The Effect of Collaborative Communication, Power Dependency, and Price Satisfaction on Trust and Loyalty of Individual Farmers to Dairy Cooperative Case Study Dairy Supply Chain in Boyolali

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Abstract – The study aims to investigate the effect of collaborative communication, power dependency, and price satisfaction on trust of individual farmers to the dairy KUD (a dairy cooperative). This study also aims to investigate the effect of trust on the loyalty of individual farmers to the dairy cooperative. The investigation will be represented by the 165 individual farmers and several dairies cooperative in 6 districts in Boyolali, Central Java, Indonesia. The finding of this study indicates that the collaborative communication and price satisfaction have a significant positive effect on individual dairy farmer's trust of the competence-goodwill and producer's contractual of dairy cooperative; whereas, the imbalance power-dependency have a negative significant effect on the competence-goodwill and producer’s contractual of dairy cooperative. The finding of this study also indicates that competence-goodwill and contractual trust of individual farmers have a significant effect on the level of their loyalty to the particular dairy cooperative.

Keywords - dairy cooperative; Boyolali; individual farmers; structural equation modelling; trust

I. INTRODUCTION

Milk is one of the important agro products in Indonesia. In 2013, there were almost 636,064 dairy cows in Indonesia, producing more or less 981,586 tons of milk. Basically, Indonesia’s dairy supply chain consists of three main actors: the producers (individual farmers and corporate dairy farmers), buyers (Local Dairy Cooperative Union or Koperasi Unit Desa/KUD, and milk processor), and consumer. Until now, there is no portion of the chain does the producer interact directly with consumers. Mostly of the producer in Indonesia’s dairy supply chain is an individual farmer, although, sometimes, their role in milk production less important than corporate dairy farmers. For example, in East Java, although individual farmers owned 94 percent of cows, corporate dairy farmers have an important role because they can produce fresh milk more than dairy farmers and their fresh milk production is increasing faster than individual farmers. Then, KUD are the main choice for individual farmers to sell their milk, only a few of the individual farmers sell their fresh milk direct to milk processor. In Indonesia, there were about 220 KUDs involved in the dairy industry with more or less 100,000 dairy farmers as members. Each of the cooperatives is a member of The Indonesian Association of Dairy Cooperatives (Gabungan Koperasi Susu Indonesia or GKSI).

There were several services provided by KUD to the dairy farmers, among others, providing cattle and feed on credit, collecting the milk, checking the milk quality, and paying the farmer. Although KUD providing the dairy farmers credit, basically, the farmers are independent milk producers because they have to decide anything related to their businesses by themselves. In this case, the farmers are the parties that have full responsibility of running of the dairy farms day-to-day. The KUD collects the fresh milk, processes it and then markets it to processing industries, and in specific cases, KUD market the fresh milk direct to the public. The KUD is the biggest buyer of the fresh milk produced by the farmers. Although there were no formal contract between the KUD and the farmer, in practice, the farmers have to sell their fresh milk to the KUDs to which they belong. In this case, impossibility of carrying milk over long distances becomes a condition that makes the farmers difficult to sell the milk to the other KUDs. Based on this condition, the KUDs have a monopoly position in defining the price of fresh milk. In this case, at farm level, the price of fresh milk is decided by the GKSI and KUD. If the farmers were independent, the farmers would be able to get the highest price through sells their fresh milk directly to the milk processing industries. But this condition rarely happens. Then, after collecting the milk from the farmers, GKSI sold the milk to the milk processing industries. The price of fresh milk is determined by the milk processing industries based on the level quality of fresh milk. The higher level quality of fresh milk, the higher price that can be obtained by GKSI from the milk processing industries. The GKSI rarely can get the highest price of fresh milk from milk processing industries. It's because, the level of quality of fresh milk from local cow is still far below the National Quality Standard (SNI). Only 12 percent of milk production meeting the minimum quality standard for milk and to overcome this problem, giving price incentive to the dairy farmers is one of the tools that used by KUD to encourage better farm management practices and higher quality milk [1], [2], [3]. All of the explanations about the relation between individual farmers and cooperative indicates the importance of the producer (individual farmer) and the buyer (cooperatives) having improved understanding, through collaboration and achieving long-term working relationships along the chain. Quality relationship between both parties ensures constant milk supplies with good quality and reasonable price which in turn enhance the milk supply chain [4].

