Importance Performance Analysis of Dairy Processing Cooperatives for Recommendations on Capacity Building for Small and Medium Enterprises and Cooperatives in the Regional Innovation System of Padang Panjang City, West Sumatra

A Suresti¹, R Wati¹, A Agustar¹, A Hasan¹

¹ Fakultas Peternakan, Andalas University, Padang
² Faculty of Engineering, Andalas University, Padang

Corresponding author’s e-mail address: amnareres@yahoo.com

Abstract. This research was conducted in order to determine the regional core competencies to accelerate the strengthening of the Regional Innovation System in the City of Padang Panjang which focused on the role of cooperatives as an institutional innovation in the development of a dairy business. In the agribusiness system, the role of cooperatives can be realized to strengthen the upstream agribusiness sub-system, which is related to the provision of input factors needed by farmers, as well as the downstream agribusiness sub-system associated with agricultural product processing activities and marketing. This study aims to explain the role of cooperatives in the development of the people's dairy cattle agribusiness (the case in the MERSI Cooperative, Padang Panjang City). This research was conducted in Padang Panjang City, West Sumatra Province. Data collection was carried out using survey methods. Respondents in this study were all dairy farmers in the working area of the Mersi Cooperative as well as cooperative managers. Based on themethod Importance and Performance Analysis (IPA), Mersi Cooperative in Padang Panjang City has not played a good role in the people's dairy cattle agribusiness. This can be seen in the respondent's assessment of the level of interest of breeders on an average of 4.9 and the performance of cooperatives by breeders only in the 2.7 category.

Keywords: Cooperatives, Agribusiness, Regional Innovation Systems; Dairy Cows

1. Introduction

The Regional Innovation System is a systemic and systematic approach to regional development. Through this Regional Innovation System development approach, all actors, institutions, networks, partnerships, actions, production processes and policies that affect the direction of development, speed and diffusion of innovation as well as the learning process are carried out to achieve regional development [1]. Some of which make the basic principles of developing a regional innovation strategy include a strategic way of thinking and are consistent with a long-term framework, a Regional Innovation strategy which is a priority agenda of the region and is an integral part of a regional development strategy, a regional innovation strategy is a strategic policy to increase regional competitiveness, Focuses on local best potential and open to creative ideas that are useful for the
progress of the area, and Set clear goals and rational outcomes. In order to strengthen this system, an innovation institution is needed that supports the success of the livestock agribusiness business. One of the innovation institutions that exist in the region today is the cooperative.

According to Law no. 25 of 1992 concerning Cooperatives, cooperatives are business entities whose members are individual or cooperative legal entities based on their activities based on the principles of cooperatives as well as a people's economic movement based on the principle of kinship, while cooperatives are everything related to cooperative life. Cooperative is interpreted very differently by experts. In general, the notion of cooperatives is inseparable from the principles, foundation, goals and principles of cooperatives. Therefore, the understanding of cooperatives is very important so that each individual has a correct understanding of cooperative institutions.

It is hoped that the role of cooperative institutions in animal husbandry will provide great opportunities for the livestock sector to be able to develop properly. Efforts to develop animal husbandry certainly require adequate facilities and infrastructure, starting from the application of good farm technical management and institutional roles that run effectively. This will have an impact on the development of the dairy cow population and milk production from the livestock sector.

One of the cities in West Sumatra that is suitable for the development of dairy farming is the City of Padang Panjang. Areas suitable for developing a dairy cattle business in Indonesia are mountainous areas with a minimum height of 800 meters above sea level. An examination of the relationship between dairy cow milk production and regional topography shows that a difference in height of 100 meters is closely related to a difference in average production of four percent. The average milk production for Padang Panjang city cows is 1,200 liters / day of the 120 cows that are already in production, and the number of cows is 286 cows. Of the 1,200 liters of cow's milk produced at this time have not been fully processed by farmers, only 10% has been processed by farmers, in the form of pasteurized milk, the remaining 90% of raw milk in the city of Padang Panjang is sold directly to Bukittinggi and its surrounding areas.

In dairy agribusiness, breeders cannot be separated from the existence of cooperatives. The majority of dairy farmers are small breeders who own only 2-5 cows, so they need a place to accommodate their milk production and distribute it. The business continuity of the breeders is very dependent on the cooperative to accommodate and sell their production. Cooperatives have a strategic role to support the development of local milk. Cooperatives can spur the development of dairy agribusiness so that the empowerment of cooperatives is needed to increase business scale, milk production and reduce production costs.

