Bringing collaborative inclusiveness to Indonesian agribusiness in West Java through online platform

Mustika Sufiati Purwanegara,
Atik Aprianingsih and
Jeremy Joseph Hanniel*

School of Business and Management,
Institut Teknologi Bandung,
Jl. Ganesha 10, 40132, Bandung, Indonesia
Email: mustika@sbm-itb.ac.id
Email: atik.apri@sbm-itb.ac.id
Email: jeremy.joseph@sbm-itb.ac.id
*Corresponding author

Wan Khairuzzaman Wan Ismail

International Business School,
Universiti Teknologi Malaysia,
Jl. Sultan Yahya Petra, 54100, Kuala Lumpur, Malaysia
Email: m-wkhai@utm.my

Abstract: The purpose of this research is to propose an inclusive agribusiness model that can improve the economic conditions of farmers in Indonesia, especially in West Java. The researchers used multiple cases for investigating the business model for different commodities in the West Java area. For each case, the data were collected from farmers’ focus groups, interviews with stakeholders in each commodity, and through obtaining secondary data. It was discovered that farmers are constrained by various problems concerning lack of tangible and intangible resources. As the main agribusiness actor, farmers also have low welfare. To improve farmer’s welfare, a Purpose-Driven Inclusive Agribusiness Ecosystem (PDIAE) model is proposed in which participation of regulators, investors, infrastructure, knowledge empowerment, market and research information, and financial incentives are mandatory. These findings may enhance knowledge of how inclusive business models can increase the welfare of the bottom of the pyramid segment.

Keywords: agribusiness; agriculture; bottom of the pyramid; business ecosystem; inclusive business; West Java; Indonesia; online platform.


Biographical notes: Mustika Sufiati Purwanegara is a Lecturer and the Head of the Business Strategy and Marketing Expertise Interest Group in the School of Business and Management, Institut Teknologi Bandung. She is a prestigious club member of the Global Alliance of Marketing Management Associations.
1 Introduction

The survival of an organisation depends on its exchange relationship with others (Pfeffer and Salancik, 1978). Sustainability, which means to keep certain processes or activities going, is the goal of most business enterprises (Winston, 2011). In the agribusiness sector, the sustainability of farming enterprises, especially the smaller ones, depends on their relationships with processors, collectors, exporters, retailers, traditional markets, research institutions and universities, and banking and financial institutions. Farmers are considered as one of the major suppliers in the supply chain. Owing to the limited resources that they have, they do not have the capacity to exercise power in their relationships with other stakeholders in the supply chain. Power in supply chain relationships refers to the ability of one party to influence the other (Nyaga et al., 2013), and is an issue of dependency (Emerson, 1962). Firms use their power in business relationships to gain favourable exchange terms, greater share of relationship benefits, or to coerce partners to do what they would otherwise not do (Pfeffer and Salancik, 1978). Since Indonesian farmers cannot exercise their power over other stakeholders due to their lack of power, they are not in a position to obtain favourable exchange terms and a greater share of benefits from the relationship.

To better understand the farmers’ business, business model mapping is essential to investigate the strategic and tactical components of the firm (Leschke, 2013). Here,
business model is defined as the architecture or design structure of the business that includes the organisation as the actor to create, deliver, and capture the value proposition for the customer and the sources of revenue and cost (Osterwalder and Pigneur, 2010). Good business models can describe how the business system can earn profit to accelerate growth. Bad business models cannot yield profit because the stakeholders in the business are unable to obtain the benefits (value) from the expended cost (price).

Successful companies can fulfil their consumers’ needs with effective business models (Johnson et al., 2008). However, business models are designed for entrepreneurs, investors, business advisors and non-profit organisations (Leschke, 2013) – all of which have control over their resources and have the ability to make strategic and tactical decisions towards achieving their goals and objectives. Unfortunately, West Java farmers do not have that privilege. Limited resources and capabilities make it impossible to do business alone due to the systemic obstacles related to limited economic scale. For this reason, the authors believe that the business ecosystem approach (Moore, 1993) is appropriate in analysing the condition of West Java farmers. A business ecosystem is an economic community supported by inter-organisation and individual interactions which are a part of the business world. It is this economic community as a whole who makes valuable goods and services for customers. In this term, customers are also a part of the ecosystem. Commonly, the members of a business ecosystem are suppliers, producers, competitors, customers, and other business practitioners. Over time, the roles and capabilities of the ecosystem members evolve and adapt to the direction set by one or more ‘leading’ members of the ecosystem. The members who play the role as leaders can change at any time, but the role will have the same value in the ecosystem. The leaders’ role is to push the ecosystem members forward with the shared vision to integrate the investments they have committed to, so that all members have a mutually beneficial role in the single business ecosystem (Moore, 1993).

