

ANALYSIS OF BUSINESS PORTFOLIO FOR FINANCIAL INDEPENDENCE OF RESEARCH INSTITUTIONS (Case study at Research Institute for Tea and Cinchona)

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ABSTRACT

Research Institute for Tea and Cinchona (RITC), after going through several changes in the Legal Entity status, eventually became a corporate in 2009. However, it still has faced the financial problem. Therefore it is necessary to conduct the study to identify the consisting Strategic Business Units (SBU) in RITC; the cost and income structure of each SBU; the mapped business portfolio on BCG matrix; and to set a strategy for self-financing both in organization and SBU level. SWOT analysis of external and internal factors in RITC exhibits that the recommended strategy for RITC at the organization level is Divestment/Investment, that RITC should manage the available opportunities in advance through Investation in its marketing management. Boston Consulting Group (BCG) matrix figures out the position of each SBU. Furthermore, the combined results of the cost structure analysis as well as the performance of SBU were used to sharpen the result of BCG matrix. Result of BCG Matrix analysis indicates that 73% of SBUs are in the Question Mark category; 18% is categorized as Cash Cow Category; and only 1 SBU (9%) in the Dog category. None of the SBUs entered the "Star" group. Among the SBU groups included in the Question Mark category (8 SBUs), when associated with the cost structure as well as business performance, there are only 3 SBUs which are very potential to be pushed into the Star category with Build Strategy i.e. (1) SBU of Superior Clones of Tea and Cinchona Production; (2) SBU of White Tea and Packaged Tea Unit; and (3) SBU of Arabica Coffee Garden Unit.

Keywords: BCG matrix, Business portfolio, cost structure, SWOT analysis

INTRODUCTION

The role of tea commodity in Indonesian economy is reasonably strategic. Tea plantations in Indonesia absorb about 320,000 workers and support around 1.3 million people. In addition, tea is one of fairly significant Indonesia's export commodities as the state's foreign exchange earner. From the environmental aspect, tea cultivation and processing is a type of business that highly preserves and supports soil and water conservation especially preventing floods and landslide. But since 2012 the performance of Indonesian tea plantations continues to decline both from aspects of area, production and export. This is mainly due to the fact that the productivity of Indonesian tea plantations is still very short, only 1,032 kg/ha/year, low domestic added value, and lack of commodity policy support [1].

Research Institute for Tea and Cinchona (RITC) is a research and development institute established by the Dutch colonial government in 1902 and re-established by the Minister of Agriculture in 1973 through the Decree of the Minister of Agriculture No. 14/Kpts/Um/1/1973. PPTK mandated to carry out applied research in the field of tea and cinchonin order to improve the quality and quantity of tea and cinchona production and solve the arising or allegedly arising problems in the field of tea and cinchona. Essentially, the role of PPTK is to produce innovations in order to enhance the competitiveness of national tea and cinchona agribusiness competitiveness. In its development, due to various considerations, since 20 November 2009 institutional status of PPTK changed into corporate or private under the coordination of PT. Riset Perkebunan Nusantara (RPN) [2].

The PPTK legal entity status as a private company with its mandate is especially uncommon case in the world. In general, tea research institutes in tea producing countries of the world get the funding from the government budget allocation (APBN), levy, cess or export levy managed by Tea Board, as applied to Tea Research Institute of Sri Lanka, Kenya Tea Research Foundation, and UPASI Tea Research Foundation and Tocklai Experimental in India. In Kenya, there is 1% levy of every sale or export in Mombasa Tea Auction (MTA). The fund is managed by the Kenya Tea Development Authority (KTDA) which allocates 50% for market development and tea added value; 40% for financing Tea Research Foundation of Kenya; and 10% for development of tea agro industry infrastructure. The collected funds and managed by KTDA reaches USD 100 million per year, which USD 40 million or about Rp. 500 Billion per year is allocated to fund Research & Development (R & D) activities at Tea Research Foundation of Kenya [3].

PPTK, as tea R & D institution in Indonesia, the source of its funding comes from the portfolio of its own business including commercialization of its research results. This condition causes the PPTK with an average total

budget of only Rp 22 billion per year primarily to finance the salary of 669 employees with status as private employee (no civil servant or state-owned employees), exceptionally limited to perform ideally in accordance with its mandate.

