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THE DEVELOPMENT OF BUSINESS PARTNERSHIP AS AN EFFORT TO INCREASE THE MANGO FARMER'S INCOME, A SYSTEM DYNAMIC APPROACH

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Abstract

West Java is one of the largest mango production areas in Indonesia. Yet, there is no proper policy and institution supporting West Java to have competitive advantage in national and international market. On the other side, the demand of mango is increasing in line with the improvement in the income of the society as well. The proper supporting agriculture institution is required in order to create a link between the market and the producer which, in turn, will improve the quantity, quality and continuity of the mango supply in the market and raise the mango farmers' income level. This research is focused on the mango farmer and aimed to strengthen the partnership of the supporting institution in order to involve the farmer in the modern and global market as well as develop a strategic policy to improve the competitive advantage of West Java's mango. The methods used in this qualitative research are descriptive and dynamic system analysis. The result shows that there are partnerships take place between farmers and big suppliers, farmers and exporters, as well as farmers and industries. In maintaining the sustainable partnership model, factoring policy and socialization on the use of the off-seasons technology are required to improve its productivity which, in turn, will influence the income level of the mango farmer.

Key words**:** *bussines partnership, farmer's mango income, dynamic system*

INTRODUCTION

In the last ten years, in Indonesia, the demand of fruits from local and international market has been growing rapidly. The increase of the demand from domestic market is caused by the raise of the society income and the improvement of the needs of good nutrition. SUSENAS data showed an increase in the consumption of fruits per capita (kg / capita) by 13% in the last 20 years. The increase is much more promising when we take a look at the increasing number of mango consumption by 20% per year, from just 0.99 kg / capita / year to 3.12 kg / capita / year in 2003. Initially, the mango as seasonal fruit is considered as a luxury fruit by the people bought by the upper classes. But now, the mango has been more available with a relatively cheaper price most of the year. Naturally when the people's income rises, the consumption of fruit also shifts from being available throughout the year like bananas to a more exotic seasonal fruit. Similarly, the export demand for tropical fruits continues to rise, including the demand for mangoes from Indonesia. Mango exports data in five years from 2007 to 2011, showed an average increase of 14% per year (Director General of Horticulture, 2012).

The major market shares of mango are in the Middle East, East Asia and Western Europe countries. In addition, in fact, there are also some countries that have the potential to be mango export target such as: China, Japan, Europe and Australia. The rapid growth of mango open market, both domestic and international, would theoretically increase the sales volume which, further, increase mango farmers' income. But the empirical data shows that mango farmers 'income has not increased as expected due to various constraints such as low mango quality, as well as limited access to market and technology information. Business partnership is considered as an effort to give farmers access into technology, capital and market information which wil raise mango farmers' income. But what happened in

the field are not always in line with the theory. Therefore, an in-depth study about business partnership of mango farmers as an effort to increase farmers' income is needed.

The research problem is formulated as follow:

(i)How is the partnership pattern existed between the mango farmers and their business partner?

(ii)What kind of business partnership is needed to develop the mango farmers business in order to increase the farmers' income?

Literature review.

The Development of Business partnership (Contract Farming) Model as An Effort to Increase The Mango Farmers Income.

The weakness of agribusiness in Indonesia was identified by Saragih (1998) [13] who suggested that the agribusiness system in Indonesia was generally dispersal, horizontal and asymmetric. These three things together have weakened the competitiveness of agribusiness which make the comparative advantage is in vain, because the structure is unable to take advantage of agribusiness into competitive advantage. In such conditions farmers face productivity paradox, namely increased productivity where greater added value enjoyed by those who are in non-farm, so the level of real income of the farmers is getting left behind. The conditions explained above are also found in mango commodity. Increased demand followed by increased production and price level (consumer's price) is not always result in welfare for farmers as the profit received by farmers is not correlated with the increase in the price at the consumer level. Various studies show that the increasing demand for mango for both domestic and international market mango caused the price at consumer level continues to rise. But it turns out that the effect of price increase is not merely enjoyed by mango farmers as producers, but the traders (middlemen or traders). (Agustiana, 2005; Saptana, 2005) [1, 12].