Inclusive business means doing business with the poor. Inclusive businesses engage people living at the base of the economic pyramid (BOP; Gradl and Jenkins, 2011). The stakeholders of inclusive businesses typically include individuals, companies, governments and intermediaries: business associations, cooperatives, unions, standard bodies, Non-Government Organisations (NGOs), public and private donors, academic and other research institutions, media and other trendsetters (Gradi and Jenkins, 2011). Inclusive business ecosystems intend to create prosperity and social development for business actors (including in agribusiness sector). They consist of people with limited education, the ones that will have limited access to facilities and infrastructure, and who will be faced with regulations that do not favour them (UNDP’s African Facility for Inclusive Markets, 2006). The obstacles for these low-income business doers can be solved by collaboration among the business doers, the government, researchers, funding organisations, university, and the whole society.

Although the agriculture sector in Indonesia contributes 33% to the gross domestic product (Statistics Indonesia, 2014a) and employs 41 million workers, which amounts to 43% of the total Indonesian labour force (Statistics Indonesia, 2014b), its contribution to wealth creation is limited. This is evident particularly in the province of West Java. Despite being the highest economic contributor to the country’s agricultural sector, it was the poorest province in Indonesia in 2013 and 2014. Based on this condition, West Java farmers can be considered as the bottom of the pyramid. Inclusive business as a method to improve BOP welfare has been studied in different geographical regions in the world, such as in nine developing countries in America (Reficco and Márquez, 2012), India (Bonnell and Veglio, 2011; Kapoor and Goyal, 2013; Goyal et al., 2014; Phillips et al.,
Although much research has been done on the topic, there is a need to disseminate the practice around the world (Vorley and Proctor, 2008), since the local situation has a significant impact (Phillips et al., 2011) and there is no single approach to handle BOP communities (Reficco and Márquez, 2012; Kapoor and Goyal, 2013; Goyal et al., 2014; Bonnell and Veglio, 2011; Teng and Oliveros, 2016). Previous evidence in Indonesia was related to microfinance (Bonnell and Veglio, 2011) and in aquaculture business post-2004 Tsunami in Aceh (Phillips et al., 2011). To the best of the authors’ knowledge, there is no research focusing on the inclusive agribusiness sector in West Java. Thus, the purpose of this study is to propose an inclusive business ecosystem model for farmers at the bottom of the pyramid (BOP) from the West Java cases.

2 Methods

2.1 Data collection

Multiple cases were used in investigating the business models for different commodities including mango, vegetables, rice, and coffee in the West Java province area. These commodities were chosen for this study because West Java province is famous for the production of said commodities. Apart from secondary data, the data collection was performed through observations, focus-group discussions with farmers, and in-depth interview sessions with stakeholders for each commodity. Data collection took place mainly at agricultural centres for each commodity across the West Java province with a varying number of available respondents at the time of research.

2.2 Focus-group discussion

Focus-group discussions (FGD) for this research consisted of two groups, farmers and stakeholders. For farmers, the focus-group discussions were conducted once for each commodity. Farmers who were selected to participate in the FGD were members of a cooperative or farmer group. The discussions were carried out to gain insight from the farmers, processors and government officials regarding product life cycle, value chain, production processes, problems, causes and expected solutions. Table 1 shows the participants of the FGD.

