

CAPITAL BUDGETING ANALYSIS AND GOVERNMENT TAX INCENTIVES INTERVENTION OF PADDY NON-GRANARY AREA IN PENINSULAR MALAYSIA

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ABSTRACT

Rice has been a staple food in Malaysia. Besides, paddy is among the food crop sub sector which has always been as an especial core attention for the government. The present study evaluates the capital budgeting and investigates the effect on Government tax incentives to the project assessment of paddy industry in non-granary areas. Financial appraisal of Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI) and Payback Period (PP) are the selected indicators in capital budgeting approach. According to the results, paddy projects in non-granary area is financially viable where all financial indicators provide lucrative values. The project may be sustained with the proper profitability even though the distortion of revenue and costs are existed during the project. Since the project drags potential assessment in terms of financial appraisal, the more attention is suggested for the government to encourage the non-granary area to be part of paddy concern in Malaysia.

Keywords: Non-granary areas, Capital budgeting analysis, Government tax incentives.

INTRODUCTION

The third economic growth engine in Malaysia after manufacturing and service sector is agricultural sector. The classifications of agriculture can be in four main groups of co-existence plantation, smallholder's subsectors food and industrial commodities (Kamaruddin et al. 2013). Paddy is the crucial commodity in positioning continually country's supply and demand, where the invention to achieve high yield of paddy production is the essence in starting green revolution of the country (Mardianto et al, 2014). In Malaysia, rice has been a staple food. Besides, paddy is among the food crop sub sector which has always been as an especial core attention for the government (Ramli et al. 2012). The industry is very structured, as it is vital from economic, social and, political aspect for the country. For instance, the industry could contribute to job to 172,000 paddy farmers in 2009. Besides, the cultivation areas are high. Currently, related land utilisation is about 674,928 hectares which is related to 76 percent in Peninsular Malaysian, 118,919 hectares and 40,352

hectares for Sarawak and Sabah respectively. Malaysian government paid specific attention to this industry. The government has designated eight granary areas as permanent production areas in order to sustain rice production and efficiency (Mohd Rashid & Mohd Dainuri 2013) .

In general, the purchase price of paddy highly depends on government intervention. In order to increase rice production, the number of paddies harvested area must also be increased with the improvement of infrastructure (Mulwanyi et al, 2011). According to (Dayanda et al. 2002) the financial appraisal plays essential role in the capital budgeting process. In fact, it can provide the estimated addition about firm's value and strategic framework to obtain beneficial feedback in the investment decisions. On the other hand, regarding to studies related to paddy industry, mostly studies concentrate on the granary areas. Moreover, paddy sector ensures the food security, while the farmer's income and paddy productivity play a major role to determine the

socioeconomic level and feasibility of the industry (Baharudin, 2021). Hence, this study aims to consider capital budgeting of paddy industry in the non-granary areas i.e., the areas out of the eight selected areas. Consequently, study aims to analyze the current paddy industry in non-granary areas situation via capital budgeting analysis and impact on government tax incentive program.

The start point of any business is the budget. For most of the farmers, budget is provided by loan from either banks or other sources (Rhodes et al. 2008). The allocated budget represents the income, fixed and variables costs, profits and investment amount for the farmers (Hamra 2010). Current study applies the project appraisal. This concept considers a mutual understanding about farms' profitability, return, and cost-benefit in the scope of private project evaluation. Besides, for this study private project appraise matters as it can provide market price for paddy industry, labour cost as well as other essential inputs. For this study, the indicators of financial appraisal are of Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (BCR) and Payback Period.

