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## The Dynamics of Cow Farmer Group towards the Development of Feed Canning Technology

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### Abstract

#### Keywords:

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farmer.

Malang Raya area as a contributor of livestock product which is dairy cow's milk, do not escape from problem of increasing the number of farmers but not accompanied by an increase in milk production. This can be influenced by two kinds of factors such as genetic factors and external environmental factors such as feed. The above problems certainly underpinned renewal, to improve feed quality such as feed canning techniques, where the dynamics level of a group influenced the level of adaptation and distribution of these innovations. This research aimed to determine the dynamics of dairy farmers in Malang Raya Regency and the influence of group dynamics on the development of forage canning technology. The research location was determined purposively, where the location chosen would represent Malang Raya Regency with the majority of the people working as dairy farmers. The number of respondents in this research was 62 people who were determined by the purposive random sampling method. The research method used was descriptive analysis and case studies. Methods of collecting data used interviews, questionnaires, observations and documentation, to obtain primary and secondary data. The results showed that the dynamics of the majority group were in the moderate category, while group pressure was the only aspect that occupied the high category, in which 74.6%. Group pressure had a big influence on the motivation in performing activities to realize group goals, and the pressure was expected can change behavior, attitudes, ideas and mutual trust between members.

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## INTRODUCTION

Malang Regency as one of the contributors to national milk production which supported by data (Central Bureau of Statistic, 2018), in 2018 Malang Regency had 85,188 dairy cows with total production reached 148,000 tons of cow's milk. The development of dairy farmers in Malang Regency according to data (Central Bureau of Statistic, 2019), in average had increased from 2013 to 2019 with a total of 2298 heads/year. The farm in Malang Regency which majority classified as small-scale where farming activities were still performed traditionally and one person did not manage many cows, same thing described by Muhyidin et al. (2019) stated that in Indonesia, farmers were on a small scale using contemporary methods. This management will certainly be an obstacle in the development of milk production, which made the development of dairy cows every year was not accompanied by an increase in milk production in Malang Regency. Simply, farming patterns in several farmer groups made innovations such as forage canning technology less adaptable and applied.

According to (Amam & Harsita, 2019) and (Larasati, Roessali, & Setiadi, 2021) stated that the growth of dairy cows will certainly increase milk production, but domestic milk production was still unable to meet national consumption, only 21% was fulfilled while 79% needs were still supplied by other countries or imported and made dependence on imported milk. This can occur due to less optimal lactation process where the cows' productivity process was influenced by two kinds of factors such as genetic and environmental factors, where external environmental factors such as feed, climate, and maintenance management and internal factors such as lactation period, lactation duration, empty period, and dry period affected about 70% of the total production (Mahmud et al., 2020). The same thing was expressed by Filian, Santoso, Harjanti, & Prastiwi, (2016) who explained that the age increased of dairy cows was closely related to the increasing lactation period. Improving maintenance management was very important for the milk produced, especially the factor of feed and cage systems. According to Suhendra et al., (2015) efforts to improve maintenance management can be supported by programs from the Government, such as the Initiation and Socialization Acceleration Program for Agricultural Technology Innovation (Prima Tani). Of course, the technology developed must also be in accordance with the needs in the area.

One of the external factors, in which feed, had a very large influence. Feed was all food ingredients that can be given to livestock and had no negative effect on livestock. Increasing livestock growth and being an external factor in cow's milk production, the availability of feed must always be cultivated continuously. Sugiarti (2019) stated that livestock must have sufficient forage intake of 10% of the total weight of the livestock. Forage is feed in the form of grass etc. Magrianti & Priyanto (2019) stated that if the 10% need for forage feed was met, the livestock will be able

to produce milk with maximum performance and good quality as a condition for milk to be accepted by cooperatives. The need for forage was very high. If this was not addressed, there will be a scarcity of forage due to dry season or too much demand while supplies were limited. This created various ideas about effective feeding such as forage canning technology.

Feed canning technologies such as silage, hay, and ammonia were methods used to meet animal feed needs when supplies were low. Trisnadewi (2016) explained that silage came from forage that had been canning in a fresh condition with water content (60-70%) while hay was forage in the form of grass or legumes family stored with water content (20-30%) and ammonia was addition of protein content in forages that had low quality such as straw. This innovation, of course, must be introduced starting from the purpose, method of manufacture and cost. The farmer group was certainly one of the media to introduce this innovation, where with a dynamic farmer group; it will be easier for innovation to be distributed and convinced farmers to apply. Larasati et al., (2021) explained that this was also motivated from problem of expensive additional feed, resulted in farmers were unable to meet these needs.

