

Aggregator Business as an Intermediary in Agriculture: A Literature Review

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Abstract: This paper reviews the literature on the basic concepts of aggregator business in Indonesia's agricultural sector. An aggregator business is essentially an intermediary that utilises information communication technology (ICT). Intermediaries in the Indonesian agricultural sector are known as *Tengkulak*, *Pengepul*, and *Bandar* all of which carry a negative image. The length of the supply chain associated with intermediaries results in a decrease in farmers' profits. This research reviews the relevant publications, including articles published in referenced books and journals, along with definitions of intermediary and business aggregators in business disruption. The phenomenon of disruption initiated the birth of a new business intermediary model, namely the business aggregator. This research was conducted in 12 business aggregators based in Indonesia using in-depth interviews with their owners and with a deputy assistant team from the coordinating ministry for the economy to get an alternative business aggregator model as an intermediary. There are six alternative aggregator business models comprising information sources (clearinghouses), connector (spark-plug), communities (village-preneur), food hubs, and upstream efficiency. This aggregator business will cut the supply chain and increase farmers' profits.

1 INTRODUCTION

The term 'intermediary' is used commonly in business sectors including agriculture and has both positive or negative connotations (Monieson, 2010). Judging from the scale of farming in Indonesia, most farmers in Indonesia are small-scale farmers such that intermediaries have a positive role because the majority of farmers in Indonesia are fragmented. If they distribute their agricultural products directly to consumers, it will cause prices to vary, and costs distribution will be more expensive due to irregular quantities (Fixing, 2013; Mejía & García-Díaz, 2018).

Mejía and García-Díaz (2018) revealed that in the long-run, intermediaries could reduce the profitability of producers/farmers. Intermediaries are often considered to reduce the efficiency of distributing agricultural products by lowering prices at the level of farmers (Ranjan, 2017; Tapsavi, 2009). Intermediaries only increase personal profits without increasing the added value of these products by utilising the limitations of market information of farmers as producers (Shankar, Singh, & Dwivedi, 2017).

Various efforts have sought to improve the farmers' welfare such as government intervention by providing extension programmes, assistance, and regulations. One such regulation is to develop farmer group institutions as stipulated in Law No. 16 of 2006 with the aim that such groups would increase their bargaining power (Ranjan, 2017). However, the institution that was formed has not provided optimal benefits for farmers who still face the same problem (Hanggana, 2018).

The role of farmer institutions is currently limited to distribution assistance from the government, such that the process of marketing agricultural products is still overseen by intermediaries (Hanggana, 2018).

Intermediaries, when viewed positively, provide many benefits to farmers. The majority of farmers in Indonesia do not have marketing knowledge in selling their products. Both consumers and farmers gain immensely from the roles of intermediaries, who ensure that there is a seamless flow of farmers' goods in the market by matching supply and demand. Rapid technological advancements could improve the marketing system. Technological advances, especially information technology, have been proven to improve the welfare of farmers in various

developing countries (Knoche, 2010). Information Communication Technology (ICT) services can be used for distance learning, financial services, market information, marketing networks, and various other information needs (Ranjan, 2017). ICT can be applied by intermediaries to connect farmers with consumers and reduce the marketing chain.

2 INTERMEDIARIES

Some of the intermediary terms used in the agricultural sector in Indonesia include middlemen, dealers, brokers, and collectors, among others.

“Pengepul are steaming people. Brokers are intermediary traders who connect traders with one another in terms of buying and selling or between sellers and buyers (Example: stocks and so on); While Tengkulak are intermediary traders (who buy agricultural products and so on from farmers or first owners); Bandar is a person who have fund for transaction “(KBBI Online)

The terms *Tengkulak*, *Pengepul*, and *Bandar*, are mostly interpreted negatively by farmers because they have negative impacts. Middlemen strive to make a profit by reducing the prices of farmers as low as possible (Shankar, Singh, & Dwiwedi, 2017; Ranjan, 2017; Simon, Benghozi, & Salvador, 2015). Farmers sometimes have no other choice because agricultural products rot easily and are bulky, so it is better for farmers to sell them to middlemen (Fixing, 2013). Farmers also face problems in terms of access to funding which is aggravated by complicated

regulations for applying for credit from banks. This is where the *Bandar* enters as a middleman who not only buy the farmers’ products but also invest in their harvest giving farmers no choice but to sell to the *Bandar* at prices that are usually below the market price.

