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Urban Farming Strategy Greenfield AgriCo market entry and case for change in Southeast Asia



strategy&

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Project Qualification: Urban Farming Strategy for an AgriCo in South East Asia

Situation	Actions	Results achieved
<p>Clients Government statutory bodies in charge of national food security and agricultural development</p> <p>Situation</p> <ul style="list-style-type: none">• Client required support to establish an AgriCo focused on urban farming to advance the nation's food security agenda• Seeks assistance in devising the company's value proposition, farm network architecture, target operating model, investment case, corporate structure, and implementation plan	<p>How Strategy& helped</p> <ul style="list-style-type: none">• Identified emerging trends in the country's agriculture landscape and performed competitor analysis• Conceptualised solutions and offerings of AgriCo to address current gaps in the local food supply market• Developed the high level business model, which includes target customer segments, supply chain journeys and adoption levers• Determined the target operating model; identified core functions required for AgriCo• Assessed joint-venture corporate structure options for AgriCo, including legal and board structure• Devised the implementation roadmap, including considerations for go-live models, go-to-market strategy, joint-venture partner selection, and stakeholder management• Developed case studies of global urban farming leaders in order to aid decision-making for the Clients	<ul style="list-style-type: none">• Delivered a high level blueprint to establish an urban farming AgriCo• Outcome will be presented to the ministry of sustainability and food security in the country

In support of country's Smart Food Security agenda, client aims to establish an AgriCo to further drive urban farming adoption

Country Food Security Target

- **Interoperable farming system**

Higher accessibility and acceptance for consumers and businesses

- **Simple distribution network**

A simplified distribution system to increase competitiveness and efficiency for users

- **Faster harvest cycles**

Increased speed of harvest-to-table via controlled environment agriculture

- **Safer produce standards**

A fully regulated food safety environment (e.g. establishment of the Food Standards Council)

Clients Objectives

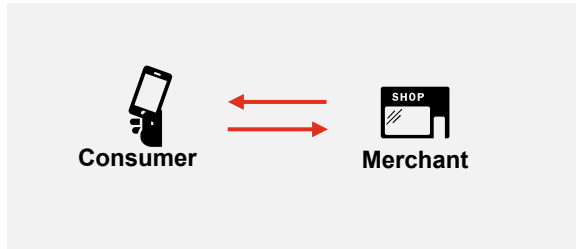
- Develop a national urban farming solution through AgriCo that aims to:
 - Promote vertical farming for retail and restaurant supply chains
 - Support food banks and the social sector
- Establish a forward-looking view (including emerging and key trends) of the agriculture landscape
- Determine the ways-to-play (incl. op model, target markets) for AgriCo to accelerate adoption of local produce
- Design infrastructure that is future ready by exploring all relevant current and potential technologies – assess suitability of existing national farming infrastructure
- Explore opportunities to leverage on existing investments for the collaboration

In response to top-down call to action, disruptors are entering the market with two variations of urban farming propositions

Farming models available

Indoor Vertical Farms

Produce grown and distributed directly by operator to consumer



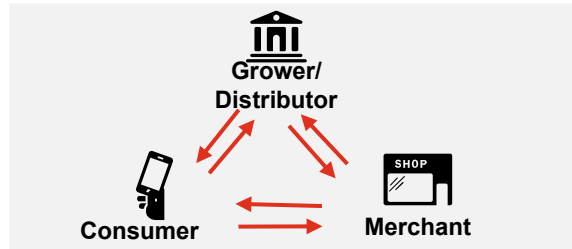
Operators:



Recently opened to third party growers

Rooftop Greenhouses

Operators grow and distribute produce. Distribution is dependent on a specific network and delivery arrangement



Operators:



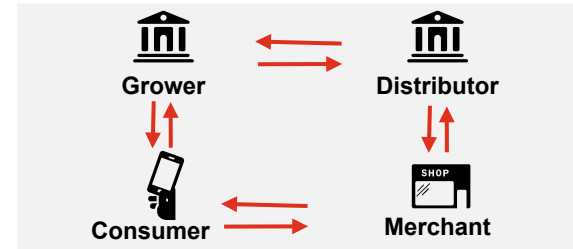
GrabPay

Alipay

1 Closed-loop farms
(Controlled env.)

Community Gardens (or more)

