

A woman wearing a blue patterned dress is bent over, working in a field of young green plants. The field is divided into rows by a dirt path. In the background, there are traditional mud-brick buildings and trees. The overall scene is rural and agricultural.

Strengthening government agencies to better serve the digital agriculture technologies (DAT) ecosystem and smallholder farmers: The case of KALRO

Case Study

September 2022



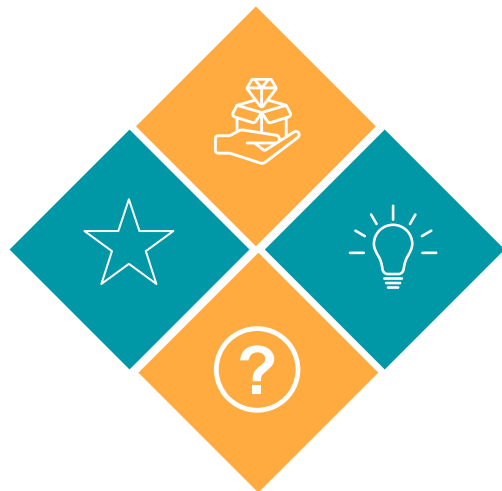
AGRIFIN

Dalberg

The study explores role of gov't agencies in the DAT ecosystem and presents steps for establishing a solution to growth-oriented challenges

- **Mercy Corps AgriFin has worked with organisations on impactful innovations across the Digital Agriculture Technologies (DAT) ecosystem over the past decade and has commissioned a case study to highlight a developing innovation within KALRO**
- The study first unpacks the unique value proposition of gov't agencies in the DAT ecosystem and introduces KALRO as a leading agency. Thereafter, the case highlights a solution to challenges agencies face – Social Enterprise – and key questions to consider in the solution's establishment phase. At the end of the study, AgriFin would like readers to take away learnings across four major areas:

Key takeaways



The **unique strengths and role** of government agencies in the DAT ecosystem



Overview of **growth-oriented challenges** agencies face in the ecosystem:
The case of KALRO



Through KALRO's experience, an outline of **key questions and considerations** in the establishment phase of a Social Enterprise



Overview of **success factors** to streamline the establishment of a Social Enterprise



Context

Emerging digital innovations are helping to address systemic issues facing smallholder farmers' (SHFs) livelihoods



Skills and knowledge



Capital



Market



Gender



Climate

	Skills and knowledge	Capital	Market	Gender	Climate
Systemic issues	<ul style="list-style-type: none"> Limited information sharing on good agricultural practices leading to reliance on outdated methods 	<ul style="list-style-type: none"> Constrained access to financial products and services due to factors such as limited ownership of collateral assets 	<ul style="list-style-type: none"> Lack of access to quality and affordable inputs Limited linkages to off-takers and end-consumers 	<ul style="list-style-type: none"> Limited agronomic support tailored for women SHFs Lower asset ownership due to cultural and legal reasons* 	<ul style="list-style-type: none"> Effects of deforestation, monocropping and pollution adversely affect farming productivity
Digital innovations	<ul style="list-style-type: none"> eLearning platforms to deliver training on improved agronomic practices e.g., FAO eLearning and iShamba 	<ul style="list-style-type: none"> Digital financial services such as, mobile money payments, digital savings and credit products e.g., Zoono and Agri-Wallet 	<ul style="list-style-type: none"> Digital marketplaces to connect SHF to potential buyers – e.g., DigiSoko and Twiga 	<ul style="list-style-type: none"> Gender-inclusive and gender transformative approaches in digital product design and delivery transforming female farmers' livelihoods e.g., AgriPay and DigiFarm 	<ul style="list-style-type: none"> Climate smart technologies such as soil testing and solar water pumps to boost farmers' resilience against the effects of climate change

Key:

Activity-related issues

Cross-cutting issues

Note: The highlighted issues and innovations are illustrative and non-exhaustive. *Legal reasons include legislation that limit women from owning or inheriting land. Source: Mercy Corps AgriFin, Digital Agriculture Platforms, 2021; Dalberg analysis, 2022

Government agencies have unique strengths and can play an important part in the DAT ecosystem to support individual solutions scale

- **In isolation, digital innovations face barriers to scale** including a lack of sufficient data, and limited established networks in the ecosystem
- Government agencies are well positioned to help addresses these inefficiencies and support innovations to effectively reach and improve the yield and income of smallholder farmers

Role of government agencies in the DAT ecosystem



Enabling access to open research and data

- Government agencies have a wealth of agronomic research in libraries that can be digitized on the platform and made available to ecosystem actors. Hence, addressing the data and information asymmetry issues



Promoting collaboration among ecosystem partners

- Through their convening power and established networks, agencies can engage different partners on one platform to collaborate in providing digital products

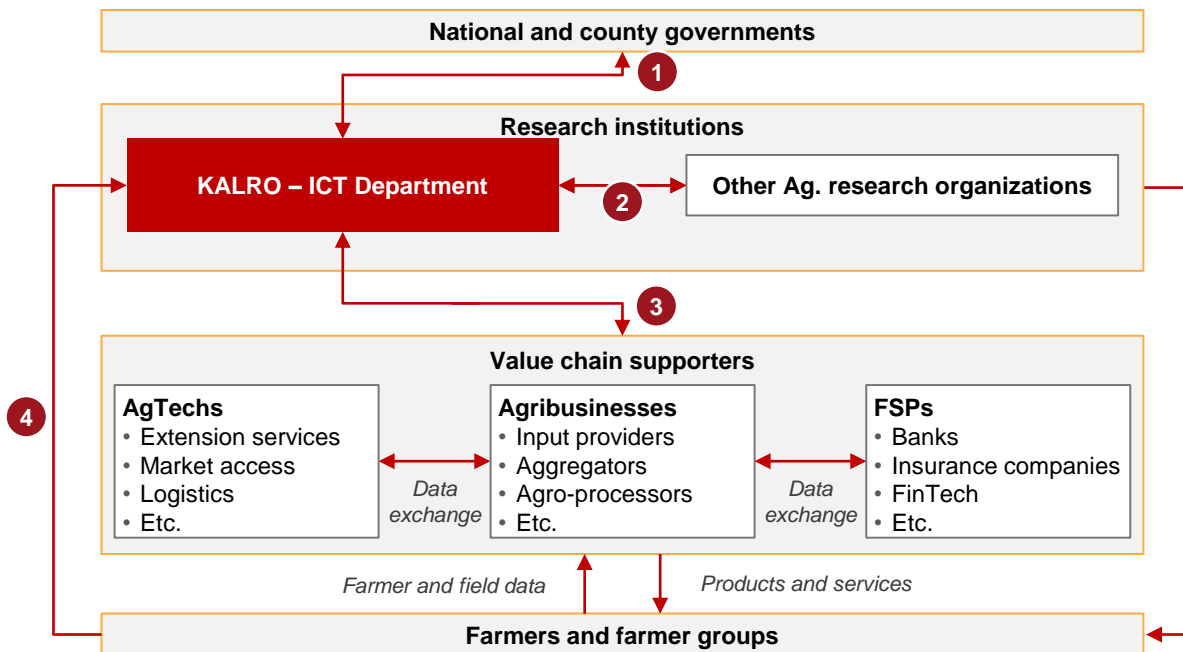


Developing unique market demand-led products

- Government agencies can develop unique products that do not crowd out the private sector, instead solve unaddressed gaps

KALRO is a well established government research institute with an ICT department that has the potential to play a catalytic role in the DAT ecosystem

- **Kenya Agricultural and Livestock Research Organization (KALRO)** is a quasi-government agency with a core mandate of coordinating research in the agricultural space and ensuring equitable access to information
- **KALRO's ICT department** is an expert-driven division playing a key role in supporting the development of digital products and exchange of data to enhance the livelihoods of farmers. *Their enabling role in the DAT ecosystem is illustrated below*