Generally, to evaluate the cost-benefit analysis of any project, Net Present Value (NPV) is applied (Chavez et al. 2013). NPV describes the amount of money that firms earn in project. Besides, NPV is practical for most frequent methods in company's decision criteria evaluation (Sayed et al. 2009). The negative outcome of NPV indicates that the cost surpass the benefit and the project is not economically feasible. Moreover, one of the most frequent used variables to evaluate the single project profitability is Internal Rate of Return (IRR). This indicator usually designs with the investors. The positive value of IRR with the higher value than 1 discount rate shows that the project is acceptable (Mackevicius & Vladislav 2010). Moreover, it shows the financial costs and benefits related to any project from economic aspect. Economic aspect is also considers a social aspect which deals with workers, their families and enterprises (Ramos et al. 2015). Furthermore, for a project Benefit Cost Ratio (BCR) is vital. This indicator illustrates the present value of benefit to the present value of costs. The ratio greater than 1 indicates that the project is viable and worthy of investing (Satyasai, 2009). Furthermore, in order to consider the acceptability of an investment project and

the time period to recover the cash resource returning the finance the project pay back is vital (Bordman et al. 2006). Generally, result of financial analysis differ from one project to another. For instance, in the study conducted by (Papendiek et al. 2016) to financial cost-benefit analysis of producing biomass from agricultural land in Germany in three different production scenarios, the results were varied. The project could be profitable by increasing the internal rate of return for traditional fodder production, while the new fodder breed was dependent on other variables like price of the legume juice. Besides, it should be considered that the tax laws are different in each country. For instance, in Malaysia, any company relates to agro based cooperative societies, associations, sole proprietorships and partnerships should pay tax.

The predominant incentives for agricultural sectors are Pioneer Status (PS), Investment Tax Allowance (ITA), Accelerated Capital Allowance (ACA). Pioneer Status is in conjunction with a partial exemption from company's income tax. Its incentives offer payment of 30% tax from statutory income for five years. Investment Tax Allowance is an alternative of Pioneer Status which grants the agriculture firms to offset the allowance against 70% from statutory income in the year of assessment. On the other hand, Accelerated Capital Allowance is related to different procedure that provides an initial allowance of 20% in the first year and about 40% for an annual allowance. Normally, the incentives recommend the conjoined package between Pioneer Status with Accelerated Capital Allowance and Investment Tax Allowance with Accelerated Capital Allowance to maximize proper profit for the agricultural companies.

METHOD

Study area and data collection

Data collection was performed via distributing questionnaire and face- face interview among the farmers in non-granary areas in Malaysia. Besides, the data on farmers' production reports were secondary data in conjunction with input-output cost farm's initial investment, and income statement. Moreover, the general information about the industry was a part of primary data. Sampling method was a multi-stage sample from the population based on farm size and production technology. A total of 248 farmers were selected.

Data Analysis

The concentration of data analysis was based on the calculation of capital budgeting. Capital budgeting presents by the common approach namely: Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI) and Payback Period. The discount rate also applied to determine a time value of money to the cost of capital as 10% during project assessment. Along with the fundamental assessment of capital budgeting analysis, the calculation of government incentives and sensitivity analysis are also undertaken in the study.

1. Net Present Value which is known as the discounted cash flow technique. NPV is related to the increase of shareholder' wealth when the project was selected. The positive result of NPV means the project would be accepted (Sayed, 2009). The following formula illustrates it:

$$NPV = \sum_{t=0}^N \frac{CF_t}{(1+r)^t}$$

Where,
 CF = Cash Flow
 r = Discount Rate
 t = Time

2. Internal Rate of Return (IRR) the IRR is the discount rate when the net present value of the project equal to zero. A project's IRR should be compared to the company's cost of capital or hurdle rate. The hurdle rate means the rate that the project must surpass to create positive shareholder wealth (Mackevicius & Tomasevic, 2010).

$$NPV = \sum_{t=0}^N \frac{CF_t}{(1+IRR)^t} = 0$$

Where,
 CF = Cash Flow
 r = Discount Rate
 t = Time
 IRR = Internal Rate of Return

3. Profitability Index (PI) or Benefit Cost Ratio (BCR) – The profitability index is related to value of the project's cash flows divided by the cost. PI

describes the potential profit from each money invested.

$$PI = \frac{PV \text{ of future cash flows}}{\text{Initial cost}} = \frac{\sum_{t=0}^N \frac{CF_t}{(1+r)^t}}{CF_0}$$