<table>
<thead>
<tr>
<th>Institution and locations</th>
<th>Quantity (persons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Java Regional Planning Board</td>
<td>West Java</td>
</tr>
<tr>
<td>Processor</td>
<td>Indramayu</td>
</tr>
<tr>
<td>Mango farmers</td>
<td>Indramayu, Cirebon, Sumedang, Kuningan</td>
</tr>
<tr>
<td>Vetiver farmers</td>
<td>Samarang, Garut</td>
</tr>
<tr>
<td>Rice farmers</td>
<td>Cianjur</td>
</tr>
<tr>
<td>Coffee farmers</td>
<td>Mount Halu</td>
</tr>
</tbody>
</table>
Semi-structured and structured interviews with inclusive-based collectors were conducted with Alpha (farmer group located in the northern Bandung city) and Gamma (farmer group producing horticulture in Pangalengan district). Structured interviews were carried out using an interview protocol as a ‘guided conversation’, adapted from The SME Capability Assessment Tools (Inclusive Business Hub for Practitioners, 2016). The semi-structured interviews were conducted using open-ended questions. The interview covered ten capability areas of the respondents, such as strategic management, procurement supplies, premises, distribution and transportation, product quality, interaction with customer, finance, leadership, human resources, and information technology. The respondents for semi-structured interviews were stakeholders, as shown in Table 2. The respondents for supermarkets were four large retailers: Carrefour, Hypermart, Hero and Yogya.

Table 2  Respondents list for semi-structured interviews

<table>
<thead>
<tr>
<th>Institution</th>
<th>Quantity (persons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer</td>
<td>15</td>
</tr>
<tr>
<td>Department of Industry and Trade West Java Province</td>
<td>2</td>
</tr>
<tr>
<td>Coordination Extension Agency</td>
<td>1</td>
</tr>
<tr>
<td>Department of Agriculture</td>
<td>10</td>
</tr>
<tr>
<td>Collector</td>
<td>7</td>
</tr>
<tr>
<td>Traditional Retailer</td>
<td>1</td>
</tr>
<tr>
<td>Supermarket</td>
<td>5</td>
</tr>
<tr>
<td>Cooperative</td>
<td>4</td>
</tr>
<tr>
<td>Exporter</td>
<td>3</td>
</tr>
<tr>
<td>Input agriculture providers</td>
<td>1</td>
</tr>
<tr>
<td>Lecturer</td>
<td>2</td>
</tr>
</tbody>
</table>

2.3 Data analysis

Analysing the data is a crucial step following the qualitative interview. The analysis of the data, which was based on Yin (2009), included a five-phased cycle: compiling, disassembling, reassembling (and arraying), interpreting, and concluding. Triangulation was performed to get different views of stakeholders and to ensure that all data were valid.

3 Results and findings

3.1 Current condition

Figure 1 summarises stakeholder relationships in the agricultural sector in West Java. Actors in West Java agribusiness model include research institutions and universities, banking and financial institutions, processors, collectors, exporters, traditional markets, governments and buyers or end users.
Farmers sell their fresh farm produce to processors in two ways, directly to buyers and/or through collectors. Collectors collect, sort, and grade a single type of farm produce from many farmers in order to gain volume so that they can meet the demand of processors, retailers, and exporters. The best produce is sold to exporters, while the second-best category of produce is sold to retailers. Produce which does not meet the quality requirement of exporters and retailers is sold to traditional markets.

Compared to farmers, collectors have more power in price negotiation for farm produce. Since in some cases collectors are the working capital provider for farmers, they have the final decision on farm-gate price. In Indonesian agriculture sector, there are three types of collectors: tengkulak, inclusive-based collectors, and producer cooperatives. Among the three, the one who is willing and able to provide working capital for farmers is tengkulak. However, collectors have less bargaining power when dealing with retailers and exporters. Retailers have more power in determining the produce price. Also, similar to farmers, collectors have restricted access to capital which is also seen as a threat to their sustainability.

Processors generally have more power compared to collectors and farmers. However, they are not free from problems ranging from limited knowledge and technology to resources to prolong the shelf life of the fresh produce. Yet, their power also loses to retailers and exporters. As the actors who directly engage with end consumers, both retailers and exporters have the final say thus the highest power in price negotiation.

When serving as buyer in agribusiness supply chain, collectors, processors, retailers, and exporters have high bargaining power. These conditions show that those four players are included in captive supplier-/buyer-dominant relationships. When there is value exchanged, the four agribusiness actors capture most of the value created. However, as is the case with other agribusiness actors, the four agribusiness actors are not without their own problems. Both retailers and exporters face high transaction costs to ensure the continuity in quality and quantity of the farm produce they sell to end consumers. Conversely, there are only a handful of suppliers that are able to meet this requirement, which forces the retailers and exporters to change suppliers as necessary. This is when problems arise. Every time they need to change suppliers, they face a huge transaction cost which includes the cost for supplier selection, monitoring, checking, quality control, and contract development. For the exporters, high transaction cost is coupled with inability to read the international market and lack of government support.

