Social Agriculture:
How Social Media Is Reshaping Agriculture Value Chains in Ghana

UNIVERSITY OF GHANA

This report is part of a broader multi-country research study on social agriculture.
www.platformlivelihoods.com/social-agriculture/

It is also part of the larger Platform Livelihoods Project, exploring working, trading, renting, and creating in a digital age. www.platformlivelihoods.com
For questions about this report, please contact Richard Boateng, richboateng@ug.edu.gh.

For questions about the Platform Livelihoods Project, please contact info@cariboudigital.net.

Authors

Richard Boateng, Joseph Budu, John Serbe Marfo, Obed Kwame Adzaku Penu, and Pasty Asamoah

Recommended Citation

Boateng, Richard, Joseph Budu, John Serbe Marfo, Obed Kwame Adzaku Penu, and Pasty Asamoah. "Social Agriculture: How Social Media Is Reshaping Agriculture Value Chains in Ghana." Platform Livelihoods Project. Farnham, Surrey, UK: Caribou Digital Publishing, April 2024. https://www.platformlivelihoods.com/social-agriculture-in-ghana/.

Caribou Digital delivers fund management, learning partnerships, and research, advisory, and evaluation services, supporting organizations worldwide to build more inclusive and ethical digital economies.
www.cariboudigital.net

Acessibility

This report has been designed using Adobe's PDF accessibility evaluation tool, a checklist of considerations to align to Web Content Accessibility Guidelines (WCAG) 2.1 Level AA.

Contents

Executive summary

This report provides insights into how social media creates and impacts livelihoods in the agriculture sector in Africa's digital economy, especially in Ghana. Known as "social agriculture," the use of social media in agricultural activities is gaining popularity in economies worldwide, including in Ghana. Social agriculture refers, broadly speaking, to the set of practices composing the use of social media platforms to support agricultural livelihoods. Despite the promise of social media platforms, little is known about how social media reconfigures agricultural value chains and impacts the livelihoods of actors within them. This study is a response to this knowledge gap and aims to enable more social agriculture winners in the agricultural sector in sub-Saharan Africa.

To achieve this objective, we engaged 17 Ghanaian agricultural sector stakeholders with expert knowledge and experience in the sector to identify value chains influenced by social media. The recommended value chains in Ghana were cocoa, rice, soybean, and vegetables. However, in gaining access to actors for detailed analysis, we developed five case studies spanning vegetables, rice, cocoa, and agricultural processing. A total of 28 interviews were done to develop the case studies.

The five case studies include:

1   **KayaApp** (vegetable value chain): Grocery (primarily vegetables) shop outsourcing using four female head porters.

2   **Nserewa** (rice value chain): Crowdfunding rice production driven by youth and employing 700 outgrower farmers.

3   **HapaSpace** (agricultural processing): Digital skills training provider for 458 young agricultural processing entrepreneurs.

4   **Home Gardening Ghana** (vegetable value chain): Online home gardening education, training, and input provision for youth (241,000).

5   **Touton** (cocoa value chain): Licensed purchaser of cocoa beans from individual farmers through a network of 70 district officers and managers.

Themes from findings

This research illuminated four themes which can guide the evolution of social agriculture, inform governmental and development partner interventions, and shape future research: (1) impacts on value chain roles; (2) trust dynamics; (3) opportunity creation; and (4) gender and youth empowerment.

Reconfiguration of value chain roles

Interviews revealed three primary avenues through which platforms are reshaping agricultural value chain roles.

1   Introducing new roles, such as agri-educational intermediaries.

2   Diminishing information asymmetry.

3   Creating new proxy farmers and subsistence farmers.

HapaSpace, for instance, offers persistent mentorship and post-training assistance to agripreneurs, addressing gaps left by traditional educational institutions. Both KayaApp and Nserewa harness social media to update members about market events and fund utilization. Significantly, Nsewera's crowdfunding endeavors, facilitated by WhatsApp, are pioneering the concept of proxy farmers and have successfully engaged 700 local rice cultivators. Without such initiatives, these farmers might remain underproductive due to capital constraints.

Trust dynamics

The modus operandi of these platforms raises questions about trust establishment. Trust is fostered by:

1 Feedback during interactions between stakeholders.

2 Solidifying surety and cultivating relationships.

3 Strong platform governance, underscored by adherence to social media group guidelines.

Trust deteriorates when platform managers neglect member engagement or fail to filter spam and unauthorized content. For example, Home Gardening Ghana does not allow advertisements because such advertisements could cast doubts on the platform's main objective. Trust outcomes identified include operational, relational, and strategic benefits.

Opportunity creation

This theme focuses on the inception of tech-driven business models and market reach extension. HapaSpace exemplifies how digital tools and platforms can catalyze new entrepreneurial avenues, while Nserewa's business model capitalizes on crowdfunding to offer virtual farming opportunities in Ghana. Furthermore, platforms like KayaApp demonstrate how digital reach can transcend geographical boundaries, serving international clientele.

Gender and youth empowerment

There's substantial evidence highlighting the role of social media in job creation and enhancement, especially for women and youth. For instance, KayaApp's initiatives have improved job prospects for head porters, both in terms of earnings and job security.

Nevertheless, the study underscores the need for caution. Despite the pronounced positive influences of social media, challenges persist. Women entrepreneurs face financial and logistical hurdles, limiting scalability. Additionally, there is a palpable skills gap, especially among younger women, in harnessing digital tools. The underrepresentation of women-owned ventures (53 out of 458 agripreneurs) also calls for more research and intervention.

Conclusion and key takeaways

The study provides a comprehensive understanding of the interplay between social media platforms and the agricultural sector in Ghana. Emerging new roles, trust dynamics, entrepreneurial opportunities, and empowerment avenues are pivotal in reshaping the agricultural landscape. However, to fully harness the advantages of social agriculture, mitigating challenges like financial constraints, skill gaps, and representation disparities is imperative.

Recommendations for future research

1   Further investigate the scalability challenges faced by women-owned businesses.

2   Delve deeper into the skills gap, focusing on tailoring educational programs for youth and women, especially those in less privileged contexts.

Recommendations for agricultural practitioners and policymakers

1   Prioritize and promote digital literacy, ensuring that marginalized groups, especially women, have equitable access.

2   Enhance feedback mechanisms on platforms to build and maintain trust.

3   Establish partnerships with digital training providers like HapaSpace to integrate traditional agricultural practices with modern entrepreneurial skills.

> By addressing these key areas, stakeholders can harness the full potential of social media in the agricultural sector, driving growth, sustainability, and inclusivity.

Key terms

Social media platform(s)   Various social media pages and groups that have been created for agricultural activities. This particular study identifies pages and groups created on social media platforms like Facebook, WhatsApp, TikTok, Instagram, and YouTube that facilitate avenues for one (platform) to many (members) interactions, many (members) to one (platform), and many-to-many interactions (between members).

Social media platform owner   The person who created a social media page or group for members to join. This person moderates the activities of the page or group based on certain governance or rules.

Social media platform manager   A person who has administrative privileges to moderate the activities of a page or group based on certain governance or rules. This may include the person who owns the social media page or group or anyone assigned by the owner to serve as an administrator of the social media group or page.

Social media platform members   Persons who have joined a social media page or group of a social media platform owner because they are interested in activities on the pages or group.

Creating[1]   Producing content such as videos and photos on social media.

Trading[2]   Offering products and services to customers through social media.

1   Donner, "Platform Livelihoods: Working, Trading, Renting, and Creating in Digital Marketplaces."
2   Donner, "Platform Livelihoods: Working, Trading, Renting, and Creating in Digital Marketplaces."

Introduction

Social media platforms facilitate creating, sharing, interacting with, and trading content and making connections among multiple actors. Generally, social media has brought both positive and negative outcomes to organizations and citizens over the globe. On one hand, it has made communication more and more convenient. On the other, social media use has adversely impacted relationship dynamics, mainly due to reduced time and attention for relationship partners.

Examples of social media platforms include YouTube, Twitter, Facebook, WhatsApp, Instagram, Telegram, and LinkedIn. These platforms provide benefits such as knowledge co-production, learning, innovation, monitoring, relationship building, lobbying, advertising, and marketing.[3]

The preceding social media platforms can potentially influence activities in various sectors, including agriculture. Within agriculture, activities are concerned with adding value from one stage to another in the agriculture value chain. The main aim of a value chain is to produce value-added products or services for a market by transforming resources and using infrastructures within the opportunities and constraints of its institutional environment.[4] In the agriculture sector, the exchange of information has been dominated by traditional media such as newspapers, television, and magazines.[5] However, recently, social media has been adopted by more and more actors in the

3   van Osch and Coursaris, "Organizational Social Media"; Ahmed et al., "Social Media for Knowledge-Sharing."
4   Trienekens, "Agricultural Value Chains in Developing Countries."
5   Lathiya, Rathod, and Choudhary, "Role of Social Media in Agriculture."

sector.[6] Social media platforms enable agricultural value chain actors to interact with, learn about, and communicate agricultural methods for increasing their value chain's quality, fertility, and productivity.[7] Among the benefits of social media in the agriculture sector is the ability for extension experts, research scientists, agronomists, environmentalists, and farmers tonetwork and to share knowledge and information.[8] Social media, like WhatsApp and Facebook, is now a mainstream form of communication and transactions worldwide and continues to grow in popularity in agriculture in sub-Saharan Africa.[9] Despite this growth, little is known about how social media reconfigures agricultural value chains and influences actors' roles, thus impacting the livelihoods of many within the sector. This study is a response to this knowledge gap, and it is significant to creating more platform-enabled winners in the agricultural sector in sub-Saharan Africa.

Social agriculture

The term "social agriculture" describes the practices comprising social media platforms to support agricultural livelihoods. This project is a follow-up to earlier research conducted by Caribou Digital on social agriculture in Kenya.[10] That study examined Kenyans' experiences and perspectives using social media platforms as part of their agricultural livelihoods. In addition, it highlighted how social media platforms afford particular practices around commerce and information dissemination, as well as issues of trust and online abuse experienced by respondents.

Though that first study generated valuable insights, the perspective of social media influence on the complex interaction of activities within agricultural value chains was not explored. Agricultural value chains consist of complex interrelationships of actors, networks, information, and resource exchanges that facilitate the delivery of value to consumers and commercial clients. Thus, to gain a holistic perspective of the affordances of social media in agriculture, understanding and unearthing the complexities of impacts within agricultural value chains cannot be overlooked.

6   Hansen et al., "ICT and Social Media as Drivers of Multi-Actor Innovation in Agriculture."
7   Kesherwani et al., "Social Media Help Farmers."
8   Kesherwani et al., "Social Media Help Farmers."
9   Cheeseman et al., "Social Media Disruption."
10   Schoemaker et al., "Social Agriculture."

Understanding agriculture value chains

An agricultural value chain is defined as the people and activities that bring an essential agricultural product, like maize or vegetables, from obtaining inputs and production in the field to the consumer through stages such as processing, packaging, and distribution to domestic markets and exports to international markets. Agricultural value chains include three primary categories of activities: **upstream**, **midstream**, and **downstream**.

Upstream activities are those close to the inputs or raw materials in the value chain, or those related to the design, primary, and applied research stages of the value chain. Examples of inputs in agricultural value chains include seeds, crop chemicals, equipment, fertilizers, land, labor, tractors, and irrigation machinery. Some actors upstream in the value chain include landowners who facilitate access to farmlands for use by producers and financial service providers who finance the activities of producers and other suppliers who make inputs available to carry out production activities.

Midstream activities are related to production; this stage is dominated by producers (primarily farmers), who may require financial institutions to procure lands and other supplies (e.g., seed, fertilizers, machinery, and irrigation systems). Activities in this stage can be small-scale/smallholder or large-scale/commercial. Support from government subsidies and other forms of financial assistance can influence the scale of production.

Downstream activities add value to agricultural produce and focus on getting the product to commercial clients and consumers. They include collection (or aggregation), processing, marketing, and trade. At this stage, actors include cooperatives, aggregators, wholesalers, processors, retailers, importers, exporters, marketers, and consumers. The activities of these actors are highly complex and depend on close collaboration or integration among actors to maximize the value created and shared. For example, marketing includes retailing, wholesaling, and promotion (advertising, brand management) activities and after-sales services to consumers and businesses.

The agricultural value chain in Ghana

Agriculture is one of the most important economic sectors in Ghana. From 2019 to 2021, the agriculture sector's contribution to national GDP increased, from 17.32% (2019) to 11.85% (2020) to 19.71% (2021). Currently, more than 50% of Ghana's total labor force is employed in agriculture. Therefore, agriculture plays an impactful role in Ghana's society, politics, and economy.[11]

Ghana's agriculture sector consists of several products. Paramount among them is cocoa, the major exported cash crop. Other crops consist mainly of grains and cereals (i.e., rice and maize), roots and tubers (i.e., cassava, yams, and sweet potatoes), and, more recently, vegetables. Poultry is the primary livestock in the animal production sector.[12] Agriculture in Ghana is severely affected by environmental and ecological changes, and the government of Ghana is working to make the sector more resilient by bringing research, innovation, and technology. For example, through the help opf agriculture extension officers, smallholder farmers are building their resilience to climate variability using climate-smart agriculture practices in the Bono East Region of Ghana.[13]

Cocoa

Cocoa is one of the primary and most exported commodities of Ghana's agriculture sector. Through its regulatory body, the Ghana Cocoa Board, the government of Ghana controls the cocoa supply chain. Ghana is the second largest producer and exporter of cocoa beans. Most recent figures from 2022 show that Ghana exported US$2.3 billion worth of cocoa beans.[14]

Cocoa is primarily produced by small and peasant farmers in Ghana.[15] This commodity has provided more than 500,000 farmers in the country's southern region with a means of subsistence, and it has significantly impacted the national economy.[16]

11   Ferreira et al., "The Role of the Agricultural Sector in Ghanaian Development."
12   Darfour and Rosentrater, "Agriculture and Food Security in Ghana."
13   Baffour-Ata et al., "Building the Resilience of Smallholder Farmers to Climate Variability."
14   Sasu, "Ghana: Export Value of Cocoa Beans 2022."
15   Asigbaase et al., "Decomposition and Nutrient Mineralisation of Leaf Litter in Smallholder Cocoa Agroforests."
16   Yusif et al., "Do Government Agricultural Policies Affect Production and Export of Cocoa in Ghana?"

Grains and cereals

Grains are the primary food source in African countries, including Ghana.[17] Smallholder farmers produce most of the grains and cereals in Ghana; the most common are maize and rice.[18] Rice is a major strategic food and cash crop in Ghana. Rice consumption in Ghana has continuously risen because of population growth, urbanization, and changes in consumer behavior.[19] In 2020, total rice consumption in Ghana was 1.45 million metric tons.[20] Recently, local paddy rice has seen a boost in production and sales, as comparted to imported rice, as the Ghanian government has stopped providing foreign currency support to import rice. The move is to ensure an increased and sustained domestic production of good-quality rice for food security, import substitution, and savings in foreign exchange. Hence, this policy initiative has led to a significant increase in the demand for local rice. In 2020 Ghana produced 649,000 metric tons of rice.[21] This is the largest recorded since 2010. Rice is grown in all regions of Ghana. The Volta, Ashanti, Eastern, Upper East, and Northern Regions are the primary production zones of rice in Ghana, with the Volta Region seeing highest production.[22]

Vegetables

Vegetables are a source of vitamins, minerals, and nutrients for the population.[23] In both commercial and home use, they serve as soup thickeners and help to increase the bulk of stews. Tomato, lettuce, cabbage, onion, shallots, okra, eggplant (garden eggs), sweet pepper, carrots, chili pepper, and hot pepper are among the most common vegetables grown in Ghana.[24] Vegetables are both exported and consumed by urban and rural populations. Lettuce, cabbage, and cucumber have become increasingly popular in urban centers, leading to high yearly production yields. Exotic vegetables like carrots and cauliflower have low yields and poor quality. More often than not, poor agricultural practices, including the use of unviable seeds, poor use of fertilizers, the lack of proper irrigation due to unpredictable rainfall patterns, lack of processing controls, and lack of access to markets lead to low yields, which affect the income earnings of vegetable farmers in Ghana.[25]

---

17   Awika, "Major Cereal Grains Production and Use around the World."

18   Darfour and Rosentrater, "Agriculture and Food Security in Ghana."

19   Awika, "Major Cereal Grains Production and Use around the World."

20   FAOSTAT, "Food and Agriculture Data."

21   FAOSTAT, "Food and Agriculture Data."

22   AfricaagMedia, "Ghana: Rice."

23   Egbi et al., "Nitrate Contamination of Groundwater in the Lower Volta River Basin of Ghana."

24   Fadairo, Williams, and Nalwanga, "Perceived Livelihood Impacts and Adaptation of Vegetable Farmers to Climate Variability and Change in Selected Sites from Ghana, Uganda and Nigeria."

25   Quansah et al., "Pre- and Post-Harvest Practices of Urban Leafy Green Vegetable Farmers in Accra, Ghana and Their Association with Microbial Quality of Vegetables Produced."

Generally, vegetable production in Ghana has increased over the years, but by minimal margins. The production of vegetables in 2017 was 786,457 metric tons, marginally rising to 788,396 metric tons in 2020.[26] The vegetable sector in Ghana includes three main components (1) commercial/market gardening areas within main cities such as Accra, Kumasi, Takoradi, and Tamale; (2) truck farming, where vegetables from rural areas are purchased by middlemen and transported to cities; and (3) small domestic or backyard gardening with vegetables typically consumed by families, with excess sometimes sold for profit.

Key challenges

Agriculture value chains in Ghana face various challenges. First, a lack of infrastructure results in a significant amount of food loss annually. Second, high levels of digital and general illiteracy impede the adoption of new agricultural technologies, such as drones, microchips, vertical farming, and drip irrigation.[27] Third, the agricultural value chain is negatively affected by climate change, which impacts agricultural productivity through global warming, lack of access to water, and other aspects. Finally, the government has not enacted legal reforms in the agriculture sector.[28]

The agriculture sector of Ghana needs reforms in market structure, credit lending, land reforms, and many other areas to reduce the participation of middlemen, who currently extract value from the sector. In addition, agriculture in Ghana needs to be digitalized to implement a direct farm-to-market structure in which farmers and consumers interact directly for mutual benefit.

26   FAOSTAT, "Food and Agriculture Data."
27   Kolavalli, "Developing Agricultural Value Chains."
28   Kolavalli, "Developing Agricultural Value Chains."

Social media platforms and agricultural value chains

Agricultural value chains are complex networks that encompass the entire process of producing, processing, and distributing agricultural products from producers to end consumers. These chains represent a series of interdependent stages, each adding value to the final product and involving a range of actors, resources, and activities. The growing use of social media platforms in agricultural value chains affects both their characteristics and their key actors. Further, the features of social media platforms enable actor interactions that create some benefits for the actors within the value chain. This section discusses these relationships further to build a framework to analyze specific case studies.

Characteristics of value chain roles

Value chains comprise various stages, each characterized by specific roles and functions. These roles typically include input suppliers, producers, processors, distributors, retailers, and consumers. Each role contributes to the transformation of raw materials into final products and involves specific activities aimed at enhancing the product's value, quality, and accessibility.

Key actors of social media platforms

With the advent of digital technologies, social media platforms have emerged as pivotal tools that reshape the dynamics of agricultural value chains. Key actors related to these platforms include farmers, agricultural extension workers, agribusinesses, government agencies, consumers, and technology providers. These actors engage in virtual interactions that transcend traditional boundaries, enabling the exchange of information, resources, and expertise.

Social media platform–enabled interactions in the value chain

Social media platforms facilitate interactions among various actors in the agricultural value chain that were previously limited by geographical constraints. Farmers can share insights on best practices, weather conditions, and pest management, while agribusinesses can directly connect with consumers to understand preferences and demand patterns. This enables smoother coordination, better decision-making, and improved access to market information.

Platform features engaged to enable actor interactions

Various features of social media platforms are leveraged to facilitate interactions within agricultural value chains. These include discussion forums, live chats, video conferencing, knowledge-sharing groups, and online marketplaces. Through these tools, actors can share real-time information, collaborate on projects, and collectively address challenges, contributing to enhanced efficiency and sustainability in the value chain.