The dairy farmer group was a cooperation media between fellow dairy farmers, where in the dairy farmer group there was a connection with other dairy farmer groups and also with the government which was a medium for mutual learning between farmers (Hariri, Dewi Andaru, & Suliyanto, 2016). Dairy farmers groups in general can be easily found in rural areas, because usually people in rural areas averagely had a livelihood as a dairy farmer. Farmer groups' function as a source of solutions to existing problems, joint activities in farmer groups will also strengthen relations between members. Activities that can be performed together will be more efficient for farmers (Bakhtiar, Pulung Sudibyo, Indriani, & Muhammad Shodiq, 2020). This was the reason why researchers were interested in conducting research on Dairy Farmers Groups in several Sub-districts in Malang Regency, such as Ngajum Sub-districts, Karangploso Sub-districts, Dau Sub-districts, Pujon Sub-districts, and Ngantang Sub-districts, to find out how the conditions and dynamics of the dairy farmer group. A dynamic dairy farmer group had a sign in the form of activities that were routinely performed and was also characterized by good, effective and efficient interaction and performance between members and with outsiders.

A previous research that discussed group dynamics was Bakhtiar et al, (2020) with groups of horticultural farmers as subjects and compared the results of group dynamics in Malang and Batu city included in high category with a value of 77.18% while group dynamics in Batu city and Pujon Sub-district classified in the same category, in which high, with a percentage of 77.27% and 77.08%. A similar research was conducted by Falo (2016) in the group of beef farmers with an average score of 3.916 and included in the satisfied category. The novelty in this research was linking group dynamics with the development of feed canning technology that included in the questionnaire and the existence of leadership elements in group dynamics.

Based on this description, it was important to conduct research on the dynamics of dairy farmer group towards the development of feed canning technology. The aim of this research included, 1) describing the condition of dairy farmers in Malang Regency, the purpose of the research 2) knowing the dynamics level of the dynamics of dairy farmers in Malang Raya Regency. Through this research, it can

describe the condition of the dairy farmer group with the development of food canning technology in Malang Raya.

## **RESEARCH METHOD**

### **Research Location**

The research location was determined purposively with the consideration that these areas were the largest milk producers in Malang Regency, Ngajum Sub-district, Dau Sub-district, Karangploso Sub-district, Pujon Sub-district and Ngantang Sub-district. The five sub-districts were chosen because most of the people work in livestock commodities, especially dairy farmers. The research was conducted from April to November 2021.

### **Population and Total Sample**

The population in this research was conducted by quota sampling by considering predetermined criteria, which was participating in farmer groups. The population was represented by five farmer groups that spread in Ngajum Sub-district with 80 active farmers, Dau Sub-district 130 people, Karangploso Sub-district 100 people, Pujon Sub-district 160 people and Ngantang Sub-district with 150 active farmers. Dairy farmers who became the research sample were 62 people with the condition of 10% of the total population for each district. The sample determination was adjusted to the number of farmers who were still active in the Sub-district.

### **Data Collection Method**

The data collection method focused on farmer groups, starting from the Head, Secretary, Treasurer and members from Ngajum Sub-district, Dau Sub-district, Karangploso Sub-district, Pujon Sub-district and Ngantang Sub-district, in Malang Regency. From each farmer group, 10 were taken as research samples. The sample selection was conducted by using purposive random sampling. Data were collected by filling out questionnaires, interviews, direct observation and documentation. This research has both primary and secondary data sources. Primary data was data that obtained directly. Primary data was obtained from direct interviews with dairy farmers groups in several sub-districts of Karangploso, Ngantang, Nganjung, Dau and Pujon which were the samples in the research, by using a list of questions (questionnaires) that have been prepared by taking researchers' references first and adjusted to the conditions of data needs for this research and the secondary data conducted through a literature study, such as in the form of books, notes, existing evidence, or archives, both published and unpublished in general that in accordance with this research. The types of data needed to conduct this research were qualitative data and quantitative data.

### **Data Analysis Method**

The research used quantitative descriptive which will explain the object of the research based on the real situation in the field. The data analysis method used to answer the first objective was descriptively with tabulated results, starting from age, gender and education level. To explain the second objective, descriptive analysis technique was performed to explain the level of each part of the group dynamics. The group dynamics' level of all samples was categorized into 3 categories, which were

low (20% - 46%), moderate (47% - 73%), and high (74%-100%); whereas, these categories will explain whether the farmer group had a low, medium or high level of dynamics. The research variables consisted of 9 variables, in which leadership, group goals, group structure, functions and duties, group coaching and development, group cohesiveness, group atmosphere, group pressure and group effectiveness which will be tested as determinants of the dairy farmer group dynamics. The measurement of variables was conducted by distributing a linkert scale questionnaire which was divided into 5 categories, such as Strongly Agree (5), Agree (4), Hesitant (3), Disagree (2), and Strongly Disagree (1).