Operators only grow produce. Distribution is broadly accepted via existing wholesale and retail supply chains



Operators:

VISA

mastercard

SAMSUNG pay

G Pay

Apple Pay

2 Open farms (Multi-crop)

While disruptors bring choice for consumers, 'Imported Produce' remains the leading option for affordable food

Competitor Landscape Analysis








The urban farming operators selected for assessment were filtered based on their significance in the market

Operators were assessed across seven lenses – produce variety, freshness, interoperability, harvest speed, cost to merchants, customer reach, and food safety

Non-differentiating efforts by players often reap marginal benefits as consumer pain points remain unaddressed

Differentiating efforts of players

		Description
Tech-led vertical farms		Technology-driven farming solutions available (app-based) to consumers upon subscription. The platform allows for B2C and B2B produce ordering
Retailer co-branded farms		Co-branded farms are collaborative efforts by a retailer and a farm operator to provide fresh produce directly in-store, usually aimed to drive shared customer loyalty
Disruptive farm-to-table play		Disruptors enter the farming landscape with intentions to maximise direct-to-consumer freshness to support core business. Discounts and incentives are offered frequently to consumers
Subscription harvest services		Operators are providing a subscription harvest service that allows consumers to pre-order seasonal produce and receive regular deliveries, assisting consumers with fresh food access
Reduction in costs to consumers		Operators are expected to reduce distribution margins in order to remain competitive and encourage merchant adoption (e.g. SkyGreens have reduced margins for some merchants to 5% per kg from 20%)

Key takeaway

- **Consumer experience is compromised as operators try to diversify and differentiate themselves**
 - Consumers often have to travel to specific locations or wait for delivery windows (inconvenient)
- **Interoperability is still lacking as produce offerings are limited to specific operator networks and restricted to pre-approved merchants**
- **Lack of quality standards and traceability measures result in spoilage and waste – business model becomes unsustainable**

The country's grassroots still prefer imported produce especially for daily meals – a habit entrenched in hearts and minds

Dominant Sourcing Mode: A Household's Perspective

Pioneer (>65 years)

- Buys groceries for daily meals – wet market, supermarket, hawker centres
- Buys only imported produce due to familiarity and lower price

Silver Hair (45 – 65 years)

- Provides for family, buys groceries and meals from markets
- Buys imported produce or visits supermarket chains
- Prefers imported produce for

Young Adult (20 – 44 years)

- Buys groceries for meals, dining out, and retail food shopping
- Buys imported produce, occasionally tries local organic options
- Open to local produce, prefers imported for affordability

Imported produce is a norm in every household as it is affordable, available, familiar, and widely stocked



Yeo Soo Keng, 78



Maria, 35



Tan Chun Kit, 58



Goh King Kuan, 50



Daniel Tan, 26



Marc Tan, 18



Becky Tan, 12

Foreign Worker (20 – 44 years)

- Buys only when requested by employer, mostly household groceries
- Buys imported produce as it is the usual option provided by the employer
- Receives food allowance and sends savings home to family physically

Teen and Young (<19 years)

- Eats meals prepared by parents using mostly imported ingredients
- Buys snacks and meals using pocket money at hawker centres and convenience stores

From a small merchant perspective, hawkers prefer imported ingredients due to their affordability and wide availability

Day-in-life of a Hawker – Overview



Tan Chun Kit, 58



Tan Chun Kit, 58 years old, is a hawker selling fish soup. He employs 1 stall assistant and operates between 7.30am – 4.30pm. Imported ingredients are his dominant source of supply.

Chun Kit is the primary breadwinner of his family, which consists of his wife and 2 sons who are still in school. He currently lives in a 3-room flat.

