

POST HARVESTS ON AGRICULTURAL SECTOR: A CRITICAL VIEW OF WAREHOUSE RECEIPT SYSTEM IN EAST JAVA-INDONESIA

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Abstract-The agricultural sector plays an important role in economic growth and improving food security, where agricultural output is primarily food is an important factor for basic human needs. In meeting the availability of food, the production process has many factors that influence it and often farmers experience crop failure. In this study explains the factors of failure in the agricultural sector and its handling based on the Warehouse Receipt System in East Java. The research location was carried out in East Java Province purposively in 6 districts namely Probolinggo, Sampang, Situbondo, Tuban, Madiun and Nganjuk with data collection methods through surveys, Focus Group Discussion, deep interviews, to stakeholders, and data were analyzed using descriptive quantitative percentages. The results showed that food on the one hand is the basic needs of most people and even most of the world's population, but on the other hand there are obstacles that always accompany it in producing it. Apart from the characteristics of agricultural commodities whose total output is influenced by nature and has seasonal variability in production as well as large volumes and is easily damaged, then based on conditions in the study area the results of the causes of agricultural business failures consist of technical, natural, pest, price and market factors, capital, human resources and information technology, culture and others. The most dominant factor, 19 percent, is caused by natural factors. In addition to this, fluctuating prices at the time of the harvest are very detrimental to farmers, an alternative solution is the use of a Warehouse Receipt System, where this system can be accessed by farmers and helps farmers to delay selling at harvest time where prices are falling and reselling it when prices are already rise.

Keywords: Index Terms- Business failure, Characteristic of agricultural, Price fluctuation, Warehouse Receipt System.

I. INTRODUCTION

One of the way to improve marketing of agricultural products is through the Warehouse Receipt System (WRS). This system is made more sophisticated by adopting measures such as commodity valuation according to quality, so as to reduce the occurrence of fraud in weight and size; and facilitate financial access at all levels in the marketing chain; seasonal price variability and instruments to reduce price risk (Coulter, J and Onumah, G. 2002). The WRS concept is based on warehouse receipts that can be used as collateral to access finance. One of the important philosophies of the existence of WRS in Indonesia is the availability of sufficient food stocks for the community, this concept can be explained by looking at the marketable surplus of the food commodity (Rosmawati, H. 2009; Mahanta, D. 2012). Currently every country in the world is facing the same obstacle in ensuring adequate food for its people. Indonesia is the largest agrarian country in Southeast Asia and is the country with the 4th largest population in the world. The problem faced by Indonesia with a large population is how the food available in the country can meet the needs of its population, therefore the presence of WRS can be one indicator for the government in monitoring the availability of food in an area, where food availability connotes physically food in quantity adequate and accessibility shows the purchasing power or

ability to obtain enough quality food at any time, while utilization shows the quantity and quality of adequate food intake (Omonona and Adetokumbo, 2007; Widada, A.W. *et al.* 2017).

Agriculture plays an important role in economic growth, increases food security, poverty alleviation and rural development and is a major source of income for around 2.5 billion people in developing countries (FAO. 2003). Agricultural output in this case food is an important factor in meeting basic human needs. Every day people need ± 1 ounce of rice/person to be consumed in the form of rice and within 1 month the rice needs to reach 3 - 4.5 kg/person, in a year predicted 1,095 kg - 1,642.5 kg/person. Most of the world population still relies on food, especially rice as the main consumption, including Indonesia where rice is the main commodity of food for the people and also in East Java. Although throughout the world, there is a shift in diet, especially in consuming staple foods towards a more diverse diet. But globally there was a significant increase according to (Alexandratos. 2006; Kearney, J. 2010) food consumption per person with an increase of almost 400 kcal/person/day, up from 2411 to 2789 kcal/person/day between 1971-2001. And so far cereal remains the most important food source in the world, contributing 50 percent of calories and the contribution of cereal to energy intake in developing countries by 70% and 30% for industrialized countries. The WRS is not only known and found in Indonesia but also in other countries such as Tanzania, for that country WRS is one of the reform steps undertaken by the government in an effort to overcome the problem of marketing systems of inefficient agricultural products with the assumption that increasing the efficiency of the marketing system through WRS can help in poverty reduction by increasing farmers' incomes through stable prices and reducing transactional risk (Mpita, HA 2013). In many countries many use the Warehouse Receipt System for their agricultural products and this system is important in terms of the functioning of the product market, besides allowing farmers and traders to access markets and financial systems (Tosun, D. *et al.* 2014; Towo, NN 2014;

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Katunze, M. *et al.* 2017). Open up access to financial institutions, farmers' knowledge and skills in relation to the use of information technology and reduce government intervention in regulating agricultural commodity trade (Onumah, G. 2002; IFAD. 2012; Tosun, D. *et al.* 2014; Suryani *et al.* 2014; Chapoto and Aboagye. 2015). Through this system farmers can increase income, bargaining position and motivate farmers to produce higher products and maintain better product quality.