## RESULT AND DISCUSSION

### Dairy Farmers' Condition

The result of respondent data recapitulation that conducted from questionnaire deployment was presented in the following table.

**Table 1 respondent characteristics based on age**

No	Respondent based on age	Total (People)	Percentage (%)
	Years old		
1	21 – 30	6	9.68
2	31 – 40	25	40.32
3	41 – 50	26	41.94
4	51 – 60	5	8.06
	<b>Total</b>	<b>62</b>	<b>100</b>

Source: primary data (processed), 2021

Table 1 showed that of the total 62 respondents, they had a variety of characteristics ranging from age, where all respondents were dominated by the age group of 41-50 years old with a total of 26 people (41.94%), aged 31-40 years old with a total of 25 people (40, 32%), aged 21-30 years old with a total of 6 people (9.68%) and followed by those aged 51-60 years old who had the small number of people, which was 5 people. The age of the respondent had a close connection with the productivity level and the farmer's mindset in determining how the business performance. Otampi, Elly, Manese, & Lenzun, (2017) explained that the productive age was in the range of 15-64 years old while being declared unproductive was 64 years old. Based on the data in the field, the age group of 41-50 years old dominated the overall respondents with a percentage of 41.94% who were considered to have entered an unproductive age. The high percentage value in the age range of 41-50 years old was influenced by the low interest of the younger generation to enter the livestock sector, especially dairy farmers. Motivation was very important as the direction of the young people's mindset in finding their interests. This was supported by the opinion of Astuti, Arso, & Wigati, (2019) that the motivation for regeneration as a dairy farmer was very important to be known among children and adolescents who were still as student to continue their family business activities.

**Table 2 respondent characteristics based on gender**

No	Respondent based on gender	Total (People)	Percentage (%)
1	Male	48	77,42
2	Female	14	22,58
<b>Total</b>		<b>62</b>	<b>100</b>

Source: primary data (processed), 2021

Based on table 2, the respondents' characteristics based on gender and with male were 48 people (77.42%) and female were 14 people (22.58). According to the facts in the field, the work of farmers was dominated by men because this work required physical strength from the maintenance until cows' feeding. Meanwhile, the role of women was to help to ease the work of the men. According to Welerubun, Ekowati, & Setiadi, (2016) and Ervina, Setiadi, & Ekowati, (2019) that in general men farmers did dominate the livestock business because men had great power and ability in managing their businesses, while women played a role as a business supervisor when her husband was not there when he had to take care of his livestock. Another factor that made men more dominant was the ownership of dairy cows with an average number of 8 heads, while according to Magrianti & Priyanto, (2019) smallholder scale farmers with cow ownership of less than 5 cows. This factor can be the cause of the results that male respondents more than female.

**Table 3 respondent characteristic based on education level**

No	Respondent based on education level	Total (People)	Percentage (%)
1	Elementary	8	12.90
2	Junior High School	25	40.32
3	Senior High School	28	45.16
4	Bachelor	1	1.61
<b>Total</b>		<b>62</b>	<b>100</b>

Source: primary data (processed), 2021

Based on table 3, the respondents characteristics based on education level included elementary school with a total of 8 people (12.90%), junior high school with a total of 25 people (40.32%), senior high school with a total of 28 people (45.16%), Bachelor with a total of 1 people (1.61%). According to the facts in the field, the majority of farmers had the latest education in senior high school, because the community considered education to be important and they understood the 12-year compulsory education program. This program was very helpful because with this program the majority of people in Malang Regency had the latest education in senior high school. In accordance with the opinion (Y. M. Hasanah & Jabar, 2017) that the 12-year compulsory education program can realize the access expansion and equity of education in each region, while also reducing children dropping out of school. But, there were also those who have the latest education in elementary; this was due to a lack of motivation to learn. Learning motivation was very influential on the education level. The motivation can be from an extension worker or community service program which explained about the 12-year compulsory education, but it can also explain

how important basic science is. (M. Hasanah & Mutiani, 2019) also considered that counseling or service programs were one solution that can be conducted to motivate people who still do not have the motivation to go to school.