Beneficiaries of platform and interactions

The benefits of social media platform–enabled interactions extend to various stakeholders within the agricultural value chain. Smallholder farmers gain access to market information, technical know-how, and support from experts. Agribusinesses can streamline distribution channels, respond to consumer demands, and engage in targeted marketing. Consumers benefit from increased transparency, traceability, and access to fresher and higher-quality products.

In this study, which aims to explore the impact of social media platforms on agricultural value chains, these concepts serve as a valuable lens through which to examine how these interactions reconfigure existing dynamics and contribute to the broader transformation of the agriculture sector. Studying the characteristics of value chain roles, key actors, interactions, platform features, and beneficiaries can provide valuable insights into the intricate ways in which technology is shaping agricultural value chains.

Research methodology

This section presents the process used in the selection of case studies, recruitment of participants, and collection and management of data.

Selection of value chains

At the commencement of the project, the research team engaged 17 stakeholders in the Ghanaian agricultural sector who had expert knowledge and experience to identify value chains that are being influenced by social media. At the end of the engagement workshop, the experts recommended the following value chains for study: cocoa, rice, soybean, and vegetables. Fortunately, these value chains are also part of Mastercard Foundation Ghana's 13 priority value chains.[29] Further, the selected value chains also represent the diversity of the agriculture sector. For instance, while cocoa and soybean value chains have export orientation, rice and vegetables focus on the domestic market. The selection also features value chains with clear evidence of social media use by traditional value chain actors like farmers (rice, vegetables, and soybean), and those with new value chain actors, primarily driven by social media (vegetables and rice). However, upon field entry, the research team was able to gain access to only actors within the vegetable, rice, cocoa, and agri-processing value chains.

Selection of case studies

The research team conducted a desk review to identify businesses and organizations involved in social agriculture and developed the following inclusion criteria for selecting case studies within the identified value chains.

1   Use of social media in business activities for more than a year.

2   Observable impact of social media use.

3   Opportunity for digital ethnography (research team should be able to join and observe social media groups).

Table 1 shows an overview of cases and criteria for selection.

29   Mastercard Foundation, "Young Africa Works."

Case	Value chain / Primary value chain role	Business model	Reasons for inclusion	Potential candidates and reason for exclusion
KayaApp Grocery *4,400 TikTok followers with 15,900 likes, and 5,300 Facebook followers and 5,100 likes.*	Vegetables / Downstream (aggregator)	Grocery (primarily vegetables) shop outsourcing using four female head porters.	• Used social media since 2019. • Outsourcing grocery purchasing is driven and managed by social media platforms. • Opportunity for digital ethnography (researchers were able to join the social media platforms to observe activities).	• Farmer Haus Project (no observable impact of social media use) • FarmersHausGh (no observable impact of social media use) • Big Samps Market (researchers lacked access) • StockupGh (researchers lacked access)
Nserewa *Average of 50 virtual farmers (crowd funders) for each farming season.*	Rice / Upstream (financier)	Crowdfunding rice production driven by the youth and keeping 700 out-grower farmers optimally employed	• Used social media since 2019. • Social media platforms are used to coordinate the recruitment of crowdfunders and information management during the farming season. • Opportunity for digital ethnography (researchers were able to join the social media platforms to observe activities).	• GrowForMe (no observable impact of social media use) • SmartFarmer (no observable impact of social media use)
HapaSpace *458 agripreneurs across four WhatsApp groups.*	Agricultural processing / Downstream (cooperative)	Digital skills training provider for 458 young agricultural processing entrepreneurs	• Used social media since 2019. • Social media platforms are used for knowledge and resource exchange, continuous learning, and as a marketplace for agripreneurs post-training. • Opportunity for digital ethnography (researchers were able to join the social media platforms to observe activities).	• Savannah Young Farmers Network (no observable impact of social media use) • GrassRoots Hubs (researchers lacked access) • AgriCo Hub (researchers lacked access)
Home Gardening Ghana *241,000 members across 100 countries, with Ghanaians being most represented.*	Vegetables / Downstream (consumer)	Online home gardening education, training, and input provision for youth.	• Used social media since 2019. • Social media platform is the primary platform for members and content sharing. • Opportunity for digital ethnography (researchers were able to join the social media platforms to observe activities).	• The Ghanaian Farmer (researchers lacked access) • Ghana Farmers Association (researchers lacked access) • Home Gardening & Farms—Ghana (researchers lacked access)
Touton *No fewer than 70 members across 13 WhatsApp groups for their respective districts.*	Cocoa / Downstream (aggregator)	Licensed purchasing of cocoa beans from individual farmers through a network of 70 district officers and managers.	• Used social media since 2019. • Social media platform is used to coordinate operational activities between district officers and regional managers. • Opportunity for digital ethnography (researchers were able to join the social media platforms to observe activities).	• No other businesses operating in this business model were identified

Table 1 ▲

Criteria for case selection and overviews

Case study development

The research team adopted a "revelatory" case study approach. A case study can be described as revelatory when comprehensive research is scarce on the subject matter being investigated.[30] Our approach entailed conducting a comprehensive analysis of Ghana's underexplored area of study (i.e., social agriculture). As of now, there is arguably no known empirical study that has been conducted on social agriculture in the context of Ghana.

The study's objective was to identify one or more entities with the potential to serve as a unique model resource for knowledge on social agriculture. More specifically, the research team sought to identify any persons or businesses whose activities fall within the agricultural value chain and directly or indirectly involve social media. The case studies—KayaApp, HapaSpace, Nserewa, Home Gardening Ghana, and Touton Ghana—present unique opportunities to address the study's objectives, as they employ business models that involve social media. These case studies were identified through the research team's social networks. The extensive duration of the team's involvement with the selected cases, coupled with rigorous data-gathering techniques such as semi-structured interviews and analysis of relevant documents, has significantly contributed to comprehension of the landscape of social agriculture in Ghana.

Recruitment of participants

In the cases of KayaApp, HapaSpace, Nserewa, and Home Gardening Ghana, the research team established contact with the focal persons behind the business (see Table 2) through social media, especially Facebook. In the case of Touton, contact was established with one of the company's regional managers, who has six years of working experience in the cocoa industry and has worked for other licensed cocoa-buying companies in four other regions in Ghana. Social media contacts were augmented with email, phone calls, and virtual meetings.

These initial contacts were important because of their understanding of their respective value chains. Also, because of their managerial roles, they facilitated and provided access to relevant internal and external research respondents.

Data collection and management

The research team collected data using a semi-structured interview guide approved by the Caribou Digital team. The interview guide consisted of six general questions with additional open questions, which prompted the interviewers to probe further as needed. The general questions were as follows:

1 What platforms are actors using? What specific features are they using, and which activities comprise their roles (new or pre-existing)? Have social media platforms changed what they do concerning the product/crop?

    30   Yin, *Case Study Research: Design and Methods*.

2   How has social media changed what they were doing before? What new things are they able to do? What did they do before, and what do they do now?

3   What are the benefits and challenges?

4   What new roles have actors adopted based on each of these features?

5   How has the context of the value chain enabled them to adopt new role(s) through these social media features?

6   How have social media platforms changed the lives of key actors and those around them?

In all, 28 interviews were conducted. The interviews were conducted by a four-member team between January and March 2023. The team included two researchers, one videographer, and one photographer, who took video coverage and still photographs, respectively. In addition to the focal persons behind the business, other persons, such as customers, employees, social media managers, and participants on the social media groups and pages of the case study businesses, were also interviewed. (See Table 2 for an overview of the interview participants.) Some of the interviews were electronically recorded (audio, still photographs, and video) and have been transcribed and stored for sharing with project partners. Others were handwritten, as respondents did not consent to an audio recording of the interviews (e.g., farmers and some managers of Touton). The interview team also participated in meetings organized by some case businesses as non-participant observers (e.g., Nserewa held a face-to-face interaction session with its crowdfarmers).

In addition to the focal persons, the research team interviewed other actors associated with the focal persons. The inclusion criteria for selecting these actors include the following:

1   Actors are social media–enabled and on the social media group(s) of the focal persons.

2   Actors who are not social media–enabled have been interacting with the focal persons for at least a year.

3   There is observable activity by these actors on social media groups created by the focal persons.

4   Actors are willing to share their experiences regarding the topic under investigation with the research team.

Table 2 shows an overview of participants and criteria for selection.

Case	Pseudonym/Gender	Designation/Primary value chain role	Reasons for inclusion	Other possible respondents not included
KayaApp	Naomi (Maame Kaya)/Female	Agripreneur/Aggregator	Focal person and social media platforms manager (convener).	Farmgate Vegetable Aggregators were not included because they are not social media–enabled and are not on any of Maame Kaya's social media groups. Researchers also lacked access to these respondents.
	Aisha/Female—Customer 1	Kayayoo (Head Porter)/Shopping Assistant	Helps KayaApp in shopping for groceries.	
	Jennifer/Female—Customer 2	Consumer	KayaApp customers and members of Maame Kaya's social media platform groups.	
	Akua/Female—Customer 3	Consumer		
	Ramatu/Female—Customer 4	Consumer		
	Eunice/Female—Customer 5	Consumer		
	Joyce/Female—Customer 6	Consumer		
	Doreen/Female—Customer 7	Consumer		
	Mizpa/Female—Customer 8	Consumer		
Nserewa	Kojo/Male	Agripreneur/Financier	Focal person and social media platform administrator (convener)	Other financiers on Nserewa social media pages who declined to meet with researchers.
	Linda/Female	Financier	Member of Nserewa's social media crowdfarming group	
HapaSpace	Gideon/Male	HapaSpace CEO and Cooperative Lead	Focal person and social media platform administrator (convener)	Other aggregators and processors on HapaSpace social media who declined to meet with researchers.
	Maxwell/Male	Cooperative employee	Social media platform administrator	
	Josephine/Male	Cooperative employee	HapaSpace Community Manager to corroborate the focal person's responses	Other agripreneurs who were not social media-enabled.
	Philipina/Male	HapaSpace agricultural project manager		
	Theophilus/Male	Agripreneur/Processor	Members of HapaSpace social media groups	
	Frederick/Male	Agripreneur/Input supplier (machinery)		
	Emilia /Male	Agripreneur/Processor		
	Freda/Male	Agripreneur/Processor		
	Vida/Female	Agripreneur/Processor		
Home Gardening Ghana	Dr. Frank Ackah/Male	Agronomist/Consumer	Focal person and social media platform administrator (convener)	Other aggregators and processors on Home Gardening Ghana's social media pages who declined to meet with researchers.
	Michael/Male	Agricultural consultant/Consumer	Member of Home Gardening Ghana social media group	Other agripreneurs who were not social media-enabled.
Touton	Kwame/Male	Agricultural consultant/Aggregator	Focal person and social media platform administrator (convener)	Farmers were not included because they are not social media–enabled and as such are not on any of Touton's social media groups
	Djibril/Male	Cocoa District Manager/Aggregator		
	Enoch/Male	Cocoa Sustainability Manager/Aggregator		
	Nat/Male	Cocoa District Manager/Aggregator		
	Yaw/Male	Cocoa Extension Officer/Aggregator		
	Joseph/Male	Cocoa farmer		
	Kofi/Male	Cocoa farmer		

Table 2 ▲

Participants

KayaApp Grocery

Case study overview

KayaApp Grocery is a social media platform–based grocery shop that sources groceries for interested persons in Kumasi, the capital city of the Ashanti Region of Ghana, and other cities. KayaApp was birthed on social media, specifically TikTok. CEO Naomi Kokuro, popularly known as Maame Kaya, started this venture during the COVID-19 lockdowns, which led to price increases and difficulties accessing foodstuffs. One day, she posted a TikTok video about bulk foodstuff and vegetables she chanced upon in the market, inviting interested persons to join her, buy them in bulk, and share. The post had over 30,000 views overnight. This post has grown into the KayaApp as it is now across various regions in Ghana.

As of this writing, KayaApp's TikTok account has over 4,400 followers with 15,900 likes, and the Facebook page has over 5,300 followers and 5,100 likes. Maame Kaya's motive is to use social media to get customers food items at affordable prices. She currently has over 200 customers in Kumasi and other parts of Ghana. Customers request food items via social media channels, especially WhatsApp, using texts, voice notes, images, and videos. She then buys bulk from market women, mostly retailers, and share the food items among the customers. She calls this service "Bulk-Buy-Share." Some customers also send KayaApp their grocery shopping list outside the Bulk-Buy-Share service.

Other customers, mostly overseas, also use KayaApp as a proxy buyer. KayaApp shops on their behalf and delivers to their aged relatives in Ghana who are unable to go to the market. This approach overcomes fraud faced by some older people; when their overseas relatives send money for groceries, some caretakers purchase sub-standard items or items in small quantities. But with KayaApp, they can be assured of having the items in bulk and quality. One customer, for example, said: *"What Maame Kaya is doing for me is helping me because my mother-in-law is an aged person, and she cannot be going to the market to get things."*

Characteristics and value chain roles of platform

Grocery shopping via KayaApp Bulk-Buy-Share involves several activities, including attracting and identifying interested customers, taking orders, payments, tracking, buying and warehousing, sharing and packaging, transporting, and pick up. These activities are managed and sustained using social media. KayaApp's value chain activities are illustrated in Figure 1.

Figure 1 ▾

KayaApp value chain activities
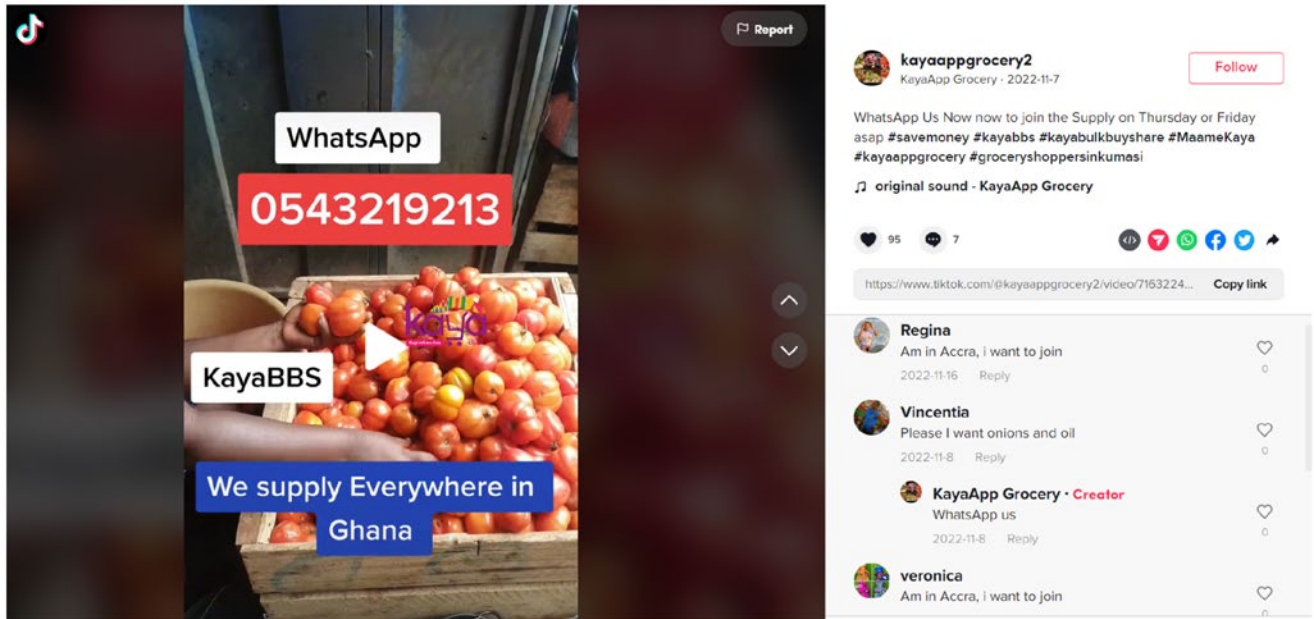
1   Identifying customers

KayaApp value chain activities begin with customer identification. Maame Kaya advertises on social media platforms like Facebook, TikTok, and WhatsApp using texts, images, and videos of foodstuff bought, warehoused, packaged, and ready to be dispatched to customers. Potential customers, upon seeing the comments under the post, expressing interest in transacting with KayaApp. KayaApp then sends them a WhatsApp group link asking potential customers to join. Figure 1 shows a customer placing an order and potential customers seeking to join the KayaApp WhatsApp group after a post on TikTok.

01
Order received

02
Write order in order book

03
Obtain price list

04
Plan the shopping

Group the items
Identify vendors

Buy the ones that have prices

05
Shopping

09
Feedback

20–30 minutes after delivery
Customer
Send invoice
Appreciation

08
Updates customer

1 – At market
2 – Packaging complete
3 – Delivery

07
Delivery time

Call driver
Packing into boxes
Taking pictures and videos

06
Packaging

70% shopping
First alert for delivery option
30 mins – 1 hour

2   Taking orders, payments, and tracking

According to Maame Kaya, after customers successfully join the KayaApp WhatsApp group, she issues a communique and advertisement informing customers to place orders and make payments through mobile money by the close of Tuesday. This is because KayaApp operates on a weekly basis. Customers interested in the week's bulk-buy-share place their orders and make payments through mobile money to Maame Kaya. She then documents orders using a spreadsheet to avoid mistakes and missing any orders. Given that her customer base is growing and she wants to avoid mistakes, Maame Kaya has introduced a Google Forms link, which is populated with items for customers to use in placing their orders. A customer who runs an IT firm and supplies institutions and businesses with business management software shared her thoughts about the Google Form that Maame Kaya introduced:

> "In recent times, she has also introduced the Google Forms thing, which I think is good for data collection and getting her data about her customers more organized."

KayaApp Customer 2

Figure 2 ▲

KayaApp grocery
Source: KayaApp Grocery TikTok page

3   Buying and warehousing

Early morning, around 6:00 a.m. GMT, Maame Kaya writes all customer orders on a piece of paper and goes to the market to begin purchases. She bargains and buys food items in bulk from her trusted market women vendors, who are always happy to see her because of the quantity of her purchases. Maame Kaya has two foodstuff-buying assistants who support her in this activity. Purchased items are carried back to the KayaApp warehouse by female head porters, locally known as "Kayayei" (see Figure 3).

4   Sharing and packaging

After the bulk-buy and warehousing, Maame Kaya divides the food items according to their respective orders:

> "For instance, if two customers request fresh tomatoes worth $2 and $10, respectively, we buy fresh tomatoes worth $12 in bulk and share it among the two customers in a ratio 1:5. After the foodstuff has been divided among the customers, we then package them and label them with their respective owners' delivery information using permanent markers."
>
> **Maame Kaya**

5   Transporting and pick up

Packaged foodstuffs are then transported using commercial vehicles. In some cases, customers come to pick up their items at the bus station, request delivery via digital ride-hailing services, or request that KayaApp deliver their items to their doorstep at a fee.

Figure 3 ▾

Maame Kaya making a purchase at market

Key actors on the KayaApp social media platform

Generally, the Bulk-Buy-Share supply chain involves several activities. But there are only three actors behind the KayaApp social media platforms: customers (consumers), KayaApp employees, and the CEO.

A large proportion of KayaApp customers are young women of diverse backgrounds. The majority of KayaApp customers have formal education, with some being professionals, including doctors, teachers, and businesswomen. Generally, the KayaApp customers can be described as "busy professionals or business people."

KayaApp employees can be categorized into two groups. These include (1) marketing and operational assistants and (2) Kayayei.

> "I have girls who help me with marketing—between 17- and 25-year-old girls. They help me with posting pictures and videos online, keeping records of the transactions, engaging with customers online, receiving momo [mobile money] payments, engaging in bulk buying, and sharing and packaging."
>
> **Maame Kaya**

Social media platform–enabled interactions in the value chain

KayaApp leverages three main social media platforms for its operations: TikTok, WhatsApp, and Facebook. Of the three, TikTok and Facebook are used to achieve the same goal. KayaApp uses TikTok and Facebook to post recorded videos of Bulk-Buy-Share activities hoping that potential customers will reach out via the comment section, after which they are added to the WhatsApp group. These activities characterize informational interactions on KayaApp social media channels.

Further, the platforms contain advertisements about KayaApp's activities and benefits. Maame Kaya uses WhatsApp to advertise, accept orders, request payments, and provide delivery reports to customers. According to Maame Kaya, besides business transactions, customers also provide her with market information.

