

Discounted Cashflow Analysis Valuation of Agriculture Business Swiftlet Bird Nest Farming Case Study : “Wahana Walet Sejahtera” in Berau East Kalimantan

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Abstract

Nowadays, swiftlet bird nest is one of the most valuable agribusiness products in Indonesia and other countries in ASEAN. Current global production for this nest is estimated to 5 billion USD annually. Meanwhile, in Indonesia, the price of raw nest from farmers each kilogram is Rp.10 million (USD 715) and up to Rp30 million (USD 2.143) per Kg in export transactions. The increase of swiftlet nest demand over the years that is not followed by the production capacity upscaling of farmers, creates the existing producers cannot fulfil the needs of market and at the same time loss of opportunities in this industry.

In order to take the advantage from this opportunity and additionally the availability of resources and space to operate this business, Wahana Walet Sejahtera as new venture of swiftlet bird nest runs the swiftlet bird nest farming in Berau. To deliver the prospective view of this business to the investors and the management of organization, feasibility study and corporate valuation are assessed thus, it is able to confer the adequate information as the consideration of them to invest and take an action. Business feasibility study in this case uses several parameters, including Internal Rate of Return (IRR), Net Present Value (NPV), Payback Period, and Profitability Index through two different schemes, single house production and multi house production. And for the valuation calculation for both methods, discounted cash flow model (DCF) model is the main way to generate the value.

Keywords

business valuation, discounted cash flow, feasibility study, swiftlet bird nest

1. Introduction

Swiftlet Bird Nest Swiftlet Bird Nest is one of the most valuable agriculture products in Indonesia and Southeast Asia (Budiman, 2020). The Price of swiftlet bird nest remains high, it starts around Rp. 10 Million (USD 715) per Kg from swiftlet bird farmer and can reach Rp. 30 Millions (USD (2.143) per Kg in the exporter company (Sinaga, 2020).

Indonesia controls 80% of the world's bird nest needs, the rest is supplied from Vietnam, Thailand, Malaysia, Myanmar, China, and the Philippines (Sinaga, Ismail, & Ritonga, 2020). There are 12 export destination countries for Indonesian Swiftlet Bird Nest (SBN), namely China, Hong Kong, Vietnam, Singapore, the United States, Canada, Thailand, Australia, Malaysia, Japan, Laos, South Korea (Syukra, 2020). The following chart shows the total swiftlet nest exports from Y2012 to Y2019 from Indonesia, which shows an increase of demand every years.



Figure 1 Indonesia's Swiftlet Bird Nest Export Data source: (BPS Statistics Indonesia, 2020)

Efforts to manage and farm swiftlet bird nests have been going on for a long time, from the initial bird's nest in the cave in nature to the farming of bird's nests in the house. The goal is that the population and production of swallow bird nests are maintained sustainably to capture huge economic values, improvement quality of swiftlet bird nest as well as easier for harvesting process (Budiman, 2020).

Wahana Walet Sejahtera as new venture in the swiftlet bird nest business which located in Berau Regency East Kalimantan built to embrace the opportunity of this valuable and prospective business.

The purpose of this study are helping Wahana Walet Sejahtera management and other companies in related field to catch opportunity and conduct development of their swiftlet bird nest farming business. The management can find out whether this business is feasible or not in the long term and determining the fair value of the Wahana Walet Sejahtera after running in a certain period of time. Apart from aiming to get a technical financial perspective from the feasibility and valuation business assessment, the results of this study can also be used to make strategic decisions related to future business development by involving external investors accordingly.

Questions to answer during this study are: 1). Is Wahana Walet Sejahtera feasible if all plans that has done work in the long term? 2). How much is fair value of Wahana Walet Sejahtera in its business activities after this business runs in a certain period of time?

1.1 Objectives

The objectives of this study are:

1. Wahana Walet Sejahtera (WWS) management can find out whether this business is feasible or not in the long term.
2. Determining the fair value of the Wahana Walet Sejahtera (WWS) after running in a certain period of time.
3. Helping Wahana Walet Sejahtera (WWS) management and other companies in related field to catch opportunity and conduct development of their swiftlet bird nest farming business.