Where,
 CF = Cash Flow
 r = Discount Rate
 t = Time
 PV = Present Value

4. Payback Period – The payback period is the expected number of years required to recover the initial investment. Payback period can be calculated by :

$$\text{Payback Period} = \frac{\text{Initial Investment}}{\text{Periodic Cash Flow}}$$

In order to simulate the changes in key variables due to farm distortion and risk, the role of sensitivity analysis in evaluating project appraisal plays important policy decision. Pannell (1996) defined that the parameter assumption and values for any economic models are indicated in the change and error where the role of sensitivity analysis widely defined as the investigation of potential changes, errors and effect on the conclusion to be drawn on the existing model. In this study, the change in revenue and costs are considered in evaluating the sensitivity analyses. The percentage changes were simulated based on 5%, 10% and 15% respectively on value of Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI) and Payback Period (PP).

RESULTS

Descriptive analysis

The demographic characteristics of farmers are presented in Table 1. Accordingly, out of the total of 248, there were 234 male farmers and 14 female farmers by 94.4 percent and 5.6 percent respectively. Farmers' age was divided into five categories. Most of the farmers' age was belong to the age category of 58-68 years by 95 respondents. Besides, farmers with the age category of 47-57 years old were in the second

highest amount by 70 persons. However, this age outcome has been studied by Terano and Fujimoto (2009) that farmers who age above 40 years are tended to be full time workers in Paddy field. Furthermore, farmers whose age was between 36-46 were 44 persons. Regarding to the numbers of family member working on the farm, there were three categories. The category of 7-9 persons had the highest amount by 132 persons. Besides, with concern to the experience of farmers in working on the farm, the category of 1-10 years had the highest amount by 76 respondents. Moreover, there were farmers with the experience between 1-10 years were 76 persons and 63 respondents with the experience of 11-20 years. Besides 54 persons with the experience of 21-30 years. In this regard only 7 farmers had the experience of more than 51 years. Furthermore, in terms of total

expenses of paddy farm in non-granary area, the cost of labour is dominated as higher cost among other operational cost during production season. It can be defined that in producing paddy, the farmer needs to pay tremendous labour activities as seeding, fertilizing, flatting, and plowing costs which may not be applied personally by themselves especially for medium and large farms. Then, product of seed cost proceeds 17% as the second high cost of paddy farms where the availability of seed is very crucial to the basic cultivation. The next ranks of expenses costs are followed by harvest cost, rent/taxes, transport cost, fertilizer costs, pesticides, fuel and other costs, constitute 14.4%, 13%, 6.8%, 6%, 5.3%, 4.9% and 1.2% respectively.

Table 1. Demographic Characteristics of Farmers

Item		Frequency	Percentage
Gender	Male	234	94.4
	Female	14	5.6
Marital Status	Single	9	3.6
	Married	239	96.4
Age	<35	22	8.9
	36-46	44	17.7
	47-57	70	28.2
	58-68	95	38.3
	>69	17	6.9
Family Member Working in the Farm	4-6	114	46.0
	7-9	132	53.2
	>10	2	.8
Experience	1-10	76	30.6
	11-20	63	25.4
	21-30	54	21.8
	31-40	35	14.1
	41-50	13	5.2
	>51	7	2.8