The relationship between the KUD and individual farmer is that of buyer and seller, and there is no contractual
agreement between them. Supported by a lack of legally binding supply contract, it becomes difficult for KUD to predict and manage their supply flows and also the quality. Given the tight and uncertain supply and also the quality, working more closely with producers to build a stronger relationship is one way to reduce their switching behavior and to obtain a continuous and constant milk supply [5]. Shortly, the condition between KUD and its members (individual farmers) has shown that supplier loyalty concept is increasingly important for dairies to stay competitive because, loyal supplier will be staying with the business partner [6] and give a positive attitude toward the relationship [7]. To explain the loyalty of suppliers to their buyers, this study defines supplier loyalty in the Indonesian dairy industry as the motivation of dairy farmers to continually sell milk and engage in long-term relationships with their buyers. This definition also used by Boniface et al [4] to define supplier loyalty in the Malaysian dairy industry.

In business-to-business relationships, achieving loyalty will stimulate long-term relationships with the exchange partner [5] and enhances a sustainable business environment in the future [8]. In the agribusiness context, there were a number of advantages can be obtained by processor because of gaining, managing, and maintaining the loyal suppliers. This advantage is including the processor can get more consistent supplies, lower transaction costs, improve efficiency and reduce post-harvest losses. This advantage, particularly significant for perishable products, like a fresh milk [9]. Regarding supplier loyalty, trust is the basis for loyalty [4]. Trust encompasses one part’s expectations that another party will act in a certain way [10]. According to previous research conducted by Boniface et al [4], the level of trust will be depend on some factors, such as collaborative communication, power dependency, and price satisfaction. So, looking at the importance of trust to help cooperative get the long-term relationship with the individual farmers and the level of trust depends on some factors, this study has two purposes. The first purpose, investigate the effect of collaborative communication, power dependency, and price satisfaction (which can be defined as antecedent factors) on trust of individual farmers to the dairy KUD (a dairy cooperative). The second purpose, investigates the effect of trust on the loyalty of individual farmers to the dairy KUD (a dairy cooperative). Specifically, the investigation of the relationship of collaborative communication, power dependency, and price satisfaction on trust and loyalty will represented by the dairy supply chain in Boyolali.

II. LITERATURE REVIEW

A. Trust

Trust has gained growing importance from the point of view of practitioners and researchers, as a mean of reducing uncertainty and securing a long-term connection with partners of their business [11]. In a supply chain framework, trust is frequently mentioned as an important component for successful partnership relation, as in [12], [13], [14]. Reference [14] said that in building partnership, trust is at the core of handling risk and a prerequisite in the supply chain.

Although there were numerous study about trust, but no solid opinion about the meaning of trust [15] and also no solid opinion about dimension of trust [16]. Zucker, 1986 in Batt et al [9] identified three dimensions of trust, namely process-based trust, characteristic-based trust, and institutional-based trust. Sako in 1998 identified six dimensions of trust, namely characteristic trust, rational trust, institutional trust, anticipatory trust, responsive trust, calculus-based trust and identification-based trust [18]. Other dimensions of trust are described by the other authors, as in [19], [20], and [21]. In line with Boniface et al [4], this study prefers to choose three dimensions of trust from Sako [17] for examining the level of trust of individual farmer to a dairy cooperative. Contractual trust refers to one’s expectations that the promise will be kept by their exchange partner; competence trust refers to one’s confidence that their exchange partners have a specific competence, or professional standard, in running particular tasks; and goodwill trust refers to one’s confidence that their exchange partner will have a good commitment to supporting and continuing a focal exchange relationship [17].