1.2 Limitation

The limitation of this study is:

1. The assumptions for calculations in this study is in the context of Berau Regency as the location of business.
2. The study and projection influenced by current situation of Covid19 outbreak
3. The financial projection will use assumptions from management and field survey for swiftlet bird nest business in the Berau Regency.

2. Literature Review

2.1 The Production of Swiftlet Bird Nest

Originally swiftlet birds inhabited at caves located in multiple areas across islands in Indonesia. Many nesting sites were found at Java Island, Maluku, Lombok, Sumatera and Kalimantan. In addition, the contributions of swiftlets farming expand extensively in agriculture industry to produces economic profits. The scale market of swiftlet bird nest at global level have risen significantly every year. Domestic demands of swiftlet bird nest trade are going up as well. From an estimation perspective, swiftlet bird nest trading on the global market can be worth up to 5 billion dollars, following the major suppliers of swiftlet bird nest such as Indonesia (80%) and other south east asia countries such as: Thailand, Malaysia and Vietnam. The enormous demand of swiftlet bird nest leads to continuous production on a large scale. Thus, in order to maintain the supply chain of swiftlet bird nest, artificial human-made habitats for the swiftlets were built to overcome any shortage problem. The human-made habitats resemble the natural cave environments for swiftlet birds (Hooper, 2014).

Rapid urbanization and industrialization appear to be obstacles and lessen the availability of nesting sites for swiftlets species as they have been sighted in the human populated area like in several region of Java Island. The swiftlets may search for the damp, dark and cooling environment inside abandoned buildings for its new nesting site in the urban environment. This occasion brings the idea to build artificial humanmade habitats on a large scale to improve the activity of swiftlet bird farming (Budiman, 2020).

In order to provide an alternative nesting site for swiftlets, the artificial human-made buildings were conducted in imitation of the natural cave-like conditions. several factors must be thoroughly considered in order to build the artificial cave-like habitat for swiftlet farms, which includes air and surfaces temperature, relative humidity, air velocity and light intensity. Thus, the building was occupied with damp and dark surroundings with a temperature of 25 °C and 35 °C that was suitable for swiftlet bird nest production. High temperature was able to damage the eggs, while, low temperature can cause harm to young featherless swiftlets. Besides, adequate ventilation in the building helps to control the temperature. The use 'L' shaped elbow pipes placed in the walls of the building to allow free airflow and achieve maximum light exposure. Furthermore, relative humidity must be carefully controlled, as a high relative humidity environment can lead to the growth of fungal in the nests. Unfortunately, the swiftlets were reluctant to do nesting on the nest surfaces covered with fungus. On the contrary, the adhering ability of the nest to the wall surfaces reduced and falls easily to the ground when the relative humidity environment was too low. The best relative humidity for swiftlets farming was ranged from 80 to 90%. Usually, the birds' movement, breeding or even their diet is not entirely controlled by the farmers. Without human interference, the swiftlets have their own will to live naturally and move freely to hunt their source of foods (Budiman, 2020).

2.2 Discounted Cash Flow

Discounted cash flow (DCF) is a model that is a model that discounts the future cash flows(free cash flow of the firm, free cash flow of equity and dividend flow) using a discount rate.

The DCF pays attention to investment opportunities (risks and returns) that current firm value is calculated using the company's present value of cash flows (Djaja, 2018).

The formula of Discounted Cash Flow (DCF) is :

$$Value = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t}$$

Where:

CF_t = Cash Flow for t period

n = periods of t

r = weighted average cost of capital (wacc)

Discounted Cash Flow is calculated through Free Cash Flow. Free Cash Flow is net operating cash flow that is available after the company meets the needs of all debt obligations, capital expenditures and working capital

distributed to equity holders. Free cash flow is calculated based on assumptions to generate company's financial projections.

There are two type of free cash flows: Free Cash Flow to Firm and Free Cash Flow to Equity. Free cash flow to firm (FCFF) is the net cash flow from operations available for distribution to investors who contribute to the company's capital structure after accounting for depreciation, taxes, working capital and investment costs (Damodaran, 2006).

Free cash flow to equity is the net operating cash flow that is available after the company has fulfilled all debt obligations, capital expenditures and working capital distributed to equity holders.

