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## Rising to the Challenge: What would be a sustainable e-commerce model for Cambodia's agri-food products?

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### Abstract

In recent years, e-commerce development has increased significantly due to a remarkable increase in smart phone and mobile internet adaptation, digital payment options, digital transport service providers, and increasing income levels of young adult consumers. It is clear that e-commerce can be a promising solution for Cambodia to solve ongoing market issues for agricultural products by reducing unnecessary costs along value chains, and potentially addressing information asymmetry in agricultural marketplaces. However, e-commerce is relatively new to Cambodia. Thus, adapting to this new way of doing business for agricultural products in Cambodia is challenging due to its less developed infrastructures for agricultural product value chains, and a lack of skilled labour and financial resources. Insights from agri e-commerce development in neighbouring countries and an analysis of current market conditions in Cambodia suggest an e-commerce model for agricultural products in Cambodia.

**Key words:** Cambodia, agricultural products, e-commerce, enabling environment, sustainability

### Introduction

The agriculture sector in Cambodia plays a significant role in the economic development of the country, where 40 per cent of the population are farming, contributing 22 per cent to national Gross Domestic Product (GDP). However, one of the pressing challenges in this sector is lack of market access with reasonable prices for local agricultural products. In recent years, Cambodia has embraced and implemented technology and digitalization into the public and private sectors to boost effectiveness and efficiency. However, e-commerce has not been widely implemented for agricultural products. With the significant impacts of e-commerce evident in agricultural sectors from other countries in the region, Cambodia should explore this new way of selling agricultural products in markets. This would support farmers gaining better access to alternative markets with higher prices due to reducing unnecessary costs along value chains. To have a clear picture how e-commerce would benefit Cambodian farmers, in this paper the aim is to explore possibilities in "agri e-commerce" development in Cambodia by reviewing the experiences of China and Thailand in promoting e-commerce for their agricultural sector. The current conditions of Cambodian markets are described to understand key drivers and challenges in developing e-commerce for Cambodian agricultural products. With these insights from agri e-commerce

development in neighbouring countries and an analysis of current market conditions in Cambodia, an e-commerce model for agricultural products in Cambodia is suggested.

### **Agri E-Commerce**

Agri e-commerce is the sale or purchase of agri-food goods or services through the internet or digital platform, and it also includes flows of agricultural information, products and cash transactions. More importantly, Agri e-commerce also has the potential to enhance the performance of agricultural value chains with a reduction of inefficient distribution of agricultural products (Joiner & Okeleke, 2019), by broadening markets, transmitting information quickly, reducing transaction and inventory costs, and boosting opportunities for traders. Furthermore, better access to accurate information via agri e-commerce improves the quality of agricultural products in effective ways with a potential promotion on the industrialization level for agriculture sector (Joiner & Okeleke, 2019).

In recent years, a number of agri e-commerce services have been implemented across developing countries. Like other Southeast Asia Countries (ASEAN), with the promotion of the digital economy, some of these countries have placed their attention on e-commerce to support small and medium sized enterprises (SMEs) and farmers for their agri-food products, due to market demand, and a surge of internet, smartphone and online purchasing behaviour (Kemp & Moey, 2019).

In 2019, there was \$US3.63 billion of e-commerce spending for food and personal care products in six nations of the ASEAN region (Kemp & Moey, 2019), and this trend will continue to grow across the region due to two reasons. The first reason is that ASEAN consumers will continue to spend more in Food and Beverages than in any other product categories. By 2030, Food and Beverages spending will represent 30 per cent of ASEAN consumption – up to 40 per cent in the Philippines and Viet Nam (World Economic Forum, 2020). Another reason is that governments, businesses, and individuals in this region pay high attention on promoting digital economy growth to maximize its benefits (OECD, 2019).

However, the exponential growth of e-commerce of agricultural and food products, such as online food retailers, particularly in the Asia region, also face certain challenges. The first challenge is related to safety and quality control. One example is that proper inspection at the borders in some countries is limited, in particular if shipments are sold directly to consumers for personal use (Food Industry Asia, 2019). Another example is that food safety still remains a significant challenge in which the food safety laws have not effectively integrated into e-commerce business models due to these models being relatively new for food and agricultural products (Joiner & Okeleke, 2019). Furthermore, there is unclear guidance on marketing and advertising protocols on food or agricultural products via e-commerce platforms.

### **Emerging E-Commerce Models of Agri-Food Products**

According to Joiner & Okeleke (2019), there are seven enablers of accelerating e-commerce adoption across the region, developed by GASM intelligence, World Bank, and the UN Food and Agriculture Organisation. These are shown in (Table 1). This index is used to estimate attractiveness of a market in promoting e-commerce for both agricultural and non-agricultural products or services.

**Table 1. The market attractiveness index**

Agri e-commerce enablers	Weighting	Agri e-commerce enablers	Weighting
Mobile internet penetration	20 %	Financial inclusion	15 %
e-commerce familiarity	15 %	Agricultural readiness	15 %
Logistic networks	15 %	Urbanization	10 %
Income structure	10 %		

Source: (Joiner & Okeleke, 2019)

### Characteristics of agri-food products and purchasing behaviour

Agri-food products are categorized into three types: 1) fresh produce, 2) dry processed or packed food products, and 3) cooked or frozen foods. Based on these categories, agri-food products can be highly perishable, semi-perishable and stable or non-perishable.