### Group Dynamic

Group dynamic consisted of nine elements such as leadership, group goals, group structure, functions and duties, group coaching and development, group cohesiveness, group atmosphere, group pressure and group effectiveness, can be used to explain the dynamics level of farmer groups. The elements of group dynamics were presented in the following table:

**Table 4 the percentage calculation of group dynamic elements**

Element	Value (%)					Total Value	Average %	Category
	Karangploso	Pujon	Dau	Ngantang	Ngajum			
Leadership	71.7	80.8	69.0	66.0	51.3	338.7	67.7	Moderate
Group Goals	70.7	87.5	77.4	63.1	44.2	342.9	68.6	Moderate
Group Structure	70.7	76.3	71.3	62.7	43.3	324.2	64.8	Moderate
Functions and Duties	82.7	85.0	75.4	67.6	52.5	363.1	72.6	Moderate
Group Couching and Development	79.3	83.8	74.9	64.4	55.8	358.2	71.6	Moderate
Group Cohesiveness	68.0	87.1	80.0	68.9	45.8	349.8	70.0	Moderate
Group Atmosphere	83.0	85.0	80.8	73.3	43.8	365.9	73.2	Moderate
Group Pressure	82.0	83.8	76.9	70.2	60.0	372.9	74.6	High
Group Effectiveness	88.0	80.0	58.5	77.3	60.0	363.8	72.8	Moderate
<b>Total</b>	<b>77.3</b>	<b>83.2</b>	<b>73.8</b>	<b>68.2</b>	<b>50.7</b>	<b>353.3</b>	<b>70.7</b>	

### Leadership

The leadership factor of each farmer group played an important role in determining the success of a group. This was reflected in the average number of leadership, which was 67.7 percent in the moderate category. However, in reality, the figure of a leader in a farmer group was not so significant. It was the role of group administrators that was quite influential in the development of the group in the future. This was different from the research results of (Bakhtiar et al., 2020) that leadership in horticultural farmer groups had a significant influence on group development in the future. This result had similarities with (Haq, Nurlina, & Alim, 2016) (Amalia, 2019) the role of members as a whole was able to become a leader.

### Group Goals

The group goal was an important element in the farmer group. Farmers in these 5 Sub-districts worked always oriented towards group goals. This was indicated by the percentage value of 68.6% which was stated in the moderate category. On the other hand, farmers used group goals as guidelines and group targets as a reference in their work. The intended target group was the welfare of the surrounding

community. In addition to the group target, each individual was also oriented towards group goals because they want to increase family income. This was in line with the opinion (Andarwati, Guntoro, Haryadi, & Sulastri, 2017) which stated that group goals were the expectations of farmers in doing the job, because group goals were formed in accordance with personal goals and activities that were good and beneficial for the surrounding environment. But according to (Damanik, 2015) that the group goal was not the orientation of members in doing the job. The directed group goal will make it easier for the group to perform activities according to their needs.

### **Group Structure**

The group structure was a communication media between members, in table 4 showed that the group structure was in the moderate category with a percentage of 64.8%. A group structure had leadership in it. This was in accordance with the opinion (Bakhtiar et al., 2020) that worked when there was instruction from the head was a function of the leadership structure. This opinion was in line with the field results, such as members of the farmer group worked or performed management duties in a structure of waiting for instructions from the head or other administrators. In addition, according to (Daniel, Maad, & Wibaningwati, 2021) the head had an important role in decision making. So that, the group structure must have a concept in decision making accompanied by the head.

### **Group Functions and Duties**

Group functions and duties were the responsibility of each member who was given responsibility. In this research conducted a percentage result of 72.6% in the moderate category. This was not in line with (Peni Siwi Utami, Satria Putra Utama, n.d.) who stated that the functions and duties of farmer groups were in the low category, because they did not perform their functions and duties properly. On the other hand, the functions and duties that should be given to members must be in accordance with individual abilities. The empowerment of farmer groups can be seen if members performed their duties according to group decisions. According to (Romadhon & Saleh, 2019) the relation between the groups role in performing their functions and duties had an effect on group empowerment. This showed that the empowerment of farmer groups was influenced by the activeness of members in performing the functions and duties of the group.

### **Group Coaching and Development**

Group coaching and development function was to maintain harmony between individuals, obtained a percentage of 71.6% with a moderate category indicated that the farmer group had quite high activeness. The coaching and development of the farmer group had the key on the member participation. In line with the opinion (Romadhon & Saleh, 2019) that in developing a farmer group required the participation of members in every field. Meanwhile, according to (Kharis & Mutrofin, 2019) empowerment required collaboration with other parties, so that the group became more open and new innovations were emerged.