The agribusiness system is a vertical system of each agricultural commodity which consists of several subsystems, namely the production means procurement subsystem, production subsystem, product processing subsystem (agro-industry) and marketing subsystem [2].

MERSI Cooperative (Merapi Singgalang) is one of the cooperatives. which is located in the City of Padang Panjang which has several business units that become the supporting pillars of cooperative activities, including the dairy cow business unit, savings and loans, milk processing, and livestock feed procurement Since the beginning of the cooperative, its main business has been in the dairy cow business unit. In the dairy business unit, the Cooperative has 31 breeders spread across the working area of the MERSI Cooperative with a total of 120 dairy cows.

The cooperative's compliance with the quantity and quality standards of milk is inconsistent. Each farmer is given different feed. This condition affects the quality of the milk produced, where it is often found that the milk produced has a poor performance, including too yellow, too high water content and so on. The feed given to cows is still not based on good feed standards, besides that the slow management of the milk from the milk to the shelter causes a decrease in the quality of the milk due to the susceptibility of adding bacteria. Besides, due to technological limitations, a lot of milk is wasted. One of the causes for the low milk production is the poorly managed community farming system. This people's dairy farming business system causes regional and national milk production to not develop optimally. If this business system is not carried out with innovation and encouragement from the
government, cow milk production will never be able to meet the needs of the community and in the end it will add to the value burden of imported cow milk.

The existence of this cooperative institutional role is expected to provide great opportunities for the livestock sector to be able to develop properly. Efforts to develop animal husbandry certainly require adequate facilities and infrastructure, starting from the application of good farm technical management and institutional roles that run effectively. With the existence of a cooperative in this dairy farmer group, has it been able to provide services in developing a dairy farming business? To answer these problems, the authors feel the need to conduct research on the role of cooperatives in the development of the people's dairy cattle agribusiness in the MERSI Cooperative, Padang Panjang City.

2. Materials and Methods
The research operation is carried out by analyzing the agribusiness system from the upstream subsystem, the farming subsystem, the downstream subsystem and the support service subsystem qualitatively. Meanwhile, the performance analysis of cooperatives using Importance and Performance Analysis (IPA) is carried out by analyzing the dimensions of service quality in the form of reliability, responsiveness, assurance, empathy, and tangibles that have been implemented by the cooperative. So as to improve the welfare of members and the role of cooperatives for farmers to be optimal.

The determination of the level of importance uses a five-level scale (Likert), which is deliberately designed to allow customers to answer at various levels on each item that describes the service. The level of importance consists of very important, important, quite important, not important, very unimportant. To measure the performance of a cooperative, five ratings are given with the following weights:

a. Very good answer is given a weight of 5
b. Good answers are given a weight of 4
c. Fairly good answers are given a weight of 3
d. Bad answers are given a weight of 2
e. Very unfavorable answers are given a weight of 1

In this study, there are two variables represented by the letters X and Y, where X is the level of performance, while Y is the level of importance. Furthermore, the horizontal axis (Xi) will be filled by the average score of the performance level. Meanwhile, the vertical axis (Yi) will be filled with the average score of importance level. The formula is as follows:

\[ Xi = \frac{S X_i}{n} \quad (1) \]

\[ Yi = \frac{S Y_i}{n} \quad (2) \]

where, Xi is average score of performance level, Yi is average score of importance level, and n is number of respondents.

Importance-performance analysis (IPA) is a quantitative approach for measuring how people feel about certain characteristics of an issue or a thing [3]. A benefit of IPA is that it generates a clear picture of how important certain elements are in comparison with how satisfying they are to clients or customers [4]. The visual output of this method, an IPA matrix, is created by plotting individual attributes' importance values and satisfaction values on a two-dimensional graph having four quadrants. Importance and satisfaction are each measured through the use of a Likert-type scale, and the parameters of the matrix's quadrants are based on the means of the two measures. In a traditional interpretation of IPA, each quadrant is interpreted as having implications for prioritization and management of attributes (Figure 1).
3. Results and Discussion
This cooperative was initiated by the Permata Ibu Farmer Group, which started group activities since early 1981. Initially, Permata Ibu Farmer Group only engaged in food crops, but in 1981, with the assistance of dairy cows for West Sumatra and Padang Panjang, allocation of assistance. This is where the group struggled to start a dairy farming business and to date, the Permata Ibu Farmer Group has become one of the groups that has survived managing dairy cows in West Sumatra.

The Mersi Cooperative relies on 2 main commodities, namely dairy farming and dairy products. Within the Permata Ibu group, 2 farmer groups are joined, namely the Permata Ibu Farmer Group, with the chairperson: Deslia Sulastri, Spt and the Lembah Makmur Farmer Group, with the chairperson: Rafles. The Permata Ibu Group has 20 members with 120 dairy cows. The Lembah Makmur Farmer Group has 10 members with a land area of 5 hectares.