Suppliers:



- Chun Kit has to go to the wet market early morning to source his ingredients for the day's cooking
- His suppliers stock mainly imported produce as it is cheaper and more readily available

Needs:



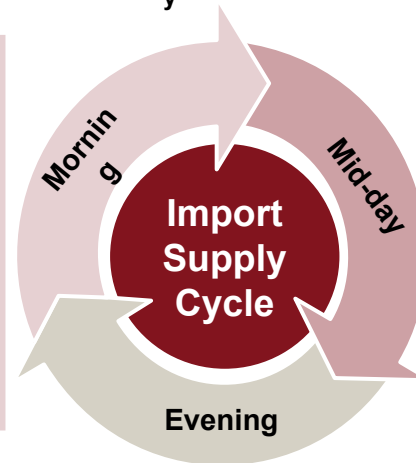
Affordability



Availability



Reliability of Supply



Operations:



- Chun Kit's busiest hours are between 12pm to 2pm. He serves ~90 bowls of fish soup during that period at ~\$4 each
- A small % of customers asks about locally-farmed ingredients but are satisfied with the taste of imported produce

Family:



- After Chun Kit closes his stall for the day, he goes to a nearby food centre to pack food for his family – imported produce is the main ingredient used in the food centre
- Chun Kit's sons ask him for dinner money after school for a meal at the hawker centre – imported ingredients are the most affordable and convenient option for hawkers

Example: Imported and locally-farmed produce are about cost neutral to hawkers – no compelling incentive to adopt local farming

Case Study: Cost of Imported vs. Locally-Farmed Produce

ILLUSTRATIVE

Scenario 1: Imported Only

⌚ 1 hour

💰 Sourcing

Chun Kit only sources imported ingredients – spending \$80 per day on produce for 140 bowls of fish soup

🔍 Quality Check

End of day, Chun Kit inspects the remaining stock, estimating wastage against the day's usage

🏠 Market Trip

Chun Kit travels to the wet market to restock imported ingredients for the next day, spending 1 hour for quality check and restocking

Scenario 2: Locally-Farmed Only

⌚ 20 mins

💰 Sourcing

Chun Kit sources locally-farmed ingredients for all 140 bowls of fish soup everyday, incurring 5% - 15% price premium per kg

🔍 Quality Check

End of day, Chun Kit performs a quick freshness check to ensure produce received matches quality standards

🏠 Home

Chun Kit goes home and his work is done for the day

Cost of Import Sourcing

- 1 hour per day of quality check and market trip
- \$10 per hour opportunity cost to Chun Kit¹

Opportunity cost per annum: \$3,650

Avg. impact to profitability⁴: ~5%

Cost of Local Produce

- ~\$200,000 revenue per year²
- 5% – 15% premium per kg for local produce³
- 20 mins per day at \$10 per hour¹

Avg. annual premium: \$4,900

Avg. impact to profitability⁴: ~6%

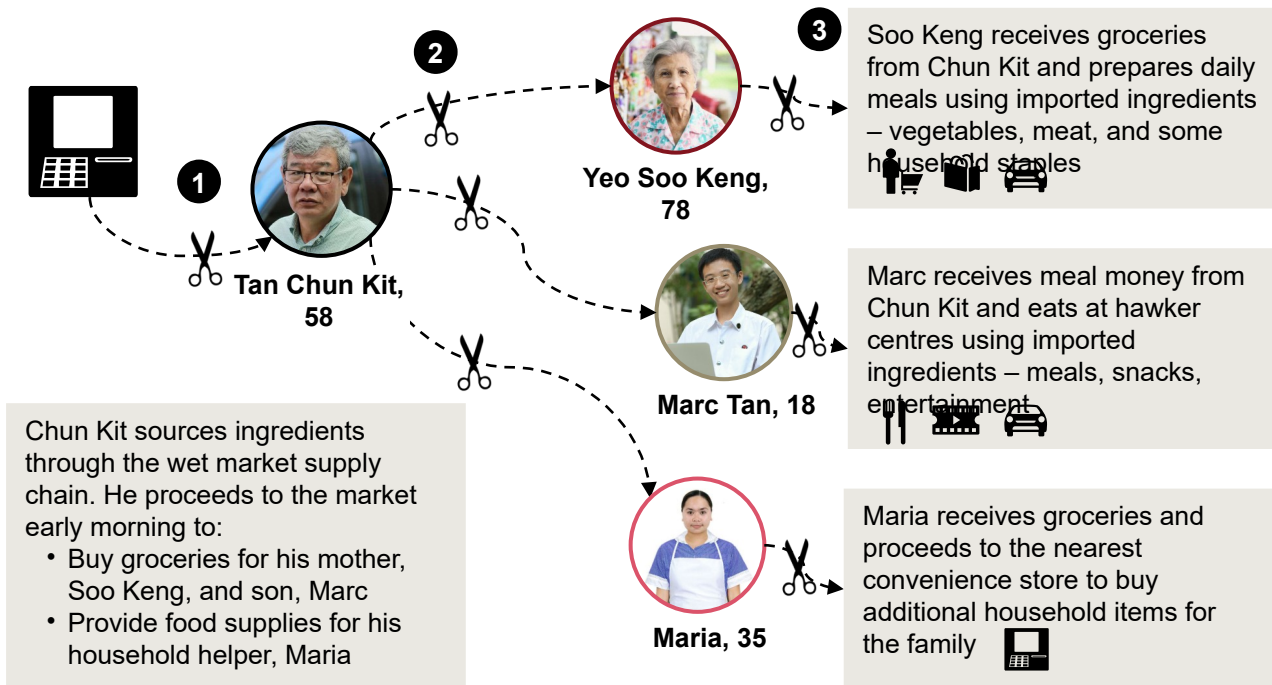
Note: 1) Hourly opportunity cost is based on average per hour wage adjusted for realisable savings amount of \$10; 2) ~\$200,000 revenue per year is based on \$560 revenue per day multiplied by 365 operational days per year; 3) Price premium range is based on competitive rates – local farms (5%) to certified organic (15%); 4) Profitability is assumed to be 40% of revenue at \$80,000 based on average gross margins for hawkers