In the study conducted by Yulizarman (1999) [22] in Indramayu-Indonesia, it was found that 73.3% of the farmers used "tebasan system" at a much lower price and only 26.7% were harvesting their own and sell them immediately to collectors. The factors that influence the farmers to choose the "tebasan system" are because farmers need funds quickly and avoid the risk of theft as the harvest itself needs labor and additional costs and, moreover, they are lack of experience in harvesting and selling the fruit. However, Sulistyowati study (2009) [16] showed that mango farmers who sell their product through the APPM (Association of Mango Farmers and Merchants), obtain a higher price and market guarantee. But, the problem is that there are only a small number of farmers who want to join the institution. From the above mentioned studies, it can be expected that the institutional mango farmers have not been functioning optimally so that the mango farmers choose to sell through slash and debt bondage. There are obstacles encountered in the development of mango farmer's commercialization, especially the influx of imported fruits from overseas. Imported fruit has several advantages over local fruit such as its high quality, attractive color, good shape and size, attractive packaging, as well as the vigorous promotion via electronic media. According Sulistyowati *et al*. (2015) [18], off-season technology adoption by Indonesia mango farmers is still low (17.92%). If compared between two biggest mango centre in Indonesia, West Java have higher implementation level than East Java, that is 23.42% compared to 12.50%. Based on the problems of the asymmetric and dispersal mango agribusiness structure, then the business partnership is one solution needing to be considered. Contract farming as a form of partnership in the agricultural sector, according to Eaton, C. and Andrew W. Shepherd (2001) [7], when efficiently organized and managed, contract farming reduces risk and uncertainty for both parties as compared to buying and selling crops on the open market. In other words, partnership is the parallel cooperation relations between businesses based on the principle of mutual benefit and mutual protection which lie on the principle of kinship and togetherness.

The immediate benefits of contract farming are; a) Improving access to capital and production factors, b) Improving access to the market, c) Utilizing better technology, d).

Better risk management e) Increasing the use of family labor. Thus, contract farming is one of the institutional engineering that unite the farmers from one production sub-system with other production sub-system in order to increase efficiency and productivity which refers to the market mechanism, and more equitable value-added distribution for all actors of agribusiness. Thus, farmers' income is expected to increase as well as their welfare. A study conducted by Sulistyowati in 2003 [15] in Cianjur and Bandung Regency found that the implementation of the partnership showed better performance in farming to farmers. The result of testing the allocative efficiency of the factors of production (land, seeds, organic fertilizers, inorganic fertilizers, pesticides, and labor) showed an evident that contract farming was more efficient than non-contract farming. So it can be concluded that the implementation of the partnership play a significant role in improving the allocative efficiency of the factors of production, income and R/C. Similarly with the Multi-partite partnership model, it has been succeed to improve the welfare of coffee farmers through improved quality of Luwak coffee, so they can reach export markets to Europe (Sulistyowati, 2010) [17].

MATERIALS AND METHODS

The research was conducted in Cirebon as the center of mango production and contract farming in West Java-Indonesia. The design of this study is qualitative, while the data and information come from primary and secondary sources. Data collected are based on observations, discussions, and in-depth interviews with respondents through and FGD to obtain numerical data and mental models. The participants are specialists associated with mango agribusiness such as District Agriculture Office, BRI and BNI as banks representatives, Agricultural Instructors, the Chairman and members of Mango Farmers Group, Chairman and members of Gapoktan, Mango dealer, mango Seed Provider, Mango Collector, Sprayer Trader (insecticide spraying and sellers), the partner (Cirebon – SAE, PD. Ece Kewer, PD. Dunia Gincu). Mental models are the rules underlying the decision making by the actors involved in the mango agribusiness system studied (Tasrif, 2005) [20].

