GSMA

Terms of Reference – *Leveraging blockchain for agricultural value chain digitalisation in Kenya*

7 November 2024

Introduction

<u>GSMA</u>

The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Solutions and Events.

<u>GSMA Mobile for Development Foundation</u>

The GSMA Mobile for Development Foundation, Inc. ("GSMA") is a U.S. 501(c)(3) charitable organisation. The Mobile for Development team (M4D) operates at the intersection of the mobile ecosystem and the development sector. Our aim is to stimulate digital innovation and deliver both sustainable business and large-scale socio-economic impact. Our research and insights platform, in-market expertise and community of partners push forward digital innovations and implementations that empower underserved populations. To date, we have impacted the lives of over 220 million people.

<u>Central Insights Unit</u>

The Central Insights Unit (CIU) sits at the core of GSMA M4D. It produces thought-leading research on frontier technologies, digitalisation and society and the impact of mobile and digital technologies in sustainable and inclusive development. The CIU works closely with the UK Foreign, Commonwealth and Development Office (FCDO) and the rest of M4D to ensure that research highlights the role of mobile technology as an enabler, draws on the expertise GSMA holds and builds capacity within the FCDO.

Context

In low- and middle-income countries (LMICs), smallholder farmers face numerous challenges in sustaining commercial viability, which affects productivity and incomes. These challenges include climate change and disasters, biodiversity and crop loss, disease, pests and fluctuating market prices for agricultural yields. Population growth and decreasing land shares put additional pressure on farmer productivity and incomes. Agribusinesses, including cooperatives, are also impacted by some of these challenges, for example fluctuating productivity can result in reduction in revenues.

Challenges in market access, particularly international market access further hinders sustainability of profits by reducing revenue diversity.

Agricultural value chain digitalisation[1] initiatives are on the rise across LMICs to tackle challenges experienced by agribusinesses and smallholder farmers in the last mile. Blockchain has emerged as an important tool in agricultural value chain digitalisation as it can enhance transparency, efficiency, traceability, and trust.[2] The established use of blockchain in fintech positions it well to provide a number of financial services, a key use case of blockchain for agricultural digitalisation, including digital payments, smart contracts and low-cost insurance. Other use cases include but are not limited to transparency and traceability, market linkages and sustainable farming practices. Despite the emergence of blockchain in agricultural value chain digitalisation there is a lack of evidence on the viability, sustainability and scalability of blockchain for agriculture initiatives in LMICs.

Despite being the backbone of the economy, smallholder farmers in Kenya face numerous challenges in sustaining commercial viability, which affects productivity and incomes including climate change and disasters, biodiversity and crop loss, disease, pests and fluctuating market prices for agricultural yields.[3,4] Population growth and decreasing land shares put additional pressure on farmer productivity and incomes. Agribusinesses, including cooperatives, are also impacted by some of these challenges, for example fluctuating productivity can result in reduction in revenues. Challenges in market access, particularly international market access further hinders sustainability of profits by reducing revenue diversity.[5] Given the importance of agriculture for the country's economy and its population's livelihoods, it is vital that the sector builds resilience against these challenges and there is potential for blockchain to play a key role in this.

The CIU is looking for an expert to conduct research and inform a new report that will document existing learnings on the use of blockchain in agricultural value chain digitalisation in LMICs. The CIU is specifically interested in performing a deep dive into Kenya, and in identifying lessons and any available best practices, from international markets that are applicable to Kenya. The research will culminate in the production of a public facing report.

Project overview and Objectives

Objectives

The GSMA is seeking a supplier to build upon GSMA's preliminary findings and contribute content to the final report. The objectives of this engagement are to:

- Identify relevant deployments of best/worst practices of blockchain use for agricultural value chain digitalisation in LMICs.

- Validate and extend on GSMA insights and analytical frameworks.

- Describe and analyse business models[6] behind existing deployments in agricultural value chains, in highlighting challenges and opportunities to deploy and scale solutions. Some key

---

[1] Please see GSMA: Toolkit for the digitization of agricultural value chains for more information.
[2] FAO. (2019). Blockchain for agriculture. Opportunities and challenges.
[3] The World Bank. (2021). Climate Risk Country Profile: Kenya.
[4] USAID. (2022). Kenya: Agriculture and food security.
[5] World Fish. (2022). Case studies of success stories in Kenya's agribusiness sector.
[6] Please see Strategyzer for more information on the proposed business model canvas.

considerations here include but are not limited to partnerships, value propositions, customer segments, cost structures and revenue streams.

- Identify, describe and assess challenges and enablers to blockchain deployments including but not limited to infrastructure (e.g. connectivity), skills (both among farmers and other actors in value chains e.g. agribusiness staff) and policy (e.g. data privacy, data sharing).

- Identify relevant use cases and lessons that are applicable to Kenya, such as in value chains that are prevalent in the Kenyan context (e.g. tea, coffee, maize and sugarcane).

- Provide practical recommendations to solutions providers and other actors in the broad ecosystems (e.g. investors, development partners) on how to support blockchain deployments across LMICs and specifically in Kenya.

Important considerations:

- We aim to conduct an analysis on use cases where blockchain can be leveraged to deliver impact in agricultural value chain digitalisation. We aim to investigate opportunities at different stages of maturity, including use cases where solutions are already being deployed, as well as more nascent opportunity areas. Selection criteria are to be defined.

- We will prioritise solutions that address the needs of agribusinesses engaging with smallholder farmers in agricultural value chains and that therefore support both agribusiness efficiencies in the last mile (e.g. reducing operational costs and inefficiencies, improving monitoring processes) and farmer impact (e.g. increased market access, increase income, financial inclusion). Where relevant, we will also look at solutions that engage larger farmers (non-smallholders) in the last mile.