> "One customer notified us on their WhatsApp page that there will be price hikes in the future, so she should buy the foodstuff on time to avoid high costs."
>
> **Maame Kaya**

Platform features engaged to enable actor interactions

KayaApp is a social media platform–based grocery shopping business serving a mostly urban customer base. Business activities include accepting customer orders, buying, transporting, and providing delivery reports to customers. For this reason, KayaApp leverages the groups (creating and joining), posting content in multiple formats (text, video, images), and voice note features of social media platforms.

The group creation and joining feature allows Maame Kaya to create groups for customers to join, interact, and transact with KayaApp. In addition, groups allow KayaApp to gather customer sentiments and adjust business operations where necessary. Posting text, video, and images allows KayaApp to advertise to customers by sharing previous Bulk-Buy-Share activities. Similarly, the texting feature allows customers to interact, place their orders, and network. The voice notes feature allows customers to easily record audio messages in local dialects.

KayaApp also makes use of an interesting WhatsApp feature: WhatsApp polls. Maame Kaya explains how she uses this feature to know whether she has a critical mass of customers for a given week to decide whether she will shop that week. Figure 4 shows a poll from KayaApp seeking customers' shopping intentions for a particular week.

> "Now with the new feature on WhatsApp called the polls, I use it weekly to determine whether people are going to shop or not. There is a certain number that I will not shop for because it will not be cost-effective like we want it. So, every week on Tuesday, I will post it on all platforms. So, when I get a certain number of potential buyers, I know that week will be good."
>
> **Maame Kaya**

From customers' perspective, threads of comments on posts on KayaApp's social media draw them to trust KayaApp as a genuine business.

> "Also, she interacts with us on the WhatsApp platform. She will always come to the page asking for feedback, so yeah, that was it for me. Even though some people can deliberately form a group to dupe, I realized she was for real. And aside from the WhatsApp interactions, she also does programs on the radio and shares the link in WhatsApp for us to follow. ... So, all of those things so of increased the trust I had for her."
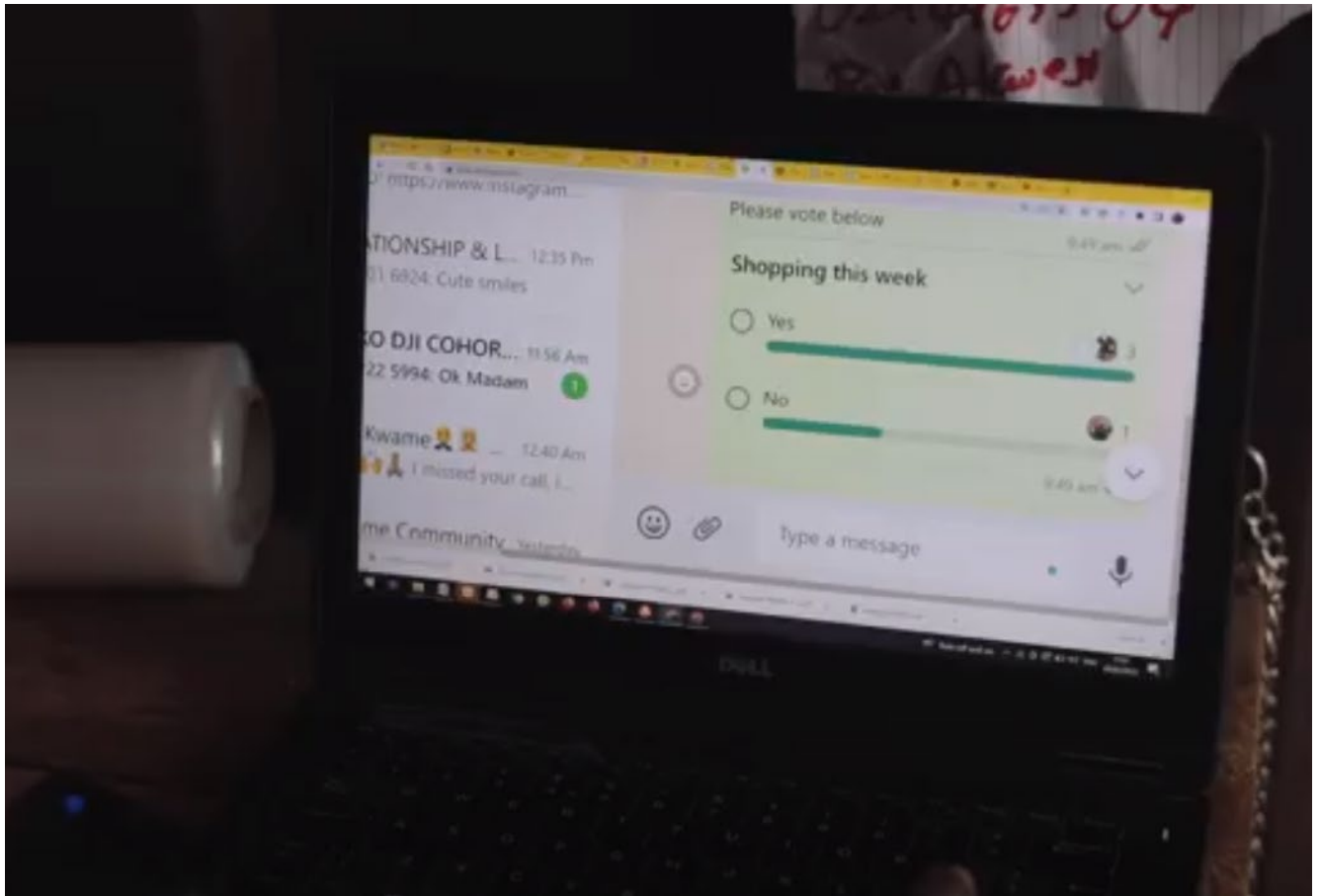>
> **KayaApp Customer 1**

Figure 4 ▲

KayaApp WhatsApp poll

"Honestly, before I started buying from her, I watched her interactions on the page for a while after she had added me to her WhatsApp page. I noticed she encouraged feedback on the page, whether good or bad, and that was one of the ways that I got to know she was genuine."

KayaApp Customer 2

"So, when I chanced on her page, I was like, let me try and see. But you know, with this online thing, you can't be too sure. So I went through her page and then went ahead and added some of my friends as well just for us to monitor what was happening after she had added us to the WhatsApp page. So, after following for some time, we ordered from her. So usually, she will post the items available, then you will select what you like and then you make the payment and she delivers."

KayaApp Customer 4

Mechanisms enabling platform interactions

KayaApp's interactions are characterized by several mechanisms, namely trust-building and feedback. KayaApp has built and won customer trust over the years using various means. First, the business has created a good reputation on social media through transparency. The CEO circulates genuine and personally shot videos and pictures of bulk foodstuffs in the market to attract potential buying partners. She informs the buying partners of any changes in the market, delivery, and payment.

> "We do not hide anything from my Royals; that's what I call my customers. I post and circulate videos and photos personally of bulk foodstuffs in the market to attract potential buying partners. If there are any changes, I inform them."
>
> **Maame Kaya**

Second, Maame Kaya's level of education, professional qualifications, and social activities exude trustworthiness to potential customers and people with whom she interacts. She holds a master's degree in business administration from the Kwame Nkrumah University of Science and Technology (Kumasi, Ghana). She is also a Meta Certified Digital Marketing Associate who trains the general public on leveraging social media for business, thereby building social capital (see Figure 5). Her experiences, interactions, and credentials are key in building trust and credibility, enabling platform interactions. She says:

> "You see, the thing is, I am active on social media, so everyone knows me. So, it is more like they know where to find me. My profile is on my social media accounts and anytime I organize programs, I include my credentials so that they know I'm a professional who has MBA aside from other certificates in digital marketing."
>
> **Maame Kaya**

Figure 5 ▾

Poster advertising Maame Kaya speaking event

Customers describe the importance of this credibility.

"I was just trying to find out if I can get a place to do shopping for my mother-in-law in Ghana. So as I was typing, her name came up, so I decided to check her profile on TikTok and her videos, and also the comments that people have made on her posts. It was one of the ways to make satisfy myself that I was going to deal with a genuine person. But after checking all those things, I realized that she will not be a fake person, so I contacted her on WhatsApp and she added me to her WhatsApp page that same day. I decided to trust her because I saw the feedback people gave, and I also checked her videos, and all her details were there, so I felt safe to try something."

KayaApp Customer 5

"In fact, after the Facebook training, we have been to other incubators' programmes and were in the same group. So, she knows me and I know her. She buys from me and I also buy from her. We discuss our challenges and how to overcome them as business people. So, trust has been built through all these interactions and engaging in these activities with her as a business person myself."

KayaApp Customer 3

Concerning feedback, KayaApp values and takes customer feedback very seriously. In fact, feedback is ingrained within their business activities. After final delivery, customers are encouraged to share their success stories via their personal social media channels. More importantly, KayaApp asks customers to share any undesirable situations they may have experienced within twenty to thirty minutes of receiving delivery for immediate redress and to avoid repeating any mistakes.

"No one has ever gone on social media to call us out, something that is very important to us because you know we are a social media-based business, and negative publicity is not good for us."

Maame Kaya

Beneficiaries of platform interactions

The interactions on KayaApp social media platforms have generated several benefits for Maame Kaya as a business owner, for the employees, and for the customers.

> "I am the main person in the business, and I make sure things are done; I monitor all the online activities and all the things that happen with the business, right from receiving orders to the delivery of the orders."
>
> **Maame Kaya**

The interactions attract more customers to transact with KayaApp. The more customers the business has, the bigger the purchases, revenues, and profits. Also, as the customer base grows, there is an increased need to stay in touch with customers and, most often, to receive orders from them. The customers' WhatsApp groups facilitate access to information from customers.

> "We are also getting customers as a business; we are getting by engaging consumers online. Imagine calling to get orders from even 15 people at once—we are saving time and a lot of resources."
>
> **Maame Kaya**

Further, using social media platforms has impacted KayaApp's outlook and manner of operations. For instance, it has influenced how foodstuffs are packaged before shipping to customers:

> "Because of social media and presentation and how we want people to know that we are doing something, we have to check our packaging and our whole customer service so that if someone comes online—if customers have issues, they come directly to us."
>
> **Maame Kaya**

Despite the largely positive impact of social media, Maame Kaya describes some unfavorable aspects of using social media in general, including competition and cloning. Maame Kaya recounted how new entrants have emerged to copy her business model, even in Kumasi, her home city of operation.

> "But there is a bit of a negative dimension; when we started in Kumasi, we were the only grocery shoppers, but because of social media promoting it, other people have taken up that business as well. We actually have competitors."
>
> **Maame Kaya**

KayaApp's employees also experience benefits of social media, particularly the head porters (Kayayei). These porters, who would have been either unemployed or self-employed earning unpredictable wages, now enjoy some level of income sustainability. Working with KayaApp ensures a stable income with which they can plan and improve their lives.

> "In the markets I have Kayayei who carry the things we buy to the warehouse and assist in the sharing and packing food items. Let's take Aisha, who completed SHS three or four years ago. She's not been able to go back to school; she's the only child of her mum, who is doing petty trading. She tells me she's gone to other businesses, and they didn't work out, but this one [KayaApp] she's able to earn. She knows the exact amount she will earn at the end of the day. They know that by working here, they're able to sustain their livelihood by saving money to do other things. By expanding, we are also creating jobs and putting money in the pockets of people."
>
> **Maame Kaya**

Customers are the third set of beneficiaries. Through social media, they *"easily verify whether I am real or not real,"* Maame Kaya intimates. *"They can easily get in touch with me … so it's making communication easier and cheaper for them."* Convenient and cheaper communication related to more affordable groceries could further translate into cost savings for customers' household budgets.

> "We are helping them save money. We are in an economic crisis. Food prices in the world are high, and Ghana is one with the highest prices, so one way to save is to buy in bulk. It's cheaper to buy in bulk. That's why they [customers] keep coming back."
>
> **Maame Kaya**

> "She also educates us on the issue, like which items are in season and how to even store the items. And she does all this through the WhatsApp platform. You know, when she does all these things, it makes the conversation richer and the customers are happy."
>
> **KayaApp Customer 3**

Beyond cost savings, those customers who have their own businesses have leveraged KayaApp's social media platforms to advertise their own products and services. Maame Kaya believes that beyond grocery shopping, it will be beneficial for the customers' businesses to grow because they will make more money, enabling them to buy more from her.

"I've made and gotten family out of it. There are some I engage on a personal basis. I am somebody; my slogan is that a sale for my client is a sale for me—I buy from my clients and promote them on my social media platforms for them because it is when you get the money that you will come and shop from me."

Maame Kaya

"Sometimes she also opens up the page to post our business so that others who are interested can also patronize, and anytime she does that, it's really cool. You get to know what others are doing as well. So, it's not just about her business; she thinks about the welfare in terms of the business of her customers as well, so it's a win-win situation for us all."

KayaApp Customer 4

Many KayaApp customers are young mothers with children between the ages of two and fifteen who have a lot of domestic responsibilities. Thus, Maame Kaya, through social media, reduces the burden and stress of having to go to the market and come back and cook for their families. They are able to channel some of their energy into their businesses and their care responsibilities.

"I am a mother of 3. I have a 13-year-old, an 11-year-old, and a 6-year-old, and I am an entrepreneur. I live after Michel Camp, on the Akosombo stretch. I am a very busy person. I run a food processing business and it takes a whole lot of my time. Because of this, I don't have time to go to the market. I have a nanny who helps me at home, but she also is learning a trade, so she is not that free to be running the market errands. And with me, I also feed the workers that I work with in my food processing business, so bulk buying is really a lifesaver for me. I save a lot."

KayaApp Customer 3

Social agripreneurs' challenges

KayaApp faces two main challenges with respect to social media platforms. The first is logistical, which may be hampering the expansion of the business. For instance, Maame Kaya wishes she had a mini truck that would enable her to access even cheaper produce by purchasing at the farm gate. She described how current buying is done on foot:

"If I was getting support with logistics. We need the normal motorcycle because we can't do some of the shopping with a tricycle that has a high fuel consumption."

Maame Kaya

"I would prefer to have the Kia truck to carry foodstuff because I am looking at actually going to the farm to buy, especially the Bulk-Buy-Share products. I can go to Techiman [a popular trading hub for foodstuffs in Ghana] and buy the items, pack them, and Kia can even deliver in Accra for me because transportation in Accra is expensive."

Maame Kaya

Customers share some concerns regarding the transport challenges.

"Sometimes there is a challenge because I also have to go pick up the kids at school and instead of going home I have to bring them to the shop and wait for the items to be delivered and all that ... but we hope there is improvement in that, I have already discussed that with her, and she has promised that she is working on her own transportation as well, so we hope things improve soon."

KayaApp Customer 4

"So, I tend to pay more for transportation because it is not just about sharing the cost of the items but sharing the cost of the transportation as well. However, in my case, because of where I live, most of the time, after the items have gotten to Accra, I have to pay more for them to be delivered to my home because I don't usually have any of the other customers living close to me for us to share the cost of transportation. I have told her about this and she says she's working on getting a truck specifically for the job so that things like these can be addressed."

KayaApp Customer 3

The lack of logistics constrains business growth and expansion into auxiliary services. For instance, some perishable foodstuffs need to be kept fresh until final delivery. The lack of refrigeration facilities, for instance, forces KayaApp to keep vegetables with vendors until deliveries are ready to be made to avoid spoilage.

"People are asking for auxiliary services. If we have a vegetable fridge, that one doesn't freeze, so when you put vegetables in, it keeps them fresh. So, if we have that and a lighting system, it would help. I don't want to do things in the house and then bring it to the shop to avoid any personal issues."

Maame Kaya

The second challenge is financial constraints. KayaApp believes that proper advertising will increase its customer base, which will contribute to its expansion through increased knowledge about its services. Even though the business receives some promotions both online and offline, Maame Kaya believes that they are not enough to achieve the intended goals.

> "I would prefer a full total marketing strategy for people to know that we are in that field, not just a single posting. I don't think enough people know us; that's because we don't have money. I see some of my competitors using influencers, but I can't do that because I don't have that money. There are times I've sent groceries to an influencer expecting that he will film and publicize the unpacking. They will take money to that for me."
>
> **Maame Kaya**

> "Some customers try to get Kayayei directly to buy the things for them, but because they are not on social media, it is difficult for them. With this job, you need to see pictures and videos. You sometimes have to send customers pictures and videos whiles you are in the market for them to see what you buying, and social media is what can enable you to easily do that. But most of these Kayayei have little education and are not on social media because most of them use yam [feature] phones."
>
> **Maame Kaya**

Summary

The grocery value chain tends to be very open and entrepreneurial, mainly at the mercy of individual business people. Consequently, people have found and developed innovative business models to generate value for patrons and rent for themselves. KayaApp, a social media platform–based grocery shopper, combines TikTok, Facebook, and, most importantly, WhatsApp groups to advertise, attract, and engage buying partners interested in sourcing and sharing groceries in bulk. Business operations lead to cost-saving benefits, market reach potential for customers, and sustainable income and improved livelihoods for employees. Further, while the business makes revenue, it plans to expand into auxiliary services that customers request. These plans have not yet materialized because of financial and logistical constraints.

CASE STUDY 2

Nserewa

Case study overview

Nserewa is a crowdfunding platform operated by agribusiness development company Wecomm Agri-Media and Consultancy Limited. The platform "*enables people to sponsor food production activities and earn returns on investment*" with a mission "*to create opportunities for people interested in farming to sponsor agriculture production*." Since its inception in 2021, Nserewa has raised funds to support about 700 farmers to produce over a total of 5,000 acres of maize, soya, and rice in selected towns in Ghana. The towns include Tumu (Upper West Region), Asutuare (Greater Accra region), Wheta, Kpoglo, and Golokuati (Volta Region), and Walewale (Northeast Region). The crops are sold to off-takers such as Vester Oil Mills Limited, Ghana Nuts Limited, Rosons Foods Limited, Ransboat Farms, and Newage Rice Mills for processing. These activities help people to realize the dream of being virtual farmers while galvanizing financial support for smallholder farmers and value chain actors. Further, Nserewa has developed its own brands, including Evivi Rice, one of the most popular Ghana rice brands.

Characteristics of key actors behind the platform

Nserewa has six key actors: the platform team, sponsors, outgrower farmers, off-takers, insurers, and regulators. First, the **platform team** comprises a team lead, an administrative manager, a finance manager, a monitoring and evaluation manager, a creative lead, a technical field officer, and a consultant, who doubles as the general manager. This team focuses on developing innovative products and programs to attract funders for agricultural production activities.

Nserewa's **sponsors** are mostly private individuals aged 18 and above interested in agricultural production but without full-scale resources to invest commercially. They send their financial contributions to partake in their selected Nserewa project—maize, soya, or rice production—over an average of six months. They may choose to reinvest or withdraw after earning their profit. **Outgrower**

farmers have access to land but lack access to finance to fund the total cost of optimum production for maximum yield. Nserewa raises funds from sponsors to fund the total cost of production for partner farmers. **Off-takers** are mostly agro-processing companies looking to purchase crops like maize, rice, and soya. For instance, maize and soya are further processed into poultry feed by some off-takers who have signed long-term contracts with Nserewa to buy their harvested crops. **Insurers** promise reimbursement of the sponsors' capital in the case of loss occurring from the production activities over the period, serving to address some of the risks for sponsors.

Finally, as a **regulator** the Securities and Exchange Commission (SEC) works to *"regulate, innovate, and promote the growth and development of an efficient, fair and transparent securities market in which investors and the integrity of the market are protected."*[31] Currently, crowdfunding is an innovative but unregulated space in Ghana. However, the SEC has admitted Nserewa into its crowdfunding sandbox, making it somewhat regulated.

Value chain roles

Kojo, Nserewa's founder, came into his role after observing Ghana's food insecurity level over the past years. He lamented the limitations in government food production programs that have been unable to provide enough food for the local market. According to the Observatory of Economic Complexity, Ghana imported over US$318 million worth of rice in 2022, putting pressure on the local currency.[32]

> "Currently, we are in the funding stage, so we have put our project prospectus out there. I monitor the platform to see those who have registered (to be sponsors but have not yet paid), and those who have subscribed (i.e., those who have registered and paid but have not yet completed KYC [know-your-customer] requirements). When the funding round closes (at the end of February), we will enter production, which will take us to the bush. That's where we ensure the money gets to our partner farmers to buy the inputs they need—seeds, fertilizer and crop protection. We also ensure they apply the inputs appropriately, accurately and on time to ensure maximum output to service our off-takers."
>
> **Kojo, Nserewa Team Lead**

31   "Securities and Exchange Commission (SEC) Ghana."
32   Observatory of Economic Complexity, "Rice in Ghana."