Data Analysis

a)*Supply chain mapping* is used to describe the mango supply chain.

According to Feller, Shunk, and Callarman (2006) [8], Supply Chain is a network organization of product from upstream to downstream including all sorts of different processes and activities that provide value to the product until it reaches the consumer. Meanwhile, the Supply Chain Management (SCM) is a series of approaches to integrate suppliers, dealers and retailers efficiently so that the product is produced and distributed by the correct quantity, location and time to minimize costs and satisfy the needs of the end user (Copra, Sunil and Peter Meindl, 2001) [5].

b)*Dynamic System Analysis*. The rationale for the methodology of system dynamics is system thinking in which every issue is seen as a system including all the interactions between the elements of an object within a particular environment that works to achieve the goal. According to Sterman (2001) [14], and Bell C. *et al*. (2003) [4], system dynamics is a perspective and set of conceptual tools that helps us to understand the dynamic structure of a complex system. System dynamics is also a method of solid modeling which enables us to build a computer model to create a simulation of complex systems and use these models to design policies and also organizations more effectively. The methods of system dynamics is done through six stages, such as: Problem identification, System conceptualization, Model formulation, Simulation and validation, Policy analysis and improvement and Implementation (Sushil, 1993) [19]. The main assumption in the paradigm of dynamic systems is that the structure of the phenomenon is a collection of causal loop structure. The existence of this structure as a logical consequence of their physical constraints and social goals, reward (praise) and the pressure that causes human to acts and generate dominant dynamic

cumulative tendencies holistically (Sterman, 2001) [14].

RESULTS AND DISCUSSIONS

Mango Supply Chain in Cirebon Regency. Actors involved in the mango supply chain in Cirebon regency are supporting industries which become providers of inputs (seeds, fertilizers and insecticides), Saprotan store which supply farmers' needs in conducting mango farming, Department of Agriculture, Department of Trade and Industry, banks and other financial institutions. Perpetrators of mango production centers involve farmers, middlemen, traders, farmers' groups and companies / exporters. Production of mango produced by farmers is used to meet the needs of the processing industry, the traditional markets, supermarkets and international markets (Fig. 1).

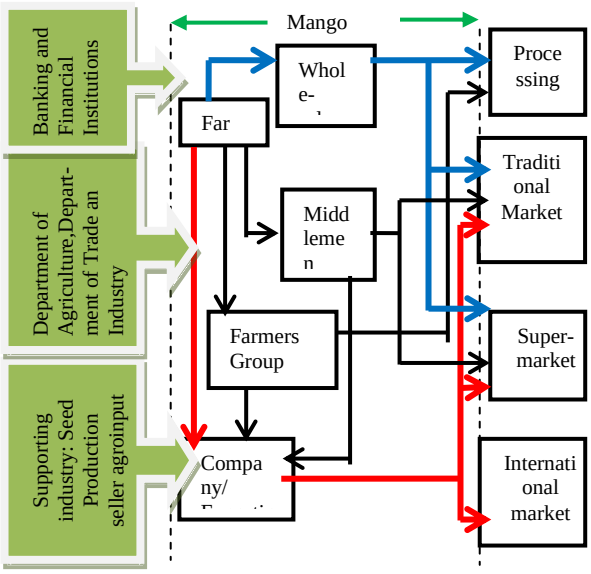

Fig. 1. Mango Supply Chain in Cirebon Regency, Indonesia

Each of the actors involved have different roles and functions in the development of mango in Cirebon. Farmers as a manufacturer is dependent upon the industry as input providers, such as saprotan store, which fulfill their mango farm inputs such as fertilizers, pesticides, growth regulators and others. As a provider of information, the Department of Agriculture through agricultural instructors are able to help farmers in the delivery of information technology in mango cultivation so as to increase the productivity of mango, control the pests and diseases as well as information needed by farmers. Banks and other financial institutions are expected to take part in providing capital for farmers farming so that farmers will no longer have difficulty in obtaining capital and get stuck with usurer or bonded labor system. Mango farmers as producers have a very important role in the development of mango but the farmer must also be supported by the industry and supporting institutions. Farmers in cooperation with the middlemen, traders, farmers' groups and exporters are able to help farmers in the mango market to meet export demand.