- This research will also consider the potential of other emerging technologies such as artificial intelligence (AI) where they are being used in conjunction with blockchain in the agricultural sector. Specific attention should be given to this consideration throughout the research.

Methodology

Research questions

The research will seek to answer the following questions:

1. **Which use cases and specific solutions present the most promising opportunities to leverage blockchain for agricultural value chain digitalisation?**

- What are existing and emerging blockchain use cases that have potential to improve the sustainability, resilience and productivity of agricultural value chains?
- In what ways are these use cases positively impacting smallholder farmers and agribusinesses?
- How developed are these use cases (e.g. pilot stage, widely adopted, etc.)?
- What are the available business models behind blockchain-based solutions in agri value chains?

- What challenges exist in developing and deploying these solutions?
- What are the main barriers and risks of using blockchain enabled value chain digitalisation solutions?
- What lessons and best practices can be applied to the Kenyan context to ensure maximum impact?

2. What are priority actions to support the development of promising use cases and scale proven solutions?

- What types of support do innovators need to deploy blockchain for agricultural value chain digitalisation?
- What should implementers of blockchain-driven solutions consider to ensure sustainable impact?

Note: The GSMA will provide an initial analysis of use cases for the supplier to review, complement and expand on as part of their research.

In scope

In the context of this study, blockchain refers to the method of digitally storing transactional data in a decentralised, immutable ledger. Agriculture refers to the practice of farming or cultivating, inclusive of four sub-sectors: crops, livestock, fisheries and forestry. The study will focus on commercial agriculture, specifically looking at solutions targeting smallholder farmers.

This research will focus on the use cases that can deliver efficiencies to agribusinesses and smallholder farmers. It will look at how farmers and agribusinesses can be supported to leverage blockchain and how agritechs can be supported to provide sustainable and viable blockchain solutions.

This project will have a wide lens, considering international markets with lessons relevant to Kenya.

Deliverables and timelines

Phase	Activities and deliverables	Timeline
Phase 1: preparation and draft report	**Key activities** - Kick off call to discuss working plan, scope, timelines and approach - Mapping of ecosystem players addressing gaps in GSMA's list.[7] - Desk research	

---

[7] The GSMA already has a preliminary list of ecosystem players but is expecting the supplier to leverage its network to address any gaps and suggest additional stakeholders.

	Key deliverables	Deliverable 1 due mid-January (TBC)
	- Draft report including case studies from international markets with detailed analysis of the business models, a preliminary assessment of the barriers and enablers to these deployments and an indication of key learnings applicable to Kenya.[8] *Format: PowerPoint (20-25 slides)*	
Phase 2: Desk research, key informant interviews, analysis and reporting	**Key activities** - Desk research - Key informant interviews (KIIs) with 10-15 experts: enabling organisations, start-ups, development partners, regional experts where relevant.	Deliverable 2 due mid-February (date TBC)
	Key deliverables - Detailed summary interview notes - Final report: analysis of findings and recommendations *Format: PowerPoint 30-35*	

Firm and proposal requirements

Looking for: *Individual consultant*

Required experience

The GSMA is searching for a partner to deliver analysis responding to the outlined objectives. Ideally, they will have:

- Experience in undertaking similar analyses
- Thematic expertise in blockchain and digital development
- Solid understanding of agricultural value chain digitalisation
- Familiarity with FCDO-funded programmes preferred

Proposals should include a separate technical and financial proposal:

Technical proposal
1. A short (1 page) statement of suitability, highlighting recent relevant experience.
2. A short (2-4 page) discussion of the proposed approach including: the analytical frameworks to be used, identified data sources, and initial proposals on case studies.
3. Any proposed changes to the ToR.
4. Details of relevant firm project experience.
5. Gantt chart outlining major project stages and timelines
6. CVs, and location of team members.

---

[8] The GSMA will provide an initial analysis of use cases for the supplier to review, complement and expand on as part of their research.

Financial proposal

1. Level of effort (person-day) by activity.
2. Fee rates (per day in GBP).
3. Total project cost (GBP), without VAT[9].
4. The Respondent's Total Price is inclusive of all costs, insurances, fees, costs, expenses, liabilities, obligations, risks, and all financial requirements for the performance of Services and provision of Deliverables.
5. Any charge not stated in this Proposal, which extends above to the Total Price, is not permitted.

Due to GSMA compliance requirements, exact project budgets cannot be provided at this stage. You are, however, able to provide a few implementation/budget options that can help us assess value for money and we can align our project scope to the relevant budget after a consultant has been selected.

Proposal assessment and selection Process

The proposal will be scored on the following set of criteria:

Criteria	Importance	Weighting
Cost	Proposal's value for money	30%
Quality	Quality of the research approach outlined in the proposal, including degree to which it addresses the outlined research questions and proposal elements	40%
Bidder's capacity to manage the project on time and on budget	Selection of experienced high-quality research partner(s)/ ability to manage the project on time and on budget	10%
Relevant experience	Bidder's experience in successfully conducting similar projects	20%

- Proposals are to be submitted no later than *20 November 2024* to *Daisy Macaskie (dmacaskie@gsma.com) and Lauren White (lwhite@gsma.com)*
- Clarification questions can be sent to Daisy Macaskie (dmacaskie@gsma.com) and Lauren White (lwhite@gsma.com)
- Shortlisted consultants may be contacted for an interview by *22 November 2024*, which will be conducted up until the *26 November 2024*.
- Consultants will be notified of the final selection by the *29 November 2024*.

---

[9] GSMA Foundation Inc is a US registered 501(c)(3) charity and is exempt from VAT.

GSMA Mobile for Development

Foundation Inc.

Armour Yards, 165 Ottley Dr. NE

Suite 203

Atlanta, GA 30324

United States