1 Data-driven recommendations to inform policy making

2 Data exchange to inform training and product development

3 VC supporters tailor KALRO's datasets to enhance products, whilst KALRO receives data on sector trends

4 Farmer groups receive trusted content and digital public goods, while they share production data with KALRO



KALRO's journey to establishing a Social Enterprise

Credit: Image by DC
Studio on Freepik

KALRO's ICT department vision is to become a regional leader in enabling Digital Agriculture Technologies

Vision: KALRO's ICT department has developed robust agronomic data, national data hub products and trusted relationships. It now envisions itself to become a **regional leader in enabling Digital Agriculture Technologies**

The pathways towards this vision include



1. Develop market demand-led digital products for smallholder farmers and the ecosystem with a long-term strategy*



2. Promote collaboration of partners in the ecosystem



3. Generate ground-truthed data to inform policymaking

To achieve its vision, the department needs to introduce several changes and address barriers to growth



- A **clear strategic product roadmap** for developing and refining digital products in the short, medium and long term
 - *Instead of **reliance on project-based funding**, leading to a fragmented portfolio with unfinished products and limited ability to refine existing ones*



- **Greater product development and analytical capability**
 - *Yet, facing difficulty attracting top-tier talent, due to a tight budget and salary caps*



- More **customer-focused product development**
 - *While currently limited to by limited customer-centric capability in-house, due to a tight budget and salary caps*



- A **clearly defined partnership structure and management** to oversee critical relationships and negotiations
 - *Since currently processes are unclear for forging and maintaining relationships and there is no **partnership manager** due to a tight budget and salary caps*



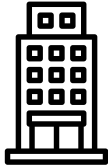
- **Greater internal synergies and engagement** to disseminate data to inform policy making
 - *Working in silos with limited engagement with other departments*

However, KALRO's ability to make these changes has been constrained by its public institution status; hence, opting to establish a Social Enterprise

Required changes	Barriers	KALRO enterprise's approach to addressing the barriers	Examples from previous approaches ¹
Clear strategic product roadmap	Reliance on project based-funding	<ul style="list-style-type: none"> Development of a commercialization strategy that re-invests revenue to ensure self-sustainability and long-term development of public and private goods 	<ul style="list-style-type: none"> Development of a long-term financial plan, initially relying on gov't funding before shifting to licenses and fees. However, reliance on gov't funding can be risky for sustenance
Greater product development capacity	Difficulty attracting top-tier talent	<ul style="list-style-type: none"> Remuneration of staff at near market-level salaries to attract local top tier talent 	<ul style="list-style-type: none"> Developing a phased approach of initially recruiting international talents for technical roles before progressively engaging local talent
Customer-focused product development	Limited customer-centric capability in-house	<ul style="list-style-type: none"> The recruitment of new skilled staff can build up the in-house customer-centric capability 	<ul style="list-style-type: none"> Incorporating performance-based contracts with quantifiable tasks linked to improvements in the ecosystem