With the assistance of dairy cows for West Sumatra and Padang Panjang, the number of dairy farmers is increasing. With the Permata Ibu farmer group consisting of dairy farmers managing this business down to the marketing and milk processing levels, other dairy farmer groups also take advantage of this group's services in marketing their milk. Then the Cooperative Office is based on a government program, where each region has a superior product which we know as "One Product One Village (OVOP)". The superior products in Padang Panjang City are milk and leather, so the cooperative office socializes the role of cooperatives to dairy farmer groups in this area. Therefore, a forum for dairy farmers to gather into a cooperative can fight for the interests of breeders. ensure business continuity and increase their income. It is also accepted by the community that they also need a place to increase their business and accommodate their milk production. Finally, in 2010 the Merapi Singgalang cooperative was established, abbreviated as the MERSI Cooperative, which consists of dairy farmers in the City of Padang Panjang and in the same year, the cooperative was established with the assistance of grants from the service of 35 million, which at that time had 30 members. Part of the fund was used for the savings and loan business unit and 20 million was used for the feed management unit.

The MERSI cooperative is a multi-purpose cooperative which is located in the city of Padang Panjang, precisely on Syech Ibrahim Musa street, Ganting sub-district, East Padang Panjang district in Padang Panjang city which was established on February 1, 2009 and began to develop its business in the field of dairy farming. The cooperative's working area is located in 2 Districts in Padang Panjang City, namely West Padang Panjang and East Padang Panjang Districts. In addition, there are members of breeders who are outside the city of Padang Panjang, namely Tanah Datar Regency.
3.1 Performance Analysis Cooperative

Performance of cooperative is analyzed using the method Importance and Performance Analysis (IPA). This method can see the level of performance of the cooperative will be measured in relation to what the cooperative should do to improve the welfare of members. To determine the level of performance of the cooperative as a whole and to find out the attributes that need attention, it is necessary to assess the level importance and performance attributes. From the level of importance and performance it can be seen to what extent the level of cooperative performance against the attributes that have been carried out so far.

These attributes are calculated in order to obtain the average value of the level of importance and performance of each attribute. Furthermore, calculating the average value of the level of importance and performance of all attributes. These values are then plotted into a Cartesian diagram. In the end, a Cartesian diagram will be formed showing the position of each attribute in a particular quadrant.

The IPA matrix consists of four quadrants, namely quadrant I is the top priority (high importance, low performance), quadrant II is maintaining achievement (high importance, high performance), quadrant III is a low priority (low importance, low performance) and quadrant IV is excessive (low importance, high performance). The inter-quadrants are separated by the $X_i$ and $Y_i$ axes, where the axis $Y_i$ is the average of the weighted average of the importance level, while $X_i$ is the average of the weighted average of the performance level of all attributes. From the calculations that have been done, it is obtained $X_i = 4.93$ and $Y_i = 2.74$. The calculation of the level of farmer attitudes and expectations can be seen in Table 1.

Table 1. The level of importance, performance and satisfaction of members of the Mersi cooperative

| Dimension   | Importance | Performance | Satisfaction |
|-------------|------------|-------------|--------------|
| Reliability | 4.95       | 2.74        | -2.21        |
| Responsiveness | 4.92     | 2.53        | -2.40        |
| Assurance   | 4.94       | 3.05        | -1.89        |
| Tangible    | 4.90       | 2.68        | -2.22        |
| Rata-rata( Xi , Yi) | 4.93 | 2.74 | -2.18 |

That table above shows that the performance of the cooperative as a whole does not provide satisfaction to members. These attributes are calculated in order to obtain the average value of the level of importance and performance of each attribute. Furthermore, calculating the average value of the level of importance and performance of all attributes. These values are then plotted into a Cartesian diagram. In the end, a Cartesian diagram will be formed showing the position of each attribute in a particular quadrant.

Figure 2. Scatterplot of Importance and Performance Analysis MERSI Cooperative
3.1.1 Quadrant I (Main Priority)
The attributes in quadrant I have an above average level of importance but the level of performance is below the average or low value, meaning that farmers demand an increase in the attributes mentioned above. Cooperatives should make efforts to improve the welfare of breeders, which means that these attributes need to be improved so that the welfare of farmers can be achieved. Cooperatives must make continuous improvements so that the performance attributes in this quadrant will increase.