Few research institutions and universities help farmers and processors by sharing research results on farming, cultivation, processing, and management skills, or provision of technology. Financial services from banking and financial institutions rarely reach farmers and collectors due to their high risk profile, denying capital flow from these institutions to farmers. On the other hand, the government is related to, and regulates, all agribusiness actors. The government helps farmers with provision of input supplies, infrastructure, and technology, securing land ownership, and enacts and revises related policies as necessary.

From the description above, farmers seem to have the least power despite being the main agribusiness actor from whom all farm produce are sourced. This is proven by the fact that most of the farmers in this study do not have the capacity to manage their business strategically due to limited resources. It is found that farmers in at least three out of five cases can be classified into the BOP segment which earns less than US$ 1500 per year. However, farmers in all cases face the following
Bringing collaborative inclusiveness

problems to various extents: lack of capital, lack of knowledge, skill, or technology; lack of high-quality input supplies, lack of adequate infrastructure, lack of market access, and lack of market information.

3.2 Challenges in the Indonesian inclusive business ecosystem

Based on the findings from the field, it is concluded that the Indonesian Inclusive Business Ecosystem should address six basic needs or main problems/challenges of inclusive business: law and regulation, investment, infrastructure, knowledge empowerment, information, implementation support and financial incentives.

The first problem: law and regulation should be addressed by the government. Mango farmers highlighted the frequent occurrence of lack of farming input such as fertiliser. Furthermore, vetiver farmers also point out ineffective government support. One instance is that while the government has built vetiver processing facilities to increase vetiver’s value, the vetiver cooperative which was supposed to operate the plant could not provide financial capital for its members to purchase the required production input. Government regulation may provide guaranteed stability especially in the agricultural sector. An example of regulation in the face of price volatility is the protection of agricultural land and Law No. 13 (2010) on horticulture. This finding provides additional evidence to Teng and Oliveros (2016), who proposed that national policies and regulation are enablers of inclusive business in South East Asia.

The second challenge is investment. Investment is important for inclusive business models to face market conditions, since it serves as an enabler for an inclusive business (Teng and Oliveros, 2016). All farmers mentioned the need for collateral to obtain funds from banks. They also mentioned the lack of funding to buy farming inputs, such as pesticides and fertiliser. Horticulture farmers mentioned the need for bigger storage capacity. Coffee farmers also mentioned that they needed financial capital to grow coffee. Currently, the process to obtain the required capital is lengthy compared to the time to obtain returns. Investments in small-holder businesses are usually not well served by established financial institutions (Phillips et al., 2011). Generally, companies with inclusive models are struggling with their own capital without any experience to manage external funding. This requires effective collaboration with banks and investors to overcome the problem of capital and alleviate some of the financing needs of inclusive business.

The challenge of infrastructure development is the responsibility of the government since very few business actors can control this element. Infrastructure is very important in supporting the business ecosystem and is the main foundation for the business cycle of the ecosystem. Physical infrastructure is crucial in assuring fast delivery from agricultural suppliers to other actors in the agribusiness supply chain (Teng and Oliveros, 2016). The main problem in the infrastructure area is adequate roads. As a consequence, there are difficulties in transporting produce from harvest sites to collection points and from collection points to retail locations. The impact of inappropriate road infrastructure becomes more prevalent when the supply quantities are small.

The fourth challenge is knowledge empowerment. In the inclusive business ecosystem, it is necessary to support the BOP businesses in solving their problems by the assistance of other stakeholders. In addition, any problems that may arise with one member of the ecosystem can be accessed by all other members, allowing them to participate in solving the problems and compounding information to create new knowledge. The broader the
knowledge, the greater the opportunity to develop new, co-created value among members of an inclusive business ecosystem. This allows stakeholders to enhance their business practices and to accomplish both their own and shared ecosystem goals. On this particular matter, an increased awareness on farmers’ problems is needed to ensure every member of the inclusive business ecosystem understands the limitations of small farmers and to convince them to make new breakthroughs in the form of services that could help overcome obstacles and provide greater profits for parties that collaborate.

Most organisations and individuals can only change their behaviour if they have sufficient information about what to do and why they should do it. The need of this information are not limited to the needs of farmers but also extend to the needs of all business stakeholders in the ecosystem, including customers, governments, donors, the public, other companies, etc. Reliable training and research could be used to help develop a vision, and a mission to allow stakeholders within the ecosystem to collaborate to fulfil those needs. Furthermore, Phillips et al. (2011) also highlights the importance of providing technical and management skills in developing an inclusive business at the bottom of the pyramid.