The WRS as in Act Number 9 of 2006 is an activity related to the issuance, transfer, guarantee and settlement of warehouse receipt transactions, while the definition of warehouse receipt documents is proof of ownership of goods stored in warehouses issued by the Warehouse Manager. The Warehouse Receipt System in Indonesia provides sustainability of the food system through economic links with the agricultural system to improve the marketing of agricultural commodities and supports financing of agricultural activities. The government created a WRS program (Khasanah, U. *et al.* 2017; Bustamin *et al.* 2018) is to help farmers solve the problem of farming costs and to anticipate low prices at harvest which causes farmers' incomes to fall. This system is one of the most effective tools for dealing with price fluctuations in the agriculture / plantation sector, especially during the main harvest season. Pettinger (2016) The decline in the price of agricultural commodities occurs during the main harvest, this will be experienced by farmers and tends to harm farmers. Prices on the agricultural market are often far more volatile than other industries. Besides that (Lukason, O. 2014; Fomishina, V.M. and Prischepo, VS. 2017) stated that the results of agricultural products are influenced by internal factors such as (human resources, skills, etc.) and external factors (climate, pest, etc.). And these two factors determine the competitiveness of products in the global agricultural market.

Theoretically the WRS allows farmers to store their surplus production safely in a modern warehouse, for sale later when prices are higher, while they can use commodities stored as collateral to obtain loans and finance household consumption and investment needs (Giovannucci *et al.* 2000; Kovacevic, V. *et al.* 2016; Mario, J. Miranda, *et al.*, 2017). And warehouse receipts as proof of ownership of goods stored in warehouses play an important role in the agribusiness sector, especially because of the security of warehousing, in selling commodities no longer put in sacks but already using warehouse receipts as transactions or credit and can be traded. Although in practice, warehouse receipt financing is generally not fully embraced by small farmers in developing countries. Given the business environment (Gray, A. *et al.* 2004; Sanas, C.P. 2014) increasingly challenging, developing strategies that respond to changes in the business climate are crucial for sustainable long-term competitive advantage and financial success. If agriculture contributes to economic development, and farmers do not lag behind, agriculture

needs the right credit system. Post harvest credit in the form of warehouse receipt finance has proven to be an important component for the growth of the agriculture sector in developing countries. Efficient warehouse receipts allow farmers to avoid direct sales after harvest, when prices are low so as to reduce price volatility. By giving farmers access to new financing models, they will increase their ability and incentives to invest in production.

II. METHOD

Research related to the failure of the agricultural sector and its handling based on the WRS, the location is carried out in the East Java Province and determined intentionally (purposive method) with the consideration that East Java has implemented the WRS, covering 6 districts carried out randomly consisting of Probolinggo, Sampang districts, Situbondo, Tuban, Madiun, Nganjuk. The duration of the study was 8 months. The type of data used is primary and secondary data. While the method of collecting data through surveys, Focus Group Discussion, interviews using questionnaires and documenting data obtained from stakeholders (Kitzinger, J.1994; Lehoux, P. *et al* 2006). Respondents in this study included 25 key informants in each district: the head of a farmer group of 20 people, the Office related to the research topic of 5 people (Head of the Department of Agriculture, Head of the Field Agricultural Extension Department, Head of the Field of Food Crops, Head of the Department of Food Security, Head of the Department of Trade) . Total respondents in 6 districts were 150 respondents. Data analysis uses descriptive quantitative percentages by exploring data taken from the study site. This analysis presents explanations that are used to provide an overview of the object studied through sample data as they are and make conclusions in general.

III. RESULTS AND DISCUSSION

The problem of meeting the availability of food one side must be met for the community, on the other hand in producing there are many inhibiting factors or obstacles that accompany it so that farmers as producers often fail to achieve maximum yields. One of the constraints is that agricultural commodities have specific characteristics that affect production outcomes, according to Ta (2018), characteristics include: 1. Raw materials, that agricultural products are considered as raw materials because they are used for further processing 2. Large volumes and are easily damaged , so it requires a large storage capacity and because items are easily damaged it needs to be consumed immediately. 3. Variation in quality, because agricultural production depends on the homeland and nature, the results have varying quality 4. Identical products, farmers throughout the country are not connected to each other which is why all farmers produce identical products. Sometimes we face surpluses and shortages of agricultural products and unstable prices. And other characteristics are: 1. Total output is influenced by nature 2. There is seasonal variability in production 3. Geographic concentration of production 4. Production costs vary. The complexity of the agricultural sector business and has a high risk and uncertainty, one of which is the most risky is the price fluctuations that occur at any time by farmers, and to minimize food price volatility, an alternative marketing

model is needed that allows farmers to avoid losses and business failures, namely through the system Warehouse receipt. Information obtained from the Ministry of Trade of the Republic of Indonesia (2019), the WRS in Indonesia has grown since its promulgation in 2006 and has stood as many as 190 WRS and spread across Indonesia, including 25 Central Java, 32 West Java, 2 DKI, 2 Banten and the rest 94 are outside Java, specifically in East Java there are 35 warehouses with the overall breakdown in Table 1 as follows:

Table 1
Numbers of WRS in East Java

Number	Regency	Total
1.	Jombang	3
2.	Madiun	1
3.	Banyuwangi	3
4.	Mojokerto	2
5.	Probolinggo	3
6.	Nganjuk	2
7.	Tulung Agung	1
8.	Pasuruan	1
9.	Ngawi	2
10.	Sampang	2
11.	Tuban	2
12.	Blitar	1
13.	Situbondo	1
14.	Bondowoso	2
15.	Bojonegoro	2
16.	Lamongan	1
17.	Malang	1
18.	Jember	1
19.	Sumenep	2
20.	Pamekasan	1
21.	Kediri	1

Total	35
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Source: Ministry of Trade of the Republic of Indonesia, 2019