B. The Antecedent Factors of Trust

Collaborative communication and trust

The value of collaborative communication within the supply chain has been discussed by several authors. Collaborative communication will influence buyer-supplier relationships by developing commitment, cooperation and performance, and trust, as in [4], [24] and [25]. Related with trust, several researchers found that communication is positively related to trust in various inter-organizational relationships, as in [26], [27], [28], [29], and [30]. Trust building and knowledge sharing will increase as someone establish a mechanism for communication [31]. In this case, although reference [32] differentiate the term collaborative communication and communication by saying that communication cannot be always collaborative, nevertheless, in the context relationship, the communication stated by those researchers, can also be expressed as collaborative communication. Those major aspects of communication that stated by those researchers ([26] until [30]) are in line with the properties of collaborative communication. Hence, based on the previous research that emphasizes the importance of communication between partners in building the trust (including research conducted by Boniface et al [4]), this study proposed the following hypotheses.

H1: collaborative communication has a positive significant effect on the individual dairy farmer’s trust of the competence-goodwill and producer’s contractual of dairy cooperative.
Power Dependence and trust

Dependence and power are closely related concepts. Power-dependence concepts deal with the distribution of power between two partners in a dyadic exchange relation [29]. The buyer's dependence on the supplier is a source of power for the supplier, and vice versa [30]. Reference [31] conceptualized power-dependence imbalances in buyer-supplier relationships as the dissimilarity in value that the sellers and buyers attach to the relationship. In power-dependence imbalances, the most independent partner will have power over another. Since the power is the antithesis of trust [32], so, the power-dependence imbalances of one party on another will decrease the level of trust between one parties over another [4]. Then, related to power-dependence imbalances which can be exist between individual farmers and dairy cooperative (in this case, the individual farmer feels that dairy cooperative have resource for processing their milk and also can judge the quality and price of their milk), this study proposed of the following hypotheses.

H2: perceived power-dependence imbalances between farmer and dairy cooperative has a significant negative effect on the individual dairy farmer’s trust of the competence-goodwill and producer’s contractual of dairy cooperative

Price satisfaction and trust

According to reference [33], price satisfaction consists of five dimensions, namely price-quality ratio, price fairness, price reliability, price transparency, and relative price. Price-quality ratio is the concept of value for money or the ratio between outputs (price/ money offered/obtained) and inputs (product offered) [34]. Price fairness is related to price comparison. Not only do suppliers compare prices with other buyers but also with the high prices that they have received from the same buyer [35]. Price reliability relates to the idea that prices do not modification unexpectedly and that the suppliers are informed in a timely manner [35]. In relation to price transparency, industrial suppliers of several commodities, particularly products from agricultural sectors are often worried about the price formula that is used by their buyers [36]. Thus, two or more suppliers of the similar commodities may obtain different prices below some circumstances. This therefore makes it important for buyers maintain a high level of transparency related to how the prices are calculated and paid so that several suppliers may not feel distinguished [35]. Relative price is a consequence of the fact that suppliers usually compare prices of one commodity from several buyers. Such comparison may lead to a decreased the level of satisfaction if the suppliers believe they could have obtained a better price from the other buyers, although when they receive price higher than the others [35].

In relationship with trust, there were several researchers that found the significant effect of the price satisfaction on the level trust, as in [4], [37], and [38]. So, to prove the relationship between price satisfactions of individual farmers to dairy cooperative, this study proposed the following hypotheses

H3: price satisfaction from the dairy cooperative to the individual farmers has a positive significant effect on the individual dairy farmer’s trust of the competence-goodwill and producer’s contractual of dairy cooperative

C. Trust and Loyalty

Loyalty is defined as the correlation between an individual's attitudes predisposition towards an object and the repeat patronage of that object [39]. Most of the study highlighted the relationship between trust and customer loyalty; whereas, the study about the relationship of trust and supplier loyalty are still rare. One of the researchers that study about the relationship between trust and supplier loyalty is Boniface et al [4]. There are three main streams of research on loyalty: behavioral loyalty, as in [40]; attitudinal loyalty, as in [41], and [42]; and composite loyalty, as in [43] and [44]. Behavioral loyalty has been considered as repeat purchase frequency or proportion of purchase [40]. Attitudinal loyalty is a psychological attachment to a firm or certain brand which is often in the form of a long-term and ongoing relationship with the company or brand [41], [42]. Thus, composite loyalty is a combination of behavioral and attitudinal measurements [44]. In the context of the relationship between individual farmers and dairy cooperative, behavioral loyalty can be seen as a repeat individual farmer to sell their milk to the particular dairy cooperative; whereas, attitudinal loyalty can be seen as the psychological attachment of individual farmers to the particular dairy cooperative. So, to prove the relationship between trusts on the loyalty of individual farmers to dairy cooperative, this study proposed the following hypotheses