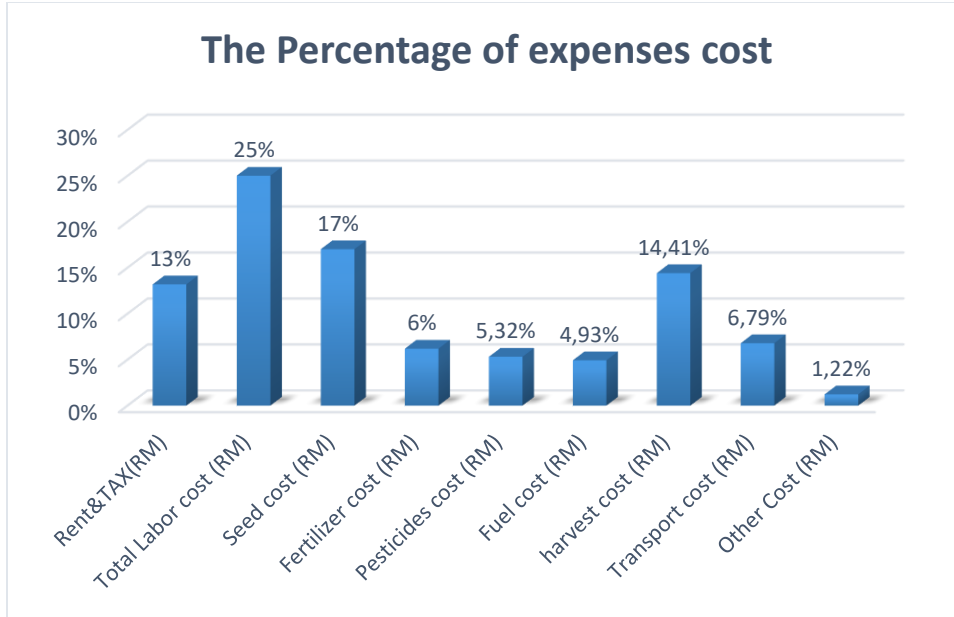


Figure 2. The percentage of expenses distribution

Capital budgeting analysis of paddy in non-granary areas

The outcome from table 2 describes the financial assessment of paddy industry in non-granary area. The main purpose of this analysis to determine the decision of long-term project evaluation which is financially viable or not. The key indicators are mentioned as net present value (NPV), Internal Rate of Return (IRR), Profitability Index (PI) and payback period. Based on the NPV result which is the calculation shows positive value, assuming the time value of money during the project assessment is considered higher than present value of initial investment. In this case, the farm may generate earnings and the project is properly viable. Next, financial indicators as IRR results 26%, it can be concluded that actual percentage may provide profitable outcome since the percentage is higher than discount rate (10%) and reduce the level of risk circumstances within the project appraisal.

Then, the profitability index of paddy farm is 1.88, based on the theory by Satyasai, (2009), this value could be illustrating that the benefit of investing the money to this project will earn 88 sen from 1 ringgit invested. This level of profit actually considers lucrative for the investment criteria. And the result of payback period provides 3.56 where to recover the initial investment of this project solely needs less than 4 years. Many projects require more than 5 years to

payback their capital investment and the paddy farm may be a visible option to obtain swiftly the cash back from our investment project. Therefore, based on four indicators of financial projection, the paddy industry in non-granary area considers financially viable for the long-term project assessment.

Table 2: Socioeconomic attributes of non-granary paddy farmers

Financial Indicators	Results
Net Present Value (NPV)	RM 30,414.20
Internal Rate of Return (IRR)	26%
Profitability index (PI)	1.88
Payback period	3.56

The government tax incentives in financial projection

The result of Net Present Value (NPV) in applying government tax incentives among farmers of paddy non-granary is in figure 3. The selected indicators are base study, Pioneer Status (PS), Investment Tax Allowance (ITA), Accelerate Capital Allowance on Pioneer Status (ACA on PS), and Accelerate Capital Allowance on Investment Tax Allowance (ACA on ITA). According from the government tax incentives, the highest value is related to ACA on ITA by amount of 40,470 and 38,861. Then it is related to Pioneer Status, ACA on PS and Base

Study by 37,570, 37,397 and 30,414 respectively. The outcome has similar result to broiler industry where the industry may manage properly (Shaikh & Zala 2011). Besides, results related to government tax incentives in Internal Rate of Return (IRR) are illustrated in figure 4.