2.1 Marketing Channels for Agricultural Products

The agricultural sector has an important role in economic development in Indonesia. Nevertheless, there are many obstacles to developing agricultural products such as marketing. Large demand for agricultural commodities creates a long distribution network starting from the level of farmers/producers, intermediary traders, to mobile traders/retailers who sell directly to end consumers. On the other hand, agricultural products have perishable characteristics that necessitate their special handling, and short marketing channels are needed so that the distribution processes are quick and the products reach the consumers in a timely fashion. A long marketing chain causes a decline in quality, losing weight due to damage to a commodity resulting in a loss (food loss) resulting in high distribution costs.

Farmers do not have other alternatives to market their products because based on the BPS Agricultural Order (2013), the average area of land controlled by agricultural enterprises in 2013 was 0.89 ha. Agricultural products in Indonesia are scattered in various regions, and the quantity spread is also small (Sudiyono, 2004). Therefore, farmer institutions play important roles in collecting products from farmers and distributing them to consumers.

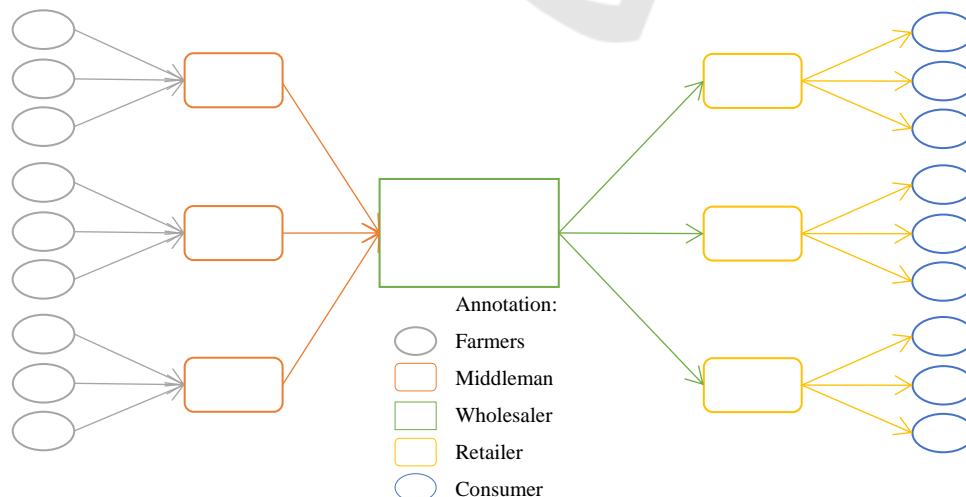


Figure 1: Marketing Channels of agricultural products (Sudiyono, 2004)

Figure 1 illustrates the marketing characteristics of agricultural products.

2.2 Aggregator Business Concept

The distribution of agricultural products in Indonesia is still weak as seen from the long-chained marketing channels. Ikhsan et al. (2015) found high prices at the consumer level due to production and productivity problems, while high prices at the level of wholesalers and retailers can occur due to the long chain and high logistics costs. Several developing countries are currently undergoing a period of disintermediation of the value chain (Figure 2). Indonesia as a developing country does not yet know whether it has implemented a value chain disintermediation. According to Laudon & Traver (2017), disintermediation is the loss of the function of market intermediaries (distributors and wholesalers).

Reardon & Timmer (2012) revealed that the role of intermediaries had been reduced due to the use of ICT so that producers can reduce interaction with intermediaries and can distribute directly. This shows that ICT plays a role in addressing the problem of inefficiency in marketing agricultural products.

2.2.1 Alternative Markets

The marketing process for horticultural commodities has been through long marketing

channels such that producers have low bargaining power and are the recipients of prices (Figure 1). Advancements in ICT opens up alternative markets for producers so that they are more efficient by selling Business-to-Business (B2B) or Business-to-Consumer (B2C). Farmers can do B2B by selling directly to restaurants, institutions/agencies, and wholesale markets. Also, farmers can increase their bargaining power, and the buyer (company/agency) can maintain the price, quality, and quantity of products purchased by providing advice and responses directly to farmers. Likewise, in the B2C mechanism, small farmers can have high bargaining power.

However, ICT adoption in Indonesia is still minimal, because the majority of farmers in Indonesia are not tertiary educated and access to ICT is still difficult due to infrastructure that is not evenly distributed. The following factors limit the use of ICT at the farm level, namely the lack of ability to use ICT, lack of awareness about the benefits of ICT, too difficult to use, lack of technological infrastructure, high technological costs, low levels of trust in ICT systems, lack of ICT application training, system integration and low availability of software (Taragola and Gelb 2005). Therefore, there is a need for actors who play a role in channelling ICT knowledge so that adoption of ICT can continue to grow at the level of farmers and consumers in Indonesia.