Mango in Cirebon is distributed to meet the processing industry such as sweets and mango purre, traditional markets, Pasar Induk (Jakarta, Bandung, Batam, Semarang and others), modern markets, such as supermarkets (Carrefour, Yogya, Sogo and others), and for the international market in the Central East countries and Singapore have a continuous demand for mangoes.

System Dynamics Approach-General Model of Actors Interaction in Mango Farming

Mango supply chain in Cirebon Regency-Indonesia is a complex network because it involves a variety of actors. These actors are consisted of mango farmers, farmer groups, middlemen, traders in traditional markets, supermarkets, and exporters. However, the mango supply chain activities seem to apply the integrated system involving the relationship of the various actors involved in the supply chain activities. There are some activities in mango farming activities to meet market demand. The results from the production of mango farmers are transported and stored in advance by the middlemen and farmer groups so that there will be sorting activity based on its quality to distinguish the quality of the mangoes that will be distributed to the markets respectively.

a)Sub Model of Mango Supply in Farmer Group and Market. In this model (Fig. 2), it

is also explained that the sorting activities undertaken by the mango farmer groups that determine their group of quality (grade) into on grade distributed for SAE market partners as much as 90% of the total production and the remaining 10% off grade is distributed for processing. The SAE partners also conduct the sorting for different market segments, namely 50% for the traditional market, 20% for supermarkets, and 30% for export. This condition in the sub model happens to mango farmers in Cirebon.

Fig.2. Sub Model Diagram Mango Supply in Farmers Group and Market

b)Farmers group financial Sub Model. Mango farmer groups financial can be seen from the profit obtained by farmer groups and also expenditure on costs incurred from the transport to the sorting process as well as distribution to the market.

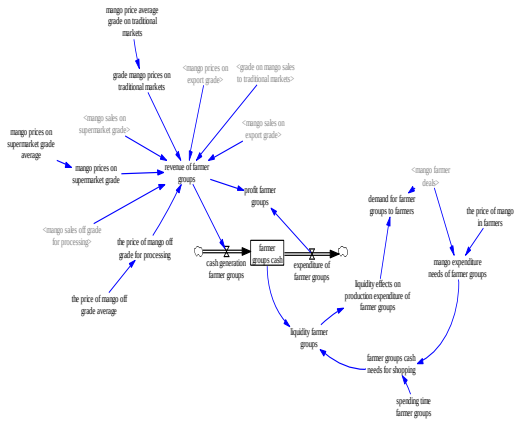

Fig. 3. Sub-model of Financial Diagram Mango Farmers Groups

c)Wholesaller and Farmer Groups Behavior. In general, the production system of mangoes, starting from the production to the marketing stage, had not been able to provide optimal incentives to mango farmers who had been working on it (Anugerah, 2009) [2]. From some studies on mango commodities conducted by Agustiana *et al*, (2005) [1]; Saptana *et al*, (2005) [12]; Iswariyadi *et al*, (1993) [11]; Haeruman *et al*, (2001) [10]; Department of Agriculture Jabar (2001) [6] and the results of other related studies, it was found that the profits of mango agribusiness activities are mostly only enjoyed by merchant level or marketing level in general.

The results showed that the mango farmers cash in Majalengka is still low. In this case, it is shown in the dealer cash who also become mango farmers in Majalengka because they have no partner in the marketing and the mango farming in Majalengka has not been developed intensively yet although the land and the number of tree population continues to grow.