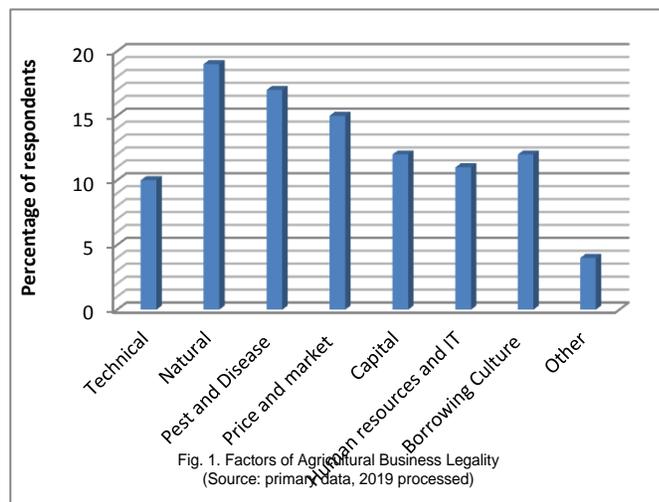
Warehouses in East Java are potentials for farmers to be utilized and their success in implementing the Warehouse Receipt System can not be separated from the role and involvement of the central and regional governments. In East Java, efforts to accelerate implementation were carried out through the Regional Regulation of East Java Province Number 14 of 2013 concerning the Acceleration of the Implementation of the WRS, which aimed to: a). Increase and guarantee the availability of venture capital for sustainable production. b). Control the availability of regional food needs and stabilize commodity prices.

The WRS policy that has been issued by the government is seen as important to assist farmers in overcoming the problem of marketing products, and helping them access credit from financial institutions, farmers can save their crops when prices are low and sell them when market prices are high or at other times with relative prices more profitable so that farmers can get cash to meet the continuity of farming and family needs (Erawan, B. 2008; Galtier, F. 2011).

In the context of meeting the availability of food does not mean without obstacles in the supply of its supply, every run of business will not be separated from the name of the risk of excess in business activities in agriculture has a very large business risk and many factors that influence it. There are risks that can be controlled by farmers and some are not even unexpected. The risk of failure in the agricultural sector is a risk or consequence that must be borne by farmers in an effort to achieve the achievement of both the production and the level of profits obtained in the business. Actually farmers as the main actors of agricultural business must be able to minimize risk by recognizing the risks, causes of risks and impacts caused by these risks. Everett, J and Watson, J (1998), stated that failure cannot be completely avoided but can be minimized. The same opinion (Shepherd, DA 2003; Douglas, S. *et al.* 2000) which states that failures in business occur due to a decrease in income or costs incurred so large that the company or in this case the farmer becomes a loss as a result of not being able to resume operations .

3.1 Determinants of Agricultural Sector Business Failure Factors

Based on the results of studies in several research sample areas in 6 districts consisting of Probolinggo, Sampang, Situbondo, Madiun, Tuban and Nganjuk districts out of 150 respondents there are factors that influence the failure of agricultural sector businesses as grouped in Figure 1 below.



From Figure 1 the dominant factor causing failure in the agricultural sector is nature (19%) while the least minimal factor (4%) is another factor, which is discussed in full as follows:

1. Technical Factors

From the research results obtained by technical facts as much as 10%, many found in the management of farming, especially in commodities such as corn and rice, farmers have not agreed to good cultivation techniques such as the application of planting spacing, at a good planting spacing

of 20x20 cm. Likewise, the application of fertilizer that is not appropriate to the dose and minimizes the application of organic fertilizer (organic fertilizer to increase soil fertility in the long term and reduce the level of soil fertility due to the use of chemical fertilizers), besides that it is also related to farmers who do not need help eradication of disease pests, which are carried out by farmers whether or not there are pests to plants, they still spray, this will affect the amount of inputs used and the costs incurred to purchase these pesticides to be large, which in turn increases farmer incomes. The use of modern technology (Cooper. 2013; Pettinger, T. 2016) has supported an increase in crop yields but increased the use of excessive chemicals eg the use of artificial fertilizers will occur increasing soils that increase yields, increasing, more expensive and more expensive for a little benefit was obtained. The use of technology technically has influenced agriculture. Productivity and yields increase, and at the same time, prove to be beneficial for farmers. Technology not only produces profitable farmers, but also produces quality products is a challenging task to meet the needs of food in large quantities. Although farmers have positive perceptions about technology (Chi, T.T.N. *et al.* 2002), farmers overcome problems in applying technology because they require capital, prefer directives from the government and get attention, and spend funds to obtain certainty of results.

2. Natural Factors

The major determinants of failure in the agricultural sector, natural factors are 19%. Business in agriculture is a unique type of business that is characterized by variability in different production results, unlike business in industry. Farmers cannot determine the exact amount of output produced in one crop or one cycle of the production process because the output produced is strongly influenced by nature, this is what distinguishes it from the industrial sector where outputs can be planned and the results ensured. The only risk that is difficult for farmers to control in their business is natural factors according to Brown's theoretical, C. (2018) important factors influencing agriculture are natural factors such as (a) climate - especially temperature and rainfall, (b) soil, and (c) topography. Most of these factors can be modified to some extent as human effort. Due to natural factors such as drought in the dry season or floods in the rainy season, irregular weather makes it difficult for farmers to manage crops, climate anomalies make it difficult for farmers to predict yields. Climate change is an important issue for farmers and agricultural businesses. The majority of farmers in Indonesia are still traditional in nature, and their businesses depend on nature. This then becomes an obstacle when farmers are unable to adapt. Harvest failures often occur due to long droughts or due to irregular rain patterns and floods that hit their farmlands. This can cause decreased production and not optimal even often fails. These results are in line with the empirical findings of Baldos, U.L.C. *et al* (2019), that the climate impact in heterogeneous agriculture also influences the welfare of farmers.