The fifth problem concerns information. An important role is held by a research institution or a consultant to provide market data for companies and low-income markets. This information is very important as an essential foundation for any business activity.

The sixth problem relates to implementation support. Availability of logistics, transactions, marketing and communications, and micro-business support services are types of implementation support that enable companies with inclusive models to work in a variety of dynamic environments. Farmer communities need support from companies, organisations and research institutions to assist with these activities.

The last problem is financial incentives. Incentives can provide opportunities for low-income individuals to participate in the market and create benefits for the environment. Direct incentives provided by the government or a company can motivate stakeholders to solve social problems. A company can create policies that set guidelines for standards and certification with several actors; intermediaries, public and private development partners and governments. Government and development partners reward businesses that are open to selling low-income farmer’s products.

Among these challenges, one with enormous impact on farmers is policy and regulation. A political observer from The Indonesian Institute of Science stated that in the last couple of years, there is no political synergy between central and regional/local government (Wibowo, 2016). Furthermore, the Indonesian president, Joko Widodo repeatedly emphasised that there are 3000 local regulations that need to be revoked since those regulations are deemed to inhibit national development (Farid, 2016). The president also highlighted that the provincial or municipal government inclination is to focus their budgeting on physical facilities rather than regional development (Farid, 2016).

3.3 Proposed inclusive agribusiness ecosystem model for farmers

Farmers at BOP are found to be lacking in capital, knowledge, skills, technology, high-quality input supplies, adequate infrastructure, market information, and market access. While most problems of rural farmers in Indonesia are usually solved by self-help, unfortunately, farmers at BOP have limited resources to improve their own situation. It has been mentioned above that other agribusiness stakeholders (Figure 1) actually have the resources and means to help farmers. If these stakeholders can be invited to actively
help farmers at BOP as the main agribusiness actor, farmers should be able to solve their problems with collective resources pooled from other stakeholders. In fact, farmers in the Beta farmer group in Pangalengan district collaborate with a university, a large retailer in major cities in West Java, and the Indonesian central bank in their agribusiness. As a result, they face fewer problems compared to other farmers in this study as they earn more than US$ 2600 per year, raising them above the BOP threshold.

This supports the idea that by collaborating with other agribusiness stakeholders, farmers may have the resources they need to solve their problems. This apparent positive effect on farmers from collaboration with other business actors gives rise to the Purpose-Driven Inclusive Agribusiness Ecosystem (PDIAE) model. The PDIAE model in this study can be broken down into the following parts:

- The purpose part is the reason and goal of doing business, engaging in a business ecosystem, and partnering with other parties, which together form the direction and goal of the business ecosystem which can be tracked at any time.
- The inclusive part is to ensure that the benefit of the added value positively impacts farmers’ welfare at BOP, enabling them to grow progressively along with the whole value chain.
- The business ecosystem part is to intentionally create and manage an environment of collaborative partnership with external parties who can give the necessary support and added value to the existing value chain.

Ideally, a PDIAE is best initiated by agribusiness stakeholders who already have enough power, resources, and influence since they have the capability to begin, operate, and sustain one. PDIAE initiated by other stakeholders (the government, companies, NGOs, etc.) may take longer to reach farmers in the BOP segment because they are not as distributed as the farmers. Moreover, there are many cost barriers for the public and private sector to enter into inclusive agricultural markets and form a sustainable and beneficial business. If this condition persists, support may only reach the already advanced farmers whose business risk is comparatively low, while leaving out farmers at BOP. Owing to their inherent abilities and wide-spread locations, universities and cooperative movements who are geographically close to the farmers can be the stakeholders to initiate local PDIAE where the BOP farmers operate. Furthermore, local initiators can also trigger a grassroots movement to establish local PDIAEs across West Java and even the rest of Indonesia, making growth in distributed agricultural faster compared to waiting for external parties to help of their own volition. In this system, farmers can provide data based on their experience in cultivation, execution of government projects, and local expertise while universities and cooperative movements can help fulfil the gaps in farmers’ needs.