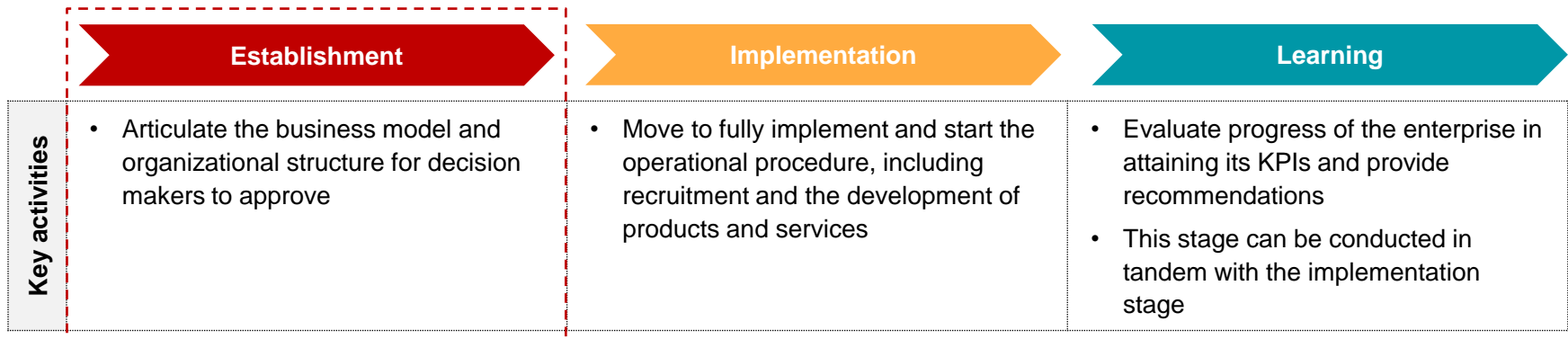
Amongst other forms of solutions in the ecosystem, KALRO adopted the highlighted approach of commercialization and remuneration to **ensure the long-term sustainability of its Social Enterprise**

A Social Enterprise is an impact-oriented, revenue-generating organization



- **A Social Enterprise is an entity that aims to achieve a particular public or community mission (social, environmental or economic) and, reinvest most of its revenue into achieving that mission**
- Unlike private enterprises which seek to maximize profit to be shared among shareholders, Social Enterprises are focused on generating revenue to continue delivering impact in their spheres of influence
- As such, a Social Enterprise can act as **an agile organization using generated revenue to recruit top talent and provide market demand-led digital products**. Government and multilateral agencies can develop such entities to solve issues in agriculture or climate change without relying on donor or project-based funding

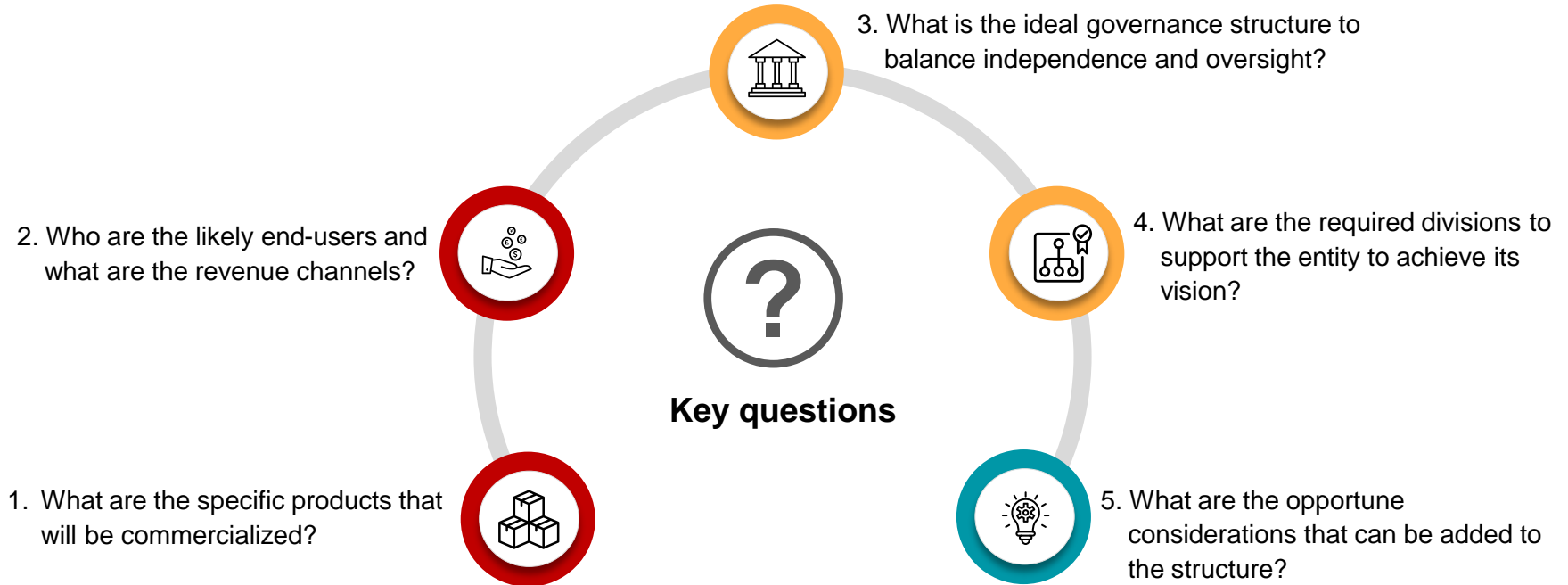
Phases of establishing and implementing a Social Enterprise