3. Pest and Disease Factors

Pests and diseases by 17%, are external factors that can be controlled by farmers, therefore recognizing pests or diseases is needed as an initial measure in anticipating pest and disease attacks, both of which affect the results such as a decrease in the amount of production and even production losses. Crop loss due to pests and diseases is a major threat to rural family income and food security throughout the world (Savary, S. and Willocquet, L. 2014; Avelino, J. *et al.* 2015). The assessment of crop loss according to Cerda, R *et al* (2017), is needed to improve the production system and reduce farmers' losses due to yield losses due to pests and diseases that contribute to farmers' income and even have an impact on food availability.

4. Price and market factors

In the sample area, it is obtained that the price and market factors are 15%, the input and output prices of agricultural commodities are always volatile and tend to be unstable and there is no certainty in prices. Price fluctuations will affect the amount of demand and supply for an agricultural commodity in both domestic and international markets. Price uncertainty has an impact on businesses in agriculture, this is related to the interest and willingness of farmers to plant or produce certain commodities. Prices on the agricultural market are often far more volatile than other industries. This is because prices are not elastic in the short run where the amount of supply can vary due to climatic conditions. Likewise with demand, prices are also not elastic (food is very important, and people usually cannot delay even high prices). A sharp fall in prices causes a decrease in income for farmers; and many entrepreneurs have problems that are difficult to predict and beyond their control, especially market changes and this affects their business (Pettinger, T. 2016; Bruntrup, M. *et al* 2018)

5. Capital Factors

Another obstacle of the agriculture sector business failure based on the results of the study is capital by 12%, where capital is the main factor in a production process activity. The capital owned by farmers can be used optimally to produce output. Some farmers have difficulty in the availability of capital, especially small farmers, capital lending is mostly done by small farmers to owners of capital or non-financial institutions. The lack of capital is an obstacle and has an impact on production results, for example when the time crops are fertilized and farmers do not have enough money to buy fertilizer, farmers make fertilizer delays or fertilization delays, the risk that must be faced by farmers is decreased production. Financial risk is the impact caused by farmers in managing their businesses. Likewise, the limited capital causes farmers not to have a warehouse to store their produce independently to accommodate their harvests, so they rush to sell their products rather than save while waiting for prices to improve. Responding to farmers' problems related to agricultural capital (Oruonye E. D., Musa Y.N. 2012; Eboime, M.I. 2008) then there is a need to redesign the government's micro-credit financing policy to ensure the provision of sustainable and timely micro-credit to farmers at very low interest rates; because capital has long been regarded as the primary means of reviving and increasing

the potential for rural economic growth, especially agricultural activities.

6. Factors of human resources and information technology

The sixth factor in agriculture sector failure is human resources and information technology by 11%. In this current era, farmers are required in addition to having sufficient skills in their fields, they are also demanded to get more information both related to agriculture and others such as market information and others. Sources of information both obtained from field extension officers and information obtained from print and electronic media. The lack of knowledge of farmers in accessing market information through print and electronic media specifically the internet causes farmers to get less information related to prices, this is where farmers often suffer losses due to their disregard of the current price of a commodity so that it becomes a weakness and the inability of farmers to sell the results. In general, farmers sell to traders who come to the villages by playing with prices and farmers are helpless to deal with it.

This problem is also found in many Sub-Saharan African countries, where farmers generally only have two choices when harvesting, selling their products to traders who come to the village or bring their products to the nearest market. Because of people's remoteness and poor communication and uncertainty about market prices this is exploited by traders who take advantage by offering very low prices for their products. To avoid losses to farmers, a market information service model is needed, so it is profitable because farmers can find out information on the market price of agricultural products in addition to these two parties can interact with each other. The driving force behind economic change is technology and information, knowledge and information will replace the workforce (Courtois, P. and Subervie, J. 2015; Troskie, D.P. 2000). The lack of farmers accessing information technology can be eliminated if the level of education of farmers is high. Farmer education is assumed to have a positive influence on farmers' decisions to adopt new technologies. Through education level farmers can increase their ability to obtain; process and use information relevant to the adoption of new technologies (Mignouna *et al.*, 2011; Lavison. 2013; Namara, E *et al.* 2013). For the most part in developing countries, agricultural technology has received an important pathway out of poverty. But on the other hand adopting this technology remains low in most of these countries. Therefore to increase the adoption of technology by farmers, it is important for policy makers and new technology developers for the needs of farmers and their support to support the technology that is appropriate for them (Margaret, M. and Kariuki, S. 2015).