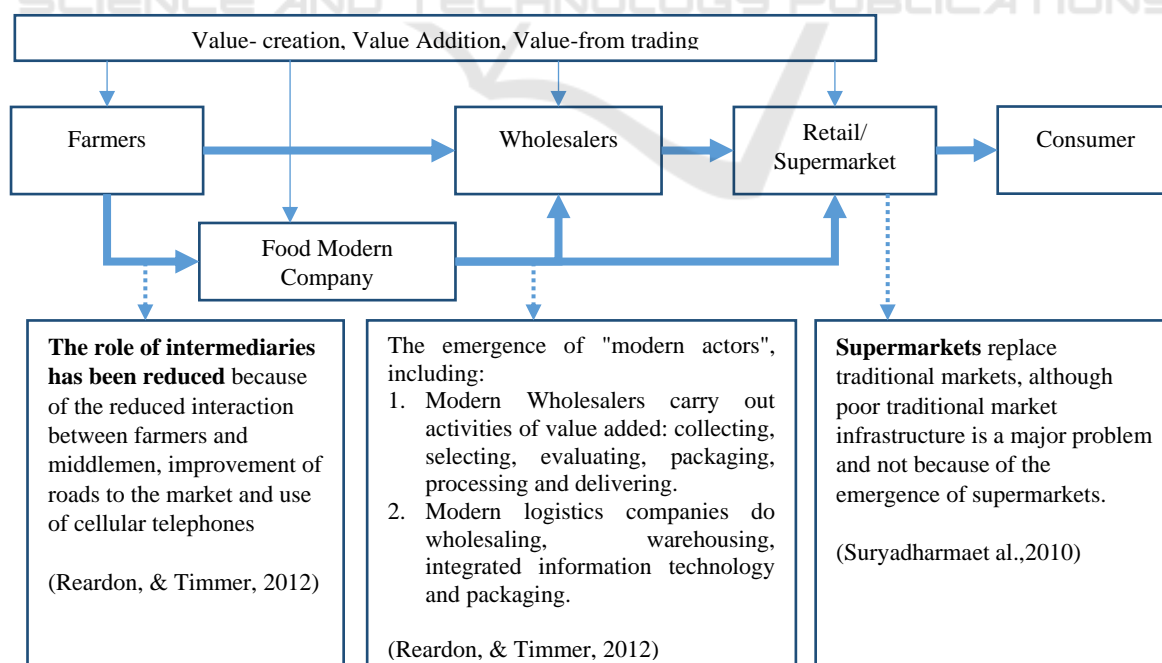


Figure 2: Value chain disintermediation in developing countries (Ikhsan et al., 2015)

2.2.2 Aggregator Business in the Disruption Era

Aggregate means the total obtained by adding shared items. Aggregation can also be defined as uniting in a coherent collection of different information sources (Moghaddam and Moballeg 2007).

Lembong (2016) refers to aggregator as a company or service provider that helps accommodate a variety of products from sellers and makes the product available in a place that is easily found by potential customers.

Aggregator in the context of this paper relates to 'actors' who play a role in the process of accommodating various types of agricultural products from various sources (farmers) and suppliers of agricultural products to end consumers in aggregate. Aggregators are collectors and intermediaries (Tapsavi, 2009). However, the concept that should be developed is how an intermediary business model plays a role in creating profits for farmers and remains actively connected with this marketing intermediary. This can be done by developing the right business model by packaging products and services that can be provided by an aggregator (Tapsavi, 2009).

Brokers who are currently developing can help farmers to reduce transaction costs, but with the digital era, ICT-based services need to be explored as a solution to existing problems (Tapsavi, 2009; Ranjan, 2017).

Digitalisation is the result of technological evolution (especially information) that changes almost all disruptions. This era of disruption is a phenomenon when people shift activities that were originally carried out in the real world, into cyberspace. This phenomenon is developing in the changing pattern of the business world. The onslaught on various disruptive fields and the siege of technology, ranging from the Internet of Things (IoT), big data, automation, robotics, cloud computing, to artificial intelligence (artificial intelligence) managed to carve a big mark in history: number 4.0 behind the industrial revolution. Efforts to improve the competitiveness of agricultural commodities in the era of disruption or industrial revolution 4.0 concern business actors who need to improve their ability to understand technology specifically ICT so that they can utilise and integrate internet / ICT capabilities within the business processes such as e-commerce.