Nserewa's projects are developed around rice, soya, and maize. These crops have an average cycle of six months, thereby guiding the Nserewa platform activities. For instance, funding activities currently taking place are for rice expected to be harvested in August, the main season, which may be followed by another funding round for the lean season. Further, these crops are irrigated rather than rain-fed, potentially extending production to nine months when farming activities are undertaken in blocks or batches.

Kojo shared the elements, including social media, that have contributed to the platform's success.

> "We can largely attribute our success to social media because when we started in 2021, crowdfunding was a grey area, so we were not allowed to share our messages directly on mainstream media. So, we shared our products on our Facebook page; we used the mainstream media only to publicise our impacts and successes."

> "As mentioned earlier, we work with sponsors, outgrower farmers, off-takers, insurers and the regulator. The sponsors are recruited largely through social media. We realized regular webinars to explain our model to potential sponsors. Interested ones are directed to our website sponsor.nserewa.com.gh to sign up and make payment. During registration, we ask them if they are interested in joining a WhatsApp group for sponsors so they can receive regular updates about the farm they are sponsoring. Most of them agree to be added. After the project, they are paid their earnings, and then about 10% to 15% leave, but most people remain to find out the progress of other projects and upcoming opportunities they can sponsor.

> **Kojo, Nserewa Team Lead**

Social media platform–enabled interactions in value chain

Two instances of social media platforms are associated with the Nserewa crowdfunding project. The first is a Facebook page, and the second comprises WhatsApp groups created for a cohort of sponsors for a specific project. The necessary combination of these instances leads to two types of interaction between actors involved in Nserewa's value chain. First, there are interactions between producers or multi-faceted aggregators and prospective financiers. These interactions are mainly marketing-based to explain the crowdfunding model and to recruit new investors. Kojo explained how they used the events feature on the Nserewa page to run webinars for prospective sponsors (see Figures 6 and 7).

◄ **Figure 6**

Facebook event for
Nserewa Maize Project

◄ **Figure 7**

Nserewa marketing flier

"You can see the Launch of the Nserewa Maize Project we did use Facebook Live in September 2021 to explain the concept of farm sponsorship to our followers and other interested people and to recruit actual sponsors for the maize project."

Kojo, Nserewa Team Lead

Second, interactions occur between producers or multi-faceted aggregators and existing financiers. Mainly, these interactions include updates on crop production activities, which happen away from the sponsors but under the direct supervision and involvement of the producer or aggregator (see Figure 8). *"After we got people registering and subscribing, we created WhatsApp groups for the sponsors,"* Kojo describes.
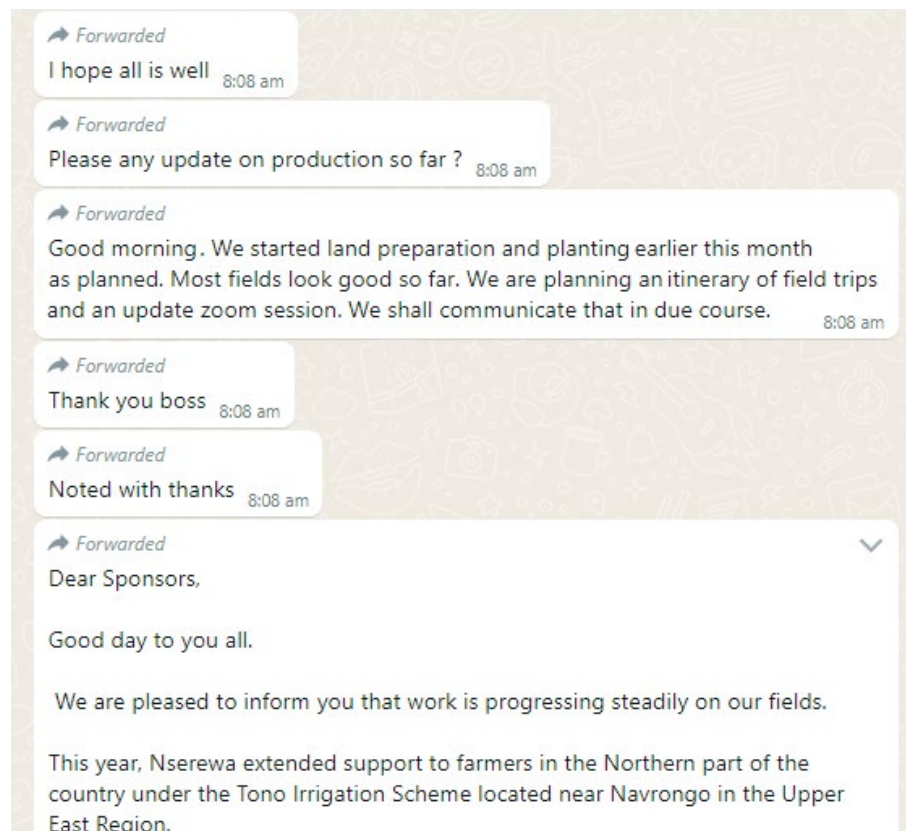
"The WhatsApp groups were created to bring all the sponsors who subscribe to the crowdfund together to give them updates and communicate with them regularly. Because we realized that people responded faster on WhatsApp than their email. When we send email updates, it takes time for people to see and respond. So, we have a WhatsApp page per planting project. So if we are planting today, we update the sponsors that today, we will inform them that we started planting rice in this or that location; next week, we will do that. We also organize road trips for the sponsors to the field and use the same WhatsApp pages to coordinate the interested sponsors. And when sponsors also have any questions or need any information, they can ask immediately in the WhatsApp group for us to provide. So we use WhatsApp more to communicate with our sponsors and give them regular updates on our work."

Kojo, Nserewa Team Lead

Interactions in the sponsors' WhatsApp groups tend to subside at the end of projects and are even expected to end. Interestingly, interactions can linger and dovetail into other projects, and some sponsors remain even after a project cycle has ended.

Figure 8 ▾

Kojo, Nswera founder, updates members in the WhatsApp group.

> ⤴ *Forwarded*
> I hope all is well   8:08 am

> ⤴ *Forwarded*
> Please any update on production so far ?   8:08 am

> ⤴ *Forwarded*
> Good morning. We started land preparation and planting earlier this month as planned. Most fields look good so far. We are planning an itinerary of field trips and an update zoom session. We shall communicate that in due course.   8:08 am

> ⤴ *Forwarded*
> Thank you boss   8:08 am

> ⤴ *Forwarded*
> Noted with thanks   8:08 am

> ⤴ *Forwarded*
> Dear Sponsors,
> Good day to you all.
> We are pleased to inform you that work is progressing steadily on our fields.
> This year, Nserewa extended support to farmers in the Northern part of the country under the Tono Irrigation Scheme located near Navrongo in the Upper East Region.

"When you're filling out your forms, we will take your phone number and tell you that we give regular updates on WhatsApp and we will have a group for sponsors, so indicate if you want to be added. So far, nobody has indicated not to be a part. When the cycle ends, and we pay them back with interest, some of them leave—about 10% to 15% leave. But most of them still remain and keep asking us about the progress of other projects and future projects and other opportunities for them to tap into."

Kojo, Nserewa Team Lead

Platform features engaged to enable actor interactions

The foregoing social media platform interactions suggest the use of various features on Facebook and WhatsApp. The objective of using Facebook Pages is to promote the company's products and services through public visibility and the platform's event feature. Potential sponsors are then onboarded into private WhatsApp groups after registering for a service. First, on Facebook, the Nserewa team plays the role of producer/aggregator using the Page feature, which allows them to bring together prospective sponsors, who then become actual sponsors. Nserewa also uses pictures in the form of fliers to pass its message to its online audience (see Figure 9). When asked what kind of content Nserewa posts on its page, Kojo responded, *"We put advertisement messages. For instance, on Valentine's Day, we did a love message to encourage people to invest for their loved ones— Sponsor an acre of rice, and make your Valentine's Day memorable."*

Figure 9 ▾

Nserewa Valentine's Day post
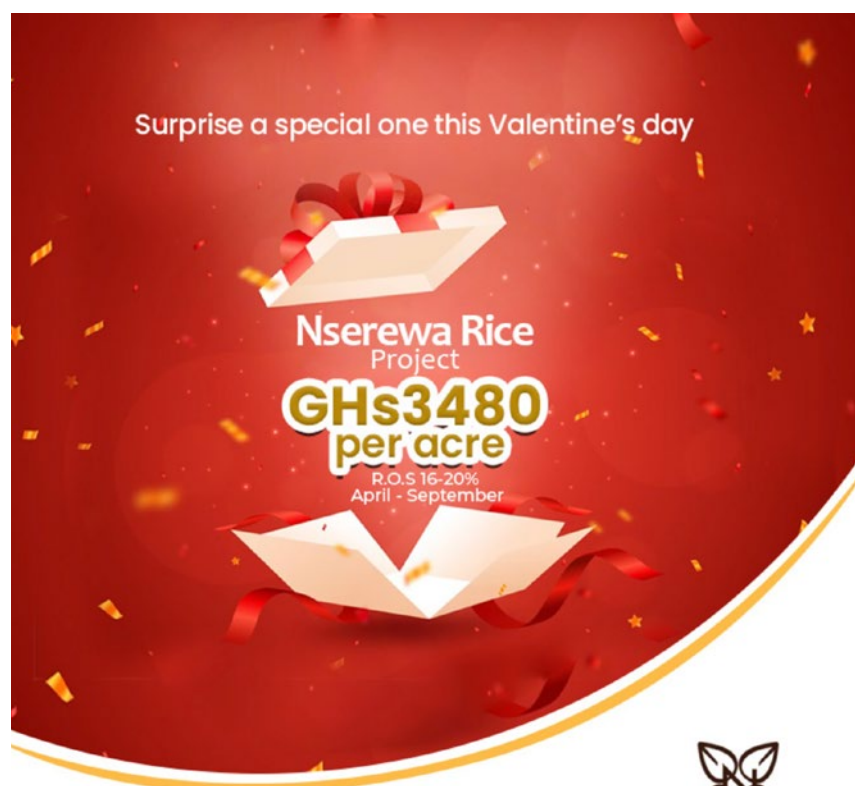
Mechanisms enabling platform interactions

Several mechanisms enable the interactions on Nserewa's social media platforms. The first is the trust-building mechanism. First, all the members of the Nserewa team have professional qualifications. For instance, Kojo, the team lead, has a formal education in agribusiness and describes himself as a serial innovator. Second, Nsewera's previous experiences have resulted in social capital, which could be translated into credibility for the messages they communicate. Again, Kojo, the team lead, has worked as a radio broadcaster for Ghana's leading English-speaking radio station, Citi FM. He conducted newspaper reviews and documentaries and sometimes hosted the morning show. He has also been hosting well-patronized Twitter Spaces covering contemporary issues in Ghana. Another source of trust-building includes using past successful crowdfunding calls to create a catalyst for current calls. The initial successes are realized in the mainstream media, including Citi FM, with whom team members have had previous engagements. Such publicity generates more awareness of the scheme, which comes across as a less risky investment opportunity, leading to more interest, dialogue on the Facebook page, and, desirably, payment to sponsor a farm.

In addition, after a successful subscription, Nserewa promotes transparency in crop production activities through audio-visual feedback provided via WhatsApp groups created for sponsors, as well as site visits (see Figures 10 and 11). The amount of trust built is demonstrated by sponsors' desire to stay in the WhatApp group even when the project they are sponsoring ends.

> "WhatsApp has really enhanced the way we do the business because if you have stakeholders, you need to continuously update them, take feedback from them, take questions and all that, and WhatsApp makes it easy for us to do that. So, I will only say WhatsApp enhances our work and makes it easy for us to be in touch with our stakeholders consistently."
>
> **Kojo, Nserewa Team Lead**

> "The subscribers trust me. I have been in the media space in Ghana for some time, so they know me. I also have a background in agribusiness which makes the agric[ultural] space something that I am familiar with. Don't forget that most of the sponsors are professionals from diverse disciplines. We have lawyers, nurses, doctors, teachers, engineers, bankers. They dig deep to investigate you before making any commitments. In recent times I have also been very active on Twitter discussing issues of national interest, so I am no stranger."
>
> **Kojo, Nserewa Team Lead**
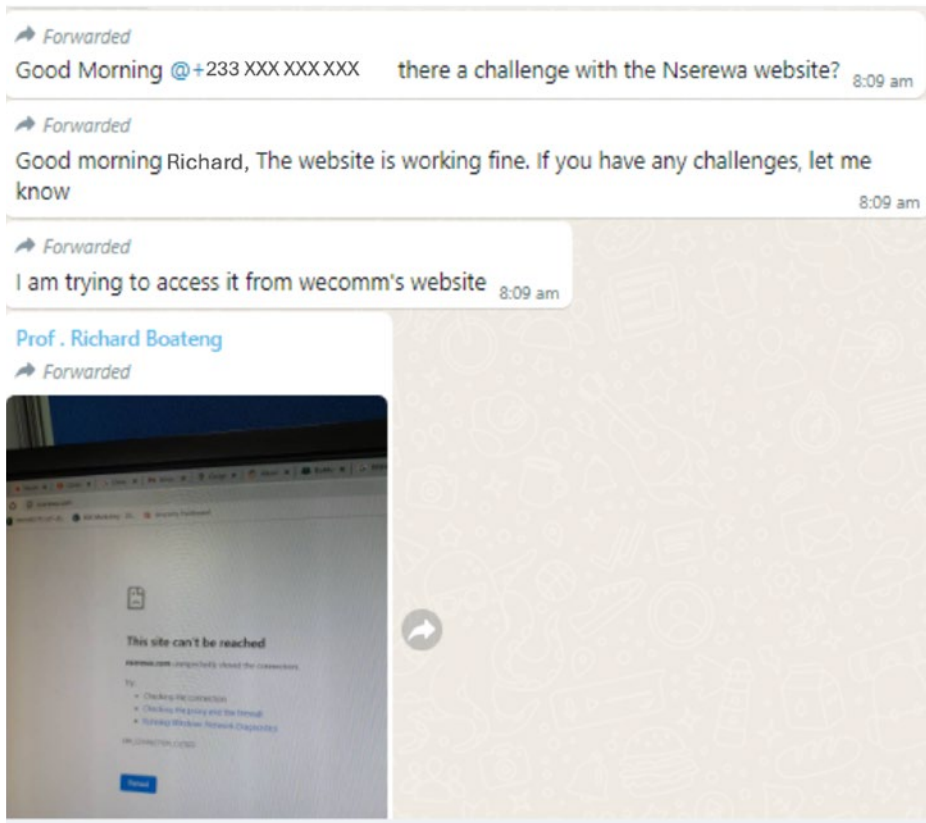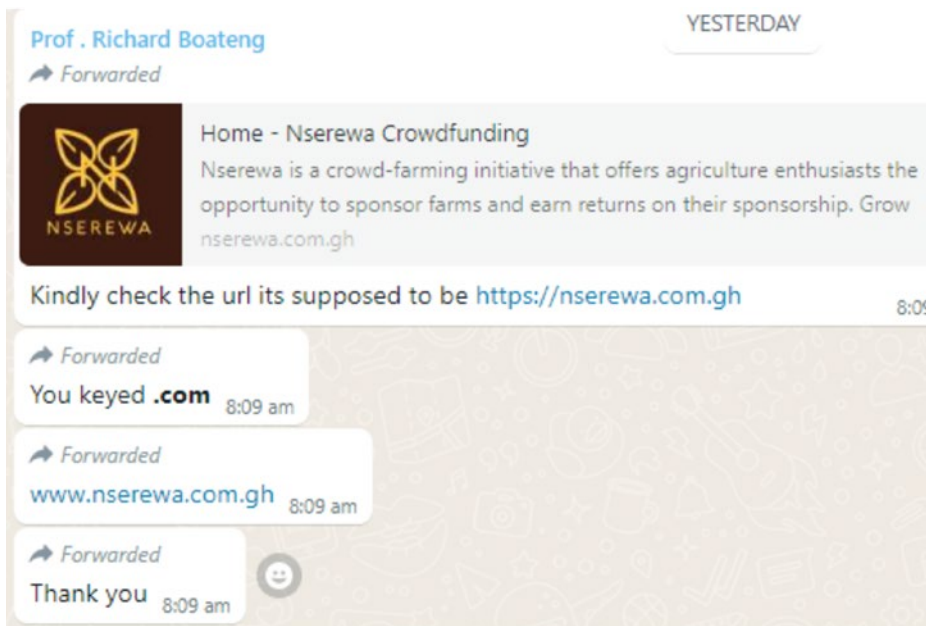
Benefits of platform interactions

The interactions on social media platforms generate certain outcomes, which could be described in terms of which value chain actor is realizing the benefit, the nature of the outcome, and the effect of the outcome. First, with respect to actors, social media interactions around the Nserewa crowdfunding project create benefits or outcomes realized by three main actors, namely farmers, sponsors, and Nserewa as a business. Kojo intimates passionately that *"if you look at the three major players in this, at every level, there's value being created."*

> "There are lots of farmers in this country who are unable to farm and be productive as they have to be because they don't have the capital. Some use last year's rice grains as planting material ... some farmers who cannot afford the total fertilizer needs of their farms; they are using 1 bag of fertilizer per acre instead of 4 bags per acre ... leading to lower yield and productivity. We have ensured that all the farmers we sign up (about 300–400 farmers) will get the total input required for their production; seed, crop protection, and crop production—this leads to 4.5 [metric tons] per hectare instead of 1.5 per hectare for those farmers who cannot have their total inputs."
>
> **Kojo, Nserewa Team Lead**

Second, with respect to the nature of outcomes, Kojo said, *"More productivity, more money."* Farmers who receive funding from the Nserewa project are able to produce more crops per hectare. Consequently, they are able to sell more and earn more income compared to farmers who cannot fund the total cost of production inputs. This financial outcome also manifests on the side of Nserewa as a company. The team lead said, *"On our side, we are avoiding challenges from borrowing from the bank and interest rates. Social media-supported Crowdfunding gives us cushioning when it comes to capital."*

Financiers or sponsors also have a share in the financial outcomes.

> "For the sponsors, we give them an opportunity for their money to work for them. During the soya call, we paid 12% interest, the maize 14%, the rice 17%, and the fertilizer 13%. During the minor season, we are giving 16% to 20%. The returns are not fixed; we have a range based on expected yields and projected commodity prices at the period we will be selling. Your money is giving you some returns."
>
> **Kojo, Nserewa Team Lead**

He also added how "*input providers are getting business because we are constantly buying from them*."

Third, outcomes affect livelihood capabilities, commercial capabilities, and learning and skills. Fully funded farmers who are able to produce optimally, to sell more crops, and earn more should have more disposable income, which they can use to expand their livelihood capabilities. They can fund household needs, start new business ventures, or fund new production activities. They could even become sponsors in the crowdfunding scheme to earn passive income. This effect also applies to sponsors who are mainly earning interest on their capital and thus also have another source of income to affect their livelihood positively.

Figure 12 ▾

In-person meeting on a site visit by Nserewa members.

Challenges for social agriculture

Despite the largely positive outcomes of Nserewa's social media-based agribusiness activities, some challenges. Though social media is creating more market opportunities for this crowdfunding venture, the first challenge is the **lack of regulation** and laws governing the crowdfunding space. This lack makes crowdfunding seem risky and causes fear among potential sponsors. The crowdfunding scheme is also somewhat hindered because it cannot use mainstream media for advertising and recruiting sponsors. This challenge is more acute in Ghana, where investors in previous unregulated financial schemes have lost their capital and interest. It is encouraging that Nserewa is in the national regulator's crowdfunding sandbox, but it is time to document and learn from its successes and failures to develop general regulations for the crowdfunding space.

Second, the platform owners and primary workers are primarily youth leveraging new and emerging technologies and business models to create new opportunities in agribusiness in a manner that impacts upstream actors like farmers. However, there is **little research** documenting and sharing lessons from these experiences. Initiative to document and share lessons with other youth and create a scheme to introduce such innovations into other agricultural value chains has the potential to create employment opportunities for the youth and sustain the livelihoods of value chain actors.