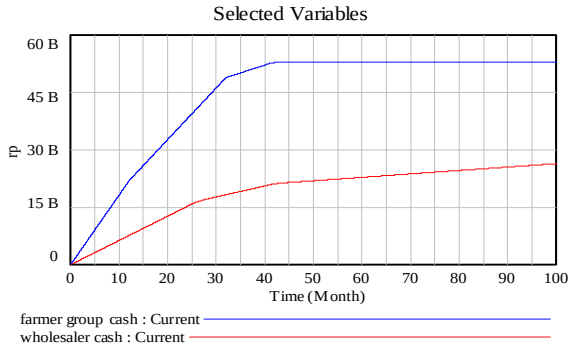

Fig. 4. Wholesallers-cash and Farmers-Group Cash Behavior

Results of the analysis showed that the farmer-group cash in Cirebon is higher than the farmer-groups cash in Majalengka as shown in Figure 4. The farmers do not have the initial capital for implementing mango farming. But, by the presence of partnerships, the cash is increasing because the farmer get capital loan from the partners and they also conduct better farming because of the demand from the partner mainly for the export market destination.

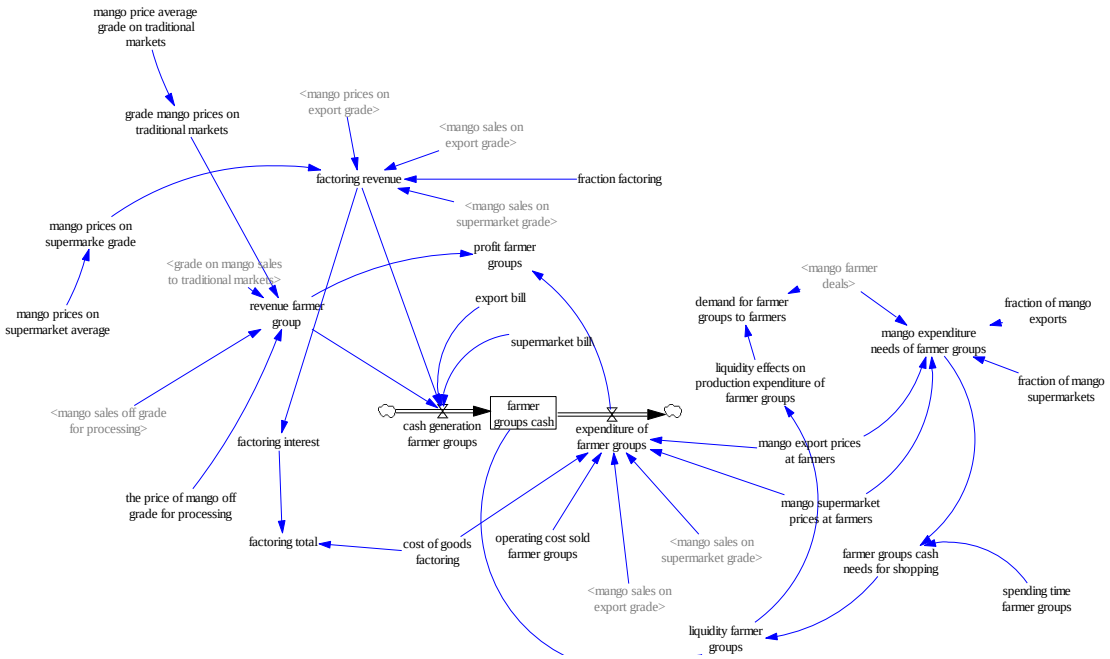

Fig. 5. Sub model of farmer group cash scenario factoring

However, the dealer cash is low because the implementation of mango farming is still not optimal and the partnership has not been established which cause the market access still low. On the contrary, in Cirebon, partnerships have already been established managed by farmer groups that partner with CV Sumber Buah (SAE).

With the establishment of the partnership, the marketing access both for local and export marketing is getting better, productivity and income had also been improved as well as the business risks could be reduced (Department of Agriculture, 2001) [6]. However, in actual partnership that exists for more than six years, there are still obstacles faced by both the partner company or a group of farmers or farmer partners.

