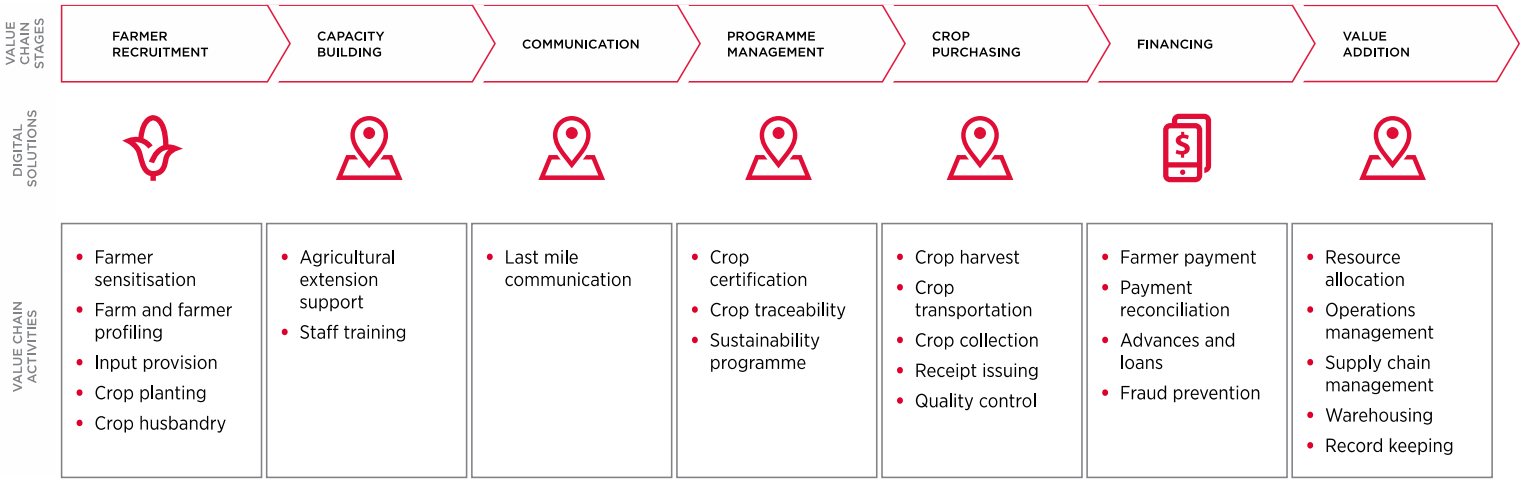
- ☑ Detailed profiles of selected agricultural organisations based on insights from a range of topics, such as: digital literacy rates, integration of smallholder farmers in the supply chain and farmer training tools;
- ☑ Description of key activities with an emphasis on those involving farmers and buyers, such as: crop collection, receipt issuing and farmer payments;
- ☑ Mapping of key pain points for farmers and agricultural organisations against these activities;
- ☑ Assessment of agricultural organisations' readiness to adopt last mile digital tools;
- ☑ Identification of mobile use cases for digital interventions, for example, digitising last mile payments.

DIGITAL TOOLS CAN ADDRESS INEFFICIENCIES IN MANY LAST MILE SYSTEMS AND PROCESSES

STEP 3. IN-DEPTH VALUE CHAIN RESEARCH

Field observations and semi-structured interviews with stakeholders in the value chain empower digital agriculture implementers to understand the full range of activities occurring in the last mile and identify inefficiencies affecting systems and processes involved in value addition. Expand the scope of your research beyond agricultural payments using the diagram below.

Inefficiencies often result from opportunity costs, which are the costs of employing production resources in a particular way rather than pursuing alternative business options. For example, assigning a realistic estimated value to the time it takes farmers and agribusiness staff to process cash payments for crop procurement allows project stakeholders to make the case to switch from cash to mobile money. If these costs are not assigned, value chain research will unintentionally treat these as free resources.



OUTPUT EXAMPLE: A MAP OF ACTIVITIES AND PAIN POINTS IN THE TEA FARMER JOURNEY UNLOCKS OPPORTUNITIES FOR DIGITISATION BEYOND MOBILE MONEY

STEP 3. IN-DEPTH VALUE CHAIN RESEARCH

	HARVEST	CROP HANDOVER	QUALITY CONTROL AT FACTORY	PAYMENTS
Activity description	Farmer stores plucked green tea leaf in 22-kilo natural fibre sacks	Farmer hands over leaves to collector at field edge	Farmer's harvest is weighed using digital scales and deductions are made based on moisture, leaf quality and weight of sacks	Farmer receives advances and balance payments based on recent supply history
Pain points	**Unpredictable weather** patterns affecting harvest and yield	**Farmer unaware of collection time** (farmer must be physically present all afternoon while truck is collecting from farmers)	**Farmer does not know how much is being deducted at factory**; only discovers upon receipt of remittance advice **Latest green leaf price** only known via word of mouth / if visited factory	Farmer is required to **travel to factory** to receive cash advances or **to bank** to cash out Individual **factory policies limit** how much they are prepared to pay in cash Farmer potentially carries a large amount of cash (cash-handling risks)
Opportunity areas	Weather forecast tool	Collection schedule shared with farmers	Instant push notifications to farmers	**Mobile money solution as the entry point to last mile digitisation**

HIGHLIGHTS OF THE VALUE CHAIN ASSESSMENT TOOL

STEP 3. IN-DEPTH VALUE CHAIN RESEARCH

Value Chain Prioritisation

- ☑ The GSMA's model scores value chains against key indicators affecting the digitisation of agricultural procurement payments and ranks them in order of priority.
- ☑ The potential to digitise agricultural procurement payments is greater in formal value chains experiencing high transaction frequency and transaction values that are compatible with mobile money transaction and wallet size limits.

Value Chain Selection and Mapping

- ☑ Creating profiles of agricultural organisations based on key procurement indicators and last mile activities gives mobile money providers a basic understanding of value chain structures and allows them to assess the suitability of particular value chains for digital payments.
- ☑ To maximise benefits for farmers, mobile money providers should profile and seek partnership opportunities with agricultural organisations involved in direct procurement from a significant number of farmers.

In-Depth Value Chain Research

- ☑ In-depth field research helps to create detailed agricultural organisation profiles, map user journeys and identify use cases for digital interventions that extend beyond digital payments.
- ☑ Field observations and semi-structured interviews with value chain stakeholders help digital agriculture implementers to recognise inefficiencies in agricultural value chains that can be addressed with holistic digital solutions.

CONTACT US!

We hope the Value Chain Assessment Tool helps to generate meaningful insights that support your digitisation project.

If you are a mobile money provider interested in conducting a value chain analysis to support digital interventions in agriculture, we are keen to hear from you! Please **email us at magri@gsma.com to request**:

1) Estimates of the potential **direct revenue opportunity** in selected countries from digitising business-to-person payments and government-to-person transfers in agriculture; and

2) A list of **priority value chains** in selected countries that are likely to be suitable for further analysis and follow-up activities.

The GSMA mAgri programme is eager to share lessons from applying the VCAT in several markets across Africa and South Asia and to listen to your experiences and feedback on how the VCAT worked in your markets.


GSMA