### **Group Cohesiveness**

The cohesiveness factor in a farmer group can be seen as a unit that based on the attachment between group members and illustrated how strong the group survived under pressure from within and outside the group. This can be seen from the average number results of 70 percent in the moderate category. This was reflected by the whole group members who always maintain the integrity of the group if there was a misunderstanding and help each other if in trouble but have a bond that was not close enough. The results of this research had similarities with (Daniel et al., 2021) had the cohesiveness results in the moderate category, seen from the sense of involvement and interaction that made it easier to achieve group goals. The difference can be seen in (Kelbulan, Tambas, & Parajouw, 2018) with the results of cohesiveness in farmer groups in high category that had very close bound and help each other in a cohesive manner to achieve common goals.

### **Group Atmosphere**

Group atmosphere was one of the components in group dynamics which had the role to make group members feel at home in doing duties and in groups, but it was possible that a bad group atmosphere will have an impact on the comfort of group members. The average percentage value of 73.2 percent in the moderate category reflected that in fact, members of the dairy farmer group in the 5 Sub-districts above felt that they always respected the activities of other groups. A positive group atmosphere will certainly affect how the group faces pressure both from within and outside the group, where the better the group atmosphere, the pressure will be lighter by doing it seriously but in a relaxed manner. This was in accordance with (Bakhtiar et al., 2020) that the atmosphere in horticulture farmer groups in the Batu and Malang areas had a high value which was reflected in groups that made their members feel comfortable and full of brotherhood. The research (Kelbulan et al., 2018) showed a difference where the atmosphere had not been well formed and had not been felt between members, stress occurred due to activities that can be assessed as pressure from within, such as during the distribution of seeds where members with narrow land asking for an equal distribution of large areas land.

### **Group Pressure**

Group pressure was an element in a group dynamic that had a role in increasing the courage to finish things as an effort to achieve group goals. Based on field data, the average result showed a percentage of 74.6 percent in the high category. This was evidenced by the attitude of group members who were active in conducting constructive criticism between members about a given duty; this made group members more enthusiastic in completing their duties. (Daniel et al., 2021) expressed a similar opinion where group pressure had a major influence on stress and motivation in performing an activity in order to realize group goals, and with pressure, it was expected to change behavior, attitudes, ideas and mutual trust between members. Unfavorable conditions can occurred due to the absence of penalties that were strictly enforced to provide a deterrent effect, this was in accordance with the research conducted (Jeningsi Frans, Ignatius Sinu, 2020).

### **Group Effectiveness**

Group effectiveness was a component in group dynamics that determined success in performing their duties properly and being able to provide satisfaction for members in fulfilling their goals of joining a farmer group. The average percentage of group effectiveness components from 5 Sub-districts got a score of 72.8 percent in the moderate category. This explained that each respondent in 5 different Sub-districts had tried to make improvements and increase the business productivity of their farmer groups but had not been optimal. Less than optimal group effectiveness can occur due to a lack of unity sense in performing efforts in conducting the farmer group. The moderate category can be influenced by the low element of leadership according to the opinion (Rangga, Effendi, Listiana, & Pranata, 2019) explained that effectiveness had a strong positive relation with the leadership of a group, good group leadership will be followed by the effectiveness of the group. The results of this research were in line with (Daniel et al., 2021) who get the results of effectiveness in the moderate category with the achievement of farming business levels that were not yet optimal, due to the rare presence of members in meetings except when there was financial assistance.

### **CONCLUSION**

Based on the research results, it was found that the overall dynamic aspects of the dairy farmers group in Malang Raya Regency were mostly in the moderate category, while group pressure was the only aspect that occupied the high category. This was evidenced by the attitude of group members who were active in conducting constructive criticism between members about a given duty, this made group members more enthusiastic in completing their duties. Group pressure had a major influence in providing stress and motivation in performing an activity to realize group goals, and with pressure it was expected to change behavior, attitudes, ideas and mutual trust between members. The influence of the pressure of the dairy farmer group in the Malang Raya Regency on the development of food preservation technology in the Malang Regency was considered large.

### **RECOMMENDATION**

First, it was necessary to conduct leadership regeneration and leadership training in order to get a visionary leader figure in the future. Second, it was necessary to train human resources in the field of administration and also to socialize the focused goals of the group that will make it easier for the group to perform activities according to the needs of the group. Third, in line with this the importance of strengthening the group structure and elaborating on the duties and functions of each position. Fourth, the importance of empowering farmer groups was influenced by the activeness of members in performing group functions and duties. Empowerment required collaboration with outside parties, so that the group became more open thus new innovations emerged. Fifth, it increased the closeness of relationships between group human resources in order to achieve cohesiveness and a positive group atmosphere through group gatherings. A positive group atmosphere will certainly affect how the group faces pressure both from within and outside the group, where the better the group atmosphere, the pressure will be lighter by doing it seriously but in a relaxed manner.

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