Common obstacles faced in partnership are quantity, quality, and continuity. Similarly, it is happened to the mango farmers in Cirebon. Farmers have not been able to meet the request of the partners in terms of quantity and quality so that the continuity of distribution from farmers to the partner company is not as expected. In addition, farmers felt that the payment delay of approximately one month from partner companies is less motivating.

d)Policy Recommendation for Partnership Development through Financial Institutions Factoring.

Partnerships at the mango development effort still many obstacles, one of which is their relatively long delay payment of the partners which are companies supermarket and export to mango farmers through farmer groups.

This will disrupt the liquidity of farmers in mango farming, it would be necessary policies in overcoming the liquidity constraints of farmers through cooperatives, financial institutions Bank and Non-Bank. Related to this, are supposed to use the services of financial institutions factoring or factoring. Factoring is a business entity conducting activities and financing in the form of purchase or transfer and maintenance of accounts or short-term bills of an enterprise from transactions in the country or abroad. In

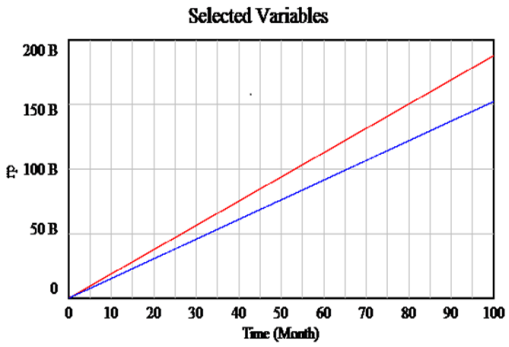

Fig. 6. Mango farmer group cash scenario factoring

Figure 6 seen their sub farmer group cash models with the addition of a new structure of factoring.

Based on modeling and simulation results obtained information that the scenario factoring, cash farmers who in turn have an impact on cash mango farmers have a tendency to rise to a higher trend compared with the farmer group cash before their scenario factoring. This will have a positive impact in increasing profits mango farmers (Fig. 6). The results are consistent with the results of research Andayani (2015) [3] which explains that factoring has a positive impact on improving cash red chilli farmers.

e)The Development of Sustainable Mango Partnership. By looking at the problems faced by the partnership between farmers and mango with a partner company (middlemen, exporters and processors), and after descriptive analysis, theory of drama and system Dynamics analysis, it is suggested that Sustainable Mango Partnership Model needs to be implemented as shown in Fig. 7.

In the field interviews and analysis conducted, the problems that stand in mango partnership are:

a) for partner companies: the production of mango farmers which do not meet both quantity and quality standards required;

b)for mango farmers: their pay delay which disturb the liquidity of farmers, especially for next mango cultivation. In developing a sustainable partnership model, the off-seasons technological innovation and institutional innovation may provide solutions to these problems.

Off-seasons technological innovation have actually been introduced to the mango farmers, but in practice there are many obstacles where many farmers are wrong in doing technology off-seasons. Therefore, skills are needed to apply the off-seasons technology well, so that the technology can increase the production of farmers, and maintain continuity of production throughout the year as well as increasing farmers' income, as prices in the summer off-season is higher. To that end, the Department of Agriculture needs to provide a more education for off-season technology, even with the field practice training (such as Piloting project garden).

Implementation of the off-seasons technology also requires higher production costs for the purchase of production facilities, approximately twice the cost of on-seasons.

It is necessary for financial institutions to provide loans to mango farmers, certainly with an affordable interest rate and repayment period adjusted to the time of mangoes harvest season.

Institutional innovation suggested in a Sustainable Partnership Model is the inclusion of the Institute for Factoring.

The problem of the relatively long delay payment of the partners, supermarket and exporter, to mango farmers through farmer groups causes losses to farmers.

This will disrupt the liquidity of farmers in mango farming. Factoring is a business entity conducting financing in the form of purchase or transfer and maintenance of accounts or short-term bills of an enterprise from transactions in the country or abroad. Therefore, with the transfer of receivables from partner to factoring institutions, the payments to farmers can be done in a shorter period of time, so it does not impede mango farmers capital for the next cultivation(results of the analysis show that the trend of farmers cash increase).