Key: KALRO's current stage

Source: Tools4dev, What is a social enterprise, Accessed: July 2022; Social Enterprise Academy, 7 Elements of a Successful Social Enterprise, Accessed: July 2022; Stakeholder interviews, 2022; Dalberg analysis, 2022

As KALRO set out to establish the enterprise, it considered five key questions that define the business model and organizational structure

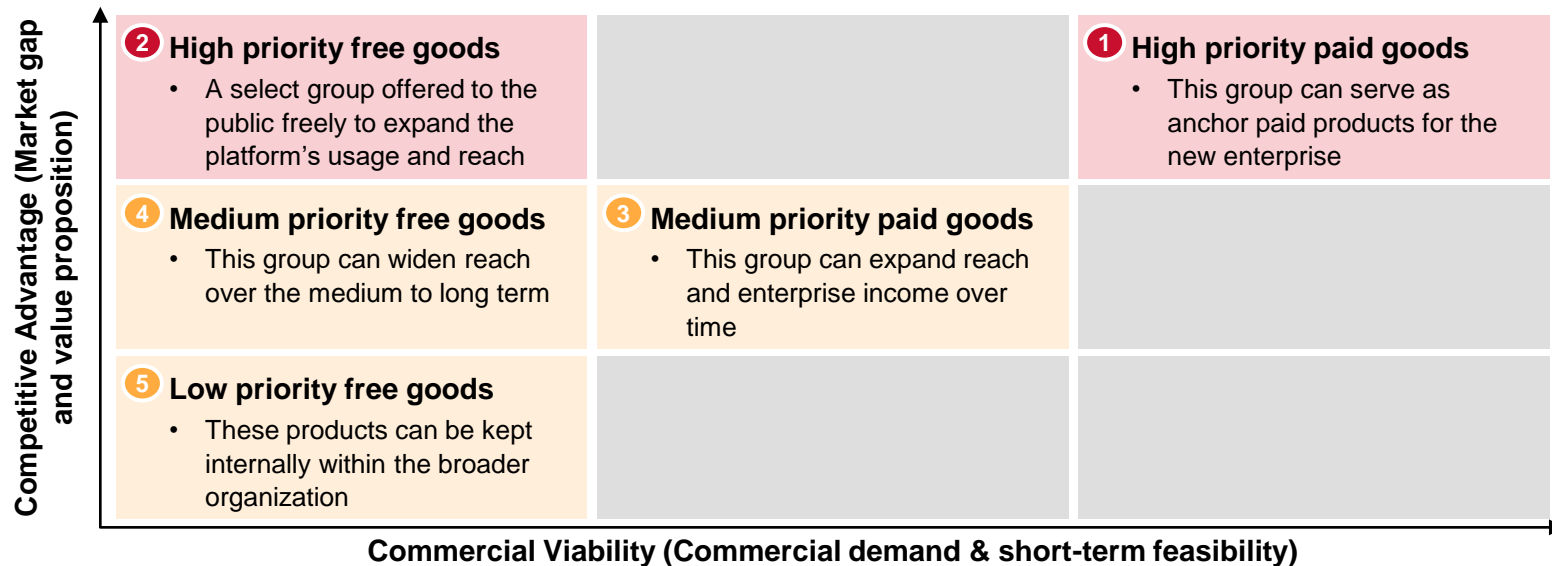


These are the questions that guided the development team in the establishment stage of the Social Enterprise. Further key questions and learnings on effectiveness and efficiency will emerge after the implementation phase.