7. Borrowing Culture Factors (12%)

The borrowing culture factor of 12% is a new finding in the study area. A tradition that is repeated and carried out in a relatively long time will become a tradition and if followed by

a community and embraced by many people will form a culture. What is meant in this study are:

1. Farmer Culture Borrowing capital for rice milling units/Rice Milling Owners (RMU)
2. Middleman Culture Provides Loans to Farmers

Lack of capital and minimum capital required by farmers makes farmers often confronted when farmers are trapped in credit, the helplessness of farmers in these requirements is used by middlemen, on the pretext of providing help to farmers who have capital difficulties, essentially middlemen create dangerous activities Where at harvest time there is no choice for farmers to sell their produce to other parties estimating the price is higher than what they need to sell the results or deposit the results to the middlemen, both cultures are very difficult to do in the community and need help from the government and farmer maintenance. Discussing Oruonye, ED and Musa, YN (2012), states, most farmers continue to run, the inability of farmers to access alternative sources of agricultural credit has facilitated them to deal with exploitative competitors (traders/middlemen) using microcredit that they for over-years.

8. Other factors

In addition to the factors mentioned above, there are other factors of 4% that cause failure in agriculture, experience in farming, the experience needed by farmers will determine the success of the business. With the experience of farmers who have the ability to analyze good business related to techniques in marketing and vice versa farmers will reverse business bankruptcy when they do not have good experience. Hayward, M. *et al* (2006), stated that rejecting experience in determining is a factor that increases business expenditure. In agriculture, which is a challenge for farmers to win, avoid and respond to shocks, efficient risk management will improve agricultural safety and provide an environment that supports investment in agriculture (www.oecd.org/agriculture/policies/risk 2011). Business failure is a process but how to increase opportunities so that their business does not fail is more important (Shepherd, D.A., Johan Wiklund, 2006). Besides that, make good planning because bad planning will cause failure of the main business in the field of agribusiness, so plan to determine in advance what to do, how to do it and when to do it so that maximum efficiency can be achieved (Chibuzor, M. 2019)

3.2 Management of Agriculture Sector Failure Handling in Warehouse Receipt System

Based on the factors mentioned above and its relation to the risk of uncertainty and the risk of failure in the agricultural sector business, especially on market prices, capital, human resources and information technology, it is necessary to have a solution in the solution of which is an alternative, namely through policies issued by the Indonesian government through The Ministry of Trade of the Republic of Indonesia, the WRS. Through the mechanism and stages in the flow of this system can be accessed by farmers or other agricultural business actors as a treatment in the hope that farmers can carry out the

next production process even though the farmers did not sell their crops directly but instead delayed sales by storing the results in storage-based WRS.

In this study Coulter, J. and Onumah, G (2002) with entitle "The Role of Warehouse Receipt Systems in Enhanced Commodity Marketing and Rural Livelihoods in Africa" states that one of the efforts in increasing marketing of agricultural products is to develop a Warehouse Receipt System. Likewise Mahanta, D (2012), in his review of "Review of Warehouse Receipt as an Instrument for Financing in India" states, one important aspect of the commodity derivatives market in India is the introduction of a WRS as an alternative solution for market participants to access short-term financing. Motives that influence farmers to use the WRS are price factors, access to credit and market access which are all related to agricultural activities (William, J. G. *et al.* 2015).

In the diagram explained the relationship of determinants of failure in the agricultural sector with the Warehouse Receipt System in Figure 2 below:

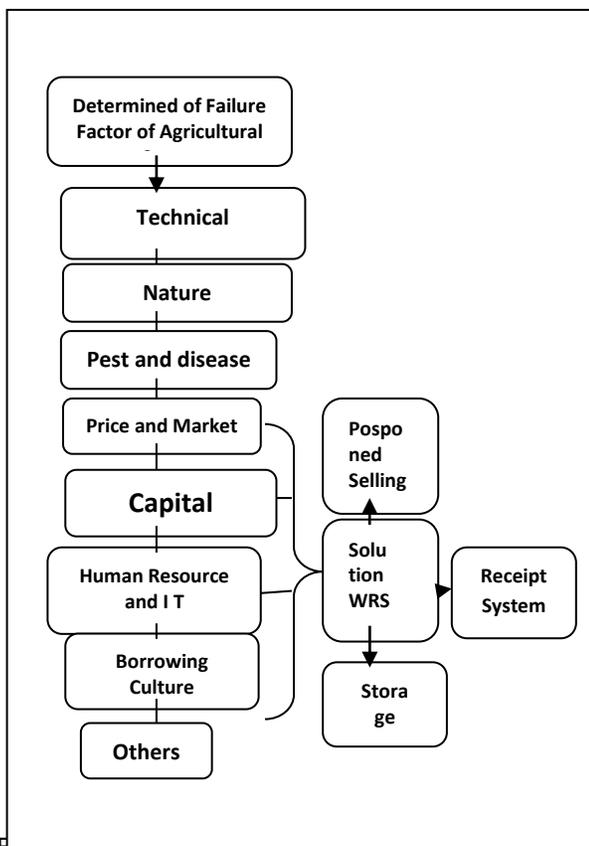


Figure 2 explained showing from the eight factors that affect the failure of the agricultural sector business, four factors including (prices and markets, capital, human resources and technology, borrowing culture) can be overcome with a WRS where farmers can apply by delaying the time of sale of produce production, at harvest time where prices tend to fall, farmers can wait for the right time to get a better price by storing their crops in the warehouse. The WRS is an alternative and marketing solution and can be used as an instrument to protect farmers from losses due to falling prices, through warehouse receipts obtained from storing

goods in warehouses, farmers can obtain loans from financial institutions appointed by the government. In a more macro context, the Warehouse Receipt System not only helps farmers avoid losses due to falling prices, but also can be used as an instrument to maintain the stability of food availability and national food security.