12 business aggregators in Indonesia who have developed online applications for businesses in

agriculture that are objects in this paper can be seen in the following table.

Table 1: Aggregator Business in Agriculture

No	Business Aggregator	Website
1	Sayurbox	www.sayurbox.com
2	Keranjangsayur	www.keranjangsayur.com
3	PT Mandala AgroPersada Nusantara	www.sayours.co.id
4	IGrow	www.iGrow.asia
5	PT LimakiloMajub ersamaPetani	www.limakilo.co.id
6	Kecipir	www.kecipir.com
7	Sikumis	www.sikumis.com
8	KORPRI Jawa Tengah	www.regopantes.com
9	Etanee	www.etanee.co.id
10	Brambang	www.brambang.com
11	Tanihub	www.tanihub.com
12	KedaiSayur	www.kedaisayur.com

This aggregators provide information on production supply agriculture, production processes in agriculture, and the process of marketing agricultural products (e-commerce).

2.2.3 Objectives and Functions of Business Aggregators

The depth interviews with the deputy assistant team of the coordinating ministry for the economy resulted in obtaining the objectives and functions of the aggregator business, which are as follows:

- (1) Improve the efficiency of agricultural product trading systems;
- (2) Maintaining the availability of agricultural products;
- (3) Maintain stable prices of agricultural products;
- (4) Improve the welfare of farmers.

Business aggregator functions are:

- (1) Serving several distribution nodes at a regional scale;
- (2) Providing local supplies that are easily affordable and always ready at all times;
- (3) A broader and more selective offer that is more diverse to the source of branded commodities and local products;

- (4) Develop the supply of local products through training and mentoring activities to increase the number of producers;
- (5) Take advantage of available infrastructure to support cross-regional marketing;
- (6) Creating economic growth in general;
- (7) Reducing the cost of the trading system which has been considered a waste

2.2.4 Aggregator Business Models

According to Hubeis (2011), business is an economic activity that involves community members in the resources of production factors into goods / services that can meet consumer needs and generate profits for the producers on an ongoing basis through production activities (transformation technology), distribution (potential), and sales (consumption technology). The aggregator business model in agriculture was developed by the (Africa, Wo, Group, & Note, 2015) which revealed that the aggregation model benefits are as follows:

- a. Logistic support: aggregation reduces logistical costs from smallholder farmers. It may also be a tool for improving quality, as producer organisations can add value to crops through sorting, drying, storing and other functions, depending on their capacity.
- b. Marketing and distribution of services: aggregation can reduce marketing, distribution, money-lending and servicing costs for companies selling inputs or financial services to smallholders.
- c. Provision of training: training groups to increase productivity are generally more cost-efficient than working with farmers on a one-on-one basis.
- d. Information dissemination: aggregation reduces the cost of collecting and disseminating information for companies seeking certified crops, by reducing auditing costs for example.
- e. Bargaining power: collective action gives farmers bargaining power to secure better prices.