- **Highly perishable agri-food products:** this refers to fresh fruits and vegetables, fresh meat, frozen meats, cooked food with specific temperature by using heater or refrigerator.
- **Semi-perishable agri-food products:** some fresh fruits and vegetables are able to be stored outside in cool place, but with less than a week of shelf life.
- **Non-perishable agri-food products:** this includes dry processed goods like rice, noodles, canned jar items, condiments and species.

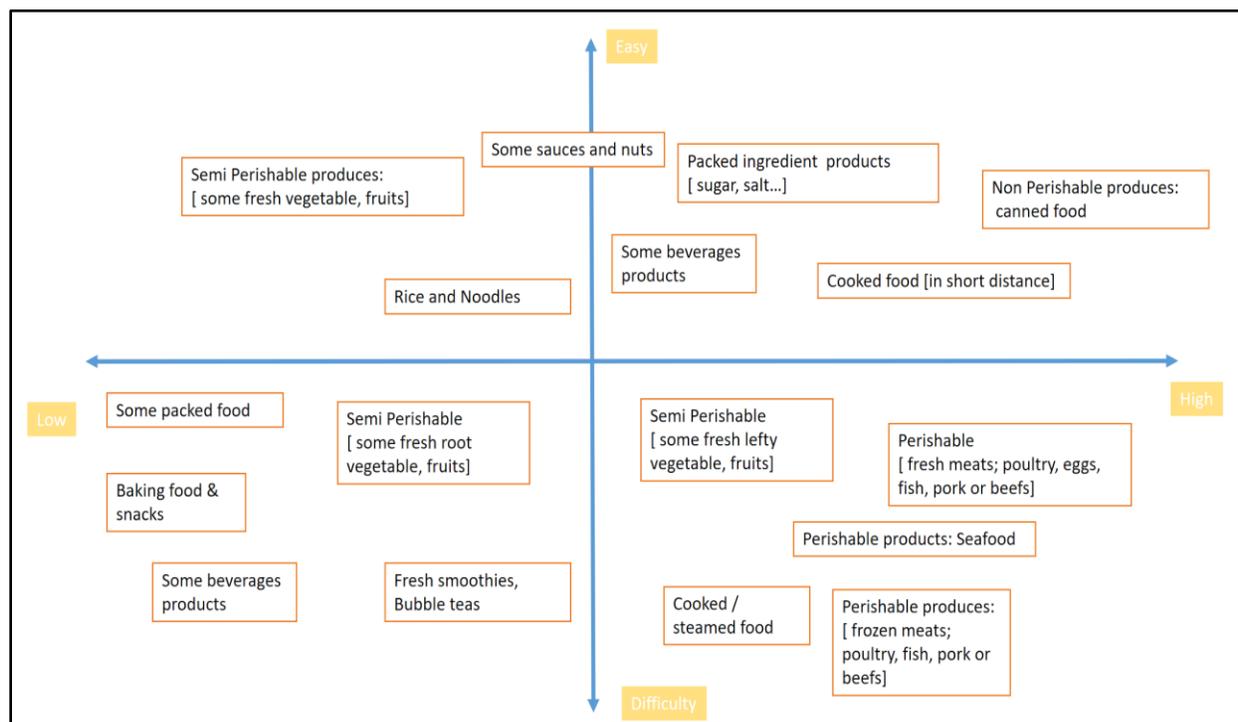
In relation to purchasing behaviour, consumers behave in a variety of ways during purchasing fresh agricultural products and the freshness, appearance and price may be valued by consumer more than other characteristics (Vukasovič, 2015; Mahaliyanaarachchi, 2007). Since quality of agrifood products is important, purchasing fresh food products online will be a challenge for consumers due to the absence of making judgement. Other buyers, who are businesses, usually purchase raw materials in bulk. This makes it more cost effective to transport the order to the buyer, compared with orders consisting of a small number of items. Agri raw materials tend to be less variable in quality than other types of produce (Joiner & Okeleke, 2019). More than some other consumer goods, agricultural and food products require trust along the chain from production to consumption, in particular once selling in e-marketplaces.

However, the difficulty in operating different agricultural products in the context of e-commerce is not always the same due to perishability (see Figure 1). The left axis shows the degree of difficulty, while the bottom axis shows degree of implementation.

### Regional Agri E-Commerce Development and Challenges

#### The case of China

Since 2005, agri e-commerce for agriculture and food products in China has been significantly promoted. If compared to other products, uptake of agricultural and food products has been slower. Yet, it has provided great advantages to accelerate e-business models for agricultural products across the country, by capitalizing on existing e-commerce infrastructures. These include e-commerce platforms like Alibaba, TaoBao village e-marketplaces and WeChat, existing distribution networks, e-payment options

**Figure 1. Difficulty in operating agricultural products in e-commerce platform**

Source: adapted from (Dan & Qihong, 2014)

like Alipay, and ongoing private and public investment schemes in the e-commerce sector familiar with shopping online (Liu & Walsh, 2019). However, the replication of the model of ordinary e-commerce to agricultural products was imperfect in China. As a result, many e-businesses failed because of inability to effectively deal with specific characteristics of agricultural products and the complexity in value chains (Liu & Walsh, 2019).