With the functioning of the WRS, there are opportunities for farmers to:

1. Get a better selling price, by storing the commodity in the warehouse first during the harvest season where the general price is low, then selling it when the price is high.
2. Obtain quality and quantity certainty, because the quality test is carried out by an accredited Conformity Assessment Agency.
3. Get a loan from the bank to finance working capital in the next planting season with a guarantee of warehouse receipts without other collateral.
4. Facilitate the sale and purchase of commodities directly or through the auction market because there is no need to bring the commodity as an example, but enough to bring a receipt.
5. Encourage farmers to try in groups so as to improve cost efficiency and bargaining position of farmers.

The other side of WRS can be one of the tools to measure the availability of national food stocks, especially related to food materials such as rice, grain, and corn. This is possible because the data of goods stored in each Warehouse Receipt System, is integrated through a Warehouse Receipt Information System managed by the Registration Center, so that the government can find out the availability of commodities in each WRS location so that the government can take policies related to distribution, food supply (imports) in regions to create national food security. Through monitoring of national stock by the government, Warehouse Receipt System can play a role in creating commodity price stability.

IV. CONCLUSIONS

From the results of research in 6 districts in East Java, it was concluded that in the context of fulfilling the availability of sufficient food for the community in terms of quantity and quality that can be supplied through domestic or imported production. Related to this in the agricultural sector activities can not be separated from the constraints in producing it so that farmers often experience business failures that result in a decrease in their income this is due to several factors such as technical factors, natural, pest diseases, prices and markets, capital, resources human and information technology, borrowing culture and others. Specifically the problem of price and capital fluctuations,

can be overcome through the Warehouse Receipt System. This system is also an alternative marketing solution with a save and postponement model and increase farmers' income, besides that this system can be used as an instrument in controlling the availability of national food stock so that the government can take steps related to distribution and export policies.

This system can be implemented well and requires a comprehensive, integrated and accelerated effort by all stakeholders. Government support in the form of socialization of the benefits of WRS to the community, especially farmers as the main actors in the agricultural sector, is important in dealing with issues of handling and minimizing business failures, marketing the results as an effort to increase farmers' incomes.

REFERENCES

- [1] Anonymous.2011 "Risk Management in Agriculture: What Role for Governments". www.oecd.org/agriculture/policies/risk.
- [2] Alexandratos, N.(ed.) 2006."World Agriculture: towards" 2030/50, interim report. An FAO perspective. London, UK: Earthscan; Rome, Italy: FAO
- [3] Avelino, J. Cristancho, M. Georgiou, S. Imbach, P. Aguilar, L. Bornemann, G. *et al.* "The Coffee Rust Crises in Colombia and Central America (2008–2013): impacts, plausible Causes and Proposed Solutions". *Food Security*. 2015; 7(2): 303–21.
- [4] Baldos Uris L C.Hertel Thomas W and Moore Frances C. 2019."Understanding the Spatial Distribution of Welfare Impacts of Global Warming on Agriculture and Its Drivers". *American Journal of Agricultural Economics*, Volume 101, Issue 5, October 2019, Pages 1455–1472, <https://doi.org/10.1093/ajae/aaz027>
- [5] Bustamin, M.R., Muluk Khairul. Hermawan. 2018. "Management Strategy of Warehouse Receipt System on Coconut Commodities". *Journal of Applied Management (JAM)* Volume 16 Number 4, December 2018. ISSN: 1693-5241
- [6] Brown Carol. 2018. "What are factors influencing agriculture". <https://www.quora.com/What-are-factors-influencing-agriculture>. accessed on November 18, 2019
- [7] Bruntrup Michael. Swetman Tony. Michalscheck Mirja. Asante Felix. 2018. "Factors of Success and Failure of Large Agro-Enterprises (Production, Processing And Marketing)". <https://www.ajfand.net/> Volume 13/No 5,2018.
- [8] Chapoto, Tendayi and Aboagye, Q.Q. 2015. "African Innovations in Harnessing Farmer Assets as Collateral". Volume. 8 Iss 1 pp. 66 -75. Emerald Insight.
- [9] Cooper. 2013. "Use and Impact of Technology in Agriculture". <http://www.e-campo.com/technology-impact-in-agriculture/>
- [10] Chi Truong Thi Ngoc and Ryuichi Yamada. 2002. "Factors affecting farmers' adoption of technologies in farming system: A case study in O Mon district, Can Tho province,
- [11] Mekong Delta". <https://www.google.com/>
- [12] Chibuzor Mbazu. 2019. "Reasons Many Agribusinesses Fail". <https://Agro4africa.Com/Reasons-Many-Agribusinesses-Fail/>
- [13] Coulter, J. and Onumah, G. 2002. "The Role of Warehouse Receipt Systems in Enhanced Commodity Marketing and Rural Livelihoods in Africa". *Food Policy* 27 (2002) 319–337. Pragmon: Elsevier.
- [14] Courtois Pierre. Subervie Julie. 2015. "Farmer Bargaining Power and Market Information Services". *American Journal of Agricultural Economics*, Volume 97, Issue 3, April 2015, Pages 953–977, <https://doi.org/10.1093/ajae/aau051>
- [15] Cerda Rolando. Avelino Jacques. Gary Christian. Tixier Philippe. Lechevallier Esther, Allinne Clémentine. 2017. "Primary and Secondary Yield Losses Caused by Pests and Diseases : Assessment and Modeling in Coffee". <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0169133>
- [16] Douglas, E.J. Shepherd, D.A. and Shanley, M. 2000. *New Venture Survival: "Ignorance, External Shock and Risk Reduction Strategies"*. *Journal of Business Venturing*, 15(5), 393-410
- [17] Eboime, M.I. 2008. "Approaches to Micro finance in Developing Countries: Lessons for Rural Poverty Reduction in Nigeria". In Igbozurike *et al* (eds.) *Rural Poverty in Nigeria*. Cape Publishers Int'l Ltd. Abuja, Nigeria. Pp. 343-354.
- [18] Erawan, B. 2008. "Prinsip Hak Jaminan Resi Gudang Dalam Perspektif Perbankan (Principle of WRS Collateral on Banking Perspective)". *Argumentum*. 2008, 8, 1–8.
- [19] FAO. 2003. "Statement at the Ministerial Conference of the WTO" - Circulated by H.E. Hartwig de Haen, Assistant Director-General, Fifth Session, Cancun, 10-14 September, Doc No: WT/MIN (03)/ST/61.
- [20] Fomishina, V.M. Prischepo, V.S. 2017. "Swot-Analysis and Analysis of Export potential of Ukraine Problems in The Global Market of Agricultural Products" .<https://www.researchgate.net>.
- [21] Galtier, F. 2011. "Which instruments best tackle food price instability in developing countries" *Dev. Pract.* 2011, 21, 526–535.
- [22] Giovannucci, D., Varangis, P., Larson, D. 2000. "Warehouse receipts: Facilitating Credit And Commodity Markets, In: A Guide To Developing Agricultural Markets And Agro-Enterprises" (Giovannucci, D. (edt)), multivolume online database, World Bank, Washington DC, USA, doc. No. 40122, pp. 1-8, available at: www-wds.worldbank.org/
- [23] Gunawan, E. Kuwornu, J.K.M. Datta Adan Nguyen, L.T. 2019. "Farmers' Perceptions of the Warehouse Receipt System in Indonesia". *Jurnal Sustainability* 2019, 11, 1690; doi:10.3390/su11061690 www.mdpi.com/journal/sustainability
- [24] Gray Alan. Boehlje Mike and Akridge Jay. 2004. "Strategic Positioning In Agribusiness: Analysis