Summary

In summary, Nserewa, a social media–based agriculture venture, is attractive to young people. The team comprises youth passionate about agricultural production for food security in the country. More youth could be attracted to this space when clear regulations and recruitment pathways. There can also be clear regulations on the sourcing and management of loans by the youth for agricultural purposes. These regulations would also ensure the sustainability of this model.

HapaSpace

Case study overview

HapaSpace Innovation Hub is a business development institution located at Danyame, Kumasi, in the Ashanti Region. It was founded in 2021 to *"support start-ups from ideation until they can enter into market."* HapaSpace also helps farmers and entrepreneurs grow and scale their businesses to reach higher standards and bigger markets. Co-founder Gideon explains how the hub executes its mission: *"The hub organises forums, looks for bulk buyers for our trainees and offers them social and professional support."* HapaSpace has been organizing large-scale training for the National Entrepreneurship and Innovation Programme (NEIP), a flagship entrepreneurial development program by the government of Ghana. Its unique approach to handling participants at the end of the training is worth noting. Gideon intimates, *"We also have a philosophy that we cannot leave them just after providing training for them, so we are keen on post-training support for them."*

> "We create WhatsApp groups into which we put our trainees, and we encourage them to use these WhatsApp groups as a marketplace to market and sell their products and share ideas. ... Currently, we have several WhatsApp groups for the various training sessions we have done; but five groups focused on the agricultural sector with an average of 60 members each. The first agric[ultural] group was created on 15 May 2022 after training for people in crop farming, livestock farming, agricultural technology, and agribusiness."
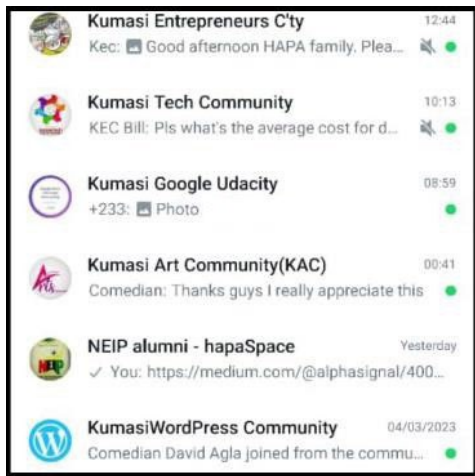>
> **Josephine, HapaSpace Community Manager**
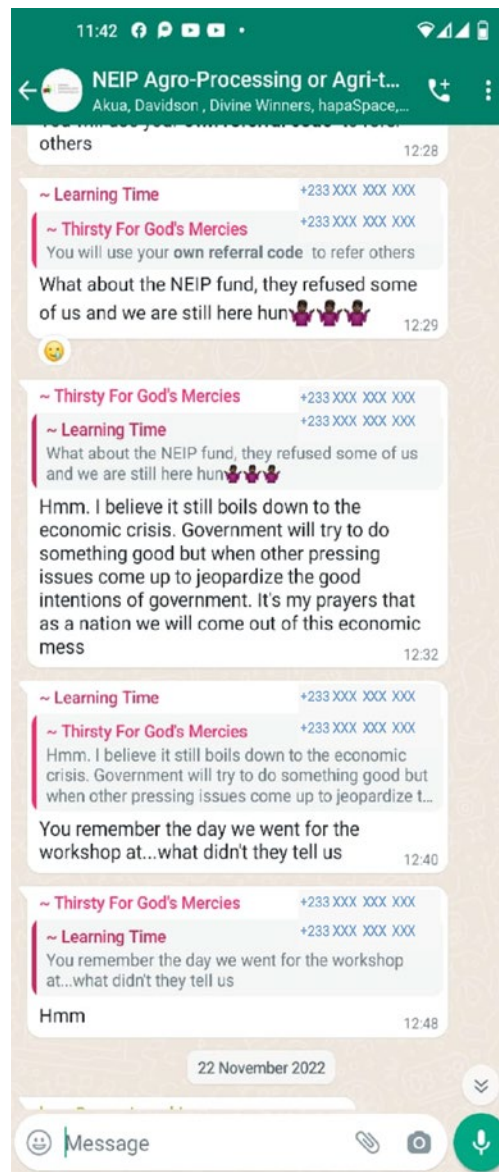
Sample WhatsApp groups
for post-training support

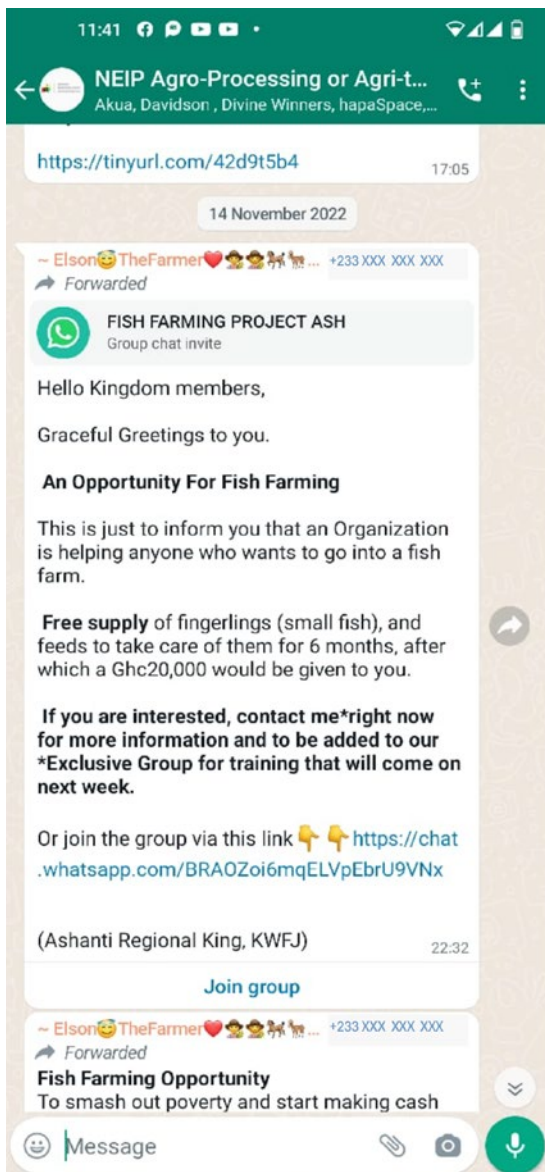Interaction in HapaSpace
WhatsApp groups

Group name	Member distribution
NEIP Livestock 1	79
NEIP Livestock 2	67
NEIP Agro-Processing and Livestock	68 (45 agro-processors and 23 livestock farmers)
NEIP Agro-Processing and Agritech	102 (70 agricultural technologists and 32 agro-processors)
NEIP Livestock and Crop farming	37 (17 livestock farmers and 20 crop farmers)

Table 3 ▲

HapaSpace WhatsApp groups

Characteristics and value chain roles of key actors

The platform has three categories of actors: the HapaSpace team, farmers and agribusiness persons, and agricultural technologists. The **HapaSpace team** comprises two co-founders, a project manager, and a community management team. The co-founders share strategic information and broker deals that will benefit mainly the non-hub members of the platforms. The project manager is responsible for all the hub's projects, including training, business visitation, and provision of support services. The community manager is responsible for content creation, moderation, and administration of social media platforms, including the four current WhatsApp groups. The **farmers and agribusiness** are primarily crop producers and animal rearers, whose occupation is to sell their produce after production and harvest. While some farmers seek buyers to reduce post-harvest losses of their raw crops, others seek markets for processed and packaged products. Finally, **agricultural technologists** are the few engineers in the platforms who fabricate and build machines, mainly for crop processing. They also provide after-sales servicing and maintenance for those who already own processing equipment.

Social media platform–enabled interactions in value chain

HapaSpace works with three main social media applications: WhatsApp, Facebook, and YouTube.

> "Most of our interactions occur in the WhatsApp groups. However, when we organize online training programs, we do it via YouTube live so we can host the video for future reference. We then share the links on our Facebook page and WhatsApp groups."
>
> **Gideon, HapaSpace CEO and co-founder**

WhatsApp group members are encouraged to use the platform as a marketplace to sell to each other and also share ideas and opportunities. For instance, on Thursday, 2 March 2023, a member posted a message about honey he had for sale in small and large quantities (see Figure 15). Similarly, another member posted a graphic advertising a partnership or investment opportunity for a pig farm. These marketing and advertising interactions tend to be between producers. Vida, CEO of Mum's Glory, an agribusiness that processes and packages indigenous food products, mentioned that "*on the page, people advertise their businesses; others also seek for references as to where they can find particular products and the most intriguing one is the grant opportunities that are being shared.*" Similarly, Emelia, whose company, Poga Agro-processing, processes cassava into flakes, observed that, "*people advertise their businesses by posting their product fliers on it.*"

It is noteworthy that not all members necessarily post information. While observing others' interactions, some glean information they use for their business.

> "I'm into metal fabrication and welding for those in agriculture. I can do corn mill machines, cassava processing machines, and earth-moving machines. Being in the WhatsApp group has helped me get access to information to meet customer expectations and standards. Different customers have different expectations, and they share such information in WhatsApp groups, so I get to understand them better."
>
> **Frederick, agricultural technologist and HapaSpace WhatsApp group member**

Figure 15 ▾

Advertisements from WhatsApp group members

Platform features engaged to enable actor interactions

The foregoing social media platform interactions suggest the use of various features on WhatsApp. First, most of the interactions are multimedia, mostly a mixture of graphics and text. Consequently, actors use the picture upload and text messaging features. As mentioned earlier, most of the images are fliers to advertise products or investment opportunities. A few are emojis expressing reactions to another person's message on the platform.

> "Mostly on the platform, aside from text, people usually use voice notes to communicate; others also put videos and pictures on the platform, and also they are able to share links on the platform. That has been very helpful to other group members."
>
> **Josephine, HapaSpace Community Manager**

These features are engaged because WhatsApp allows group members to create and share content posts with other group members. Further, these features are convenient because of existing familiarity with using them in other spaces, be it other groups or individual messages to a person's contacts (see Figure 15 for a sample post made from graphics and text).

Mechanisms enabling platform interactions

Several mechanisms enable interactions on the social media platforms of HapaSpace. The first mechanism is the trust-building mechanism emanating from group members' occupations or perceived or reported roles in the agriculture value chain. First, as Frederick, CEO of Syntropy Engineering, an agric technology firm member of the WhatsApp groups, said,

> "All the members in the group have something doing in agriculture, so no one will call you to attempt to scam you or something. Everyone is serious-minded. To date, I have not received any prank call from any member of the group; anyone who calls me means business and knows what they want". Emelia confirmed this notion when she said, "I trust the platform because... everyone on the platform is an entrepreneur".

A second source of trust-building results from the members' association in the group over time. As the maxim goes, "contact breeds affection." Consequently, members' continuous interaction with each other and even the content they share builds their credibility with their fellow members, whose trust increase among themselves, the platform, and the owner/manager. *"We have become a family now, and we refer people to each other,"* Frederick said.

A third source of trust-building is the complementary offline activities that build around the WhatsApp groups. Philipina (HapaSpace project manager) explains that *"the regular training and seminars that we organize for our members make them know each other in person."* Josephine (HapaSpace community manager) adds that *"knowing each other in person helps to put a face to the messages they see in the WhatsApp group, thereby contributing to the members trusting each other more."*

> "Once I meet someone who calls me and mentions that he was at an event, I am rest assured I can trust such a person because I can easily go to and verify the person's identity and claims; oh, and they're good at that because they I know I will hold them accountable if anything goes wrong."
>
> **Frederick, agricultural technologist and HapaSpace WhatsApp group member**

A fourth source of trust-building is that a WhatsApp group is created and managed by an identifiable organization. Vida said, *"My trust for the platform is because it was created by HapaSpace, which I so much believe, the people that manage the organization."* Emelia also said she trusts the platform and the information posted there *"because [it] put[s] all of us together."* This trust is further enhanced by strict measures to ensure relevant content. Maxwell, HapaSpace media lead, said, *"As one of the managers of the platforms, I delete spam from the platforms, and that makes it easy for the members to trust information shared there."* Members acknowledge and appreciate that only relevant content is posted on the platform and thus continue to patronize it. Freda of Elite Hair Products intimated, *"We are all matured people who have businesses, so I see that all information shared on the platform is relevant."*

Beneficiaries of platform interactions

The interactions on social media platforms generate certain outcomes realized by the members (or producers) and the hub (i.e., HapaSpace). First, on the members' side, the groups serve as a market to attract and secure customers. This happens if a member expresses interest in a product or service that another member shares in the WhatsApp group. Sometimes, a member could contact another member based on the former's knowledge of the latter's occupation and or services rendered.

"On the platform, I shared a video of my business services, through which I got access to two clients I am currently working with. Also, the other day, I got a call from someone describing a machine he wants. You know, there are standard machine specifications, but he wanted something different. He wanted me to extend the standard design for him. Later on, he mentioned that he took my number from the platform, so I had to consider giving him some discount because, as I said, we are a family."

Frederick, agricultural technologist and
HapaSpace WhatsApp group member

Further, some members testify of applying for, and obtaining some grants that have boosted their businesses. Emelia, in response to a question about the benefits she has obtained from being a group member, shared that, *"people post a lot of event opportunities on the page. For instance, posted a business idea competition on the page. I participated and won. I was awarded equipment support."* She also shared how helpful a laptop she won from another competition has been: *"This laptop has helped my visibility on social media and has increased my sales."* Interestingly, Theo of Honey Child Enterprise also won an equipment grant for participating in the same competition as Emelia. The competition was organized by GIZ, a German development corporation in Ghana.

The members also appreciate and testify to the valuable knowledge and skills they obtain from the platform. Emelia said, *"People share ideas that I didn't have knowledge of, and so I have learnt a lot from such ideas."*

"Personally, I've learnt a lot from the stuff that they post on the page. For example, someone posted how to do business planning and added some examples of business model canvases, and I actually had to choose the one that will fit my business."

Freda, HapaSpace WhatsApp group member

"Being a member of the WhatsApp platform has helped me to effectively communicate with my clients, and by so doing, I am able to retain these clients who even do referrals for me at the end of the day, which has also increased my sales."

Frederick, agricultural technologist and
HapaSpace WhatsApp group member

Second, as a hub, HapaSpace also experiences benefits. The WhatsApp groups are helping them build their brand as a leading agribusiness support organization and resource provider. The group members are delighted to join the groups due to the value they believe they obtain from the WhatsApp groups, even using the group as a marketplace to market their products.

Challenges for social agriculture

Despite the largely positive outcomes of HapaSpace's social media platform activities (complemented by offline activities), some challenges persist. First, group members interviewed mentioned infrastructural challenges, such as the lack of a stable and continuous electricity supply. For instance, Frederick, an agricultural technologist, bemoaned the erratic power supply that prevents him from working as he should: *"You know that as a fabricator, I need electricity to work, and here is the case whereby the power goes on and off without prior notice. The other day, the transformer blew out, and my machine blades broke; I now have to look for money to buy new blades."* This illustration also hints at a second challenge, lack of funding. Agricultural producers need substantial funding to purchase inputs to help achieve optimal yield.

Summary

In summary, agriculture business development services provider HapaSpace has developed a business model that is attractive to youth and is making agriculture attractive to young people. The team comprises youth passionate about agriculture and supports agricultural producers with the needed knowledge and business management skills to achieve food security in the country. More youth could be attracted to this space when there is a low cost of funding in their activities as agriprenuers.

Home Gardening Ghana

Case study overview

Home Gardening Ghana is a social media platform hosted on Facebook for those interested in home gardening or community gardening. The group was created by Dr. Frank Ackah, a crop scientist with the Department of Crop Science, University of Cape Coast. When asked why he created the page, Dr. Ackah said, *"I started the campaign to promote gardening in the country*."

> "The whole idea came when the government launched the Planting for Food and Jobs program. I am a researcher and I'm always in the field, so I realized that there was a challenge; people really wanted to grow [food], but the technical know-how was the problem. So, if you really wanted to get people to produce, it's better to find a way to educate them and show them how they can do it."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Such a group was important to promote gardening due to rising health concerns. Some farmers, especially in the urban areas, were engaging in unhealthy and unsafe crop production practices, which Dr. Ackah's research uncovered.

> "Again, there was a concern because people were more conscious about their health because there were a lot of documentaries on the abuse of pesticides and the use of unsafe water. We did some research in Greater Accra, especially those growing vegetables, and we saw how they were using unsafe water, and the way they were applying the pesticide was a challenge."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Therefore, Dr. Ackah drew the conclusion that *"the food on the market was not safe; we could not trust the food, so the best way to find a way to see how people can eat safe food*." The immediate solution to the problem, he proffered, *"was to grow food and think about their health and improve food security. That influenced the creation of the Home Gardening Ghana page*." Dr. Ackah started educating people on gardening and crop production on YouTube and his personal Facebook page.

> "It actually started as a YouTube channel—Agricam Home Gardening—where I was teaching people how they can start gardening if they want to grow any crop and how they can do it. I was actually doing it in Twi [one of Ghana's local languages], and I was sharing it on my Facebook wall, so people were always calling and asking me to come and help them. So I said to reach a larger audience, let me start the page. So I started the Home Gardening Ghana page on 3 July 2020."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Current membership of Home Gardening Ghana includes approximately 241,000 members from more than 100 different countries. There are members from all regions of Ghana; the majority come from the Greater Accra Region, indicating the importance of urban gardening.

Characteristics and value chain roles of key actors

Dr. Ackah is a "utility player" within Ghana's agricultural space. He is a researcher (a crop scientist conducting research in a university); a platform creator (the founder of social media platform with over 240,000 members), a content creator (creating and sharing relevant information about gardening with platform members and visitors; and an agriculture champion and promoter (publicizing the possibility and techniques for home-based gardening).

> "I have been able to promote and help people to improve food security and health and even now, people are now being conscious; there's now a shift from 'Let's go and buy from the little available food on the market.' to 'Let me grow my own.' I've contributed to projecting the agric[ulture] sector."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Encouragingly, Dr. Ackah has not rested on his oars at the home gardening level. Over the years, he has sought opportunities to extend gardening into schools (see Figure 16).

> "There's one other thing I didn't talk about: the school gardening project. I started promoting gardening in schools some two years ago. There are some basic schools to which we provide free seeds; I went and gave them training and seedlings and encouraged [platform] members to promote it in their schools. So, we have a lot of people that share pictures of school gardens with us on the platform."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Nana Kwekucher Ackah Jr.
14 March 2023 ·

Updates from the hostel garden project at Kwame Kwame-Nkrumah Hall, University of Cape Coast.
The students harvested their lettuce for sale today

Figure 16 ▲

A university garden project at the Kwame Nkrumah Hall, University of Cape Coast in Cape Coast, Central Region of Ghana.

In keeping with the adage that "charity begins at home," Dr. Ackah found a way to introduce gardening to his own students by letting them start gardens at his university.

> "In the last two years, I initiated the university garden project. My first-year students, I was teaching a course in crop production—the practical aspect, instead of you moving to the school farm to grow, everyone should go and get rice sacks and then get five buckets and talk to management to give you a space in your school hall ... I provided seeds and seedlings, and I moved around. The kind of vegetables these students produced was so amazing."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Overall, Dr. Ackah is happy to have created enthusiasm among quite a number of people to enter gardening.

> "Getting 240,000 people, 85% of which are Ghanaians, into gardening is something I am proud of contributing."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Social media platform–enabled interactions in the value chain

When Dr. Ackah created his platform on Facebook, he regularly posted questions from members of his audience and the related responses. He would also teach various home gardening techniques.

> "I often posted the audience questions I was attending to, and then also the other issue was that many people didn't know we could grow in containers, so the idea was that get everyone to grow in containers where they live. So container practices, I was just sharing what I have."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Consequently, most of the platform's interactions were made up of the members' questions, comments, feedback, and Dr. Ackah's responses. Encouragingly, these interactions motivated members to spread electronic word-of-mouth to their networks.

> "The objective was to create a platform where people can get information or instruction on gardening, management of pests and diseases, and how they can maintain it, and that's how we have it and has grown to this level."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

In addition to being a source of expert information and instruction on gardening, Home Gardening sought to facilitate the sharing of food production materials among co-located platform members. Dr. Ackah described the unfavorable situation that benefits from such platform-enabled facilitation:

> "The issue of getting materials; you have somebody in the Northern Region interested in growing, but where does the person get materials like seeds? So it's a way of bringing everyone interested in growing for people to get to know the people around them who are into gardening so that they can share whatever they have because seeds and other materials are expensive so if you buy seeds and you are not able to use, then you share."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

The success of this practice led to the creation of community groups *"where members from the various regions can meet and share ideas about gardening."* Dr. Ackah describes how he would sometimes *"move round to provide free training and advice"* to the community groups that invite him occasionally.