According to TLC Mind, there is a four-step iteration required in initiating and managing a business ecosystem (Wilson, 2016), as listed below:

1. Defining the business ecosystem purpose.
2. Determining existing values in the current value chain.
3. Deciding what values are needed in the current value chain.
4. Minding the gap between currently owned and needed values.
3.3.1 Defining the business ecosystem purpose

From the perspective of a business actor, there are three types of purposes in a purpose-driven business ecosystem (Wilson, 2016), as described below:

- **Business purpose**: core business activity of the actor or specific reason and goal of doing business.
- **Business ecosystem purpose**: a subset of business purpose, which is specific reason and goal of the actor in participating in a business ecosystem.
- **Ecopartner purpose**: specific contribution of an ecopartner as expected by the actor. Ecopartner is a term for business partners within the same business ecosystem.

From a farmers’ perspective, a simple example of business purpose is: ‘Rice farmers at Cianjur regency cultivate rice for the West Java market’. A derivation of the said business purpose is the following example of a business ecosystem purpose: ‘Rice farmers at Cianjur regency’s inclusive agribusiness ecosystem includes individuals, organizations, and companies to support the distribution and marketing of rice to the West Java market and increase farmers’ welfare in the process’. A further derivation from business ecosystem purpose is ecopartner purpose, which differs from one ecopartner to the next. An example of an ecopartner purpose of a retailer who has partnered with farmers is: ‘Rice farmers at Cianjur regency will work with YOGYA supermarket for marketing rice in Bandung city area’. These three purposes guide the ecosystem during its life and operation. Their fulfilment is tracked throughout the life of the business ecosystem and they also serve as an indicator as to whether the business ecosystem is heading in the initially set direction.

3.3.2 Determining current values within PDIAE

Once a direction for the PDIAE has been defined, the next step is to analyse values which are already present in the business ecosystem. These values include resources and capabilities that already exist within the ecosystem which are owned by existing ecosystem members. For example, farmers may have two initial types of values: (a) ability to deliver a specific farm produce in a certain quantity and quality, and (b) ability to share information regarding farm condition. If farmers currently already sell their farm produce to an exporter, ‘access to export market’ value is added to the current values.
There are two goals in identifying these current values: (a) to analyse what values are already present in the ecosystem and what values are not yet present but necessary, and (b) to identify values which can be an attraction point in inviting potential ecopartners who have values not yet present in the current ecosystem as identified in point (a).

### 3.3.3 Deciding necessary values for PDIAE

Together, the current values in the ecosystem and the ecosystem purpose serve as a basis to determine the values which are to be included in the ecosystem to reach its ideal state. These values are necessary to solve problems and minimise constraints within the current ecosystem and are obtained through collaboration with other parties. These parties can be those which are already within the ecosystem (current ecopartners) or currently outside the ecosystem (potential ecopartners). A value can be provided by one or more stakeholders. Table 3 shows an example of a problem experienced by farmers which is split into necessary values, their respective stakeholders, and instruments through which those necessary values can be introduced into the ecosystem by each stakeholder.

**Table 3** Example of problems, necessary values, stakeholders, and instruments

<table>
<thead>
<tr>
<th>Problem</th>
<th>Necessary value</th>
<th>Stakeholder</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of capital</td>
<td>Alternative financing source</td>
<td>Financial institutions</td>
<td>Savings and credit facility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Farmer associations/cooperatives</td>
<td>Saving and loan service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buyers/intermediaries</td>
<td>Finance purchase of input supplies</td>
</tr>
<tr>
<td></td>
<td>Alternative revenue stream</td>
<td>Depends on the alternatives</td>
<td>Depends on the alternatives</td>
</tr>
<tr>
<td>Lack of knowledge, skill, or technology</td>
<td>Technical and management knowledge/skill</td>
<td>Research institutions</td>
<td>Knowledge sharing and training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consultancies</td>
<td>Training and coaching</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buyers/intermediaries</td>
<td>Training, coaching, technical support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financial institutions</td>
<td>Training and coaching</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Farmer associations/cooperatives</td>
<td>Knowledge sharing and technical support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Government bodies</td>
<td>Knowledge sharing and training</td>
</tr>
</tbody>
</table>