Before 2013, there were only two major e-commerce groups, Alibaba Group and Jingdong Mall, involved in the development of rural e-commerce. In addition, Tootoo.cn and Benlai.com obtained venture capital to develop their operations for fresh agricultural products (Liu & Walsh, 2019). After 2013, the e-commerce development of fresh agricultural products in China accelerated with a diversified trend with the emergence of B2C, C2C, C2B and O2O (online to offline). In 2017, there were approximately 4,000 e-commerce platforms in China relating to agricultural transactions. Now, there are four e-commerce models for fresh agriproducts: integrated e-commerce platform models; vertical e-commerce models; logistics e-commerce models; and O2O e-commerce models (Liu & Walsh, 2019) (Table 2).

**Integrated e-commerce platform model:** this is a platform which licenses third party merchants to sell their agricultural products. Taobao fresh, Jingdong fresh, Suning fresh are examples of this model. Their strong brand and reputation in the marketplace have generated a large number of clients. However, this type of platform has some limitations, such as lack of consistent fresh product quality control and logistics problems (Xu, Ning and Wang, 2018).

**Vertical e-commerce models:** this model mainly focuses on food, and all products are provided by the platform. This means that a consistency of product quality is assured by the platform, potentially generating customer satisfaction. The platform is responsible for distribution. Collaborating with

specialist third-party logistics operations can reduce the loss of products in logistic activities. However, it is costly and therefore this e-commerce model operates only in particular areas or cities (Xu, Ning and Wang, 2018).

**Table 2. Agri e-commerce business model for fresh agricultural product in China**

e-commerce platform model	Vertical e-commerce model	O2O e-commerce model
	1) Logistic e-commerce model 2) Supply e-commerce model 3) Professional localisation e-commerce model	4) Offline supermarket e-commerce model 5) Local community O2O model

Source: (Liu & Walsh, 2019)

**O2O e-commerce models:** this is a combination of physical supermarkets, food shops or grocery stores from both offline and the internet. This platform provides quick response and is more transparent and delivers a good consumer experience. Examples are 7Fresh, Super species, and Hema fresh (Liu & Walsh, 2019). However, the investment in the construction of supply chain and logistics is very costly. Furthermore, the early-stage investment is requiring a lot of resources and the shift of consumer purchasing behaviour needs to be cultivated (Xu, Ning and Wang, 2018).

### The case of Thailand

e-commerce for agricultural products in Thailand is still in the early stage of development. There are a few SMEs and farmers using digital channels, but only for organic or non-pesticide products. According to the Electronics Transaction Development Agency (ETDA, 2019), the wholesale and retail industry and manufacturing industry have mainly deployed e-commerce for agricultural products. Moreover, the market for e-commerce in the wholesale and retail industry generally depends on SMEs, while in manufacturing it is mostly generated by large enterprises.

In the manufacturing industry, the B2C digital platform with 61.38 per cent market share and the B2B digital platform with 38.62 per cent market share sell various Thai agricultural and industrial products.

However, there is limited data sharing and coordination on the agricultural products in the manufacturing industry. In addition, there are four e-commerce platforms, consisting of social media, agricultural e-marketplace platform, e-retailers, and e-fresh market with six different market channels (Figure 3).

Farmers, agricultural cooperatives, collectors, e-commerce providers, retailers, traditional markets, and end users all play significant roles in the agri-food value chain. Another important player is logistics service providers. There are both on-demand delivery (i.e. Skootar, Lalamove) and third-party logistics (i.e. Kerry, Thailand post, FedEx, DHL). Financial service providers are also key players in e-commerce platforms. Two types of e-payments are payment gateways (i.e. 2C2P, PayPal, Omise, truemoney) and mobile payments (i.e. mobile banking).

Furthermore, a number of Agri e-commerce services are provided by the public sector in the form of B2C and C2C as below:

- *DGT farm* is provided by the National Bureau of Agricultural Commodity and Food Standards,
- *Agrimark.di.go.th* is provided by the Department of International Trade (DIT),
- *Agrimart.in.th* is provided by the Thailand Ministry of Agriculture and Cooperative,
- *Thaitrade.com* is provided by the Electronic Transactions Development Agency (ETDA),
- *Coop.mart.com* is provided by agricultural co-operative,
- *Coop Shopth.com* is provided by the Cooperative Promotion Department, and *Co-opclick.com* by the Agricultural Cooperative Federation of Thailand, LTD.

In Thailand, four Agri e-commerce business models have been operating: social media, agricultural e-Marketplace form, e-Retailer and e-Fresh market (see Table 3).

**Table 3. Agri e-commerce business models in Thailand**

Social media	Agricultural e-Marketplace form	e- Retailer	e-Fresh market
1.) Farmers -> Consumers	1.) Farmers -> e-commerce service providers -> consumer/hotel, restaurant, cafes (HRCs) service providers	1) Retailers -> Online channels	1) Traditional market -> online store
2.) Farmers -> Agricultural Cooperatives -> Farmers	2.) Farmers-> collectors -> e-commerce service providers -> consumers/HRCs service providers		

Source: (Lilavanichakul, 2018)

Apart from this, private investment in e-commerce in the agricultural sector has been established due to its potential growth. However, most services are still in the early stage, requiring additional sources of funding and time to build up the business (Prateepsawangwong and Luo, 2018). For instance, Get Kaset is a C2C e-commerce service provider which assists farmers sell their agricultural products directly to customers at a fair price using e-marketplace. Another example is Freshket, a B2B e- marketplace for fresh food suppliers and restaurants that helps farmers and suppliers to sell their products as well as helping restaurants to get fresh products.