Significantly, at first advertisements and commercial posts were not allowed on the platform. Dr. Ackah intimates that he started Home Gardening Ghana purely as a community service initiative, so he *"never started with the intention of making a profit from it, so even for one year, I never allowed advertisement."* All platform members and even non-members who mount pressure to access the audience at a fee have fully accommodated this decision. Dr. Ackah remembers *"someone calling from a company that they are looking for a market, which I have—at that time, the members were about 50,000, they said I should name my price, and they were ready to pay. And I told them it's not for profit-making, so I wouldn't allow advertising."*

He responded to the call in a restrictive but innovative way:

> "A lot of people were also calling and asking that at least I should allow some people to advertise, so what I did was to propose to my moderators, and we all agreed that we have to restructure and then allow for advertisement but only for people or organizations who are registered with the Registrar-General's Department [of Ghana] and so when you send your registration document and services, whatever you want to sell, I will vet it and then I compile the list and allow for advertisement."

Dr. Frank Ackah, Home Gardening Ghana

As illustrated in Figure 17, advertisements were allowed but *"only on Fridays and it's free, nobody is charged, and I have not charged for advertisement."* The advertisers had just one obligation, that was, *"whenever we are organizing a program, they can support our activities."* Ironically, *"even with that, [out of the 22 vendors certified and approved to advertise on the platform] nobody has supported these programs, except some two who gave some materials to be distributed to members."*

Figure 17 ▾

Group's pre-membership rules about advertisements displayed to interested new members

Participant questions   ✕

Home Gardening, Ghana
You're now a member of this public group.

Get started by submitting a request to participate
Everyone in this public group is reviewed by admins before they can post or comment for the first time. Read and agree to the group rules to submit your request.

orientatio... See more

4   No Church Services/Political posts/Videos allowed
All such posts will be deleted and the posters will be blocked

5   Alert admin of any advert of your produce/products
Advertising/Marketing of Products/Services will be allowed by properly registered Vendors/ Merchants on ONE day of the week, specifically every Friday All those wishing to advertise on the platform should fill and submit the relevant Form BEFORE they will be allowed to do so. The form can be found in the Featured/Announcements section on the Homepage. Members should please note that HGG is NOT RESPONSIBLE OR LIABLE for transactions between them and any Vendors/Marketers on the platform.

Platform features engaged to enable actor interactions

The foregoing social media platform interactions suggest the use of various features on Facebook. First, most of the interactions are multimedia, mostly a mixture of graphics and text. Consequently, Dr. Ackah and the other platform moderators use the image upload and text post features. They also use the "Events" feature to schedule and notify the platform's members of any upcoming events. Dr. Ackah described some online and in-person fora organized for members over the last two years.

> "Mostly on the platform, aside from text, people usually use voice notes to communicate; others also put videos and pictures on the platform, and also they are able to share links on the platform. That has been very helpful to other group members."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

These features are engaged possibly because those are what Facebook provides for page administrators to create and share content with their audiences. Further, they seem quite convenient because of the existing familiarity of using them in other spaces like WhatsApp.

Mechanisms enabling platform interactions

The interactions on the Home Gardening Ghana platform suggest the existence of trust-building and governance. First, concerning **trust**, the founder and his moderating team have been resolute about not allowing advertisements on the platform. Their main reason is that such advertisements will cast doubts on the platform's main objective, which was to promote home gardening by educating interested persons. Allowing wholesale advertisements could open the platform to irrelevant content because some members have multiple interests to which they would like to draw others' attention. A platform with over 200,000 members is a prime space. The rule to allow only persons with registered businesses to advertise is a solution that has balanced members' yearning to draw attention to their interests and with maintaining the relevance of member-generated content.

Second, concerning **governance**, the platform's leadership seem to exercise reasonable authority to achieve the platform's aims and objectives. For instance, new members are screened before they are allowed to join. They need to answer some questions to confirm their interest in gardening (Figure 18), and the platform's rules are displayed for new members' assent before receiving acceptance on the platform (Figure 19). This exerted authority fosters order and guarantees that members are sincerely interested in gardening and are participating in the platform for its intended purpose. Dr. Ackah recounted a past event when Facebook did not have this membership screening feature:

> "Initially, there was a guy who wanted to abuse the platform, and so there were some posts and issues that I realised that this guy was not genuine, so I sent him a message and asked him to stick to the rules, and then he was not listening so I had to block him from the page."

> **Dr. Frank Ackah, Home Gardening Ghana**

Additionally, posts from new "joiners" are not immediately allowed on the platform. Such posts pend until they are accepted upon passing moderators' review (see Figure 20).

Figures 18 & 19 ▾

Platform membership screening questions

Section of platform rules displayed to interested new members

Figure 20 ►

Sample post pending until full membership grant

Benefits of platform interactions

Home Gardening Ghana is generating different kinds of benefits for its founder and members. The founder, who is also a university academic, intimated that he *"reports on the platform in his annual performance appraisal as community service."* He also benefits from the platform because he uses it for research purposes.

> "One other issue is that I started it for research purposes because if you need information, it is easier you have almost 200,000 people so you have a larger population to do your research."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

On the side of the members, Dr. Ackah proudly shared, *"If I should tell you the way people have benefitted ... and a lot are benefitting from my group."* He recounted a specific case of someone who wanted to advertise her products on the platform:

> "One lady wanted to advertise on the platform, and I told her no unless you're registered because the advertisement is free, but I would want her to register (and it's a way of also helping her to get a registered business). This lady thought initially I was being difficult, so she also got in touch with one of my moderators, who also advised her to register. So she registered her business and sent me the documents and then I allowed her to advertise. Now the lady has expanded so much and now even importing planting materials from outside. The last time she called me, she said, 'Doc, I've been able to buy a car from this and I'm so happy you gave me this platform."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

He shared another story of a man happy about food sufficiency after he ventured into gardening on his fallow land upon advice from Home Gardening Ghana.

> "There is a man who moved into his apartment and had one extra plot of land; he called me that he wants to do container gardening; 'I have one plot which is bushy,' he said. I told him to get cassava and plantain. Last December, the man sent me a lot of foodstuffs."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Dr. Ackah summarized how the knowledge obtained through the platform and practiced is benefiting people's livelihoods:

> "People are selling just grapevine for GH¢50; they're making so much money. So people's livelihoods have improved because what people used to buy from outside, they're not buying; they are growing in their own homes, and they are not saving because of gardening…also, a lady who said she was interested in greenhouses, and I told her it was expensive so she should rather go for screen houses. And so in Tamale, the next time I went there, she started producing tomatoes in those houses; I've been advising people to do that as well."

> **Dr. Frank Ackah, Home Gardening Ghana**

◄ **Figure 21**

Post from a member of the group regarding the joy of farming

Challenges to social agriculture

Despite the in-roads Home Gardening Ghana platform is making, some challenges remain. The first concerns a **lack of funding** for social agripreneurs. Dr. Ackah lamented how he uses his income to fund his community visits and training sessions. Sometimes he even supplies inputs and planting materials to encourage members. Thankfully, he has received an internal grant from his university to fund the university gardening project. However, people like him could do more work if more funds are available to scale his activities.

The second challenge concerns **scalability**. The founder of Home Gardening Ghana believes that such a platform should be created for other agricultural spaces like animal rearing. Sharing his expertise has benefited many of platform members both at the individual and community levels. Consequently, scaling such an effort to create enthusiasm around animal rearing for interested persons could be a step in the right direction.

> "I think animal science is key. I am a crop scientist that's how come I have always been moving towards that direction, but many people always call for advice in animal production and looking at the pages, I've not seen any Facebook page on animal rearing in Ghana so I think someone can also take that up in that area so that people can also learn."

> **Dr. Frank Ackah, Home Gardening Ghana**

To achieve such a goal, experts could be identified and trained on how to use social media to educate, create content and engage persons towards creating an online movement platform around animal rearing so that results similar to Home Gardening Ghana's could be achieved. Such training is important because it will help reduce the learning curve for upcoming social agripreneurs.

> "When I started the page, many people also started some but they thought about the business they could make from it. But they have not been able to catch up because of their expertise. I am a professional, so when I say something, people listen. So, it's not just about starting a page, but it's about how you keep the people updated or how you'll be able to assist them with information is also key."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Summary

The founder of Home Gardening Ghana, a social media platform for gardening, has made and continues to make agriculture attractive to youth. This is evident in how university students have upheld the university gardening project across the various halls of residence. Further, in various communities, individuals, mostly youth, are turning fallow grounds into mini food production centers to achieve personal food security and even earn income. More young people could be attracted to this space when there are competitions organized around gardening as a way of encouraging such activities at home, in the community, and any available usable public space. Such a facility could also attract other forms of agripreneurs to start social media platforms from which more others can benefit.

CASE STUDY 5

Touton

Case study overview

Touton has been a major player in the global cocoa trade for decades. Over the years, Touton has invested in facilities for the collection and export of cocoa in Africa's top cocoa-producing countries like Côte d'Ivoire, Ghana, Nigeria, and Cameroon. Touton maintains direct control over cocoa production sites to guarantee the quality of the cocoa it exports. In Ghana, Touton mainly sources cocoa beans and their derivatives and processes cocoa liquor. Its main objective is to *"trade and process premium quality cocoa."* According to the company's website, the cornerstone of Touton's cocoa business is a *"strong footing in the countries where the ingredients are grown, which allows us to maintain control over the supply of products from origin right up to delivery to customers around the world."*

Further, the company, through its historical purchases of cocoa beans, its investments, and the presence of experienced teams at production sites, offers its customers a steady supply of quality products. Touton has established sustainability programs dating back to the end of the 1990s when the group started working on projects to increase cocoa farmers' livelihoods around its own SAO (Société Agricole de l'Ouest) plantation in Côte d'Ivoire. Today, Touton's cocoa beans are traceable all along the supply chain, from origin to consumer, allowing segregation of conventional and certified beans as well as better monitoring and understanding of the communities of farmers they work with. The need to ensure the traceability of the cocoa beans makes it necessary to use social media platforms wherever possible within the company's value chain.

Characteristics and value chain roles of key actors

Touton's deployment and use of social media across the cocoa value chain has been quite sparing because of uneven resources across different levels of actors and is largely at the district warehouse level (see Figure 22). Interviews with farmers at the production level reveal an obvious absence of social media platforms. Farmers like Joseph plant and maintain cocoa trees, harvest and break cocoa pods to obtain the beans, and ferment and dry cocoa beans. Fully dried beans are then bagged and sent to a farmer society shed for further drying and reconditioning. These activities largely take place without social media platforms, and farmers largely communicate with other farmers in close proximity.

> "Mm, no, those things [social media], I don't go there. Like WhatsApp or, no, I don't use it. For me, the farmers are close to me."
>
> **Joseph, cocoa farmer**

Other farmers confirm Joseph's assertion. For instance, Michael, when asked about his membership in any farmers' association WhatsApp group, said, *"No, not at all*."

Encouragingly, some use of social media can be observed at the aggregation and transportation level. Activities at this level involve grading, sealing, and dispatching cocoa beans in large sacks to the seaport. First, the cocoa beans sent by farmers to the society shed are aggregated by a purchasing clerk, often on behalf of a licensed cocoa-buying company like Touton. The purchasing clerk is responsible for attracting and buying cocoa beans from individual farmers and transporting the beans from the shed to the nearby district warehouse of his licensed buying company. Each district warehouse is headed by a district manager, who also reports to a regional manager. Consequently, the regional manager is interested in and responsible for meeting monthly purchasing targets, hence the use of social media platforms to coordinate the activities of district managers and their respective warehouses.

> "Yes, for activities as an LBC [Licensed Buying Company] and as a head of the region, we use a lot of social media, especially WhatsApp. So, I have various WhatsApp groups, which I use to communicate with all my district managers, with my accountants, and with my field operations as well. ... I have a [WhatsApp] group which is called the Western North Team. The Western North Team comprises all my 14 district managers. The WhatsApp group, I started working within the company, actually in August. So since then, since I'm the regional manager, I set up the WhatsApp group for the team to communicate in terms of our operations on the ground."
>
> **Kwame, Touton Regional Manager for Western North Region**
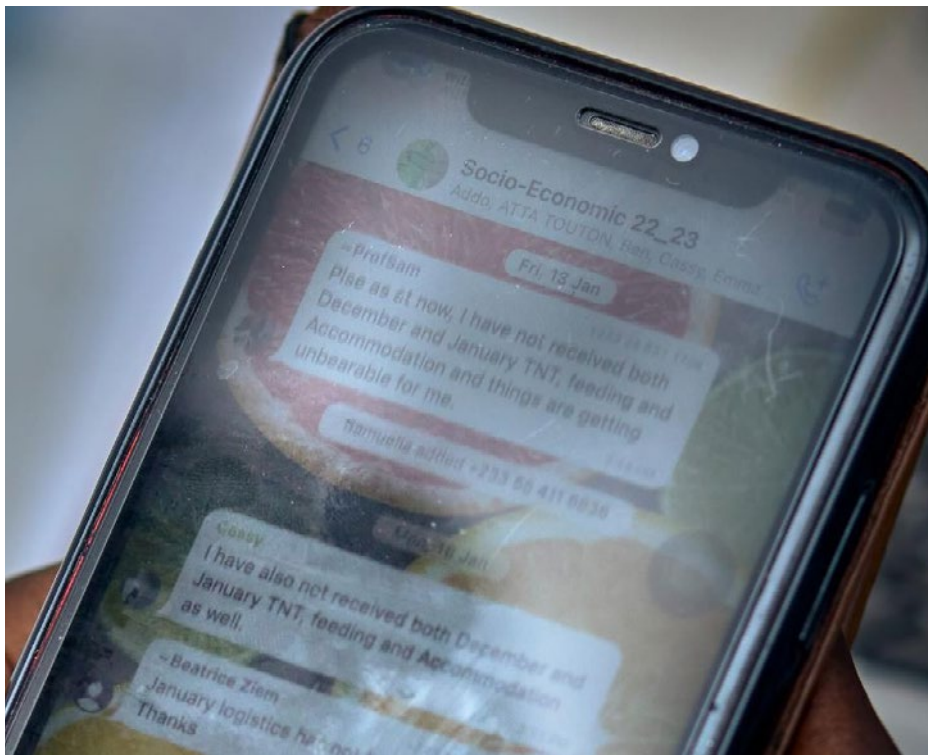
◀ **Figure 22**

Screenshot of WhatsApp group created by a Sustainability Manager to coordinate a field team

Figure 23 ▼

Abridged product flow chart vis-à-vis social media platform use

Level 2
Aggregation and transportation

District warehouse
- Grading and sealing

Various societies supply purchased cocoa beans to a district warehouse overseen by a district manager. A regional manager also oversees the operations of many district managers. We collected evidence of how a regional manager uses WhatsApp groups to manage the district manager. Further, sustainability officers who work for the district warehouse also use WhatsApp groups to manage field agents.

Level 1
Production

Society level
- Drying
- Reconditioning

A society is a group of farmers who tend to sell their cocoa beans to a particular purchasing clerk who buys on behalf of a licenced cocoa buying company. No evidence of social media platforms use was observed at this level.

Production level
- Harvesting
- Fermentation
- Drying and bagging

No observed use of social media platforms at individual farmer level.

Kwame describes creating different groups for different actors in the value chain to ensure that specific information reaches specific persons to deliver on those tasks.

> "The difference in terms of the WhatsApp groups we have is the personnel that you work with. So, if I have a district manager team, I want to relate to the district manager team alone, or if I have an accountant team, I want to relate to the accountant team alone. And there's also another platform where everybody is on board where some information needs to be divulged to all of them, but there is certain information that needs to go to only the district managers. There's certain information that goes to only the accountant or the other field teams. So, they are different WhatsApp groups, depending upon the role each one is playing basically ... depending upon the information that needs to be given. It either goes to the individual, it goes to the group. So I have individual WhatsApp contacts where the communication goes and then the group too has its communication depending upon the message that needs to go that needs be sent to the group."
>
> **Kwame, Touton Regional Manager for Western North Region**

Sustainability managers who work for the district warehouse also use WhatsApp groups to manage field agents. Sustainability managers ensure that farmers practice better cocoa production strategies. For instance, Enoch, a sustainability manager for Touton's District 3 warehouse in the Western North Region, explained that he is in charge of "*sustainability projects for the farmers; that's training them so that they can better their agronomic health practices on their farms and also to support some of them with additional livelihoods.*" Sustainability managers use WhatsApp groups to coordinate three groups, namely field agents, mapping groups, and socioeconomic groups. According to Enoch, field agents visit farmer societies to train them on best farming practices. The mapping group surveys and records the locations of cocoa farms and their owners so that cocoa beans could be traced to a specific farm. The socioeconomic groups collect farmers' household data to aid planning and implementation of interventions.

Social media platform–enabled interactions in the value chain

The use of social media platforms for Touton's operational activities suggests four types of platform-enabled interactions. The first is **general communication between platform members**. For instance, the regional manager regularly requests feedback and updates from district managers concerning their weekly and monthly cocoa purchasing targets are being met. Similarly, district managers use social media platforms to seek updates from purchasing clerks concerning the amount of cocoa aggregated at the societal level.

> "That's where I communicate with the clerks ... that is where I get to know what is happening in the societies. To know if the beans are coming or have reduced. They will tell me maybe the beans are not coming, so don't bring much money, so if someone comes to demand, let's say, twenty, give him ten."
>
> **Djibril, Touton Cocoa District Manager**

The second type of platform-enabled interaction is **instructional sharing**, where field subordinates seek or receive instructions about daily quotas and tasks to be performed. For instance, field agents responsible for mapping cocoa farms receive their mapping instructions and quotas daily from the sustainability manager at the district level.

> "Yes, we use it mostly in our work because I have a lot of field agents who are under me. I have a mapping team who also helps me on the field. So, within their communication, it's through WhatsApp platforms that we have created groups where we share information for them to do it on the field."
>
> **Enoch, Touton Cocoa Sustainability Manager**

> "Their [field agents'] work is seasonal work. Almost six months getting to the late certification period then, we start doing our activities. So, when they start their main activities, I share with them the number of societies both have to visit. Also, regarding the training topics that they have to undertake with the farmers and what's going on in the field too, they have to update me on the platform. The mapping team is also the same; for the mapping team, you have to send everyday mapping targets that you did. Also, if you are facing any challenges, you have to text on the page for us to know what is going on in the field."
>
> **Enoch, Touton Cocoa Sustainability Manager**

The third kind of interaction enabled by the social media platform is **monitoring**. Enoch described how field agents are required to share their geolocation via the WhatsApp group to register their presence and their work status. In describing Touton's use of social media platforms for field activities, he said that "*WhatsApp group is mainly to monitor their activities on the field to tell them where they are going to know that they've arrived in the society and they are working.*"

The fourth kind of interaction is **knowledge sharing**, in which platform members share field experiences with each other to facilitate learning and personal development on the job.

> "Due to the WhatsApp platforms, we share a lot of experiences. I think I remember the last two weeks, there was an incident; someone was unable to use his [mapping] device well. When he sends the message on the platform, another person also responded to the solution that he using to solve that issue. And it was a quick phase for everyone for them to continue with their work."
>
> **Enoch, Touton Cocoa Sustainability Manager**

Platform features engaged to enable actor interactions

The foregoing social media platform interactions suggest the use of various features on WhatsApp. First, most of the interactions are multimedia, mostly a mixture of photos, documents, and raw text. Consequently, actors use the file upload and text messaging features. As mentioned earlier, most of the information involves instructions from supervisors to their subordinates or feedback from subordinates to supervisors. Emojis are barely used, potentially because of the official nature of the communication. Further, members of the groups draw on their prior knowledge and experiences in the use of personal computers to navigate their way in using the WhatsApp platform.

Mechanisms enabling platform interactions

The interactions on the various social media platforms used by Touton in the Western North Region of Ghana suggest the existence of control mechanisms that stem from leaders' need to supervise subordinates' activities, especially remotely. Leaders' requests for information and subsequent responses from field staff reflect the relationship between the two categories of staff within the company's formal reporting structures. The social media use thus seems to be digitalizing the reporting structure, or the flow of information between the members of the structure. The information-request cycle thus cements the notion of supervisors' control over subordinates' activities on the platform and, by extension, in work-related activities.