- and Options". Department of Agricultural Economics, Purdue University West Lafayette, IN 47907-1145.<http://ageconsearch.umn.edu/bitstream/28666/1/sp040013.pdf>
- [25] Hayward, M. Shepherd, D.A. and Griffin, D. 2006. Hubris "Theory of Entrepreneurship". *Management Science*. vol. 52, issue 2, 160-172
- [26] IFAD. 2012. "Warehouse Receipts for Smallholders to Access Credit and Increase Incomes". <http://www.ifad.org/operations/projects/regions/pf/seeds/5.htm>.
- [27] J. Coulter G. Onumah. 2002. "The role of warehouse receipt systems in enhanced commodity marketing and rural livelihoods in Africa". *Natural Resources Institute, Central Avenue, Chatham Maritime, Kent ME4 4TB, UK. Food Policy* 27 (2002) 319–337
- [28] Jim Everett, John Watson. 1998. "Small Business Economics" 11: 371–390, 1998. Kluwer Academic Publishers. Printed in the Netherlands.
- [29] Khasanah Ukhwatul. Dwidjono Hadi. Hartono Slamet. Pratiwi Liana Fatma Leslie. 2017. "A Potency And Challenge Of Warehouse Receipts System (WRS) Implementation In Niaga Mukti Cooperation, Cianjur", *Agro Ekonomi* Vol. 28/No. 1, Juni 2017
- [30] Kearney, John. 2010. "Food consumption trends and drivers". *Philos Trans R Soc Lond B Biol Sci*. 2010 Sep 27; 365(1554): 2793–2807. doi: 10.1098/rstb.2010.0149
- [31] Kementerian Perdagangan RI. 2006. Undang Undang Nomor 9 Tahun 2006, "Tentang Resi Gudang". Jakarta : Kemendag. (Indonesian Ministry of Trade. 2006. Law Number 9 Year 2006, Regarding Warehouse Receipt. Jakarta: Ministry of Trade.)
- [32] Kitzinger, J. 1994. "The Methodology of Focus Group Interviews: The Importance of Interaction Between Research Participants". *Sociology of Health and Illness*, 16, 103-121.
- [33] Kovacevic Vlado. Zakic Vladimir. Milovanovic Milos. Subic Jonel. Jelocnik Marko. 2016 "Electronic Warehouse Receipts Registry As A Step From Paper To Electronic Warehouse Receipts." *Economics of Agriculture* 3/2016. <https://pdfs.semanticscholar.org/>
- [34] Lavison, R. 2013. "Factors Influencing the Adoption of Organic Fertilizers in Vegetable Production in Accra", Msc Thesis, Accra Ghana.
- [35] Lehoux, P. Poland, B. dan Daudelin, G. (2006). "Focus Group Research and The Patient's View". *Social Science & Medicine*, 63, 2091-2104.
- [36] Lukason, O. 2014. "Why and how agricultural firms fail: evidence from Estonia". *Bulgarian Journal of Agricultural Science*, 20 (No 1) 2014, 5-11 Agricultural Academy.
- [37] Mahanta Devajit. 2012. "Review of Warehouse Receipt As an Instrument For Financing in India". *International Journal of Scientific & Technology Research* Volume 1, ISSUE 9, October 2012 ISSN 2277-8616.
- [38] Margaret Mwangi. Kariuki Samuel. 2015. "Factors Determining Adoption of New Agricultural Technology by Smallholder Farmers in Developing Countries". *Journal of Economics and Sustainable Development* www.iiste.org ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.6, No.5, 2015 <https://pdfs.semanticscholar.org/>
- [39] Mario J. Miranda Francis M. Mulangu Francis H. Kemeze. 2017. "Warehouse Receipt Financing for Smallholders in Developing Countries: Short on Logic, Long on Imagination". https://www.canr.msu.edu/afre/events/Miranda_Paper.pdf
- [40] Mpita Halima Ajali. 2013. "The Impact Of Warehouse Receipt System On Income Poverty Reduction Of Cashewnut Farmers In Newala District" <https://pdfs.semanticscholar.org/94d8/>
- [41] Miriam Katunze. Annette Kuteesa. Teresa Mijumbi. Dennis Mahebe. 2017. Uganda Warehousing Receipt System: "Improving Market Performance and Productivity. *African Development Review*", Vol. 29, No. S2, 2017, 135–146.
- [42] Mignouna, B. Manyong, M. Rusike, J., Mutabazi, S. & Senkondo, M. 2011. "Determinants of Adopting Imazapyr-Resistant Maize Technology and its Impact on Household Income in Western Kenya". *AgBioforum*, 14(3), 158-163.
- [43] Namara, E., Weligamage, P., Barker, R. 2003. "Prospects for adopting system of rice intensification in Sri Lanka": A socio economic assessment. Research Report 75. Colombo, Sri Lanka: International Water Management Institute.
- [44] Omonona, B.T, Adetokunbo, A.G. 2007. "An Analysis of Food Security Situation Among Nigerian Urban Households: Evidence From Lagos State, Nigeria". *Journal of Central European Agriculture*, 8(5): 397- 406.
- [45] Oruonye, E. D. and Musa Y. N. 2012. "Challenges of small-scale farmers access to micro credit (Bada Kaka) in Gassol LGA, Taraba State, Nigeria". *Journal of Agricultural Economics and Development* Vol. 1(3), pp. 62-68, September 2012 Available online at <http://www.academersearchjournals.org/journal/jaed> ISSN 2327-3151 ©2012 Academe Research Journals
- [46] Pettinger, T. 2016. "Problems of Agriculture – Market" <https://www.economicshelp.org/blog/4977/economics/problems-of-agriculture-market-failure/>, accessed November 14, 2019
- [47] Rosmawati Henny. 2009. "Surplus Analysis and Marketing Distribution of Farmers' Rice Production BuayMadang District, East OKU Regency". *Agronobis*. Vol. 1, Nomor 1, Maret 2009
- [48] Savary, S. Willocquet L. 2014. "Simulation Modeling in Botanical Epidemiology and Crop Loss Analysis. *The Plant Health Instructor*". 2014:173 p.
- [49] Sanas Chitra Prakash. 2014. "Factors Influencing The Use Of Warehouse Receipts As A Financial Instrument In Kenya" <http://erepository.uonbi.ac.ke/bitstream/handle/11295/74843>, accessed on November 18, 2019