Condition and role of PPTK has not yet been optimal to solve the problems and improve the competitiveness of Indonesian tea agribusiness as the allocation of funds for research and development activities from routine funds in PPTK is somewhat limited. Most of the PPTK revenue allocation is intended for wages and salaries of employees including researchers and technicians total of 669 people.

This study is a business portfolio analysis study (Strategic Business Unit) reinforced by analysis of cost structure of each Strategic Business Unit (SBU) that PPTK can fulfill financial independence for the institution's sustainability and its role nationally as a producer of new technology in the field of tea and cinchona.

METHODS

2.1 Data collection

The data used in this study includes primary and secondary data. The primary data for Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) was obtained through questionnaire method filled by ten purposively selected sources closely related to PPTK business. The basis for determining sub-criteria of Strength-Weakness-Opportunity-Threat (SWOT) in the questionnaire was obtained from the result of the criteria set in the RENSTRA PT.RPN as the holdings of the PPTK institution. The collected secondary data included the internal data source of PPTK, PT RPN as the holding company, and available online documents.

2.2 Data analysis

The EFE and IFE analysis were used to determine the external and internal positions of the PPTK institutions, and then the results were used to map S-W-O-T PPTK in matrix form [4] as used by GneissandaHage et al. [5]. In order to obtain the weight of interest on each sub-criteria SWOT the method of weighting *Eickenrod* was used, which is one of the weighting methods used to determine the degree of importance/weight (B) of each criterion (K) and Sub-Criteria (SK) as defined in decision-making [6].

The Boston Consulting Group (BCG) matrix analysis [7] was used for the analysis of SBU portfolios contained in PPTK. For the BCG analysis, using secondary data in the form of revenue generated by each SBU in PPTK was compared with the revenue from market leaders representing the type of business of each SBU, combined with data on the market growth rate of each SBU based on primary data, and available online secondary data. BCG matrix analysis is very popular among business people and academics, among others, has been used by Debrach and Levas [8]; Mutandwa et al. [9]; Lu and Lihua [10]; as well as Ionescu [11].

Furthermore, analysis of cost structure using fixed cost data of PPTK and Cost of Production per PPTK business unit was also used as variable cost for subsequently compared with share of revenue of each SBU PPTK to identify which SBU yields positive margin/profit. Result from analysis of cost structure and this revenue may support the results of previous BCG analysis.

RESULT AND DISCUSSION

3.1 Results of PPTK SWOT Analysis

From the results of IFE and EFE analysis results, it is known that PPTK has a negative value from the internal side (-0.14), however, having a positive value from the external side (0.11). The position of SWOT from PPTK is in quadrant II (negative, positive) as shown in Figure 1. This position indicates that it is an internally weak yet reasonably potential organization. Thus, PPTK has a weakness factor more prominent than its strength internally. The weakness factors can be minimized with certain strategies in order to take advantage of existing opportunities. The provided managerial recommendations are Stability/Rationalization, meaning that organizations are advised to change the previous strategy. It is because the former strategy will be supposedly difficult to capture the existing opportunities while improving the performance of the organization.

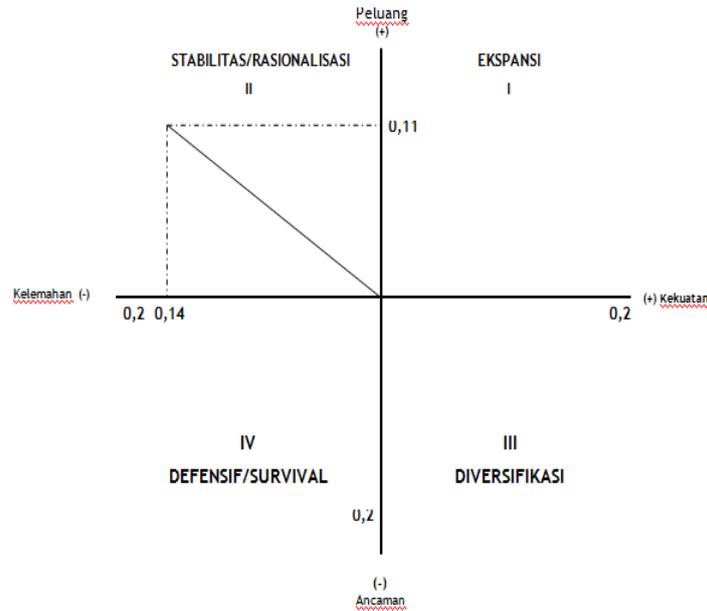


Figure 1. Position of IFE and EFE of PPTK

From IFE and EFE positions, the qualitative SWOT recommendation that Kearns recommended [12] is Divesment/Investment as shown in Figure 2 below.

