RESEARCH ARTICLE Asian Journal of Dairy and Food Research, Volume 41 Issue 1: 22-27 (March 2022)

The Success Indicators of a Dairy Farming Cluster in Indonesia: A Case in Malang Regency of East Java Province

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10.18805/ajdfr.DR-242

ABSTRACT

Background: The success of a dairy farming business was not only determined by technical and economic factors, but also by competitiveness factors. One way to strengthen competitiveness was the management of cluster-based dairy farming areas. Agricultural cluster was greatly significant in promoting regional economic growth, enhancing the rural competitive strength, advancing the specialization of agriculture production and increasing the incomes of the farmers.

Methods: Survey research was conducted to identify success indicators of the dairy farming cluster in the Malang Regency. Respondents were 42 farmers members of the "Rukun Tani 2" farmer groups who were selected purposively. The data were analyzed descriptively on the indicators that determine the success of the development of dairy farming clusters in the Malang Regency.

Result: The dairy farming cluster in Malang Regency has 17 cluster success indicators consisting of three key factors (networking and partnerships, strong competence and expertise and a strong innovation base), four basic factors (competition, entrepreneurial culture, social capital and infrastructure) and ten smoothing factors (proximity to suppliers, market access, access to information, access to financial resources, access to specialist services, access to supporting services, the existence of big companies, specialties, leadership and shared vision and government policies).

Key words: Agricultural cluster, Dairy farming, Success indicators.

INTRODUCTION

The success of a dairy farming business was not only determined by technical and economic factors, but also by competitiveness factors. For achieving this competitiveness, it becomes critical to address key problems faced by the dairy industry such as low milk yield, improper breeding, improper nutrition, deficient veterinary care, poor farm management and inadequate financial inclusion among others (Abhijeet *et al.* 2021). One way to strengthen competitiveness was the management of cluster-based dairy farming. The agricultural cluster was an advanced type of agricultural industrialization. The characteristics of agricultural clusters were established based on the farms' production potential (Poczta *et al.* 2020). Agricultural clusters mainly consist of dragon-head enterprises, township enterprises, the other groups of enterprises that gather together around the rural cities and towns or surrounding areas and related or complementary organizations and institutes (Liu and Koziol, 2011). It was greatly significant in promoting regional economic growth, enhancing the rural competitive strength, advancing the specialization of agriculture production and increasing the incomes of the farmers. The idea behind the dairy farming cluster was that clustering of dairy farms, processing, commercial support services, education and extension within a restricted area will create a more efficient regional dairy chain (Zijlstra and Lee, 2015). This study aims to identify the success indicators of the dairy farming cluster in the Malang Regency of East Java Province.

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How to cite this article: Sutawi, Prihartini, I., Zalizar, L., Wahyudi, A. and Hendraningsih, L. (2022). The Success Indicators of a Dairy Farming Cluster in Indonesia: A Case in Malang Regency of East Java Province. Asian Journal of Dairy and Food Research. 41(1): 22-27. DOI: 10.18805/ajdfr.DR-242.

Submitted: 31-05-2021 **Accepted:** 24-08-2021 **Online:** 05-10-2021

MATERIALS AND METHODS

The study was conducted in May-June 2020 using a survey method in the Kasembon District of Malang Regency, one of the development areas for dairy farming in East Java Province, Indonesia. Respondents were 42 farmers members of the "Rukun Tani 2" Farmer Groups who were selected purposively. The farmers were the target of the "The Development of Dairy Cattle Clustering Business Capacity" program in February-July 2019. The data were analyzed descriptively on the indicators that determine the success of the development of dairy farming clusters in the Malang Regency. There were four pillars and 17 determinants of cluster success (Bank Indonesia 2014), namely: (1) institutional (social capital, partnerships and networks, leadership and shared vision, entrepreneurial culture,

competition and specialization; (2) business infrastructure (market access, access to market information, access to specialist services, proximity to suppliers, access to business support services, access to financial resources and the presence of big companies); (3) human resources (competence and expertise and a strong innovation base) and (4) government support (infrastructure and policies).