Free cash Flow to Firm (FCFF) Formula

$$FCFF = NOPAT + depreciation - (\Delta NWC + Capex)$$

Free Cash Flow to Equity (FCFE) Formula

$$FCFE = NOPAT + depreciation - \Delta NWC - \Delta Capex - \Delta Debt$$

2.3 Capital Investment Analysis

Measuring the feasibility of the swiftlet farming will use common methods of financial feasibility analysis as follow:

- Net Present Value (NPV)

NPV is a method commonly used to evaluate the profits of a business. A positive NPV shows that the income from a business or project is more than the costs incurred. The Net Present Value is calculated by subtracting the initial project cost (CF_0) from the present value from the value obtained in the business (CF_t) which has been discounted using a certain cost of capital (r) (Gitman & Zutter, 2015).

NPV formula is described below:

$$NPV = \sum_{t=1}^n \frac{CF_t}{(1+r)^t} - CF_0$$

where:

CF_0 = initial investment (Cash flow) of year 0

CF_t = value obtained in the business (Cash flow) for years t

r = interest rate / WACC

Positive value of NPV will make the project to be accepted, and negative value of NPV will make the project to be rejected.

- Internal Rate of Return (IRR)

Internal Rate of Return is also a reference for calculating the efficiency of a project or business activity. IRR is the discount rate which makes the NPV (Net Present Value) of the entire cash flows to zero (Gitman & Zutter, 2015).

The formula is:

$$IRR = \sum_{t=1}^n \frac{CF_t}{(1+r)^t} = CF_0$$

where:

CF_0 = initial investment (Cash flow) of year 0

CF_t = value obtained in the business (Cash flow) for years t

r = interest rate / WACC

Comparing IRR result with required return or WACC will determine whether the business will continue the activities or stop. If IRR is greater than required return or WACC the firm will accept and continue the business otherwise the firm will reject it.

- Payback Period (PP)

In running a business with a long payback period, it will not be attractive to some investors by considering the type of business being run. So that the shorter the payback period of a business, the more attractive it will be for investors

- Profitability Index

The Profitability Index (PI) calculates the ratio between the present value of future cash flows and the value of the initial investment. The profitability index can be useful for ranking investment projects and showing the value generated from each investment effort. The investors will spend their fund in the project when the index is greater than 1.0. If the Profitability Index is greater than one, it relates to value of positive NPV (Gitman & Zutter, 2015).

The Profitability Index formula as follows:

$$PI = \frac{PV \text{ of future cashflow}}{Initial Investment}$$

Criteria of Profitability Index used in this research:

- If $PI > 1$, the firm will accept business activities
- If $PI < 1$, the firm will reject business activities
- If $PI = 1$, the firm can accept or reject the business activities

3. Methods

This study started with business issues exploration about swiftlet bird nest farming. Data preparation collected mostly from field interview with swiftlet business farmers in Berau reGENCY and data from literatures that related to swiftlet business. Business solutions comprise of two analysis: business feasibility analysis using common feasibility study parameters (Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PP) and Profitability Index (PI)) and the second part is calculating business valuation using discounted cashflow analysis. The last part of the study will make conclusion and recommendation for further study.

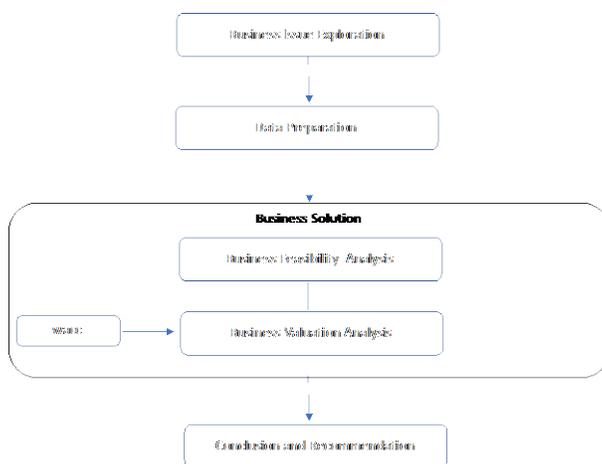


Figure 2 Research Method

4. Data Collection

A general assumption for this study involves this following data:

Inflation rate

Refer to World Bank, inflation is the index to measure the consumer price that reflects the change in the average cost for customer to acquire a bunch of goods and services annually, it can be fixed or changed. It is really matters for swiftlet bird nest business because the change of cost in operational activities of organization depends on this condition. Here are the last five-years of inflation rate in Indonesia. Researcher takes the average of inflation rate in Indonesia and simultaneously determined as assumption in this study is 3.99%