With technological innovation and institutional innovation explained above, the farmers' production processes will run continuously, production will be increased both the quantity and quality, as well as payments to farmers will run smoothly.

Thus, the Partnership can run continuously. This is in accordance with Hayami & Ruttan (1985) [9], which states that in addition to the resources and culture, the institutional and technology are crucial to transform traditional agriculture into modern agriculture.

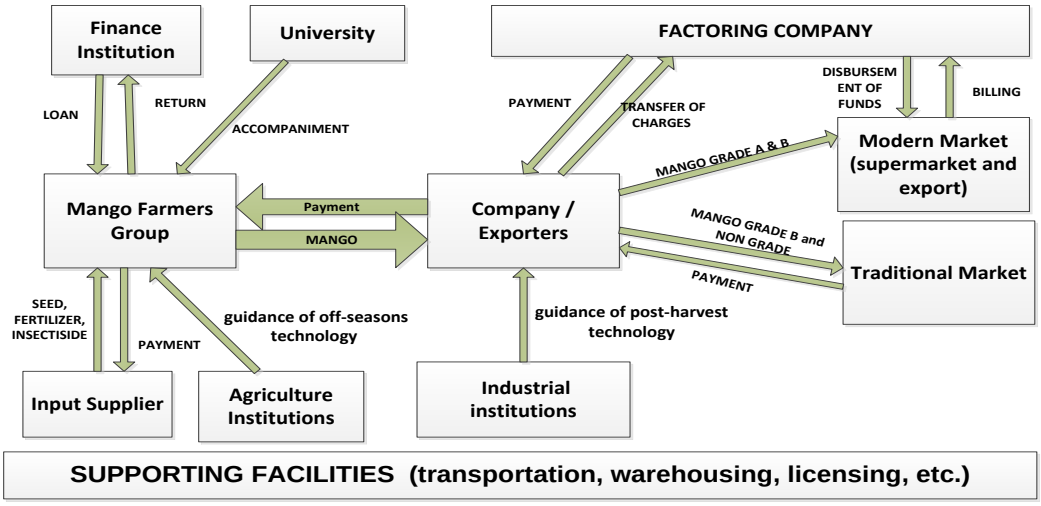

Fig. 7. A Model of Sustainable Partnership Mango

Supporting facilities such as road conditions, transportation vehicle, warehousing and export licensing, which is still not provided, are necessary and the government has responsibility to develop those aspects so it will be conducive to the development of mango agribusiness.

CONCLUSIONS

Business partnership in mango agribusiness are: a)Mango Farmer with Whole sellers for traditional market; b)Mango Farmer with Whole sellers for modern market; c)Mango Farmer with Exporter; d)Mango Farmer with Processing Industry.

As an effort to develop the institution innovation in the partnership of mango agribusiness in Cirebon Regency-Indonesia, It has been formulated mango sustainable partnership model, in addition to entering the socialization policy in the use of technology off-seasons, it is also necessary policy factoring, so that the partnership can increase the production of mango farmers, which in turn have an impact on farmers' income increase mango. This resulted in an increase in earnings and business efficiency mango farmers, so that the partnership can take place sustainable.

Based on the conclusions mentioned above, a few recommendations are specified below:

-Institutional financing (banks) are expected to provide loan schemes / credit adjusted with mango production patterns, and with an affordable interest rate.

-Sustainable Mango Partnership Model need to be socialized, so that the implementation can run smoothly and continuously, to increase the income of farmers and agribusiness.

-Assistance for the implementation of the Sustainable Mango Partnership Model both from the government (Department of Agriculture and Department of Industry) or from the College through LPPM is needed. Thus, it will eliminate any fraudulent acts (one-achievement) of one of the parties that will harm the other party. So that a partnership could run with a sustainable condition and mutually beneficial.

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