A key consideration in the enterprise's business plan was the prioritization of anchor products

- The prioritization exercise enables agencies to identify **anchor products that can be initially commercialized to gain revenue that can be re-invested to promote financial sustainability**
- In KALRO's case, 20+ digital products were prioritized against: **I) Competitive advantage**, which considers market gap and unique value proposition; and **II) Commercial viability**, which assesses the demand and viability to launch the product

Illustrative prioritization matrix





For the identified product groups, KALRO evaluated the revenue potential by assessing primary users, their willingness to pay and revenue channels

Illustrative

Product group	Description	Primary users ¹			User willingness to pay	Primary revenue models	Implications for operating model
		D2F	B2B	B2G			
Data services	Commissioned work leveraging the entity's expertise in infrastructure design and data analytics	-	✓	✓		Licensing/ service fees	<ul style="list-style-type: none"> External funding is needed for initial working capital Incoming revenue can offset external funds medium term
Digitized research	The digitized library of agronomic research	-	✓	✓		Free-of charge	<ul style="list-style-type: none"> External funding required to sustain products Incoming revenues may offset some operational costs
Big data products	Standalone digital products offering information and advisory based on research assets	✓	✓	✓		Free-of-charge	<ul style="list-style-type: none"> Highly reliant on external funding for set up Longer term may be subsidized by other revenue streams

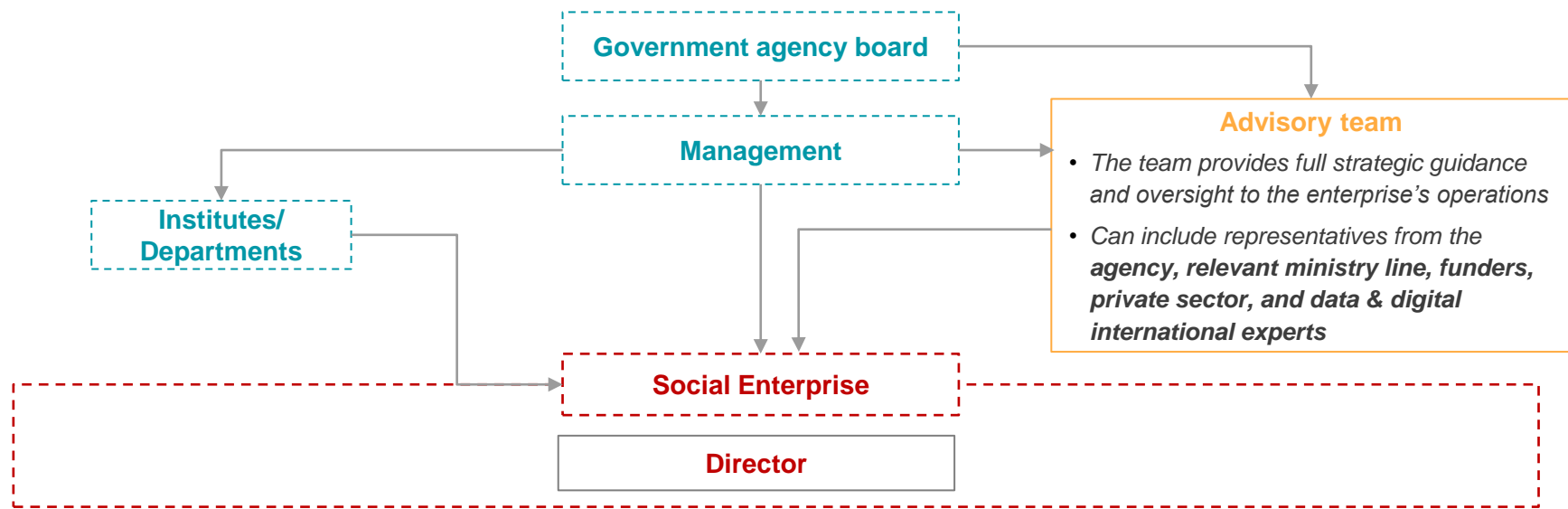
- Agencies can **conduct targeted marker demand studies** to assess the consumer needs, their willingness to pay for the identified products and appropriate revenue channels for the paid goods
- The output will inform revenue potential of the enterprise and sequencing of funding sources in the short, medium and long term