Quadrant I there are eleven attributes, namely: facilitation of business capital (1), facilitation of procurement and rejuvenation of seedlings (2), facilitation of IB implementation, facilitation of supply and management of concentrates (4), facilitation of the procurement and management of drugs (5), facilitation of livestock health handling (8), responsive to business capital issues (13), responsive to issues of rejuvenation of seeds (14), responsive to issues of concentrate supply (16), responsive to procurement of medicines (17), harvesting from farmers (23), financial transparency (24), ability of administrators to manage concentrate procurement (25), image of administrators (26), comfort in savings (28), availability of capital (33) and the availability of concentrate (34).

Judging from the comparison of the level of interest of members and cooperative performance in this attribute, it is in the very important category with a total score of 85 while the performance of cooperatives according to members' perceptions is in the poor category with a total score of 40. This indicates that the role of cooperatives in facilitating members' business capital is not good and the benefits have not been felt for members. Members sincerely hope that this attribute needs to be improved. The distribution of respondents' perceptions of the performance of this attribute is in the bad category with a total score of 17, while the level of importance for this attribute is included in the very important category with a total score of 85. The distribution of perceptions of performance is lower than the distribution of interests because respondents feel all their needs has not been fulfilled. Members consider that the attribute of facilitation for the rejuvenation of seedlings by the cooperative needs to be increased to the desires of the members because this factor has been an obstacle so far by members.

One of the reasons for the decreasing number of members in the MERSI cooperative is the image of the management. Where the perception of the level of importance of this attribute is very important, it turns out that the performance of this attribute is in the poor category with a score of 19. It means that for this attribute members expect improvements to the image of the management. One of the reasons is because of the lack of transparency about financial problems to members, there is no clarity about ownership Cooperative milk management equipment with equipment owned by farmer groups.

3.1.2 Quadrant II (Maintain Achievement)
The attribute in quadrant II has an interest level above average and a performance level above the average value, meaning that farmers want sustained efforts. Quadrant II there are five attributes, namely: marketing milk (9), processing milk to cooperatives (10), cooperatives as a forum for exchanging ideas among members (12), responsive to the problem of implementing artificial insemination (15), responsive to increasing the ability of members to challenge aspects technical data for dairy cows (20), market certainty (29), getting the latest information (32), office (35) price certainty (30) and documents (40).

In general, these attributes have been implemented by the cooperative, so that farmers can feel the benefits of applying these attributes. These attributes have a high level of performance and are accompanied by a high level of importance so that this must be maintained by the cooperative, because these attributes are beneficial to farmers and make cooperative services superior in the eyes of members.

3.1.3 Quadrant III (Low Priority)
Attributes in quadrant III have a low level of importance and performance is also below the average or low value, meaning that farmers demand an increase in the attributes mentioned above. Cooperatives should make efforts to improve the welfare of breeders, which means that these attributes need to be
improved so that the welfare of farmers can be achieved. Cooperatives must make continuous improvements so that the performance attributes in this quadrant will increase.

Quadrant III has nine attributes, namely: responsiveness to livestock health problems (19), office facilities (36), equipment for testing milk quality (38) and transportation (39). When viewed from the level of importance, these attributes are less important. But when viewed from the level of performance is quite good. Farmers ignore the attributes that lie in this position. The increase in the attributes included in this quadrant can be reconsidered because the effect on the benefits felt by farmers is very small. Based on the results of interviews with breeders, 85% stated that the management is very responsive in handling livestock health and tries to facilitate coordination with the Center for Animal Research and Health, while the cooperative office facilities, according to members, think that the existing facilities belong to one of the groups farmers and it is used today for the benefit of running the cooperative, the level of importance for this attribute is very important but the perception of members for this performance is given a low priority because according to them, with the development of the cooperative other facilities will be obtained by themselves. Likewise, with transportation, members' perceptions of performance transportation is a bad category even though the level of importance is a very important attribute, but members feel this is a low priority when compared to the technical problems of dairy farming.

3.1.4 Quadrant IV (Excessive)
This quadrant has a low level of importance. But according to respondents the level of attribute performance is considered high. Therefore, the performance of this attribute can be reduced so that resources can be allocated to improve services. Besides, if possible, it can be done to increase the level of importance, by means of socialization or counseling about the importance of attributes. The attributes included in this quadrant are: facilitation of the provision of milk processing equipment (6), cooperatives facilitate training for members (7), cooperatives facilitate coordination with agencies (11), responsive to milk marketing (21), responsive to milk processing in accordance with market appetite (22), assurance in milk quality testing (27) and service in the process of becoming a member (31).