RESULTS AND DISCUSSION

Dairy farming cluster pillars and indicators

Clusters were regional concentrations of economic activity in related industries that were connected through local relationships (Ketels, 2017). Industrial clusters were geographic concentrations of industries related to knowledge, skills, input, demand and/or other relationships (Delgado *et al.* 2016). Developing industrial clusters has become a major goal of regional economic development, as clusters have been shown to strengthen competitiveness by increasing productivity, stimulating new, innovative partnerships and presenting opportunities for new business (Slaper *et al.* 2018). Clusterization already covers more than 50% of the economies of the leading countries of the world (Qizi, 2019). The dairy farming cluster design aims to contribute to building a strong dairy chain, realize economies of scale on dairy farms and accelerate capacity building and innovation through the concentration of knowledge and information (Zijlstra and Lee, 2015).

The success of the dairy farming cluster in the Malang Regency can be detected from the four pillars and 17 interrelated indicators (Table 1, Fig 1). There was a strong hierarchical relationship between networking and partnerships, strong competence and expertise and a strong innovation base, so these three factors were called key factors. Competitive factors, entrepreneurial culture, social capital and infrastructure were basic factors, as they underlie the smooth operation of the cluster. Successful clusters usually contain flexible individuals or organizations who have a culture of innovation and was supported by the availability of adequate infrastructure. The determinants of the success of the integrated agriculture cluster include specialization, research and development capacity, knowledge and skills, human resource development, cooperation networks and social capital, closeness to suppliers, availability of capital, entrepreneurial spirit and shared leadership and vision (Adi *et al.* 2015; Lukman *et al.* 2018).

Institutions

Farmer institution was an organization that grows from, by and for the community itself which was based on the same interests in the field of livestock and has written articles of association and bylaws. Farmers' organizations play a significant role as an institutional vehicle for promoting agricultural development through helping farmers solve common problems concerning agricultural inputs, credit, technical knowledge and marketing of produce (Msuta and Urassa 2015). Dairy farming institutions consist of infrastructure subsystems and production facilities, production, processing and marketing subsystems while supporting institutions were financial institutions, cooperatives, research and education (Tawaf *et al.* 2009). Institutions play a role in determining the productivity of the dairy business by 35% (Wardani, 2009).

The institutions in the Kasembon District of Malang Regency dairy cluster include farmer groups (FG), joint venture groups (JVG) and village unit cooperative (VUC) (Table 2). The FG institution acts as a business actor, while the cooperative institution acts as the coordinator of the program for related activities in providing capital and fostering cooperatives for farmers. Dairy cooperatives have an important role in dairy development in Indonesia (Sulastri and Maharjan, 2002). Dairy cooperatives were the most important component of organized milk markets. These institutions were engaged in the maintenance of dairy cows, milk production, milk storage and provision of input for dairy farming. The dairy cooperatives have played a significant role in transferring the message of urban market demand to the farming community (Zirmire and Kulkami, 2019). The existence of cooperatives in the cluster will further strengthen the bargaining power of dairy farmers (Ahuja, 2013). Dairy cooperatives were the main instrumental tools for enhancing the milk yield and income of dairy farmers (Mburu *et al.* 2007, Laksmipriya *et al.* 2019).

The success factors for the cluster in the institutional aspect were: strong social capital, partnerships and networking, leadership and shared vision, strong entrepreneurial culture, competition and specialties. Social capital was everything related to cooperation in society to achieve a better life goal, supported by values and norms which were its main elements such as mutual trust, community participation, reciprocal processes, collective rules in society (Pratisthita *et al.* 2014). A partnership was a business strategy carried out by two or more parties within a certain period to gain mutual benefits with the principle of mutual need and mutual growth (Retnaningsih and Basuki, 2017). Leadership style has a significant effect on the performance of dairy cow cooperatives (Purnomo and Sudjana, 2010; Daimah *et al.* 2018). The entrepreneurial culture was divided into two, namely technical competence and managerial competence (Muharastri *et al*., 2015). The technical and managerial competencies of dairy farmers were classified as moderate (Muatip *et al.* 2008; Sabapara *et al*., 2014). Dairy farming agribusiness in Malang Regency has competitive and comparative advantages (Adiwibowo and Feryanto, 2014). Ironically, all this time local fresh milk has been allowed to compete alone with imported fresh milk so that local dairy farmers are unable to compete and find it difficult to develop (Amam *et al.* 2019). The specialization of functions and roles of work or business contributes to work efficiency and effectiveness, through the application of better self-generated technology. Market certainty provided by cooperatives and the milk processing industry (MPI) causes farmers not to learn to innovate in more specialized activities but requires negotiation skills

(Muatip *et al*. 2008). The strengthening of market linkages, either through expansion of cooperatives or by facilitating contract farming arrangements, would ensuring sustainable growth of the Indonesian dairy sector.