External	Opportunity	Threats
Internal		
Strength	Comparative Advantage	Mobilization
Weakness	Divestment/Investment	Damage Control

Figure 2. Qualitative position of SWOT PPTK and its suggested strategy

The Divestment/Investment box is an interaction between organizational weakness and external opportunities. Opportunities available for PPTK are relatively good, but it cannot be utilized optimally as the existing internal strength is insufficient to work on them. Such situations provide a choice of strategy to the organization which is the strategy of releasing opportunities (*Divestment*) that other organizations can utilize, or start investing in order to work on these opportunities (*Investment*). The recommended investment for PPTK is in the form of improving marketing management skills both in terms of human resources; marketing skills; English proficiency, commercialization strategies of research products and services both conventionally and digitally; maintain and expand the market. Once a reliable Marketer Team is available, investments in the form of means and facilities for Marketing Team to work effectively include rapid internet connections; adequate computer equipments; as well as sufficient promotional budget. If these investments are possible then it is likely for PPTK to manage the existing opportunities, especially the demand for tea products and their increasing derivatives both domestically and globally.

3.2 Results of BCG Matrix Analysis of SBUs in PPTK

The PPTK revenue is still highly dependent on the plantation business unit and the black tea factory which reaches 33.9% of the total revenue of PPTK of Rp 21 billion. Other business units that contribute significantly are SimalungunPlantation, of which fresh shoot production is processed in black tea factory owned by PTPN IV (26.1%), production business unit of tea and cinchona improved seeds (12,6%), research cooperation revenue (8,4%) and green tea plantation and factory (8.3%). Total revenue generated from these five business units accounted for 89% of the total revenue of PPTK that PPTK is highly dependent on the five main business units. However, business diversification is required to reduce business risk [14].

If the business portfolio is grouped based on the competence of PPTK, thus the business unit revenue of its core business is highly dominant, reaching up 97% of the total revenue of PPTK, while the non-core business unit among others is AMDK Gamboeng Spring Water, guest houses and hotels, arabican coffee plantations, and Stevia natural sweetening plantation, contributes only 3%, as it is a new business unit started in 2012 with its various challenging problems, especially marketing problems that become the weakness of PPTK competence. The details of the Strategic Business Unit (SBU) in PPTK, the value of the revenue it generates and its contribution to the total revenue of PPTK are presented in Table 1.

Table 1. SBU revenue in PPTK

No.	Strategic Business Unit (SBU)	Revenue *) (IDR)	Percentage to total revenue (%)
Core business			
1	Research collaboration	1.761.784.883	8.37
2	Lab services and expertise	761.080.063	3.61
3	Black tea plantation & experimental factory	7.130.880.636	33.87
4	Green tea plantation & experimental factory	1.750.110.500	8.31
5	Simalungun Experimental Plantation	5.488.344.160	26.07
6	White tea and packaged tea factory	844.067.999	4.01
7	Improved seeds of tea and cinchona	2.661.785.000	12.62
	Others	18.638.190	0.09
	Total Core-business	20.416.691.431	97
Non-core-business			
8	AMDK Gamboeng Spring Water	129.131.272	0.61
9	Guest House, Hotels&Agro-tourism	419.308.800	1.99
10	Arabican coffee plantation	13.107.618	0.06
11	Stevia plantation	31.397.729	0.15
	Others	42.427.364	0.20
	Total non-core-business	635.372.784	3
	Total SBU	21.052.064.215	100

*) Revenue in 2016.

The result of analysis of BCG Matrix from SBU-SBU in PPTK is presented in Figure 3. From Figure 3, it can be evident that most of SBU PPTKs are as many as eight SBUs (73%) in "Question Mark" positions and two SBUs (18%) are included in "Cash Cow" category. There is only one SBU (9%) of stevia plantation included in the "Dog" category. None of the SBU PPTKs are included in the "Star" group.