However, there are certain pressing challenges: improving operation and marketing skills for Agri e-commerce; logistical challenges of long delivery time; consumer preference on purchasing agricultural products by themselves; consumer protection, trade policy, tax policy, and environmental policy on e-commerce are uncertain; and Thai farmers and SMEs have not widely adapted to digital channels (Lilavanichakul, 2018).

### The Cambodian Agriculture sector

The agriculture sector plays a significant role in the economic development in Cambodia, where 40 per cent of the population are farming, and contributing 22 per cent of Cambodia's GDP. It is reported that its contribution increased to KHR 9504.50 billion in 2018 from KHR 9401.20 billion in 2017 (Figure 2).

There are a number of different agri-food value chain structures and characteristics in Cambodian agriculture.

**Figure 2. The contribution of the agricultural sector to Cambodian GDP from 2010 to 2018**



Source: (Trading Economics, 2017)

### Types of agricultural value chains

**Middlemen-based value chains:** these are the longest agri-food value chains where there are many middlemen, starting from the farm gate to the village, district and provincial levels before distributing to processors, markets and consumers. This model is the predominant one operating in Cambodia (USAID Cambodia, 2015; World Bank, 2018). However, there are asymmetric information issues, middlemen have manipulated the price at the markets and farmers often sell their crops at very exploited prices (Kosal, 2020).

**Cooperative-based value chains:** in 2017, 880 agricultural cooperatives were formed across Cambodia with approximately 89,474 farmers (Chea, 2018). The contract farming model has recently been adopted into these communities for commodities such as rice, pepper, cashew and cassava, fruits and vegetables. This approach reduces some unnecessary actors along the value chain and farmers have better access to price information such as fixed requirements of buyers.

**Vertically-integrated value chains:** these chains are a small portion in the agriculture industry in Cambodia. This vertically integrated value chain has been adopted by large commercial farms which have adequate capital or are operated by foreign investment companies (Saing, Hem, Ouch, Phann & Pon, 2012). This relates to some agri companies working on certain crops such as rice, sugarcane, banana and mango for export.

**Emerging agri-food value chains [digital integrated marketplaces]:** in recent years, there is a new signal in trading agri-food products online, particularly from restaurants and food retailers to consumers via online mobile apps and social media like Facebook (Kemp, 2020).

### Key value chain players (see Figure 3)

**Farmers:** the majority of Cambodian farmers are small scale. Most farmers owning their farm land have less than 1.6 hectares and 40 per cent have less than 0.8 hectares (World Bank, 2019).

**In country-processors:** these are micro, small and medium enterprises (MSMEs) producing primarily for the domestic market and located close to production zones. There were 31,400 SMEs processing food and beverages in 2012 and 84 per cent of all formally registered SMEs in the country (GIZ, 2020).

**Logistics and transportation providers:** there are a huge gap in agri-food facilities, such as cold chain logistics in Cambodia. Yusen and LSH are the main key cold chains recognized as meeting international standards (DLCA logcluster, 2014; Food Logistics, 2016).

**Retailers:** there is significant growth in modern food retailers such as supermarkets, hypermarket convenience stores both local brands like Natural Garden and Thai Hout supermarkets and internal retail chains like Lucky supermarkets, AEON and Makro (Cambopedia, 2018). Traditional or wet markets play significant roles in supplying food to domestic consumers across the country. Other food retail services include restaurants, hotels and street food vendors serving food in marketplaces.