Business infrastructure

Cluster success factors in the business infrastructure aspect include market access, access to market information, access to specialist services, proximity to suppliers, access to business support services, access to financial resources and the existence of big companies. Ease of market access can be seen from the indicators of total sales and sales growth per year. Sales growth depends on the population and productivity of dairy cows. In increasing production, farmers were experiencing constraints, limited forage, decreased number of farmers, low quality of milk, livestock

Table 1: Pillars and indicators for dairy farming cluster in the malang regency.

Pillars	Indicators	Dairy farming cluster
Institutional	1. Social capital	• Farmer groups (FG), Joint venture groups (JVG), Village unit cooperative (VUC)
	2. Networks and partnerships	
	3. Leadership and vision	
	4. Entrepreneurial culture	
	5. Competition	
	6. Specialization	
Business infrastructure	1. Market access	• Milk processing industry (MPI)
	2. Information access	• Inputs factory
	3. Specialist service	• Funding bank, Commercial bank, Small credit bank (SCB)
	4. Supplier	• Universities, Artificial Insemination Center, Agricultural R&D, Livestock Service, Agricultural Extension Center
	5. Business support	
	6. Financial access	
	7. Big companies	
Human resource	1. Competence and expertise	• Experience raising cattle
	2. Innovation	
Government support	1. Infrastructure	• Dairy credit, Dairy assurance, Dairy pregnancy program, Milk drinking movement
	2. Policies	

Source: Primary data (2020).

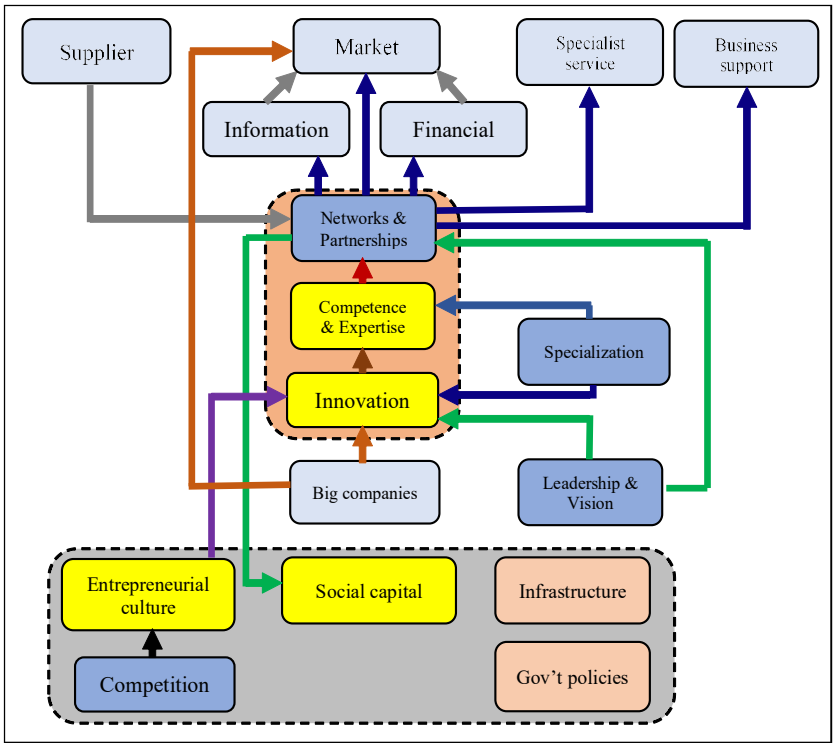

Fig 1: Hierarchy relationship of cluster success factors.
Source: Bank Indonesia (2014).

Table 2: Dairy farming cluster institutions in the malang regency.