- [50] Shepherd, D. A. 2003. "Learning From Business Failure: Propositions about the grief recovery process for the self-employed, *Academy of Management Review*", 28(3):18-329
- [51] Shepherd, D. A. Johan Wiklund. 2006. "Successes and Failures at Research on Business Failure and Learning From It". <https://www.researchgate.net/publication/228271838>
- [52] Suryani Erma, Erwidodo, and Anugerah Setiadjie Iwan. 2014. "Warehouse Receipt System in Indonesia: Between Hope and Reality". *Agricultural Policy Analysis*. Volume 12 Number. 1, June. 4: 69-86.
- [53] Ta. 2018. "Describe The Characteristics of Farming and Agricultural Products Which Make The Marketing of Food Different From Other Products". [http:// talkforbiz.com/](http://talkforbiz.com/) accessed on November 25, 2019
- [54] Tosun, D. Kerem Savran, Ozge Niyaz, Berkay Keskin, Nevin Demirbas. 2014. "The Evaluation of The Warehouse Receipt System For Agro-Food Product in Turkey" <https://www.researchgate.net/publication/280105646>
- [55] Troskie, D.P. Mathiys, E. Vink, N. 2000. "Characteristics of The Agricultural Sector of The 21ST Century". *Agrekon*, Vol 39, No 4 (December 2000). <https://www.researchgate.net/publication/240235381>
- [56] William J. G. & Kaserwa N., 2015. "Improving Smallholder Farmers Access to Finance Through Warehouse Receipt System in Tanzania", *International Journal of Economics and Financial Research*, Academic Research Publishing Group, vol. 1(3), pages 41-49, 06-2015.
- [57] Widada Arif Wahyu. Masyhuri. Handoyo, M.J. 2017. "Determinant Factors of Food Security in Indonesia". *Agro Ekonomi*. Vol. 28/No. 2, Desember 2017. <https://jurnal.ugm.ac.id/jae/article/view/26245>.