Source: AVA; PwC Strategy& analysis
Strategy& | PwC

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In order to encourage local produce adoption, the import dependency cycle needs to be broken without affecting family needs

Current State Supply Cycle – Import-Based



Future State











✂️ • Local produce adoption can be facilitated by breaking the import cycle simultaneously, increasing overall local food supply

- 1 Chun Kit receives produce directly from the AgriCo network without needing a physical wet market trip
- 2 Produce is distributed directly to Soo Keng, Marc, and Maria via local delivery networks
- 3 As local farming becomes widely adopted, Soo Keng, Marc, and Maria can source fresh produce locally without relying on imports

There are five key needs of new urban farming offering that will appeal to the People and beyond

Consumer Facing Produce Example Use Cases

NON-EXHAUSTIVE

Produce Category	Supply Flow	Distribution Channel	Market Situation	Consumer Needs
Fresh produce delivery	 --> 	Delivery via local farms, online platforms, or neighbourhood collection points – wide range of channels	Underserved – market fragmented with noise	<ul style="list-style-type: none"> • Fresh • Widely available • Traceable (e-label)
Restaurant supply	 --> 	Produce supplied via wholesale – fragmented and lengthy distribution process	Underserved – lack of direct farm-to-govt offering	<ul style="list-style-type: none"> • Fresh • Traceable
School meals	 --> 	Produce sourcing mostly done via importers, emerging offerings with local farms	Underserved – infra available, but poor experience	<ul style="list-style-type: none"> • Fresh • Simple and convenient • Traceability
Govt food programs	 --> 	Produce sourced via govt tenders – complex process with administrative requirements	Underserved – lack of simple and direct farm-to-community offerings	<ul style="list-style-type: none"> • Fresh • Simple and convenient
Community distribution	 --> 	Produce distributed via community centres, increasingly using local networks – limited experience	Underserved – lack of direct community distribution offering	<ul style="list-style-type: none"> • Fresh • Traceable

Source: PwC Strategy& analysis
Strategy& | PwC

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AgriCo aims to provide a unified farming infrastructure; it is not a supermarket, distributor, or “another” farm

Key Functions of AgriCo

AgriCo is ...

- **An interoperable produce sourcing experience**
 - Allow buyers to source produce across a wide range of categories (e.g. vegetables, herbs, protein, specialty crops), based on unique identifiers (e.g. farm ID, batch number, crop variety)
- **A common standard for interoperable farming**
- **A produce distribution processing service**
 - Facilitate and authenticate produce transactions between farm network users
- **A merchant services offering**
 - Offer solutions to support day-to-day merchant sourcing and operational needs, digitising food businesses



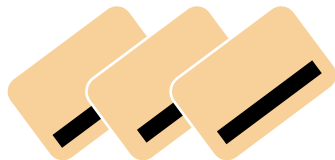
AgriCo is not ...