Institution	"Rukun Tani 2" FG	"Sami Mandiri" JVG	"Tani Luhur" VUC
Address	Bayem village, Kasembon district	Dodol village, Kasembon district	Kasembon village, Kasembon district
Founded	2001	1994	1984
Member	42 farmers	600 farmers	500 farmers
Milk production	4 tons/day	7.5 tons/day	8 tons/day
Business unit	Milk production	Feed service unit Livestock service unit Savings and loan unit	Feed service unit Livestock service unit Savings and loan unit
Partner	"Tani Luhur" VUC	PT Nestle (MPI)	PT Nestle (MPI)

Source: Primary data (2020).

disease and limited agribusiness infrastructure (Ramadhan *et al.* 2015). Milk production was collected to the VUC/JVG and then sold to MPI to be processed according to market demand. Three types of dairy products that dominate the market include ready-to-drink liquid milk, sweetened condensed milk and powdered milk, with market shares of around 26%, 35% and 39% respectively (Nugroho, 2010). The availability of fodder, the quality of raw milk and cooperation with local government and dairy experts are considered to be key elements for the success of the cluster (Zijlstra and Lee, 2015).

Business infrastructure institutions that exist in the dairy cow farming cluster in Malang Regency can be divided into four groups. First, inputs factories that serve as a provider of needs for cattle/feeder cattle, production equipment and feed. Second, Funding Bank, Commercial Bank and Small Credit Bank play a role as program coordinator micro small medium enterprise (MSME) activities related to the aspect of financing. Third, universities play a role in coordinating assistance activities related to various business management activities. Fourth, Artificial Insemination Center (AIC), Agricultural Research and Development (ARD), Agricultural Extension Center (AEC) and Livestock Service that coordinating program-related activities in technical development and management of livestock management, starting from selection seeds, maintenance, mating and animal health. These institutions act as stakeholders or related parties in the development of dairy clusters. These institutions have an integrated relationship system so that institutions can support each other, support and benefit from upstream to downstream and it is following the principles of business partnership.

Human resources

Human resources were the main key to cluster development. The competence and quality of human resources of agro-industry players will describe the skills, knowledge, behavior, personal characteristics and motivation that will correlate with success in running a business (Fadhil *et al.* 2017). The dairy cow farming cluster in Kasembon District was supported by human resources who have a long experience of raising dairy cows. Human resource development for mastery and technology transfer in the cluster was carried out in stages using several methods: training both theory and practice of dairy farming technology; field visits to more advanced dairy farm locations; demonstration plot, implementation and observation of field results and periodic evaluation of programs being implemented. Human resource development includes cognitive elements (basic knowledge of agribusiness, agribusiness technology and managerial agribusiness), psychomotor elements (managerial skills, production skills, technology skills) and affection elements (mental, moral and ethical attitudes) (Juarini, 2015).

Role of government

The government was the facilitator and regulator. The role of the government as a facilitator needs to be optimized, especially in providing assistance to business actors and facilitating dialogue that bridges communication and cooperation between business actors and the government (Lestari and Muktiali, 2017). In addition, there was a need for infrastructure that can support cluster activities, such as providing collective promotional media for business actors in the cluster. The government also plays a role in providing a conducive business environment where human resources can build a system of interdependent business interactions between entities and make optimal use of business resources. Government policies and guidelines created an environment that was conducive to this further development of the dairy sector (Rao *et al.* 2014). As a regulator, the government plays a role in supporting the operation of the cluster system in the form of policies such as legislation, subsidy, taxation and trade regulations. The government as the holder of power in the regions influences cluster development because the government has the power to determine rules that can later influence cluster development, one of which was in determining rules regarding climate conditions or the business environment (Musa, 2017).

CONCLUSION

The dairy farming cluster in Malang Regency has 17 cluster success indicators consisting of three key factors (networking and partnerships, strong competence and expertise and a strong innovation base), four basic factors

(competition, entrepreneurial culture, social capital and infrastructure) and ten smoothing factors (proximity to suppliers, market access, access to information, access to financial resources, access to specialist services, access to supporting services, the existence of big companies, specialties, leadership and shared vision and government policies).

ACKNOWLEDGEMENT

The research for this paper was conducted in cooperation with the PNM Malang Branch and the University of Muhammadiyah Malang.

Conflict of Interest

The authors confirm that there was no conflict of interest with any financial, personal, or other relationships with other people or organizations related to this paper.

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