Basically, the IRR result compares the between the discount rate and all future cash flow to the intial investment. The base study shows that the financial projection could be considered to be as the positive investment in advance. Furthermore, the Accelerate Capital Allowance on Investment Tax Allowance (ACA on ITA) is more practical than

others as the value of IRR is 34% which is the highest amount. In contrast, the same rate has founded for Investment Tax Allowance (ITA) and Accelerate Capital Allowance Pioneer Status (ACA on PS) by the value of 32%. Besides, IRR value is 31% for Pioneer Status and 26% for Base Study respectively. In this case, the amounts are not low which shows that the farmers may reach the efficient yield upon investment. Consequently, the highest rate for IRR is related to Accelerate Capital Allowance on Investment Tax Allowance (ACA on ITA) and the lowest value is related to Pioneer Status.

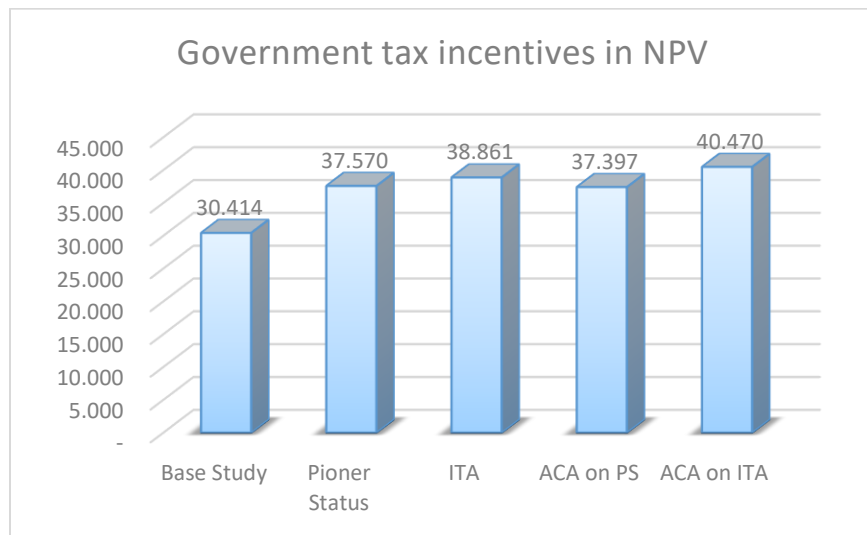


Figure 3. NPV result

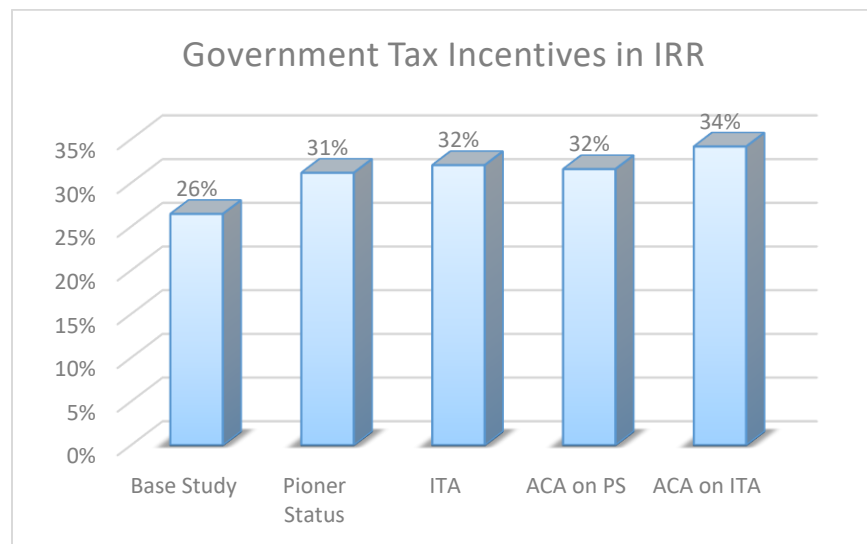


Figure 4. IRR result

Moreover, payback period in government tax incentives calculates the essential of time period to recover the exact amount of total initial investment. According to the results presented in figure 5 The time payback period for Investment Tax Allowance (ITA) is almost 3 years but shorter than the Base study and Pioneer Status. While, the payback is shorter for two other indicators of Accelerate Capital Allowance Pioneer Status (ACA on PS) and Accelerate Capital Allowance on Investment Tax Allowance (ACA on ITA). The payback for ACA on PS is less than 3 years and 2 and half years for ACA on ITA. By comparing the payback period, the option ACA on ITA is the best as it has the least time period. While the Base Study and Pioneer Status can be alternative options due to the longer payback period.