- ✗ **A supermarket**
 - AgriCo will not provide retail services to consumers (e.g. branded stores, consumer shelf space, etc.)
- ✗ **A cold-chain distributor**
 - AgriCo will not perform functions of a logistics and cold-chain distribution facility (e.g. require license from food authority)
- ✗ **“Another” farm in the market**
 - AgriCo will not add to the market fragmentation of urban farms in the country but rather to unify existing farming offerings

AgriCo operates Farm Network and Distribution Platform, supported by merchant services and a standards arm

AgriCo's Lines of Service

Core Services



1 Farm Network

- Enables multiple category produce lines (i.e. first and third party farms) and 'Produce-on-demand' / pre-order transactions
- Ensures interoperability between all participating entities for a wide range of produce categories (e.g. vegetables, herbs, protein, specialty crops)

2 Distribution

- Facilitates and authenticates produce distribution transactions
- Enables order processing, fulfilment, and settlement for distribution service users
- Sets and enforces distribution operating rules (e.g. quality management, freshness requirements)

Enablers



3 Merchant Services

- Provides merchants with solutions that cater to day-to-day sourcing needs, including but not limited to:
- e-ordering and invoicing
 - Auto inventory tracking
 - Supplier and quality management
 - Freshness monitoring

4 Standards

- Sets quality standard required for service users to participate in Farm Network
- Determines standard required for interoperability
- Leads initiatives to educate and shift public mindset to increase local produce adoption

Source: PwC Strategy& analysis

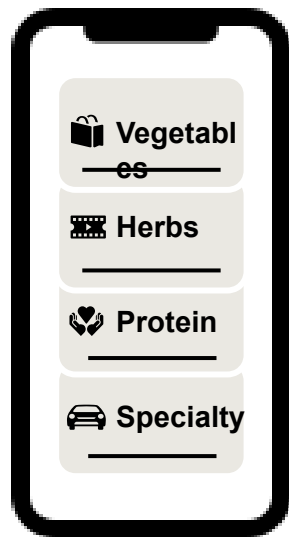
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The Farm Network is a unified platform that allows users to access multiple produce categories, promoting interoperability

Overview of Farm Network

ILLUSTRATIVE



Farm Network

Farm Network is a unified platform / 'Produce-on-demand' that enables users to access multiple produce categories, promoting interoperability and reducing fragmentation of food supply in the country

Who does it serve?

Service users (i.e. produce category providers) who compete on freshness and variety on their respective platforms (e.g. farm-to-table, organic certification)

Consumers who want to access fresh local produce across a wide range of categories and distribution channels

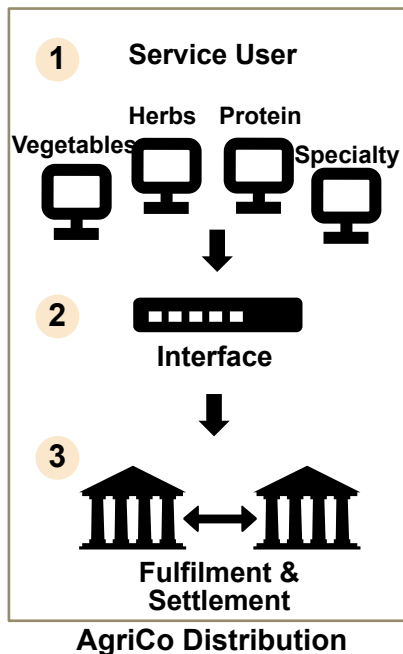
How does it work?

1. Produce category providers register to participate in Farm Network to enhance their respective distribution with wide access and interoperability
2. Consumers browse their preferred produce categories on the Farm Network platform (e.g. vegetables, herbs, protein, specialty crops)
 - Consumers select the most preferred source of produce to complete an order (e.g. organic greens from a vertical farm)
- 3
4. Consumers receive produce (direct delivery or collection) through mode offered by merchants (e.g. neighbourhood pickup, home delivery, market stall), enabled by 'Produce-on-demand'

AgriCo will allow 3rd party producers to participate in an open distribution scheme

Overview of Distribution

ILLUSTRATIVE



Distribution facilitates and authenticates produce orders, enables processing, fulfilment, and settlement services, as well as sets and enforces distribution operating rules

Who does it serve?