H4: Competence-goodwill and contractual trust of individual farmers have a positive significant effect on the level of their loyalty to the particular dairy cooperative

III. METHOD OF RESEARCH

A. The Population and the Sample of Study

This study was conducted in Boyolali, Central Java Province. Boyolali is one of five regions in Indonesia that produce 97 percent of Indonesia’s milk. The number of 165 samples is chosen from 2,440 individual farmers in Boyolali.

B. Instruments and Measures

There were 33 items were selected to test the relationship between collaborative communication, power dependency, price satisfaction, trust, and loyalty. Those items were developed from several sources, as in [4], [9], [22], [33], [45], and [46]. This study used 5 Likert Scale (1= strongly disagree, 2=disagree, 3= neither agree nor disagree, 4=agree, and 5= strongly agree) to measure the condition of all of the items.
C. Data Analysis Tools

A study carried out by using Structural Equation Modelling (SEM) which was run by Analysis of Moment Structure 22 (AMOS 22) Program.

IV. RESULT AND DISCUSSION

A. Characteristic Respondent

Characteristics of the respondents who completed a questionnaire in this study can be described as follows. Most of the respondents are male (81.87%), at the ages between 36 to 50 years old (50.29%). Most of the respondents have as much as 1 to 5 dairy cows (85.96%) and they have become a farmer as long as 1 to 20 years (73.68%).

B. Result of Validity and Reliability Test

This study used standardized loading factor to test the validity of each item in the questionnaire. The item of the questionnaire is valid if that item has standardized loading factor ≥ 0.50, otherwise, the item of the questionnaire is not valid and must be excluded from its construct. Result of data processing shows that all the items in the questionnaire used in this study have standardized factor loading ≥ 0.50, ranging from 0.65-0.88. It indicates that all the item in the questionnaire used in this study is valid for each latent constructed.

Reliability was evaluated by examining the Composite Reliability (CR) and average Variance Extracted (VE) from the measures. A commonly used threshold value for CR is 0.70 and VE is 0.50. Result of data processing shows that the CR scores for each of the constructs are well above 0.70, ranging from 0.765 to 0.975 demonstrating an acceptable level of internal consistency of the construct indicators. The result of data processing also shows that the average VE scores for each of the constructs are well above 0.50, ranging from 0.526 to 0.720.

C. Test of Model Fitness

Eleven criteria which belong to the Goodness of Fit Indices (GOF Indices) are used to determine the degree to which the theoretical model as a whole is consistent with the empirical data. The result can be explained as follows. Chi-square < 574.1574 (5%, 520); probability ≥ 0.050; CMIN/DF ≤ 2.000 or ≤ 3.000; RMSEA ≤ 0.080; 0.8 ≤ GFI < 0.9; 0.5 ≤ AGFI < 0.8; 0 ≤ TLI < 0.9; and 0 ≤ NFI < 0.5. Chi-square, probability, CMIN/DF, RMSEA, GFI, and TLI indicate a good fit of the model; whereas AGFI indicates an adequate fit and NFI indicates a marginal fit.

D. Result of Hypothesis Testing

Result of hypothesis testing indicates that all the hypotheses given by the study are proven by the model (H1: critical value or CR= 4.111, p-value < 0.05; H2: CR= 2.127; p-value<0.05; CR= 2. 761, p-value<0.05; and H4: CR= 5. 131, p-value<0.05).

V. CONCLUSION

Based on the result of data processing, this study found that all of the hypotheses given by the study are proven by the model. The finding of this study indicates that the collaborative communication and price satisfaction have a significant positive effect on individual dairy farmer’s trust of the competence-goodwill and producer’s contractual of dairy cooperative; whereas, the imbalance power-dependency have a negative significant effect on the competence-goodwill and producer’s contractual of dairy cooperative. The finding of this study also indicates that competence-goodwill and contractual trust of individual farmers have a significant effect on the level of their loyalty to the particular dairy cooperative.

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