Benefits of platform interactions

Three main benefits are observed from the use of social media for Touton's operations within the cocoa value chain. First, **improved well-being** includes reduced stress and reduced travel. Platform users described how the use of social media has reduced the need to travel long distances to submit or obtain information from various value chain actors. For instance, Djibril, a district manager, communicated that "*at first, we call something returns, every week I have to pay money for transport to send returns to the regional office for them to know the weekly activities*." Now district managers prepare the weekly returns in a spreadsheet and share them with the regional manager via the WhatsApp group. Djibril also mentioned how reduced travel has reduced stress levels which were relatively high due to the risk of road accidents caused by poor-quality roads in the region.

The second observed benefit, from both an organizational and personal perspective, is **operational efficiency** stemming from reduced transaction costs and increased work efficiency. Hitherto, district managers had to incur costs on printing, photocopying, and other stationery to prepare and submit reports to the regional officers. Djibril, a district manager, said that "*I have also saved money. The ups and downs, photocopies, you have made mistakes, so go and buy A or B are no more*." It is worth mentioning that some of these costs cannot be reimbursed because of a lack of receipts, as transactions in remote areas are largely unofficial.

The third benefit is **information management** stemming from improved information access for platform members. Social media also enables users to bypass infrastructural constraints in the field to access needed information, to share their field knowledge and experiences, and to help each other to solve problems they encounter in the field.

> "We get information in real time. Although in some areas, you can't get to network but if they get to a place or a position or location that they have network access, they can just text us the text message as information that they want to send to us."
>
> **Enoch, Touton Cocoa Sustainability Manager**

Challenges for social agriculture

The evidence of social media platform use within the cocoa value chain suggests that upstream actors within the cocoa value chain barely use smartphones or electronic devices with social media access. This is mostly due to infrastructural deficits in cocoa-growing areas, which are mostly remote and rural and sometimes lack access to electricity and telecommunication network services. Further, these actors, especially farmers, have low rates of general and digital literacy. Consequently, community-level adult education programs could be instituted to help production-level actors like farmers gain some literacy and numeracy skills.

Other concerns involve risks within the value chain due to the nature of the cocoa market. These include the lack of value for money, as many processing clerks deliver sub-standard cocoa beans, which often do not pass the test to be exported. Further, many farmers lack the funds to invest in improving their production of cocoa beans.

> "There's a lot of risk in the cocoa industry in terms of the funds that are sent from the head office all the way down to the farmers. And it's basically cash which goes down; how do you call it the value chain? So, along the line, for most PCs [purchasing clerks], you give them money and they don't bring back the value of the money for which you have given them. Farmers also don't bring up the necessary cocoa for which they're supposed to deliver. So, there's always a backlog of stocks of cocoa that is not coming. I feel what I would if given the opportunity what I will change is to make sure that we use, we use the mobile money system to be able to source our cocoa, and it should be in a direct form where the money goes directly to the farmer and then you directly purchase than waiting and then pre-financing for cocoa to be purchased."
>
> **Kwame, Touton Regional Manager for Western North Region**

Nonetheless, actors at the production level might not need to use social media platforms because cocoa beans are readily sought by funded purchasing clerks who buy on behalf of licensed companies or smuggling agents from neighboring countries with higher prices. In other words, there is a ready market for the product, which is also heavily government-regulated by controlled prices. Therefore, while farmers may not need to market their produce, they could be trained to contribute to a national observatory dashboard for cocoa to enhance the traceability of the product and the observed changes in their livelihoods.

Summary

The cocoa value chain is tightly controlled by the government, which also pre-sets prices, affecting when and how social media is used within the value chain. At the midstream level, social media platforms are mostly used for internal operational discussions. Evidence suggests that available platforms include those created by regional managers to manage the cocoa purchasing and haulage operations in the districts under their jurisdiction, and platforms created by sustainability managers for their field teams in charge of mapping and socioeconomic data collection. It is worth noting that both platforms are institutional, i.e., created to enhance the operations of a licensed buying company. Consequently, the benefits for actors are largely operational and organizational.

Data analysis approach

Audio and video recordings from the interviews that were collected in this study were transcribed using a Word document. Where respondents (especially farmers) spoke in any of the local Ghanaian languages (Twi), it was transcribed into English. The interview transcripts were analyzed thematically along with extensive field notes.

Analysis of the data for the study was done through an iteration of the empirical qualitative data.[33] This method ensures that we identify the first- and second-order constructs and then aggregate theoretical constraints. The coding process was carried out by two qualitative data-coding experts and a research assistant who received guidance from the experts throughout the process.

The first-order codes formed the initial phase of the data analysis process, which entailed segmenting and identifying data into distinct events or acts.[34] Subsequently, codes similar to the informants' vocabulary were used to ensure that emerging codes were accurate.

Following the open codes was axial coding, where similar first-order codes were integrated into a collection of second-order constructs that were more abstract through an inductive, recursive process.[35] At this stage of the data analysis, we made sure that first-order codes and second-order constructs were based on evidence discovered in both interviews and other documented evidence (i.e., WhatsApp chats and Facebook posts) rather than instances related by non-representative information or events.[36]

The final phase of data analysis used selective coding to extract aggregate theoretical dimensions from the second-order components.[37] In other words, two sets of second-order constructs mentioned above were combined into aggregate theoretical dimensions.

33 Eisenhardt, "Building Theories from Case Study Research"; Langley, "Strategies for Theorizing from Process Data."
34 Miles and Huberman, "Drawing Valid Meaning from Qualitative Data."
35 Corbin and Strauss, "Grounded Theory Research."
36 Miles and Huberman, "Drawing Valid Meaning from Qualitative Data."
37 Corbin and Strauss, "Grounded Theory Research."

Findings

This section presents the research findings with respect to the study's aim is to explain how social media platforms reconfigure and impact agricultural value chains. Findings show three ways that social media platforms reconfigure agricultural value chains: (1) facilitating new value chain roles, (2) sustaining existing roles, and (3) expanding existing roles. The three impacts identified find that social media platforms: (1) engender trust, (2) create opportunities, and (3) facilitate participatory equality for women and young people.

Reconfiguring value chain roles

Facilitation of new value chain roles

The study's findings established three ways platforms reconfigured agricultural value chains.

1. **Creating new proxy farmers and subsistence farmers:** Youth in Ghana, especially those who are employed or underemployed, often look for side hustles that can enable them to earn more income. Agriculture has remained attractive to youth due to these reasons, among others. However, as demonstrated by the

Nserewa case study, social media supports proxy rice farming for some youth—a medium for monitoring and ensuring transparency in the crowdfunding business model. Members of Nserewa who are nontraditional value chain actors and can be considered consumers have become proxies of farmers on the platform. Home Gardening Ghana has also created a new set of farming enthusiasts to engage by offering basic rubrics to encourage youth to take up subsistence farming. These new rice and vegetable value chain players indirectly influence their respective chains. Kojo, CEO of Nserewa, for example, says indicates that the objective of Nserewa is *"to create opportunities for people interested in farming to sponsor agriculture production. Consequently, Nserewa has since its inception in 2021, raised funds to support about 700 farmers to produce over a total of 5,000 acres of maize, soya and rice in selected towns in Ghana."* Hitherto, these farmers would have been less productive due to a lack of capital.

2 **Reducing information asymmetry:** Social media platforms tend to be a space where members share information freely. Consequently, members become more informed about issues, products, and services, reducing information asymmetry and helping them make informed decisions. Nserewa members have better information about the progress of work on the farms they have invested in, while Touton uses social media to coordinate employee communication and operations management. Due to social media, Maame Kaya's customers have better information about food market prices.

> "Also, she interacts with us on the WhatsApp platform. She will always come to the page asking for feedback, so yeah, that was it for me. Even though some people can deliberately form a group to dupe, I realized she was for real. And aside from the WhatsApp interactions, she also does programs on the radio and shares the link in WhatsApp for us to follow. So, all of those things so of increased the trust I had for her."
>
> **KayaApp Customer 1**

3 **New agri-educational intermediaries:** New intermediaries are being created to address needs that have been, arguably, overlooked by existing structures and institutions. For instance, Home Gardening Ghana provides education for people interested in growing their food to obtain healthy organic agricultural produce. HapaSpace provides continuous mentorship and post-training support to agripreneurs in communities and on contextual needs not addressed by traditional (tertiary) educational and training institutions.

"The hub organises forums, looks for bulk buyers for our trainees and offers them social and professional support. ... We also have a philosophy that we cannot leave them just after providing training for them, so we are keen on post-training support for them".

Gideon, HapaSpace CEO and co-founder

"We create WhatsApp groups into which we put our trainees, and we encourage them to use these WhatsApp groups as a marketplace to market and sell their products and share ideas."

Josephine, HapaSpace Community manager

Sustaining existing roles

Social media also enables actors to sustain their roles. For example, social media has enabled Maame Kaya to sustain her business as a grocery aggregator, as many of her customers (from within and outside of Ghana) rely on her for their groceries. She is able to continue attracting customers to grow her role as an online grocery shopper. Customers' reliance on her emanates from her ability to use social media to engage them to meet their needs by delivering groceries to their doorsteps. Home Gardening Ghana is able to sustain the creator's role as an educator and extension officer.

"I am a mother of 3. I have a 13-year-old, an 11-year-old, and a 6-year-old, and I am an entrepreneur. I live after Michel Camp, on the Akosombo stretch. I am a very busy person. I run a food processing business, and it takes a whole lot of my time. Because of this, I don't have time to go to the market. I have a nanny who helps me at home, but she also is learning a trade, so she is not that free to be running the market errands. And with me, I also feed the workers that I work with in my food processing business, so bulk buying is a lifesaver for me. I save a lot."

KayaApp Customer 3

Expansion of existing roles

Social media platforms have also enabled HapaSpace to create a marketplace for agripreneurs after their training, as agriprenuer trainees continue to receive training and guidance on how to run their business on one social media platform that has been created by HapaSpace. Home Gardening Ghana expanded the creator's role from consumer to community manager and moderator.

Maame Kaya also demonstrates role expansion, as she uses social media to play multiple roles: to educate her customers, build relationships, and enhance customer-to-customer relationships. Through Maame Kaya's education, her customers become more informed about issues, products, and services, reducing information asymmetry and helping them make informed decisions. In other words, Maame Kaya's customers have better information about food market prices.

> "She also educates us on the issue, like which items are in season and how to even store the items. And she does all this through the WhatsApp platform. You know, when she does all these things, it makes the conversation richer, and the customers are happy."
>
> **KayaApp Customer 3**

Table 4 ▾

Summary of impact (reconfiguring) value chain roles

Impact of social media platforms	Case study	Activities social media platforms afford in each role
Facilitation of new value chain roles	Nserewa	Consumers → Financiers → New proxy farmers Consumers become new proxy and subsistence farmers by raising funds (inputs) for farmers to farm on their behalf.
	Home Gardening Ghana	Consumers → New farming enthusiasts Consumers have become farming enthusiasts (mostly subsistence) through the basic farming rubrics and encouragement they get on social media.
Reducing information asymmetry	KayaApp	Maame Kaya informs customers on market dynamics and pricing and gives feedback on purchases.
	Nserewa	Members have better information about ongoing work at the farms they have invested in.
	Touton	Uses social media to coordinate employee communication and operations management.
New agri-educational intermediaries	Home Gardening Ghana	Educates people interested in growing their food to obtain healthy organic agricultural produce.
	HapaSpace	Continuous mentorship and post-training support to agripreneurs in communities and on contextual needs not addressed by traditional (tertiary) educational and training institutions.
Sustaining existing roles	KayaApp	Maame Kaya to sustain her business as a grocery aggregator, as many of her customers (from within and outside of Ghana) rely on her for groceries.
	Home Gardening Ghana	Home Gardening Ghana is also able to sustain the creator's role as an educator and extension officer.
Expanding roles	KayaApp	Aggregator → Educator → Relationship Builder → Influencer Empowers Maame Kaya (an aggregator) to play multiple roles at once (i.e., educator, relationship-builder, influencer)
	HapaSpace	Processors → Marketers Social media platforms have enabled HapaSpace to create a marketplace for agripreneurs (mostly processors) after their training.

Trust

This section highlights mechanisms that preempt trust and outcomes of trust from the use of social media by agriprenuers.

Mechanisms that preempt trust

The mechanisms that preempt trust are **feedback** in interactions between platform owners and members, **surety establishment**, and **relationship building**. These mechanisms are largely driven by the features of the social media platform, the proactiveness of social media platform owners, and the readiness of platform members. For example, WhatsApp, TikTok (e.g., TikTok Live), and Facebook have functionalities that allow HapaSpace, KayaApp, Home Gardening Ghana, and Nserewa to seamlessly engage with members on their platforms. Maame Kaya, for example, shares live updates of market conditions and prices of produce to attract customer orders. Nserewa creates transparency for investors to follow production activities through regular updates on its WhatsApp page.

> "The WhatsApp groups were created to bring all the sponsors who subscribe to the crowdfund together to give them updates and communicate with them regularly. Because we realised that people responded faster on WhatsApp than their email. When we send email updates, it takes time for people to see and respond. So, we have a WhatsApp page per planting project, so if we are planting today, we update the sponsors that today, we will inform them that we started planting rice in this or that location; next week, we will do that. We also organise road trips for the sponsors to the field and use the same WhatsApp pages to coordinate the interested sponsors. And when sponsors also have any questions or need any information, they can ask immediately in the WhatsApp group for us to provide. So, we use WhatsApp more to communicate with our sponsors and give them regular updates on our work."
>
> **Kojo, Nserewa Team Lead**

These owners are seemingly active in providing feedback to enquiries and requests. Coupled with responses from platform members or their audience, their constant platform and customer feedback reinforce their communication. Then again, there is also transparency (and information symmetry) as transactional information is largely shared directly in private WhatsApp groups. For Maame Kaya, customers can engage in an initial transaction with a low financial commitment or minimum purchase, and thereafter assess their relationship with the business, offering the opportunity to establish confidence and surety.

Nserewa's Facebook pages have testimonies from previous crowdfunders and assurances from the company communicated through strategic partnerships with formal institutions like commercial banks. Home Gardening Ghana and

HapaSpace provide mentorship and care openly through social media, as well as opportunities for members to market themselves, thereby creating relationship-building mechanisms. In addition, there are offline or face-to-face meetings that are occasionally organized which reinforce online relationships and extend learning beyond virtual platforms. Such events are recorded and shared on social media platforms to bridge virtual and offline experiences.

Platform conveners and moderating teams have been resolute about ensuring that rules and regulations are followed pre- and post-joining the platform and that the platforms are free from spam messages. For example, some of the platforms (Home Gardening Ghana) do not allow advertisements, as they believe such advertisements will cast doubts on the main objective of the platform. HapaSpace has a moderator who removes spam messages or anything else that infiltrates the WhatsApp group. Members who do not abide by the rules are not allowed to join the group. Those who flout the rules after joining are asked to remove prohibited content, and those who persistently fail to adhere to such rules are removed from the platform.

> "Initially, there was a guy who wanted to abuse the platform and so there were some posts and issues that I realised that this guy is not genuine, so I sent him a message and asked him to stick to the rules and then he was not listening, so I had to block him from the page."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

> "As one of the managers of the platforms, I delete spam from the platforms, and that makes it easy for the members to trust the information shared there."
>
> **Maxwell, HapaSpace Media Lead**

Outcomes of trust

The outcomes of trust identified in this study span three categories: **operational**, **relational**, and **strategic effects**. Operational benefits are associated with the use of social media platforms to reduce transactional costs in the provision of information, feedback between platform and members, the search and delivery of products, services, and customers (KayaApp), and the reduction of frequent long journeys to verify information, coordination of operations and logistics, and increased timeliness in decision-making (KayaApp, Touton, Nserewa). Achieving operational effects can build up to relational benefits.

> "My customers buy from me because they get better value than going to the market at Agbogbloshie. And most of them are mothers with kids to take care of in addition to their work. Instead of going to the market, I just do all the shopping for them, and they save the time and cost in doing that themselves, are a relatively cheaper price because of the Bulk-Buy-Share. I just go to the WhatsApp page to make them select what they want to buy, and that's it."
>
> **Maame Kaya**

Relational effects are associated with the benefits of relationship building, surety establishment, improved communication, relationships between members, and relationships between the members and the platform. Improved and direct communication may increase motivation, understanding, and confidence, evidenced by electronic word of mouth and lead generation by platform members. The apex of relational effects is when platform owners begin to promote the businesses of platform members, thinking about the *"welfare in terms of the business of their customers as well, so it's a win-win situation,"* leading to a positive client/customer image and mutual gain (Maame Kaya and HapaSpace). Thus, operational and relational effects can build up trust for platform owners and members to strategically engage in long-term relationships for the good of all. These relationship effects contribute to strategic effects.
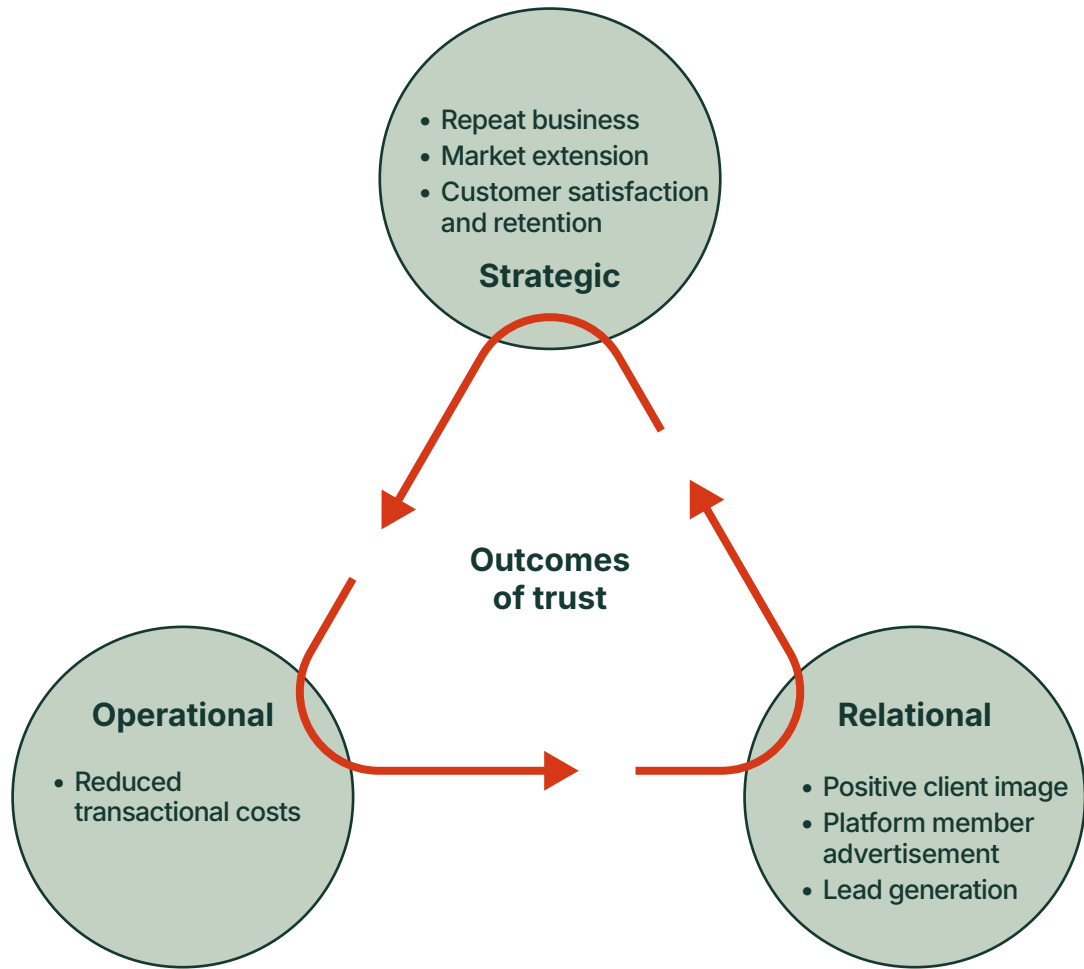
> "Being in the WhatsApp group has helped me get access to information to meet customer expectations and standards. Different customers have different expectations, and they [HapaSpace] share such information in WhatsApp groups, so I get to understand what others are facing to help me meet the expectation of my customers as well."
>
> **Frederick, agricultural technologist and HapaSpace WhatsApp group member**

Strategic effects are associated repeat business, increase in business, extending market reach (business customers ordering for their customers), and opportunities for personalization, which contributes to increased customer satisfaction and retention.