Service users (i.e. produce category providers) who want to leverage on AgriCo's digital infrastructure to achieve interoperability, extend customer reach, and distribution experience

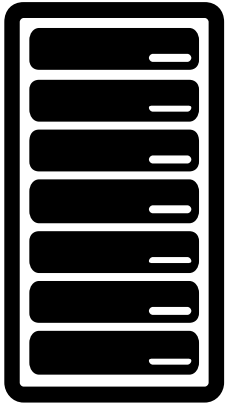
How does it work?

- 1 Service user integrates and joins the distribution platform to leverage on the digital infrastructure provided by AgriCo
- 2 Interface facilitates all orders processed by service users within the distribution network
 - Enables fulfilment and settlement services – potentially leverage on existing cold-chain infrastructure
- 3

Merchants could leverage on AgriCo's digital solutions to support day-to-day sourcing and operational needs

Overview of Merchant Services

ILLUSTRATIVE



**Merchant Services –
Overlay Digital Solutions**

Merchant services enable overlay digital solutions that cater to merchants' day-to-day sourcing and operational needs

**Who does it
serve?**

Merchants, onboarded by AgriCo, who want to digitise their sourcing and business operations, enabling operational efficiency (e.g. e-ordering and invoicing, auto inventory tracking, supplier management, freshness monitoring, reporting and analytics)

**How does it
work?**

- 1** • Merchants adopt AgriCo's offering, sourcing most or all produce via AgriCo's network
- 2** • Merchants leverage on AgriCo to enable digital sourcing solutions to support business operations
 - AgriCo enables and integrates selected digital solutions for merchants
- 3**

Standards set requirements for Farm Network and Distribution to drive quality and traceability for consumers and merchants

Overview of Standards

ILLUSTRATIVE



AgriCo Standards

Standards set technical, quality, and operational requirements for Farm Network service users, determines and enforces distribution rules, as well as boost consumer and merchant adoption

Who does it relate to?

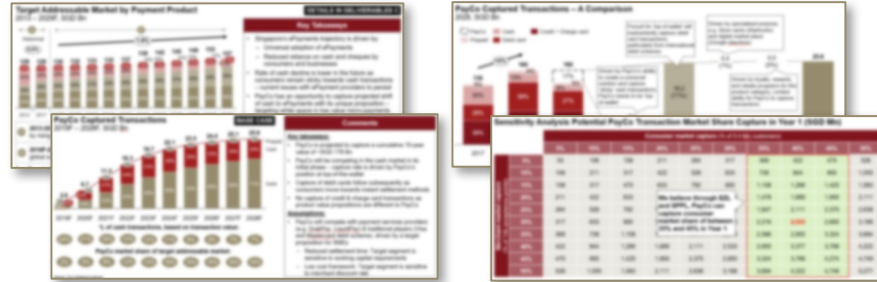
- Farm Network service user (i.e. produce category providers) – subjected to farming standards
- Distribution service user – subjected to distribution rules
- AgriCo's consumers and merchants

How does it work?

- Farm Network service user must meet the set technical, quality, and operational requirements to participate in Farm Network
- Distribution service user must adhere to distribution rules set by AgriCo
- AgriCo's offering to align to formal and informal consumer and merchant adoption levers to change public mindset and behavior towards local produce

The target addressable market for AgriCo was identified and business case developed to substantiate the investment required

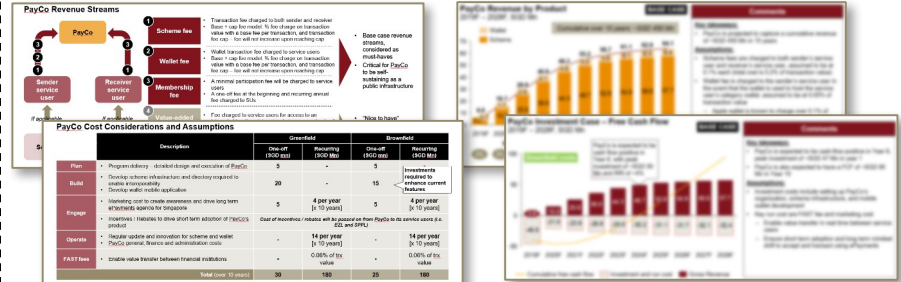
Overview of the Target Addressable Market