The following describes each of the attributes of the 4 dimensions of science that affect the performance and satisfaction of cooperative members, the level of interest and performance of the Mersi Cooperative in Padang Panjang City can be seen in table 2 below.

**Table 2. Level of Importance and Performance of Mersi Cooperative in Padang Panjang City based on the attributes of each IPA dimension**

| No. | Attribute                                           | Importance level (Xi) | Performance level (Yi) |
|-----|-----------------------------------------------------|-----------------------|------------------------|
| 1   | Facilitation of business capital                    | 5.00                  | 2.35                   |
| 2   | Facilitate the procurement and rejuvenation of cow breeds | 5.00                  | 1.00                   |
| 3   | Facilitate the implementation of the insemination   | 4.94                  | 2.64                   |
| 4   | Facilitate the supply and management of concentrates | 5.00                  | 1.64                   |
| 5   | Facilitate the supply and management of the medicine | 4.94                  | 1.05                   |
| 6   | Facilitate the provision of milk processing equipment | 4.88                  | 3.64                   |
| 7   | The cooperative facilitates technical training       | 4.82                  | 3.82                   |
|   | Description                                                                 | Rating | Difference |
|---|------------------------------------------------------------------------------|--------|------------|
| 8 | Cooperatives facilitate handling of livestock health                          | 5.00   | 1.23       |
| 9 | Marketing of milk to cooperatives                                            | 5.00   | 4.29       |
|10 | Cooperative milk management                                                  | 5.00   | 4.23       |
|11 | Cooperatives facilitate coordination with agencies / offices                  | 4.88   | 4.00       |
|12 | Cooperatives as a place to exchange ideas                                     | 4.94   | 2.94       |
|   | **Responsiveness**                                                           |        |            |
|13 | Response to the problem of capital business                                  | 4.94   | 2.70       |
|14 | responsiveness in trouble for rejuvenation seedlings                         | 5.00   | 1.00       |
|15 | responsiveness in the implementation problems                               | 5.00   | 2.88       |
|16 | Artificial insemination                                                      |        |            |
|17 | response to the problem of providing concentrates                            | 4.94   | 1.29       |
|18 | response to the procurement of medicines                                     | 5.00   | 1.29       |
|19 | responsive to the problem of providing equipment                             | 4.94   | 3.70       |
|20 | responsiveness in health problems of livestock                               | 4.88   | 1.23       |
|21 | responsiveness will increase the ability of members of the cultivation of dairy cows | 4.94   | 3.94       |
|22 | Response will Marketing of milk.                                              | 4.70   | 4.70       |
|23 | Responding to the processing of processed milk according to market tastes.    | 4.82   | 3.88       |
|24 | Management is responsive to harvesting from farmers                          | 5.00   | 1.17       |
|   | **Assurance (Jaminan)**                                                      |        |            |
|25 | Financial transparency Management's                                          | 5.00   | 2.64       |
|26 | ability to process milk                                                      | 5.00   | 2.70       |
|27 | Management image                                                             | 5.00   | 1.11       |
|28 | Test / test of milk quality                                                  | 4.70   | 2.88       |
|29 | Convenience in savings                                                       | 4.94   | 2.64       |
|   | Market                                                                       | 5.00   | 4.05       |
30. Certainty in milk price stabilization: 5.00, 4.82
31. Services in the process of becoming a member: 4.88, 3.47
32. Get the latest information from the dairy business: 4.94, 3.11

| Procedure | Tangible | Intangible |
|-----------|----------|------------|
| Availability of capital | 5.00 | 2.70 |
| availability concentrates | 4.94 | 1.05 |
| Office | 5.00 | 3.47 |
| Office Facilities | 4.82 | 2.64 |
| Equipment and milk processing machines | 5.00 | 3.17 |
| Equipment for testing the quality of | 4.82 | 2.35 |
| Transportation | 4.82 | 1.58 |
| Document | 4.82 | 4.47 |
| **Total** | 197.47 | 109.64 |
| **Average (Xi, Yi)** | 4.93 | 2.741 |

*Source: processed data (2019)*

4. **Conclusion**

Based on the Importance and Performance Analysis (IPA) method, the Mersi Cooperative in the City of Padang Panjang has not played a good role in the people's dairy cattle agribusiness. This can be seen at the level of interest of farmers on average 4.9 and perceptions of cooperative performance by breeders only occupy the 2.7 category. In general, cooperatives are not yet competent about the production input subsystem, production and marketing subsystem. The role of cooperatives in the processing subsystem is shown by their ability to accommodate member milk and manage milk through pasteurization. Competence in the supporting facilities subsystem is indicated that the new cooperative can provide services to members on savings and loan services.

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