Based on the result of figure 6, the value of government tax incentives of Profitability Index (PI) for Pioneer Status is 2.09 which explains that the profit return to firm is Ringgit 1.09. Furthermore, the higher value of PI could be back to the firm, if the options of Investment Tax Allowance (ITA), Accelerate Capital Allowance Pioneer Status (ACA on PS) and Accelerate Capital Allowance on Investment Tax Allowance (ACA on ITA) are selected. By choosing ITA, PI value is Ringgit 2.13 which gives the profit of Ringgit 1.13 and Ringgit 2.09 and Ringgit 2.18 for ACA on PS and ACA on ITA. By comparing PI value, ACA on ITA and ITA options are the most profitable ones as they carry higher PI value.

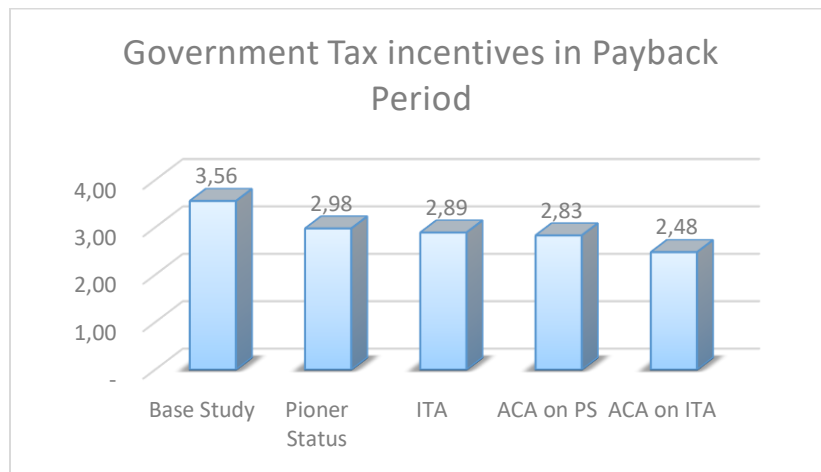


Figure 5. Payback period result

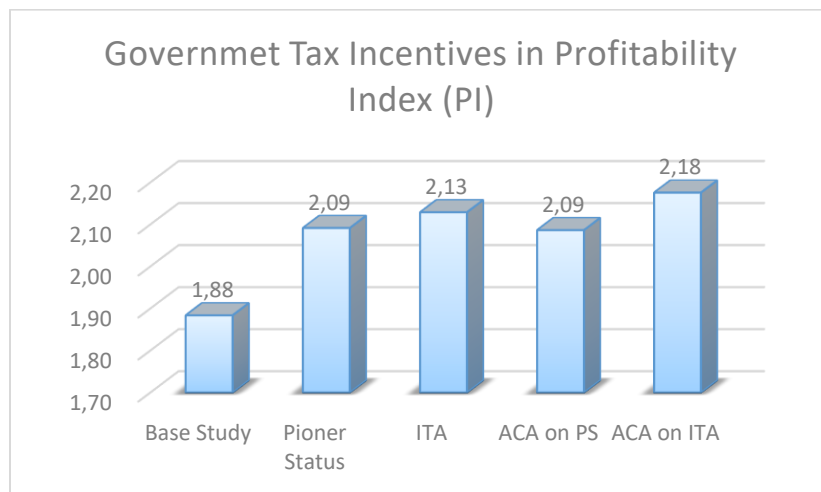


Figure 6. Profitability Index result

Sensitivity analysis in changing of income and costs

Sensitivity analysis plays the important action for project assessment in order to predict any change of market distortion and minimize the risk in evaluating decision of project appraisal. Pannell, (1996) stated that the parameter assumption and values for any economic models are indicated in the change and error where the role of sensitivity analysis widely defined as the investigation of potential changes, errors and effect on the conclusion to be drawn on the existing model. In this study, the shifts of income and costs appraise the financial indicators of project assessment that is illustrated in Table 3.