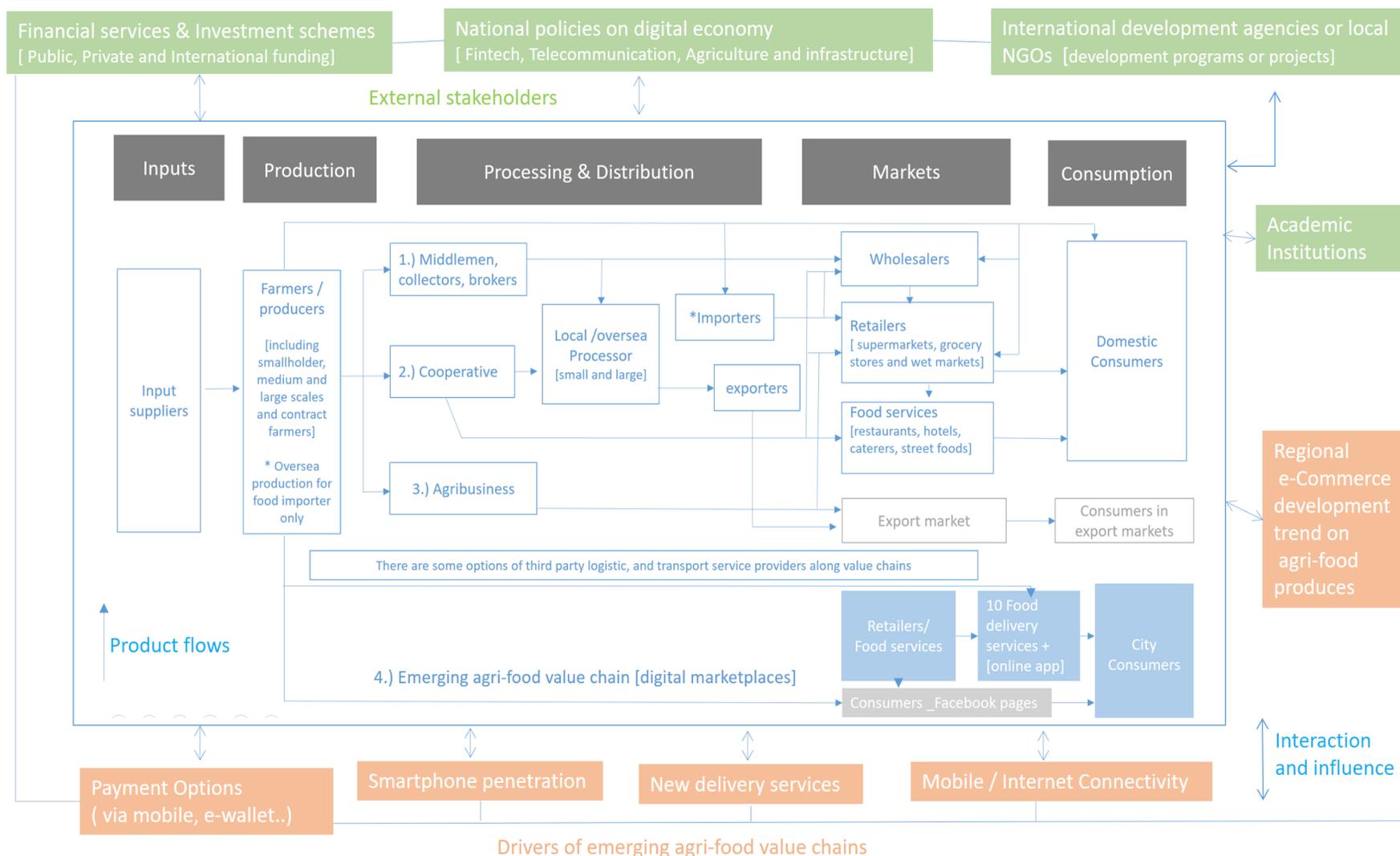
**Government bodies:** there are significant entities such as the Ministry of Agriculture, Forestry and Fisheries (MAFF), Ministry of Commerce (MoC), Ministry of Posts and Telecommunications (MPT), Ministry of Industry, Science, Technology and Innovation (MISTI), which all play a significant role in agri product value chains in Cambodia. A number of initiatives to support agri-food industry growth in Cambodia have been announced recently. One example is that an implementation unit of the Entrepreneurship Development Fund (EDF) known as Khmer Enterprise (KE) has been established as a government trust fund. Its activities aim to build a vibrant entrepreneurial ecosystem by providing financial and non-financial support.

**International development agencies and local NGOs:** there are new types of collaboration programs, and funding, which have been implemented and launched between international development agencies, government bodies and academic institutes to support farmers and agri SMEs. In June 2020, Khmer Enterprise (KE), Cambodia Australia Agricultural Value Chain Program (CAVAC), and the Institute of Technology of Cambodia (ITC), established a partnership agreement to boosting food processing innovation for SMEs across the country (Sok, 2020).

### E-commerce trends and its development

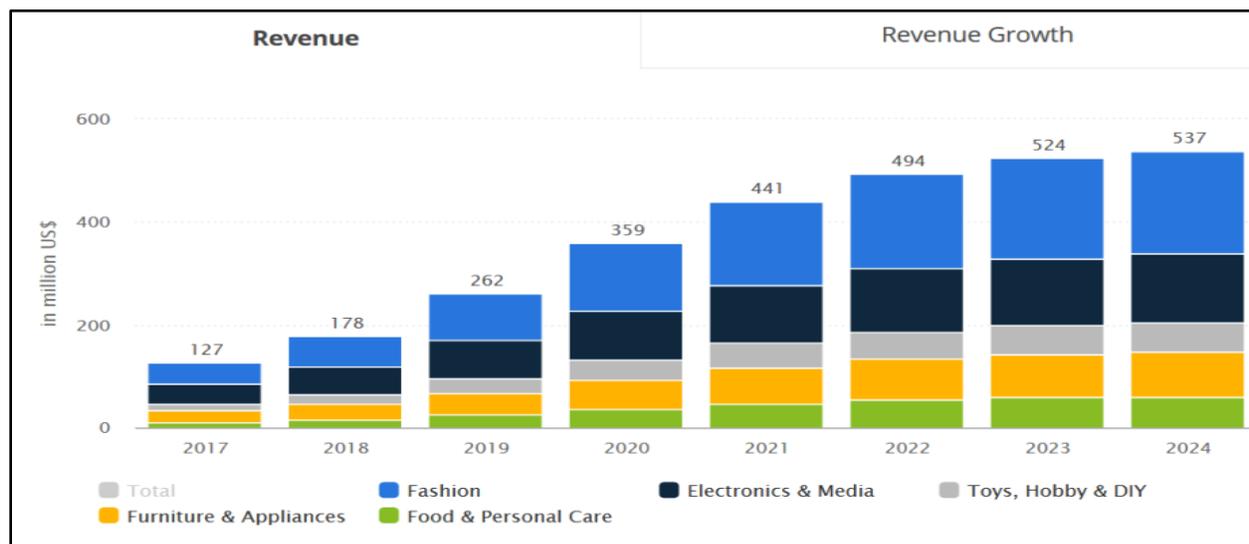
E-commerce has presented itself in the Cambodia market since 2017 and Figure 4 shows that the online purchasing rate has increased over recent years and it is expected to increase in the future. Food and personal care products have been traded online and sales have been increasing over the period of 2017 to 2020 and again sales are predicted to grow slightly in coming years.