### 3.3.4 Minding the gap

The last phase of the four-step iteration is to make efforts to introduce the necessary values into local PDIAE by making partnerships with potential ecopartners. For every ecopartner to be invited into the ecosystem for the value they bring, there should be equally beneficial values that farmers at BOP can offer in return. Without mutual benefit, cooperation between the two parties is less likely to be sustainable, its benefit to both parties’ businesses would be short-lived, and there is little total benefit to the whole ecosystem. In fact, synergistic cooperation and mutual trust is at the core of any business ecosystem. Table 4 shows two examples of potential stakeholder types, their instruments, values to be exchanged, and possible necessary actions.
### Table 4
Potential stakeholders, instruments, values to be exchanged, and possible necessary action

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Instrument</th>
<th>Exchanged value</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buyers/intermediaries</td>
<td>Contract farming</td>
<td>Farm produce in demanded quantity and quality</td>
<td>Search for appropriate buyers/propose to current buyers</td>
</tr>
<tr>
<td></td>
<td>Finance purchase of input supplies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market network</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provision of high-quality input supplies and technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training, coaching, knowledge sharing, technical support, organisational support</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information sharing (transparency)</td>
<td>Information sharing regarding farm condition (transparency)</td>
<td></td>
</tr>
<tr>
<td>Certification bodies</td>
<td>Training and certification</td>
<td>Finance and promotion</td>
<td>Search for other ecopartners who can help reach certification bodies</td>
</tr>
</tbody>
</table>

### 3.4 The ideal local PDIAE

Figure 2 depicts the proposed inclusive agribusiness ecosystem for farmers in West Java, Indonesia. The proposed inclusive agribusiness ecosystem model is expected to improve the farmers’ prosperity with these stakeholders and to provide the support needed by the farmers group. The stakeholders include government, research institutions, universities, civil society organisations, financial institutions and funding, and companies.

Figure 3 shows the ideal ecosystem map of farmers’ PDIAE. The ideal map depicts that connections with other business actors are mostly made through farmer associations/cooperatives. This is because interactions with other ecopartners are more effective and credible when carried out through a united body of farmers (farmer associations) or even a legal body (cooperative) as opposed to through individual farmers. From ecopartners’ perspective, it is also easier and possibly more efficient, more effective, and less risky to manage a relationship with a single entity consisting of a farmer association/cooperative compared to many individual farmers. On the flipside, it is the task of the farmer association/cooperative to channel all benefits of engaging in the local PDIAE to all farmer members.

The actors in the ideal PDIAE map are distributed into three layers according to their value offerings: ‘core partners’, ‘secondary value partners’, and ‘tertiary value partners’. Actors in the ‘core partners’ layer are those included in the farmers’ supply chain, which means that they are essential to farmers’ businesses. Actors in the ‘secondary value partners’ layer contribute resources which can add significant values to the agribusiness but farmers do not need these values to run their business. However, the values these actors can give can lead to competitive advantages and increased sustainability for the agribusiness. Actors in the ‘tertiary value partners’ layer can add values to the agribusiness despite these not being as significant as those in the ‘secondary value partners’ layer.
3.5 Management of PDIAE

Management of PDIAE is not included in the steps for initiating the PDIAE itself, nor is it carried out after inviting a new ecopartner into the PDIAE. In fact, management of the PDIAE happens indefinitely starting when farmers at BOP are aware that they are already in an agribusiness ecosystem – be it informal or purpose-driven. Managing the PDIAE comprises managing the overall vision and the details of the ecosystem (Wilson, 2016).

To manage the overall vision is to manage the fulfilment of the business ecosystem purpose and all ecopartner purposes. Farmers at BOP should review whether the current PDIAE has already included all necessary values. This can be done through measuring aspects such as productivity, income, welfare, etc., before and after necessary values are successfully introduced into the ecosystem. If those aspects have not reached the target even after the inclusion of the necessary values, farmers may have to adjust current partnerships or look for other potential ecopartners. Similarly, if there are still important values yet to be included in the ecosystem, farmers should look for potential ecopartners who can contribute the values or negotiate with current ecopartners to obtain them. When inviting a new ecopartner into the ecosystem, farmers at BOP should always refer to their business purpose and the business ecosystem purpose.
Figure 3  Map of an ideal local PDIAE (see online version for colours)
Managing the details refers to managing relationships with current ecopartners. Relationships among actors within the PDIAE must always be maintained to make sure that trust does not wane and that the ecosystem is sustainable for all business actors within it. This may include participating in various business programs with ecopartners, regular formal and informal meetings, trust building programs, adherence to own ecopartner purpose, frequent communication, etc.