Based on the result of Table 3, the decreases of revenues by 5% and 10% are not massively effect to industry’s profitability. Since the NPV still shows positive value, IRR presents more than 15%, the project obtains benefits more than 40 cents in invested RM 1 and recovering the initial investment less than 5 years. It could be emphasised by the study of Baharudin (2021) that the size of the field does not affect the income of the farmers. The more attention may consider if the revenue decreases by 15% because the IRR shows nearly to 10%, profit solely attains 21 cent and require more than 5 years to pay project investment. On the other hand, by increasing cost

either by 5%, 10% or 15%, the paddy project in non-granary area is still profitable and lucrative for investment. This is indicated that any change of cost in production is not massively impact to the profitability of paddy’s industry in non-granary area and the project may be a proper industry to be invested. However, by regarding of this circumstance, the study also tries to provide the worst image of changing the cost and revenue in sensitivity analysis. The result, however, if the cost increase by 5% and the revenue decrease by 5%, the industry is still financially viable constituting NPV as 16,860, IRR as 20%, PI as 1.50 and Payback period as 4.55 respectively. Then, the project shows in the marginal profit and it is not considerably attractive for project investment if the cost increase by 10% and the revenue decrease by 10%. Furthermore, the increment of cost (15%) and decrement of revenue (15%) show negative perception of this industry since all the financial variables outcomes under value in term of project viability. Thus, the role of government must take the action to maintain the price and the cost of paddy production in non-granary area which is at least the change is not happening simultaneously in the percentage more than 10%.

Table 3. Sensitivity analysis

Simulation	Financial Indicators			
	NPV	IRR	PI	PP
Situation I				
Revenue decreased by 5%	22,539.97	23%	1.67	4.04
Revenue decreased by 10%	14,665.73	19%	1.45	4.72
Revenue decreased by 15%	6,791.50	14%	1.21	5.74
Situation II				
Cost Increased by 5%	24,743.23	24%	1.72	3.93
Cost Increased by 10%	19,054.26	21%	1.55	4.39
Cost Increased by 15%	13,374.29	17%	1.39	4.98
Situation III				
Cost and revenue by 5%	16,860.00	20%	1.50	4.55
Cost and revenue by 10%	3,305.79	12%	1.10	6.44
Cost and revenue by 15%	-10,248.41	3%	0.68	11.58

Note:

- Situation I : Decreasing revenue
- Situation II : Increasing costs
- Situation III : Decreasing revenue and increasing costs

CONCLUSION

Rice has very a vital role in Malaysian economics and therefore, it is the core attention of government. Malaysian government considers eight areas known as the granary areas as main paddy areas. The present study considers the capital budgeting analysis in non-granary areas which is collaborated with four indicators of Government tax incentives namely: Pioneer Status (PS), Investment Tax Allowance (ITA), Accelerate Capital Allowance on Pioneer Status (ACA on PS), and Accelerate Capital Allowance on Investment Tax Allowance (ACA on ITA). According to this result of capital budgeting analysis, paddy projects in non-granary areas is economically feasible. Net Present Value (NPV) related projects in these areas could bring proper profit for the farmers since the NPV amount was high enough. Furthermore, considering the payback period, paddy projects in these regions are rational as the longest time period is near to 4 years. Besides, these projects could be profitable since the Profitability Index (PI) was reasonable to gain net profit for all the indicators. Moreover, with tax incentives, the viability of the industry is more lucrative for the future projection. Consequently, it is suggested for the government should try to put more concentration and effort on these areas. This is due to the reason that more investing in these areas donates better contribution to the country's economic specifically when the projects could be profitable.

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