Figure 3. The current structure of agri-food value chain in Cambodia



Source: developed by author and adopted from a combination of rice, pond and cage aquaculture, and horticulture value chain maps (USAID Cambodia, 2015)

Figure 4. Total revenue growth of online sales in Cambodia



Source: (Statista, January 2020)

## Key Enablers of Agri e-commerce Adoption

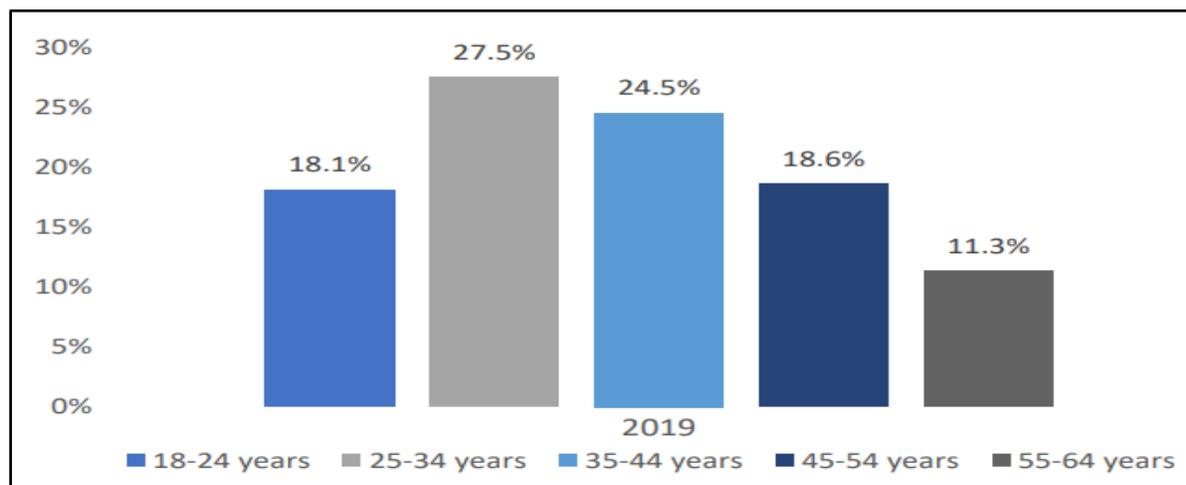
### Domestic consumers

**Smart phone and Internet penetration:** According to the latest figures of the Ministry of Posts and Telecommunications (2019), about 14.1 million, or 86.7 percent, out of the kingdom's 16.2 million people have access to the Internet, most of them get online via smartphones. In addition, there were 21.24 million mobile connections, and the number of mobile connections was equivalent to 128 per cent of the total population in January 2020 while Internet penetration stood at 58 per cent (Kemp, 2020). The option of affordable mobile internet is 5 USD per month for 4GB (Smart Axiata, 2020), which is equivalent to 3 per cent of the lowest average monthly wage 158 USD (World Bank, 2020).

**Growing income:** average income was \$US1620.64 GDP per capita in 2019 and it is expected to be \$US1730.88 in 2020, a rise of 6.8 per cent (Statista, 2019; World Bank, 2020).

**Young population:** approximately 55 per cent of the population are in the age group between 20 to 34 years old in 2018, and this segment is a potential group of consumers for e-commerce (Mango Tango Asia, 2016). Of Cambodian customers, who shopped online in 2019, 18.1 per cent are aged from 18 to 24 years, 27.5 per cent from 25-34 years, 18.6 per cent from 45-54 years, and 11.3 per cent from 55-64 years, (Statista, 2019) (see Figure 5).

**Online shopping behaviour:** the majority of Cambodian online shoppers prefer buying products from social commerce platforms such as Facebook and Instagram (Luo & Chea, 2018). Even when people shop from e-commerce websites, they order products directly from China through apps such as Alibaba or TaoBao, instead of using local e-commerce websites.

**Figure 5. Percentage of Cambodia population shopping online**

Source: (Statista, 2019)

### Enabling policies for e-commerce

In recent years, the Cambodia government has demonstrated strong support in establishing friendly and enabling environments to boost e-commerce growth by highlighting digital innovation, industry 4.0 and electronic ecommerce as new sources of growth in the country (Royal Government of Cambodia, 2018). Aligned with this national strategy, the Ministry of Agriculture, Forestry and Fisheries also released its five-year strategy for transforming agriculture and food to advanced agribusiness through employing technology, sustainability and globalization (Chea, 2019). The government is committed to promote this digital economy growth by incentivizing more investment in this sector.

Furthermore, the e-commerce law and the consumer protection law were enacted on 2 November 2019 to support the growth potential of e-commerce in Cambodia. With this legal enhancement, it potentially will contribute to building trust in this new marketplace as well as strengthening the e-commerce ecosystem (Cohen, 2019). In addition, the Cambodian government has worked collaboratively with the UNDP and the Cainiao 4PXgroup, which is the logistics arm of the Alibaba Group, in 2019 to implement a three-year project in Cambodia with the aim of accelerating the uptake of e-commerce and its logistics solutions for both domestic and cross-border trade (May, 2019). Apart from this, the Ministry of Commerce has partnered with UNDP to pilot the project "Go4eCAM" to support SMEs to grow digitally and obtain access to finance (Chhut, 2020).