High willingness to pay Low willingness to pay

Note: 1) D2F – Direct to farmer, B2B – Business to business, B2G – Business to government.
Source: Stakeholder interviews, 2022; Dalberg analysis, 2022



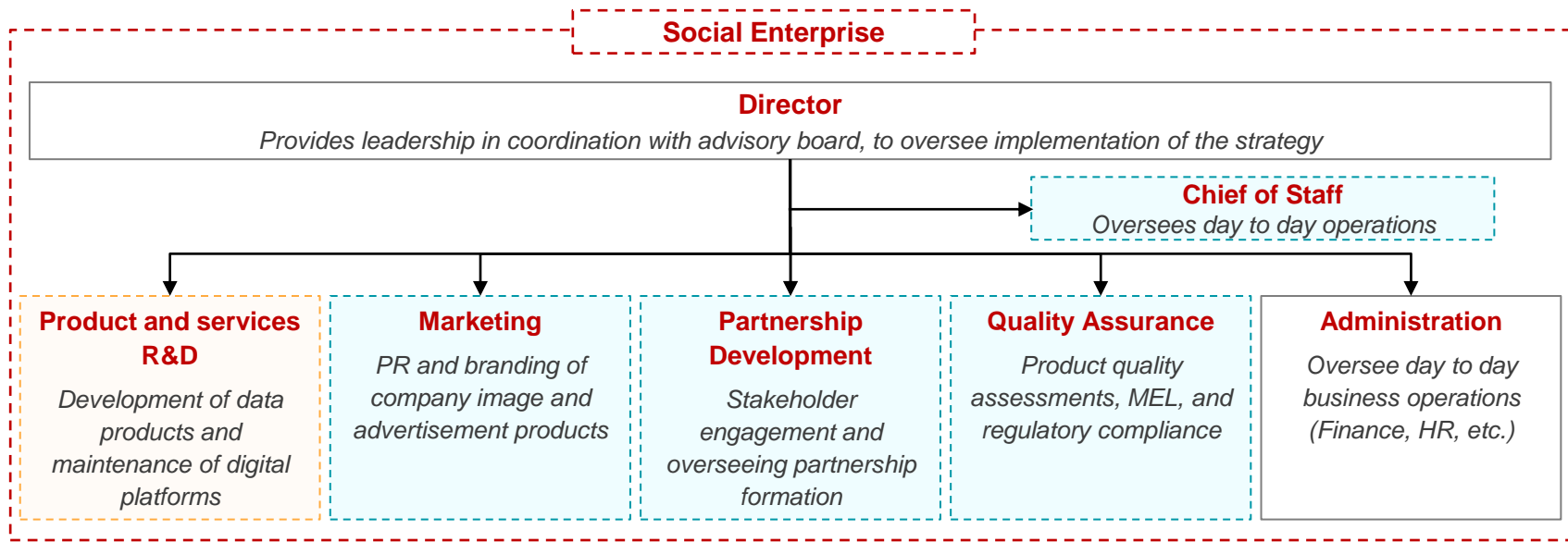
KALRO adopted a governance structure that clearly articulates the oversight and reporting channels between the board, management and the enterprise