Key Takeaways

- AgriCo will be competing in the imported produce market in its initial phase – capture rate is driven by AgriCo's interoperability feature and its position as the top-of-mind local produce platform
- AgriCo will capture wholesale fresh produce transactions subsequently as merchants move from imported to locally-sourced ingredients
- Specialty and premium import transactions will not be captured by AgriCo as they offer consumers a different product proposition to AgriCo, competing in a different market

Overview of the Business Case



Key Takeaways

- As a national infrastructure, AgriCo's fees to service users will be lower than local and international produce distributors – main revenue lines include the farm network, distribution and membership fee
- AgriCo Farm Network will be in direct competition with imported produce distributors and emerging AgriTech platforms at steady state
- AgriCo's cost buckets are categorised into Plan, Build, Engage, Operate and Change – largest in Build as capital is required to develop the farm network infrastructure and directory required to enable interoperability

Overview of the Operating Model



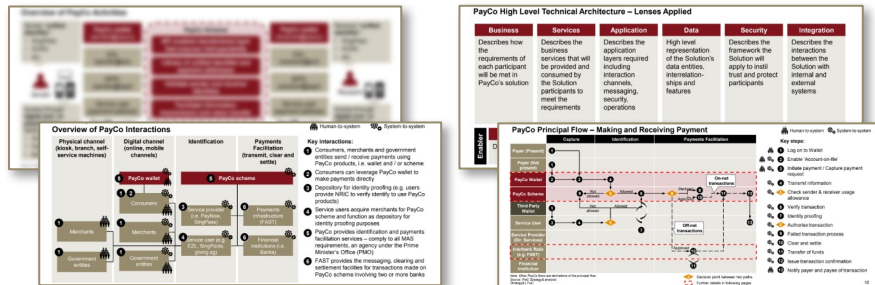
- A hybrid (cross) model of a Business Unit-led and Functions-led operating model is recommended for AgriCo as support services are centralised and redundancies are avoided
- AgriCo's target operating model is aimed to be lean and equipped with essential "run" function for AgriCo's service offering, "change" function for products and innovation, and "enable" function for farm technology management and enterprise functions

Key Takeaways

- AgriCo is recommended to be a private company as it allows for independence, swift changes without ministerial approvals, and limited risks for AgriCo
- As a public infrastructure, AgriCo's Board of Directors will include a chairman, executive directors, shareholder representatives and independent board members from various backgrounds to uphold unbiased decision making

The high level technical architecture and implementation roadmap were developed to aid implementation of AgriCo

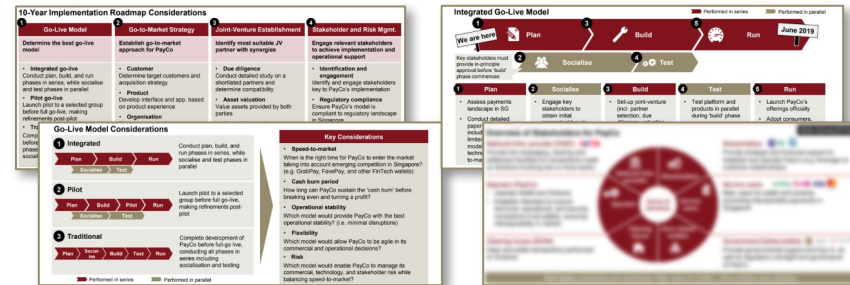
Overview of the Technical Architecture



Key Takeaways

- AgriCo services to include capturing produce orders, transmitting messages, and verifying and authenticating transactions to facilitating fulfilment and settlement
- To capture produce orders, AgriCo will leverage on existing channels (i.e. mobile app) and greenfield (i.e. IoT sensors) in order to maximise affordability, availability, scalability and traceability
- AgriCo will provide a seamless farm-to-table experience which includes human-to-system and system-to-system interaction

Overview of the Implementation Roadmap



Key Takeaways

- As a public infrastructure, an integrated go-live model was recommended for AgriCo as stakeholder socialisation and testing runs in parallel with the traditional plan, build and run
 - Go-live for AgriCo will be fast-to-market, potentially ahead of emerging AgriTech competition
 - Flexibility in making operational refinements
- Support from key stakeholders in the early stages is crucial to ensure the success of AgriCo

Strategy & Impact

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