### Increasing delivery services

A number of delivery services have been growing, fostering last-mile connectivity between local businesses and consumers with an integration of digital platforms. Added to this, ten companies mainly focus on food delivery service in cities (B2B Cambodia, 2020a).

### Other factors

According to Visa Cambodia, the total value of Visa card purchases of services or goods in Cambodia grew by 43 per cent in 2017. Transaction numbers grew at 58 per cent. Transactions on Visa cards in Cambodia increased again by 93 per cent between 2018 and 2019 (Chhut, 2019). Further, Visa planned to implement a pilot scheme by collaborating directly with certain factories. These participating factories will be able to deposit wages directly into workers' accounts. While workers can activate different options such as digital wallets, they also can pay bills or send money directly to their family (B2B Cambodia, 2020b). In addition, a number of Scan to Pay or QR payment options are provided by many banks in Cambodia such as ABA, ACLEDA, and AEON. Added to this, Wing, PayGO, True money, Click and PI Pay are mobile payment service providers in Cambodia (B2B Cambodia, 2020b).

Finally, the pandemic has raised attention from all stakeholders along agri-food value chains, in particular the government, other development agencies and SMEs communities, as well as some domestic consumers particularly in urban areas, to shift ways of living, studying, working and shopping digitally especially during the lockdown (Banga & Velde, 2020; Sum, 2018; Thou, 2020; UNTACD 2020).

## **Existing Challenges for Agri E-Commerce Adoption**

### **Limitations of infrastructure**

Although the national infrastructure in Cambodia has improved overall, road connectivity from rural villages to provincial markets or to urban markets remains a constraint (Open Development Cambodia, 2015). Facilities for proper storage and transport of food are also very limited. Moreover, the internet speed is relatively slow. Importantly, the application level of technology is relatively low, so e-commerce for agricultural products has not developed.

### **Food safety and quality control**

Although there is national and regional food safety regulation, the levels of enforcement and implementation in production systems remain low. Food safety is a pressing issue in Cambodia, where food fraud and contamination are prevalent and impose high risk as well as concerns among domestic consumers (Mengchou & Spengler, 2016).

### **The effects of climate change**

Growing agricultural products becomes a great challenge for farming communities in effectively adapting to extreme changing climate patterns, like severe drought and limited water availability. This might raise another challenge for farmers to ensure a consistent standard of their agricultural products (Sun, 2019).

### **Local agricultural products**

Most sales of agricultural products are as raw material with limited value added, resulting in little profit, so there is a lack of funds and investment for e-commerce platforms for agri-food products. There is also asymmetric information on agricultural products with little economy of scale and standardization (Chrun, Ngoun & Kong, 2019).

### **Consumer readiness**

A majority of Cambodian consumers shop and buy fresh food at physical traditional wet markets and some modern stores. They usually select and judge the quality and freshness of agricultural products through using their senses, like seeing, touching and smelling. However, e-market platforms for agricultural products do not give consumers the opportunity to do that. Moreover, online payment options are associated with high risk in the minds of consumers (Hu & ChhengAun, 2017).

### **Lack of skills**

E-commerce is a new concept of doing business in Cambodia and there are skilled labor gaps in information technology, inventory management and digital markets (UNCTAD, 2017).

## **Suggested Improvements**

### **A summary of the experience from China and Thailand**

- The facilitation of agri e-commerce should be iterated over time due to individual context or market conditions. Using a simple replication approach of the ordinary e-commerce model (for dry packaged goods) does not work well for agricultural products.
- In agricultural markets, farmers, government, private firms and buyers or traders, are all involved in developing agri e-commerce business models.
- Initiatives of the governments in establishing specific policies for agri e-commerce and building its infrastructures for agricultural products have greatly impacted on agri e-commerce development. This encourages the private sector to invest in this sector.
- The introduction of agri e-commerce should not focus only on improving process, but also contribute to agricultural product and function upgrading due to the characteristics of products and markets.
- China and Thailand are still facing a number of challenges in promoting agri e-commerce adaptation and its effective e-commerce operations in the markets.
- However, a positive implication might be that the integration of e-commerce into agricultural value chains does not necessarily require all stakeholders of the chains to be ready.

With these lessons, there is a likelihood that Cambodia should seize current opportunities to explore e-commerce models for local agricultural products, and this uptake should be adapted to local context as outlined in the following.

### **The Government**

#### ***Improving the existing enabling environment for agri e-commerce***

Recently, the government has established e-commerce and consumer protection laws, and these regulations play a role in promoting digital marketplaces in Cambodia. However, selling agricultural products in digital market channels is required to have an effective integration and implementation between these two laws and national or international food regulatory guidelines. The government should identify key players, who will operate or involve in an e-marketplace model by clearly instructing key responsibility of ensuring the safety of agri-food product handling, information and cash transfer. With this clear integrated guideline for agri e-commerce, this potentially helps to assist in operating agri

e-commerce business models in Cambodia as well as to minimize certain risks. Moreover, this would help to establish trust among consumers in local and international markets, and increase the confidence of investors.