3.6 Building a mobile platform for the business ecosystem among actors

It was mentioned previously that even though farmers at BOP are the ideal initiators of local PDIAE to support sustainable rural development, in reality this may not be feasible. This is because farmers at BOP lack knowledge, skills, and relationship capital to initiate a local PDIAE. The actors who can supply these to the farmers without much repayment are the government, NGOs, or research institutions; and one of the best ways to supply these to the farmers at BOP in a sustainable way is through the creation of a business platform in the form of software. The use of a software platform as a common base for a business ecosystem opens up multiple ways to foster the growth of business opportunities for its members, and improves the benefits it delivers to its customers (Karhiniemi, 2009).

This study introduces a social platform which provides a solution for farmers at BOP to find potential ecopartners and operate their local PDIAE. Although most of the farmers at BOP have a limited educational background, since on average, farmers in West Java are junior high school graduates; most of them are familiar with social media such as Facebook. The platform suggested in this study takes the form of a community-based website called Inclusive Ecobiz which is a civil service project by the School of Business and Management of the Institut Teknologi Bandung’s (SBM ITB). Visitors to the website can register as a farmer, farmer group, cooperative, financial institution, research institution, legal aid body, retailer, government body, etc., and complete their profile information accordingly. The general profile information includes organisation name, role, background, executives/coordinators/managers, address, contact information, and most importantly, business description and necessities. All platform members including farmers, farmer groups, or cooperatives can search for potential ecopartners by matching their own necessities with other members’ business descriptions. Other profile information such as background, the completeness of the profile information, address, contact information, and activity of the member can provide an image of the member’s credibility. This information can help members in deciding whether another member is a potential ecopartner or not.

Should a platform member find another member as an interesting potential ecopartner, they can send a public and private message to the member in the hope of building a cooperative relationship. Platform members can also become friends with other members and follow each other’s activities on the platform. There is also a group feature which allows members of a business ecosystem to operate and discuss things about their ecosystem. Group members can begin discussions and share any information, documents, pictures, and videos within their group. Lastly, there is a forum feature where all members can discuss any topics regarding building agribusinesses in West Java. At the time of writing, the platform is still at its prototype stage. The activities of the PDIAE
management cycle within and outside the platform are shown in Figure 4. To summarise, the benefits of using this social platform are the following:

- Ease in finding potential ecopartners.
- Ease in communication with current and potential ecopartners.
- Ease in sharing business and technical knowledge.
- Completely free for all users.

**Figure 4** Activities within and outside the farm Ecobiz social platform

The reason for this platform being community-based is to reach inclusive participation from all agribusiness actors without any third-party intervention. A community-based platform is also the most suitable and convenient place for many-to-many communication and content sharing among users. With increasing reductions in the price of smartphones and increasingly wide network coverage in Indonesia, and particularly in West Java, community-based online platforms can be a viable tool to support a PDIAE initiative. At the time of writing, the platform has already been tested with 1100 potential
users in 11 major regencies in West Java province. The data show that 65.8% of the 1100 potential users are willing to adopt the platform and willing to collaborate. The platform is being continuously monitored and improved by the Marketing and Business Strategy Expertise Group of SBM ITB and also through collaboration with various business actors with full support of the Indonesian Cooperative Movement in West Java as shown in Figure 2.

4 Conclusion

Farmers in West Java province are found to struggle with the lack of tangible and intangible resources in order for them to sustainably grow in the modern market environment. In order to improve the power and welfare of farmers, there is a need for a PDIAE model. The model is designed to uncover and solve problems of farmers at BOP through encouraging them to collaborate with various parties to build an inclusive business ecosystem, which includes the participation of regulators, investors, infrastructure, knowledge empowerment, market and research information, and financial incentives. In this way, farmers may obtain resources that they need to grow and the external parties may obtain resources that they need from farmers. This can provide a sustainable symbiotic relationship in West Java agribusiness where farmers at BOP can grow through collective help from external parties.

This study provides further insights into the field of inclusive business ecosystems by providing evidence from agriculture cases in West Java in Indonesia. These findings may also enhance knowledge about inclusive business initiatives, which have not been popular yet in Indonesia, and the positive benefit they may have in building the national agriculture sector.

There are three limitations of this study. First, the main source of primary data in the model leans more to the farmers’ perspective. Future studies may obtain a more balanced view by collecting data from other stakeholders. Secondly, the research is based on qualitative findings. Lastly, the model still needs further verification and validation.

References