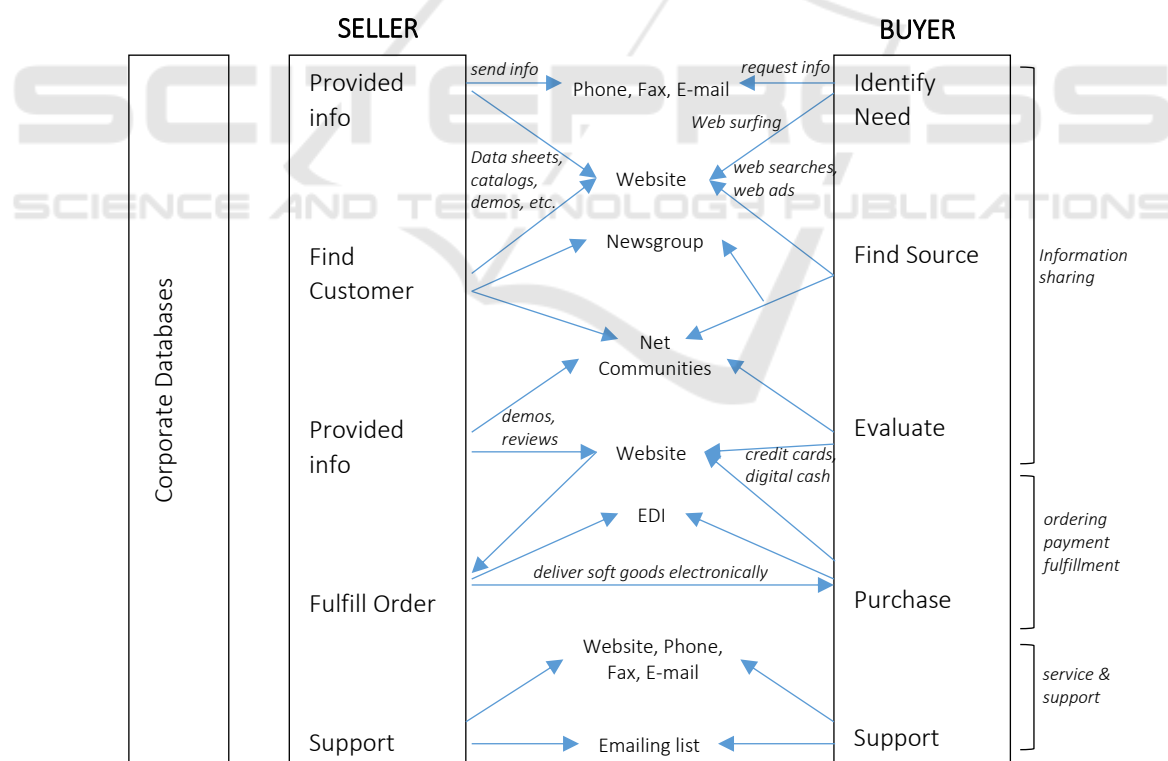


Figure 3: Business Process in the framework of e-commerce system (David Kosiur in Indrajit (2001))

In this paper, based on the reviewed literature and interviews with business people and experts from the ministry of coordinators of the Indonesian economy, we classify business models as follows:

(1) Based on e-commerce

The advancement of information and internet technology over the past few decades has had a significant impact on economic change. Increased internet diffusion and has made e-business a great potential in developing countries (Mishra, 2010). Because of the rapid advances in ICT, technology adoption is considered one of the main determinants for the survival of the company (Lip-Sam, T., & Hock-Eam, 2011).

The use of e-commerce is dominated by marketing and purchasing and procurement activities (Rahayu and Day, 2017). Indrajit (2001) revealed that e-commerce has characteristics including transactions between two parties; the exchange of goods, services or information; the main media in the trade process is the internet. Laudon & Traver (2017) revealed that the type of e-commerce that is most often discussed is business-to-consumer (B2C) e-commerce, where online businesses are trying to reach individual consumers in this case, which has been widely developed for downstream products. The business process in e-commerce can be seen in Figure 3.

Figure 3 shows that the company or group of people can offer their products and services through the internet. From the consumer side, the internet offers broad access to company information. After the information exchange, the next step is the process of ordering products or services electronically. In this business process, four streams must be managed well, namely the flow of goods, the flow of information, the flow of money, and the flow of documents.

One of the concepts of this aggregator business can be online by building e-commerce. The Indonesian trade minister revealed that all farmers would be connected virtually through e-commerce. Farmers who are members of the aggregator mechanism with e-commerce models can deal directly or sell their products directly to consumers.

(2) Information sources (clearinghouses)

The internet is instant in conveying all forms of information and can be used to deal with the problem of information asymmetry experienced by producers and consumers regarding availability, price, and product quality (Laudon & Traver, 2017). Therefore, the aggregator business is not just selling

farmers' products but can play a role in providing the information needed by each region.

Given that agricultural products are mostly seasonal, with the presence of ICT, information related to planting schedules and harvest schedules that are not simultaneous in each region can be handled by the existence of the aggregator. Singh (2009) revealed that farmers need to review their crop patterns to ensure which cropping patterns are most beneficial for farmers.

The advancement of technology infrastructure can improve internet access both in rural and urban areas so that farmers can access information about crops, weather, input and set prices, and also improve their abilities related to agricultural science (Singh, 2009). Proper information management can help farmers in making business decisions (Abreu, 2009).

(3) Connectors (spark-plug)

Aggregators can also be referred to as spark-plugs or connectors (Lembong, 2016). Aggregators can reduce inefficiencies in the process of distributing agricultural products (the availability of a strong sales information system that producers can dynamically set the price of their products to reflect actual demand or can play a role in the perfectly competitive market (Lambert, 2012).

The mechanism will form a producer selling price system where the roles of distributors and wholesalers are intermediaries between producers and consumers where they demand payment and raise costs but add little value will be lost (Laudon & Traver, 2017).