- Agencies can consider adopting a similar structure to KALRO where the **board remains the key decision-making body**. An advisory team can be incorporated to provide strategic guidance. Moreover, since the enterprise is emerging from an existing department; they can establish **transparent reporting lines to the senior management and engagement with other departments**
- This structure provides the space for the enterprise to independently run its business model but maintain clear reporting lines to the board and management, and leverage technical expertise from other departments



Internally, KALRO established new positions within the enterprise to address prior inefficiencies and contribute to achieving its vision



- In KALRO's case, the proposed organisational structure adds new functions such as the Chief of Staff, Marketing and Partnership Development that solves for identified challenges such as unclear relationship management processes
- Agencies can consider adding such functions in their enterprises, **clearly indicating their roles in supporting the organization to reach its vision and mandate**



KALRO also took an opportunity to ingrain a gender lens throughout its strategy and operations to model a gender transformative data hub

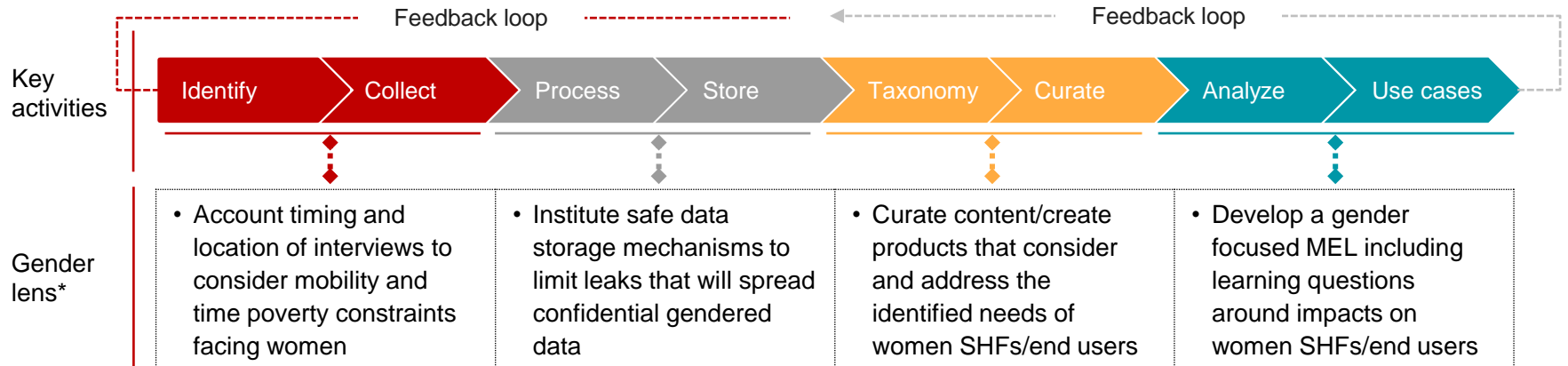
Strategic level

- In the enterprise’s establishment, the ICT Department added **an overarching gender inclusive data strategy** to guide the application of a gender lens across all partner projects and internal activities such as recruitment

Operational level

- From the overarching strategy, data-intensive agencies can **implement standard operating procedures on data collection, storage and analysis with a gender lens**. This process will ensure that its products and services intentionally identify and address gendered issues in their ecosystem

Example of the application of gender lens across the data value chain’s key activities



Note: *These are non-exhaustive examples of incorporating a gender lens across the data value chain. Source: CGAP, Leveraging KALRO data assets to add value to Women in Rural and Agricultural Livelihoods (WIRAL), 2022; Stakeholder interviews, 2022; Dalberg analysis, 2022

Overall, a set of factors can streamline the establishment process of a social enterprise



**KALRO's proposed enterprise is yet to be implemented, and additional learnings and success factors will emerge during and after the implementation phase.*