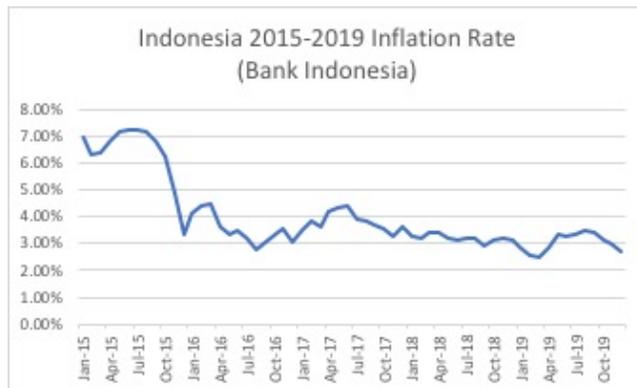


Figure 3 Indonesia 2015-2019 Inflation Rate

Taxes

Taxes is one of the compliance actions of taxpayers as a good citizen. In swiftlet nest business, there are two scenarios that potentially be used by the producers. SME or Small and Medium-sized enterprise and corporate. An organization categorizes as SME in Indonesia if it earns revenue in a year under Rp4,800,000,000 and it will be automatically changed to corporate if the organization has exceeded the default. Through this condition, if an individual start one swiftlet house, mostly it will be SME for a long time. Nevertheless, Wahana Walet Sejahtera in this case, will be transferred into corporate in the mid of their period.

Table 1 Tax assumptions

No	Tax Assumptions	Values
1	Regional Income Tax for Swiftlet Nest	7.0%
2	SME Tax	1.0%
3	Corporate Tax	25.0%

Swiftlet bird nest selling price

Fundamentally, price of swiftlet bird nest is varying. There are several criteria to determine the price. Due to WWS starts as the farmer to begin this business, sale price for this model will use the price of swiftlet farmer, Rp10,000,000/Kg.

Table 2 Swiftlet bird nest selling price

Sale Price Chain for Swiftlet Bird Nest (per Kg)		
No	Location	Price (Rp)
1	Swiftlet Farmer	10,000,000
2	Local Buyer	12,000,000
3	Swiftlet Washer	13,500,000
4	Distributor (Big Buyer)	18,000,000
5	Exporter	24,000,000
6	Importer (at Foreign Country)	35,000,000
7	Whole Saler at Foreign	40,000,000
8	End User at Foreign Country	50,000,000

Source : Author Research

Investment of swiftlet bird nest house farm

In order to start the business, the initial investment requires at least three items, the house or building to reproduce the nest, land, and fresh money as the emergency fund for organization.

Table 3 Initial investment for swiftlet bird nest

Initial Investment Per Swiftlet House Farming		
No	Variable	Values (Rp)
1	Building of Swiftlet House Farm	180.000.000
2	Land Acquisition	60.000.000
3	Fresh Money (Stabilizing the cash flow)	30.000.000
TOTAL		270.000.000

As an organization that desire to expanse its business as big as it can, the company will build new houses each year. It comes from the fresh investment thus every development, the company needs new funding, either from the existing investors or the new ones. The company has a goal to reach 296 active houses to produce nest every year in 2040.

Table 4 Plan of Wahana Walet Sejahtera to build swiftlet bird nest house farm

Year	Beginning	Additional	Ending
2020	0	4	4
2021	4	4	8
2022	8	8	16
2023	16	8	24
2024	24	16	40
2025	40	16	56
2026	56	16	72
2027	72	16	88
2028	88	16	104
2029	104	16	120
2030	120	16	136

Year	Beginning	Additional	Ending
2031	136	16	152
2032	152	16	168
2033	168	16	184
2034	184	16	200
2035	200	16	216
2036	216	16	232
2037	232	16	248
2038	248	16	264
2039	264	16	280
2040	280	16	296

Weighted average cost of capital (WACC)

Meanwhile the meaning of Weighted Average Cost of Capital (WACC) is the average cost of company to generate investment through debt and its equity. This method considers the return and also perceiving the risk that may appears from the investment. (Vaidya, 2019) Since the funding of this project only depends on the shareholder’s investment so that WACC will equivalent with cost of Equity (WACC = rs).