The enabling environment for agri e-commerce should be actively upgraded time by time in response to the current challenges or needs. By achieving this, the government should consider to have a specific team, who dedicates to work on agri ecommerce promotion and development under the appointed ministry or department.

#### ***Leveraging on the current e-commerce projects for agricultural products***

The government should engage with key stakeholders, like academic or research institutes, to study the exciting current e-marketplaces that are coordinating trade in local agricultural products. One example is “China-Cambodia agricultural products e-commerce platform” (<http://zj.asean-cn.org>). This e-marketplace was launched in 2016 under ASEAN China Free Trade Area Joint Committee, by the Department of Commerce of Yunnan Province. This e-marketplace might offer insights on how to operate and improve e-marketplaces for Cambodia's agricultural products to international markets, in particular in meeting food safety regulation and e-commerce law enforcement, and its challenges. The lessons learned from current e-commerce operations would benefit Cambodia and other stakeholders to accelerate effectively agri e-commerce development and uptake.

#### ***Raising awareness of agri e-commerce practical knowledge and adoption***

The government should raise awareness of doing trades in agricultural products via digital marketplaces to all key stakeholders along value chains. Having consistent communication and precise messages among both internal and external stakeholders, such as participating government bodies, businesses, farming communities and consumers, might help to reduce certain risks in agricultural and food markets. As stated in the Cambodia context, some of the current collaborations potentially represent opportunities to raise awareness of e-commerce for selling agricultural products and its legislative practices to key stakeholders in the current projects, in a cost-effective way.

#### ***Taking another lead in promoting digital market platforms***

The government should pilot an e-marketplace project for Cambodian agricultural products or commodities for international markets, in which local agricultural products will be traded in bulk, potentially under the management of the General Department of International trade. This B2B e-marketplace model might help to promote local products and connect to international traders and buyers. In addition, this can be an ideal place to understand challenges, test and explore the best practices in complying the integrated e-commerce laws and food safety regulation to international marketplaces. This can be a way of enhancing the enabling environment to accelerate agri e-commerce adoption and development in Cambodia.

By capitalizing the existing activities of each department under the General Department of International Trade at the Ministry of Commerce, this suggested e-marketplace will be a living marketing tool for Cambodian agricultural products and elevate the convenience for international buyers to access information of Cambodia agricultural products and to make a purchase. This e-marketplace website could be promoted by each website of the Cambodia embassy across the global. Possibly, this e-marketplace might help to generate extra income for departments from commission based fees.

However, intensive investment in this e-marketplace and new skills, and importantly commitments from this public sector, is required.

## **Private Firms**

### ***Understanding a significant market challenge and market segmentation***

A firm has to identify a targeted market, and particularly understand whom this business will bring values to. By knowing this, it will determine how a firm should establish its operation function and coordination approach in the market. To establish a profitable e-business model for agricultural products, one critical aspect is to consider the lifetime profits from selected consumers with competitive values of the business, especially in reducing transaction costs. In the Cambodia context, working with existing farming communities or cooperatives should be considered as an early stage. B2B and B2C approaches for agricultural products should be explored in Cambodia, as most farmers and farming communities are small scale with very limited digital knowledge.

### ***Creating values for a sustainable e-market business operation***

For a sustainable business model, a firm should not only focus on establishing an e-marketplace for agricultural products in Cambodia, but also on developing a e-marketplace business model which depends on the firm's abilities to provide customer value. Values could be in products, processes, communication, follow-up, services, contents, connection and context. This suggests that an e-commerce platform firm has to work closely with supply partners, such as farmers, cooperatives or SMEs food producers, to enhance the performance with a purpose of delivering a consistency of product quality to their clients. In addition, complying with e-commerce law and consumer protection laws with food safety guideline practices would help an e-marketplace firm to build trust as well as develop good relationships with consumers. The aim would be to increase the frequency and numbers of orders, while also reducing food waste due to the perishability of agrifood products. In the meanwhile, having proper customer relationship management would help a firm to improve their services in response to real market needs. Based on consumer online purchasing experiences, social media platforms like Facebook and Instagram could be channels to reach out to local consumers.

### ***Building a logistic network for an agri e-marketplace business***

A business should have an effective system to standardise its operation, in terms of information, stock and inventory management with real-time data. However, this can be challenging and costly. A firm needs to have secure arrangements both with potential supply partners and existing delivery and payment service providers. This potentially helps to increase a firm's competitive advantage in the market. By leveraging existing transport and payment service providers, this reduces costs.

## **Conclusion**

Agri e-commerce could potentially create alternative values for agri-food chains in Cambodia, by adding more values along value chains and helping farmers sell their product at higher prices. The government, private firms, buyers and producers (farming communities, cooperatives and SME food processing) all have a stake in accelerating agri e-commerce development in Cambodia. In the early stages, the government plays an essential role in establishing and facilitating a well-functioning system for agri e-commerce, meanwhile enhancing food safety practice in these new selling channels. For private firms,

market segmentation is a key to develop a profitable and scalable e-business model in coordinating trades for agricultural products. In addition, a firm should obsess over values for stakeholders because this could help a business grow in a long run. However, the existing challenges of Cambodia might cause a number of risks, such as production risks, marketing risks, technology risks, legislation and policy risks, labor risks and financial risks. To reduce these risks, the commitments of and the strong collaboration among key stakeholders potentially capitalize this new way of doing business in the Cambodia agricultural value chains in an effective way.

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