Connectors can also play a role in determining product standardisation in accordance with the characteristics of the product desired by consumers so that farmers can do their sorting and grading processes which will certainly increase the selling value of their products (Asokan, 2009; Revathy, 2015; Abreu, 2009).

(4) Community (village-preneur)

The aggregator business model can also be a farmer community in each region. This farming community will be very much needed as a gathering place for farmers. The government has made an effort to build farmer communities in each region to be more competitive by forming farmer groups (Law No. 16 of 2006).

In addition to the farmer groups, cooperatives can also move to run the aggregator business function by prioritising the interests of their members. In countries that have a developed and developing the cooperative system, this model is also progressing rapidly because cooperatives work for the interests of

members. Cooperatives or farmer groups can build bazaars or farm markets in each region to create a platform where farmers can sell their products directly to consumers without the intervention of intermediaries (Dey, 2012).

Increasing the capacity of rural resources in the context of village-preneur will improve the village economy and the development of the industrial and service sectors.

(5) Food Hub

Hub defined as “a centre of activity”. Harrington (2018) defines food hubs as physical or virtual entities that help various players in the movement of food from farmers to consumers. Meanwhile, Barham et al. (2012) define food hubs as businesses or organisations that actively manage aggregation, distribution, and marketing of food products identified by sources, especially from local and regional producers to strengthen their ability to meet wholesale, retail and individual demands.

Hamilton (2015) revealed the role of food hubs in the marketing value chain of agricultural products includes 1) food hubs (aggregating) which play a role in combining products from various sources, including small and medium producers to institutional consumers; 2) Food hubs play a role in distributing products from farmers to buyers that can be done alone or in collaboration with third parties (examples of expedition services); 3) Food hubs as a broker is considered more efficient than farmers marketing their products privately; and 4) food hubs as processing by carrying out activities that can add value to the product.

(6) Upstream Efficiency

Literally “efficiency” is defined as the accuracy of the way (effort, work) in carrying out something (by not wasting time, effort, cost (KBBI Online). Economists as a whole describe that economic efficiency will occur when individuals in society maximise their utility, remembering available resources (Productivity Commission, 2013).

The agribusiness sub-system includes upstream, cultivation, and downstream agricultural sub-systems (Saragih 2004). Upstream agricultural sub-systems include hatchery/plant/animal nursery industries, industries that produce facilities and infrastructure used in the process of agricultural cultivation.

Several previous aggregator business models explain the efficiency of forwarding linkage from sub-cultivation systems to marketing agricultural products. Activities related to backward linkage are

how farmers can obtain precise, timely and appropriate production inputs.

The majority of farmers in Indonesia are small-scale, so the aggregator can act as a provider of production facilities and infrastructure, including as a facilitator of services to farmers to meet the needs of production facilities including fertilisers, certified seeds, pesticides, agricultural machinery, and farming capital (Singh, 2009).

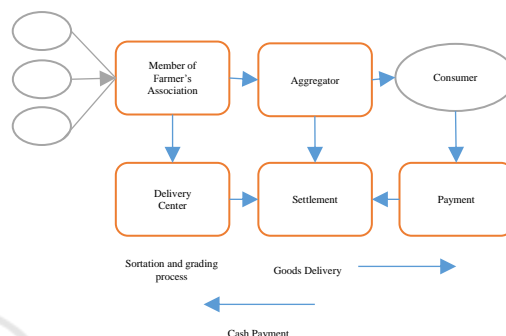


Figure 4: The aggregator mechanism as a spark plug (Asokan, 2009)

3 CONCLUSIONS

People often have negative perceptions of intermediaries or middleman in the agricultural sector which are often called *Tengkulak*, *Pengepul*, and *Bandar*. Middleman tries to make a profit by lowering the prices of farmers as low as possible. The large demand for agricultural commodities creates a long distribution network in agricultural products starting from the level of farmers/producers, intermediary traders, to mobile traders/retailers who sell directly to end consumers. This causes expensive distribution costs and low-quality agricultural products. An aggregator is a strategic solution for solving these problems. An aggregator is a modern actor in disruption era who plays a role in distributing agricultural products to consumers directly by utilising the advancement of information technology and also the role of the aggregator to improve both the welfare of farmers and consumer satisfaction.

There were six alternative aggregator business models namely e-commerce based, information sources (clearinghouses), a connector (spark-plug), communities (village-preneur), food hubs, and upstream efficiency. The six alternative aggregator business model share similarities with the function of an aggregator business that already exists in Africa.

The aggregator business will cut the supply chain and increase farmers' profits.

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