> "Because I am the one who orders the things but I am not there [in Ghana] to see them, the people who receive the items get them to use WhatsApp video to do a recording and send me a video to verify what was brought for me to confirm."
>
> **KayaApp Customer 4**

Figure 24 ▾

Trust mechanisms and outcomes

- Repeat business
- Market extension
- Customer satisfaction and retention

Strategic

Outcomes of trust

Operational

- Reduced transactional costs

Relational

- Positive client image
- Platform member advertisement
- Lead generation

Opportunity creation

This section highlights opportunities that social media platforms create for agripreneurs. The study identifies two types of opportunities: (1) new tech-based business models and (2) extended market reach.

Social media platforms create new tech-based agripreneur models

Social media platforms have paved the way for agripreneurs to create new business models. The findings from the HapaSpace case study show that social media platforms enable members to obtain access to funding and resource opportunities, including digital devices (e.g., laptops) to use in their business which grants them visibility. These platforms also facilitate the building of social capital where members seek the interest of each other's businesses. These observations stem from the critical role being played by the digital skills training provider, HapaSpace, that also offers post-training support through social media.

> "This laptop has helped my visibility on social media and has increased my sales."
>
> **Emelia, agripreneur and member of HapaSpace WhatsApp group**

As a new form of agricultural investment business model enabled by social media, Nserewa creates virtual farming opportunities in Ghana through crowdfunding. The incorporation of a crowdfunding model and strategic partnerships with financial institutions into Nserewa's operations enables the firm to raise the needed capital to farm and obtain resources for its operations. For example, in a March 2023 rice farming project, Nsewera partnered with a local bank, as well as crowdfunding sponsors. Hence, Nsewera is circumventing the capital challenge through crowdfunding and strategic partnerships.

Social media platforms extend market reach

Social media platforms allow actors to extend their local markets. The ability for agripreneurs to access customers or followers outside of their local markets is critical to their sustainability. The findings from the Maame Kaya case study show that social media platforms enable her to serve customers from the diaspora who order groceries to be delivered to their relatives in Ghana. Similarly, Nserewa allows persons outside farmers' geographical locations to invest in agricultural production they may never see.

> "I live in Canada ... What Maame Kaya is doing for me is helping me because my mother-in-law is an aged person, and she cannot be going to the market to get things. Sometimes if you give the money to the people around her to buy things [food stuff], they just buy things anyhow and I don't like that. They will be buying the things piece-piece [in bits]. So, with Maame Kaya, I know I will get quality foodstuff in bulk at a cheaper price."

Maame Kaya, Customer 5

Gender and youth participation

Social agriculture opportunities for women in Ghana

This study revealed that opportunities for women in social agriculture revolve around three areas: (1) commercial opportunities, (2) livelihood opportunities, and (3) and knowledge opportunities.

1   **Commercial opportunities:** Regarding commercial opportunities, social media gives women the exposure to establish businesses that provide goods and services to customers for profit. For example, through social media Maame Kaya has built a commercial business supplying groceries to customers in Kumasi and, in the past few months, expanded her reach to cover Accra. She also acts as a proxy buyer for customers outside of Ghana, delivering groceries to their family and acquaintances. The commercial opportunities of social media do not stop with Maame Kaya. She works with head porters (Kayayei), whom she employs to transport goods from her suppliers and help with packaging. Other women, through their association with social media–enabled platforms of HapaSpace, have accessed events and programs that have given them tools such as laptops to use in their businesses. Likewise, Home Gardening Ghana offers opportunities for women to develop knowledge and skills in subsistence farming, which can involve personal consumption, selling, and potential growth into small-scale farming. Nsewera enables women to start a side hustle, earning extra income as proxy farmers (e.g., the case of Linda).

2   **Livelihood opportunities**: There is evidence of social media platforms creating new dignified and fulfilling jobs, enhancing current jobs, and creating opportunities for extra income for women.
    — **New dignified and fulfilling jobs** are evidenced by Maame Kaya. Maame Kaya is a graduate with an MBA in digital marketing, but social media platforms have created a new dignified and fulfilling employment and passion for her. Livelihood assets enhanced or improved are human and financial capital.

- **Enhancing current jobs, making them more dignified and diversifying earnings.** For example, KayaApp head porters have more security in working with Maame Kaya and better earnings as compared to being an itinerant worker seeking customers. Some of them are being trained by Maame Kaya in the use of social media platforms and thereby enhancing their human capital as well as their financial capital.

- **Extra income through side hustles** is evidenced in the creation of new proxy farmers through Nserewa and subsistence farmers through Home Gardening Ghana. Livelihood assets enhanced or improved are primarily financial capital for Nserewa's platform members and human capital (and potential financial capital through new business opportunities or leads) for Home Gardening Ghana's platform members.

3   **Knowledge opportunities**: Social media platforms enable women entrepreneurs to learn, make decisions, and solve problems relating to their businesses, personal lives, or family lives. Citing the case of HapaSpace, women agripreneurs have benefited from the knowledge and ideas shared by other members on WhatsApp groups. These ideas and this knowledge have enhanced their businesses. Women on Maame Kaya's social media platforms receive updates on when certain types of foodstuffs are in season to save cost. Maame Kaya's social media platforms also offer women (mostly customers) who own their own businesses to learn from the experience of other successful women and reach out to potential buyers who may also be on the page. Similar opportunities have been observed on Home Gardening Ghana, where the knowledge and experience shared on social media have enabled women to gain insights into commercializing tomato farming using emerging farming technologies.

> "A lady who said she was interested in greenhouses, and I told her it was expensive so she should rather go for screen houses. And so, in Tamale, the next time I went there, she started producing tomatoes in those houses; I've been advising people to do that as well."
>
> **Dr. Frank Ackah, Home Gardening Ghana**

Barriers to women's participation in social agriculture in Ghana

This study identified that challenges for women's participation in social agriculture revolve around three factors: (1) limited access to funds for publicity and logistics, (2) illiteracy, and (3) limited or no digital skills.

1   **Limited access to funds for publicity and logistics**: While social media platforms enable women to access commercial opportunities and create livelihoods, women often lack the needed funds, logistics, and exposure to scale up their businesses and increase their customer base and earnings. For instance, Maame Kaya reported her inability to scale up her business due to limited finances for publicity and delivery logistics.

2 **Illiteracy**: Women who ply their trade using traditional approaches but want to take advantage of the opportunities that social media offers often have little or no education. As such, they lack the ability to use social media to benefit their businesses. For example, many of the Kayayei (head porters) who work with Maame Kaya have little to no formal education to read and write in English to engage potential customers. This constrains them from getting social media–related opportunities related to their livelihoods.

3 **Limited or no digital skills**: The inability of women to use social media platforms in business constrains them from reaching new and larger customer bases. Thus, they are left with no option but to let go of opportunities that come their way which could have given them more earnings and improved their livelihoods.

Social agriculture opportunities for youth in Ghana

Social agriculture in Ghana is in its nascent stages, and it is largely influencing market-driven and less government-regulated value chains like vegetables and rice compared to structured and government-regulated value chains like cocoa. However, social agriculture looks promising for attracting youth to commercial farming (as proxy farmers) and subsistence farming. Also, young people, through crowdfunding, act as proxy farmers who create livelihoods for farmers in rural areas who face challenges in raising capital and accessing needed production inputs and logistics. Four of the case studies (Nserewa, Maama Kaya, HapaSpace, Home Gardening Ghana) evidenced the presence of youth participation in agriculture due to social media. Nserewa's social media–based rice crowdfarming initiative driven by youth and keeps 700 outgrower farmers optimally employed. Social media platforms are used to coordinate the recruitment of crowdfunders (an average of 50 per season) and for information management during the farming season. Notably, most of these youth are people in the middle to high class who would ordinarily not want to have anything to do with farming because it is considered an undignified venture. Home Gardening Ghana provides online home gardening education, training, and input provision through social media for its 241,000 members, who are largely youth.

> "Don't forget that most of the sponsors are professionals from diverse disciplines. We have lawyers, nurses, doctors, teachers, engineers, bankers."
>
> **Kojo, Nserewa Team Lead**

Conclusion

The confluence of social media platforms and agriculture has manifested in novel ways, reshaping the sector's traditional contours. This study unveiled the multi-dimensional impacts of this interplay, capturing both its promise and associated challenges.

At the forefront of this transformation is the **reconfiguration of value chain roles**, evidenced by the emergence of new intermediaries and the streamlining of information flow. Platforms such as HapaSpace exemplify this shift, offering mentorship avenues hitherto unavailable. **Trust**, a foundational element of commerce, is being recalibrated within the digital landscape. The mechanisms fostering trust within social media platforms—feedback, relationship building, and governance—reiterate the importance of adaptability in the digital age.

The introduction of fresh, **tech-driven business models** encapsulates the innovation at the heart of this nexus. Virtual farming, crowdfunded agricultural projects, and digital marketplaces are not just entrepreneurial ventures; they're also testimonies to the transformative power of technology. The tangible impacts on **women and youth empowerment** underscore the democratizing potential of digital platforms, providing livelihoods, skill enhancement, and a sense of purpose to previously marginalized groups.

However, this transformation isn't without challenges. The **skills and knowledge gap**, especially among young women, hints at the potential pitfalls of the digital divide. **Financial constraints** and **logistical challenges** serve as reminders that technological advancement, without infrastructural and educational support, can lead to skewed benefits.

Key areas for future research and stakeholders

1 **Dynamic value chains**: The evolution of value chains in agriculture, facilitated by digital platforms, is a rich area for exploration. How these chains adapt, especially in other sectors and geographic contexts, could provide insights into global economic shifts.

2 **Trust in the digital age**: With trust dynamics evolving, understanding its facets in various digital contexts, especially outside of agriculture, will be pivotal. This can inform platform design, policymaking, and user education.

3 **Tech-driven entrepreneurship**: The genesis of new business models, spurred by platforms like HapaSpace and Nserewa, offers a template for entrepreneurship in other sectors. Mapping these models' success factors, challenges, and scalability can provide a blueprint for digital entrepreneurs globally.

4 **Empowerment through digital**: The tangible impacts on women and youth warrant deeper exploration into how digital platforms can be harnessed for societal uplift, beyond just economic gains.

5 **Bridging the skills gap**: Identifying the specific educational needs, especially of young women, can guide curriculum design, training programs, and policy initiatives, ensuring that the digital future is inclusive.

Recommendations for agricultural practitioners and policymakers

1 **Prioritize digital literacy**: An emphasis on digital literacy, especially for marginalized groups, can ensure that the benefits of digital platforms are widespread and equitable.

2 **Create feedback mechanisms**: Building robust feedback loops within platforms can bolster trust, ensuring user engagement and platform sustainability.

3 **Strengthen partnerships**: Collaborations with digital training providers, tech firms, and educational institutions can create a holistic ecosystem, integrating traditional practices with modern skills.

4 **Address financial constraints**: Developing financial instruments, grants, and/or subsidies tailored for digital agricultural entrepreneurs can mitigate scalability challenges, propelling the sector's growth.

The interplay between social media and agriculture, as highlighted by this study, is a microcosm of the broader digital transformation sweeping across sectors. Understanding, adapting to, and harnessing this change will be imperative for researchers, practitioners, and policymakers alike.

References

AfricaagMedia. "Ghana: Rice." Agriculture in Africa Media, December 3, 2023. https://www.agricinafrica.com/2023/12/ghana-rice.html.

Ahmed, Yunis Ali, Mohammad Nazir Ahmad, Norasnita Ahmad, and Nor Hidayati Zakaria. "Social Media for Knowledge-Sharing: A Systematic Literature Review." *Telematics and Informatics* 37 (April 2019): 72–112. https://doi.org/10.1016/j.tele.2018.01.015.

Asigbaase, Michael, Evans Dawoe, Sofie Sjogersten, and Barry H. Lomax. "Decomposition and Nutrient Mineralisation of Leaf Litter in Smallholder Cocoa Agroforests: A Comparison of Organic and Conventional Farms in Ghana." *Journal of Soils and Sediments* 21, no. 2 (February 2021): 1010–23. https://doi.org/10.1007/s11368-020-02844-4.

Awika, Joseph M. "Major Cereal Grains Production and Use around the World." In *Advances in Cereal Science: Implications to Food Processing and Health Promotion*, edited by Joseph M. Awika, Vieno Piironen, and Scott Bean, 1–13. Washington, DC: American Chemical Society, 2011. https://doi.org/10.1021/bk-2011-1089.ch001.

Baffour-Ata, Frank, Jonathan Atta-Aidoo, Richmond Ofori Said, Victoria Nkrumah, Sylvester Atuyigi, and Sheriff Mohammed Analima. "Building the Resilience of Smallholder Farmers to Climate Variability: Using Climate-Smart Agriculture in Bono East Region, Ghana." *Heliyon* 9, no. 11 (November 2023). https://doi.org/10.1016/j.heliyon.2023.e21815.

Cheeseman, Nic, Jonathan Fisher, Idayat Hassan, and Jamie Hitchen. "Social Media Disruption: Nigeria's WhatsApp Politics." *Journal of Democracy* 31, no. 3 (July 2020): 145–59. https://www.journalofdemocracy.org/articles/social-media-disruption-nigerias-whatsapp-politics/.

Corbin, Juliet M., and Anselm Strauss. "Grounded Theory Research: Procedures, Canons, and Evaluative Criteria." *Qualitative Sociology* 13, no. 1 (March 1990): 3–21. https://doi.org/10.1007/BF00988593.

Darfour, Bernard, and Kurt A. Rosentrater. "Agriculture and Food Security in Ghana." Orlando, FL, 2016. https://doi.org/10.13031/aim.20162460507.

Donner, Jonathan. "Platform Livelihoods: Working, Trading, Renting, and Creating in Digital Marketplaces." *Caribou Digital* (blog), July 19, 2021. https://medium.com/caribou-digital/platform-livelihoods-working-trading-renting-and-engaging-in-digital-marketplaces-b144ffcc1141.

Egbi, Courage D., Geophrey K. Anornu, Samuel Y. Ganyaglo, Emmanuel K. Appiah-Adjei, Si-Liang Li, and Samuel B. Dampare. "Nitrate Contamination of Groundwater in the Lower Volta River Basin of Ghana: Sources and Related Human Health Risks." *Ecotoxicology and Environmental Safety* 191 (March 2020): 110227. https://doi.org/10.1016/j.ecoenv.2020.110227.

Eisenhardt, Kathleen M. "Building Theories from Case Study Research." *Academy of Management Review* 14, no. 4 (1989): 532–50. https://doi.org/10.2307/258557.

Fadairo, Olushola, Portia Adade Williams, and Faridah Sendagire Nalwanga. "Perceived Livelihood Impacts and Adaptation of Vegetable Farmers to Climate Variability and Change in Selected Sites from Ghana, Uganda and Nigeria." *Environment, Development and Sustainability* 22, no. 7 (October 2020): 6831–49. https://doi.org/10.1007/s10668-019-00514-1.

FAOSTAT. "Food and Agriculture Data." UN Food and Agriculture Association, 2022. https://www.fao.org/faostat/en/#home.

Ferreira, Valeria, Miguel Ángel Almazán-Gómez, Victor Nechifor, and Emanuele Ferrari. "The Role of the Agricultural Sector in Ghanaian Development: A Multiregional SAM-Based Analysis." *Journal of Economic Structures* 11, no. 1 (June 20, 2022): 6. https://doi.org/10.1186/s40008-022-00265-9.

Hansen, Jens Peter, Melby Jespersen, Gianluca Brunori, Allan Leck Jensen, Kirsten Holst, Camilla Mathiesen, Niels Halberg, and Ilse Ankjær Rasmussen. "ICT and Social Media as Drivers of Multi-Actor Innovation in Agriculture." Paper presented at World Conference on Computers in Agriculture and Natural Resources, San Jose, Costa Rica, July 2014. https://doi.org/10.13140/2.1.3549.8242.

Kesherwani, Bhagyashree, Sandeep Rout, Deepayan Padhy, and Subramanian Ravichandran. "Social Media Help Farmers: For Improving Agriculture Practices." *International Journal of Biology, Pharmacy and Allied Sciences* 11 (January 2022): 410–18. https://doi.org/10.31032/IJBPAS/2022/11.1.1051.

Kolavalli, Shashidhara. "Developing Agricultural Value Chains." In *Ghana's Economic and Agricultural Transformation: Past Performance and Future Prospects*, edited by Xinshen Diao, Peter B. R. Hazell, Shashidhara Kolavalli, and Danielle Resnick, 210–40. New York: IFPRI and Oxford University Press, 2019. https://doi.org/10.2499/9780198845348_08.

Langley, Ann. "Strategies for Theorizing from Process Data." *Academy of Management Review* 24, no. 4 (1999): 691–710. https://doi.org/10.2307/259349.

Lathiya, Amit, Arvind Rathod, and Kuldeep Choudhary. "Role of Social Media in Agriculture." *International Journal of Commerce and Business Management* 8 (October 2015): 268–73. https://doi.org/10.15740/HAS/IJCBM/8.2/268-273.

Mastercard Foundation. "Our Work in Ghana." Mastercard Foundation. August 19, 2019. https://mastercardfdn.org/our-work-in-ghana/.

———. "Young Africa Works." In Strategic Roadmap Briefing Note, Ghana.

Miles, Matthew B., and A. Michael Huberman. "Drawing Valid Meaning from Qualitative Data: Toward a Shared Craft." *Educational Researcher* 13, no. 5 (May 1984): 20–30. https://doi.org/10.3102/0013189X013005020.

Observatory of Economic Complexity. "Rice in Ghana." Accessed March 7, 2024. https://oec.world/en/profile/bilateral-product/rice/reporter/gha.

Quansah, Joycelyn K., Cesar L. Escalante, Angela P.-H. Kunadu, Firibu K. Saalia, and Jinru Chen. "Pre- and Post-Harvest Practices of Urban Leafy Green Vegetable Farmers in Accra, Ghana and Their Association with Microbial Quality of Vegetables Produced." *Agriculture* 10, no. 1 (January 2020): 18. https://doi.org/10.3390/agriculture10010018.

Sasu, Doris Dokua. "Ghana: Export Value of Cocoa Beans 2022." Statista, January 12, 2024. https://www.statista.com/statistics/1172186/export-value-of-cocoa-beans-and-products-from-ghana/.

Schoemaker, Emrys, Reem Talhouk, Catherine Kamanu, Eoghan McDonaugh, Chris McDonaugh, Eliza Casey, Adam Wills, Finn Richardson, and Jonathan Donner. "Social Agriculture: Examining the Affordances of Social Media for Agricultural Practices." In ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS), 476–89. New York, NY, USA: Association for Computing Machinery, 2022. https://doi.org/10.1145/3530190.3534806.

Trienekens, Jacques H., ed. "Agricultural Value Chains in Developing Countries A Framework for Analysis." *International Food and Agribusiness Management Review* 14, no. 2 (2011): 51–82. https://doi.org/10.22004/ag.econ.103987.

van Osch, Wietske, and Constantinos K. Coursaris. "Organizational Social Media: A Comprehensive Framework and Research Agenda." In 2013 46th Hawaii International Conference on System Sciences, 700–7, 2013. https://doi.org/10.1109/HICSS.2013.439.

Williams, Tricia, and Alexandra Löwe. "Five Things Young People in Ghana Want for Their Future." Mastercard Foundation, October 25, 2018. https://mastercardfdn.org/five-things-young-people-in-ghana-want-for-their-future/.

Yellow Pages Ghana. "Securities and Exchange Commission (SEC) Ghana." Accessed March 7, 2024. https://yellowpagesghana.com/listing/securities-exchange-commission-sec-ghana/.

Yin, Robert K. *Case Study Research: Design and Methods*. 3rd ed. Thousand Oaks, CA: Sage, 2003.

Yusif, Hadrat, Emmanuel Nii Oseku Ntreh, Daniel Sakyi, and Samuel Tawiah Baidoo. "Do Government Agricultural Policies Affect Production and Export of Cocoa in Ghana?" *African Journal of Science, Technology, Innovation and Development* 14, no. 6 (September 19, 2022): 1608–17. https://doi.org/10.1080/20421338.2021.1975356.