Cost of Equity is the return rate that investor expect from the investment they put from a business activity. The rate is based on the level of risk that associated with the investment, which is calibrated as the historical volatility of returns and CAPM (Capital Asset Pricing Model) as a model to assess the value of Cost of Equity, will be used to calculate the value of this project. For the calculation the cost of equity will increase to 15%.

Table 5 Weighted average cost of capital (wacc)

Description	Value (%)	Reference
Beta	0.89	Danodaran
Risk-free rate	6.92	Ibpa.co.id
Equity risk premium (Rm – Rf)	8.03	Danodaran
Cost of Equity	14.07	CAPM Calculation by Author

5. Results and Discussion

To achieve the objectives of this study, business solution will conduct two analysis basaed on previous data collection. The study will calculate the business feasibility analysis using several parameters including Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PP) and Profitability Index (PI). The second part of analysis will

determine the fair value of the Wahana Walet Sejahtera after running in a certain period of time using discounted cashflow analysis.

The analysis will involve single bird nest house farm and multiple bird nest house farm as Wahana Walet Sejahtera build more than one in their operation.

5.1 Business Feasibility Analysis

Throughout the period, the income of this business will be start in Y2 where the first harvest starts. It starts with the half capacity of swiftlet bird nest production (1 kg each month, 12 kg in a year) and in year three (Y3) it doubles into 24kg per year (in the most pessimistic scheme).

Financial analysis from this activity from single house and accumulative result shows a positive output as well where NPV, IRR, payback period, and profitability index illustrate the promising result as follows.

Table 6 Financial feasibility analysis parameters

Financial Analysis		Single House	Cumulative Houses
Parameter	Unit	Amount	Amount
NPV	IDR	Rp967.483.600	Rp93,244,381,527
IRR	%	41.70%	52.60%
Payback Period	Time	2 Years, 11 Month, 28 Days	6 years, 2 months, 5 days
Profitability Index	Times	2.92	3.67

Through the data above, the huge differences happen on payback period and profitability index. It happens due to the massive constructions for procuring the production houses every year. However, based on the illustration on the previous explanation said that the revenue just reaches its optimum after two years the building has operated. Therefore, this condition refrains the revenue goes fast and optimal.

5.2 Discounted cashflow analysis

In order to know the value of the company (Wahana Walet Sejahtera), Finding the Net Present Value (NPV) of the business's free cashflow of the firm (FCFF) and terminal value (TV) is needed. NPV is the gain that business obtains throughout the time then accumulated and quantified it into the today value. It is beneficial to analyze the profitability rate of the targeted investment or project. Here is the value of the company for one house and multi houses.

Table 7 DCF adjusted equity value

DCF - Adjusted Equity Value (IDR)	Single House	Cumulative Houses
WACC	15%	15%
Infinite Growth Rate	4%	4%
NPV of All Periods	787,312,563	55,249,170,571
NPV of TV	180,180,037	37,995,210,956
Enterprise Value	967,492,600	93,244,381,527
Add: Cash	137,428,442	5,500,733,304
Less: Debt	0	0
Equity Value	1,104,921,042	98,745,114,831
Add: Investment	270,000,000	120,021,410,305
Adjusted Equity Value	1,374,921,042	218,766,525,136

Through the calculations on feasibility study and corporate valuation, Wahana Walet Sejahtera can deliver a great potential return for shareholders and investors.

5.3 Sensitivity Analysis

Changing the assumptions on the DCF model is essential in terms of looking for the possibility if the uncertainty happens later on. In this case, the key parts that have a huge impact on valuations are infinite growth and WACC. Based on the initial data given, the value of single house is Rp1.37 billion and it starches into the range between Rp1.13 billion and Rp1.61 billion if WACC and infinite growth rate is changed. Whilst in the multihouse practice, the

range is being wider where the value starts from Rp218.6 billion fluctuates to the range around Rp195 billion to Rp243.3 billion. Therefore, the calculation based on the conditions above will shows the differences below:

Table 8 Sensitivity Analysis for Single House

	WACC							
	12%	13%	14%	15%	16%	17%	18%	
Infinite Growth Rate	1%	1.609.669.011	1.506.798.916	1.414.873.043	1.332.489.276	1.258.448.265	1.191.721.413	1.131.424.274
	2%	1.621.653.555	1.518.783.461	1.426.857.588	1.344.473.820	1.270.432.810	1.203.705.958	1.143.408.819
	3%	1.635.619.016	1.532.748.922	1.440.823.049	1.358.439.282	1.284.398.271	1.217.671.419	1.157.374.280
	4%	1.652.100.777	1.549.230.682	1.457.304.809	1.374.921.042	1.300.880.031	1.234.153.179	1.173.856.040
	5%	1.671.846.252	1.568.976.157	1.477.050.284	1.394.666.517	1.320.625.506	1.253.898.654	1.193.601.515
	6%	1.695.931.392	1.593.061.297	1.501.135.424	1.418.751.657	1.344.710.646	1.277.983.794	1.217.686.655
	7%	1.725.963.480	1.623.093.386	1.531.167.513	1.448.783.745	1.374.742.734	1.308.015.882	1.247.718.743
	8%	1.764.455.312	1.661.585.217	1.569.659.344	1.487.275.577	1.413.234.566	1.346.507.714	1.286.210.575

Table 9 Sensitivity Analysis for multihouse

	WACC							
	12%	13%	14%	15%	16%	17%	18%	
Infinite Growth Rate	1%	243.375.133.950	228.847.502.168	218.003.277.860	209.818.786.394	203.582.482.696	198.790.748.523	195.081.590.119
	2%	250.255.417.158	233.698.089.443	221.479.794.057	212.346.010.314	205.442.406.887	200.174.502.564	196.121.062.545
	3%	258.647.850.521	239.509.189.051	225.582.709.569	215.290.957.195	207.586.288.970	201.754.533.773	197.298.213.437
	4%	269.112.489.654	246.597.453.407	230.498.083.597	218.766.525.136	210.084.531.728	203.575.791.121	198.642.336.088
	5%	282.524.914.457	255.435.906.493	236.493.759.610	222.930.324.353	213.032.908.317	205.698.082.741	200.191.668.303
	6%	300.334.855.589	266.764.064.673	243.969.849.454	228.009.244.277	216.565.121.853	208.202.769.248	201.997.088.488
	7%	325.129.087.361	281.806.373.077	253.551.880.098	234.342.218.502	220.873.646.057	211.203.433.281	204.127.809.607
	8%	362.018.066.339	302.747.625.953	266.275.560.134	242.459.129.130	226.246.003.398	214.863.583.914	206.680.455.701

According to the figure above, infinite growth rate and WACC give a significant influence to the adjusted equity value. Thus, when a certain target of adjusted equity value desire to reach, the changes on both parts can be evaluated as the similar analysis as above together with the valid data and supportive assumptions. Beside of that, in the operational factors, percentage of growth in sales is also impactful to the business.

6. Conclusion.

To sum up, Wahana Walet Sejahtera is a business venture in swiftlet bird nest farm that has a potential to develop. It is a decent organization for investors to invest. If all predictions work smoothly as it suggested before, this business will be highly profitable where NPV values are in positive numbers, NPV for single and multi-house where the amount of them respectively is Rp967,483,600 and Rp93,244,381,527, whilst for Internal Rate of Return (IRR) 41.7% and 52.6%, Payback Period, 2 years, 11 months and 28 days for single house and 6 years, 2 months, and 5 days for multi house. The payback period relatively short for the individual business and quite long for multiple houses due to the massive development that company does every year. However, it will boost a better return in the long term.

Using DCF method for determining value of the business shows the swiftlet bird nest business of the company can give optimal growth, the value of organization or business for single house will be risen to Rp1,374,921,042 for single house and Rp218,766,525,136 for multi house.

Researcher also advice to the company to look further more to the development planning, especially in the early moment of development. Aggressive development is a great key to expanse business bigger and faster. Yet, it can be a boomerang for the business itself if they cannot manage the cash flow wisely.

In the future, researcher suggests for the further study on this topic to assess more on:

- The best moment for a business to develop or expanse its business so that it can maintain the profitability and the financial stability in the organization, short and long terms
- The best policies to engage investors in this industry beyond giving a huge percentage of dividend distribution
- What is the supporting and inhibiting factor that affects this business growth in the future ?

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