Eight SBU PPTKs included in the "Question Mark" category consists of: (1) Production of Tea and Cinchona Improved Seeds SBU; (2) Green Tea Plantation and Factory SBU; (3) Research Cooperation SBU; (4) White Tea and Packaged Tea SBU; (5) Lab Services and Expertise SBU; (6) Arabican Coffee SBU; (7) Gamboeng Spring Water SBU AMDK; and (8) Guest Houses, Hotels and Agro-tourism SBU. There are two SBUs of eleven SBU PPTKs included in the "Cash Cow" category such as (1) Black Tea Plantation and Factory SBU; and (2) Simalungun Experimental Garden SBU.

For the Question Mark category dominating business units in PPTK, it is certainly very disturbing to the liquidity of PPTK, as this business group requires large cash inflows to finance its growth, and it is a weak fund producer. This condition caused the PPTK to undergo inability to provide operational funds allocated for research activities.

Among the SBUs in the Question Mark category, which are likely to be induced into the Star category are (1) white tea and packaged tea SBU; (2) production of improved seeds of tea and cinchona SBU; (3) green tea plantation and processing plant SBU; (4) arabica coffee plantation SBU and (5) research cooperation SBU.

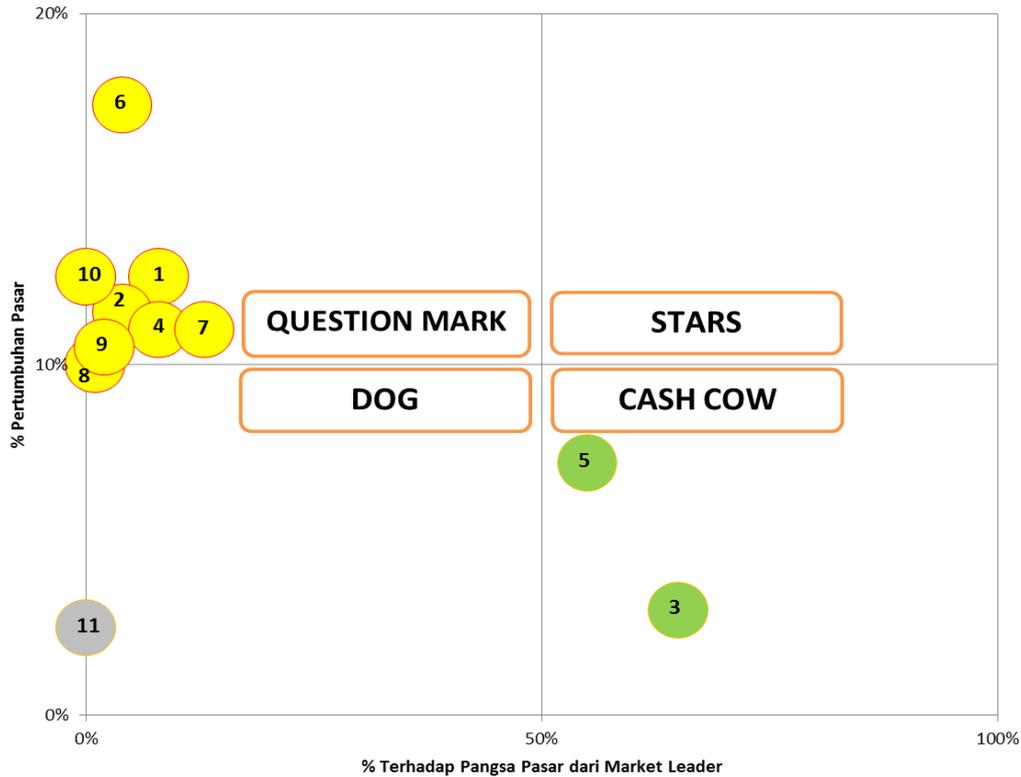


Figure 3. Results of BCG Matrix Mapping from SBU in PPTK

Captions:

No.	Description
1	Research collaboration
2	Lab services and expertise
3	Black tea plantation & experimental factory
4	Green tea plantation & experimental factory
5	Simalungun Experimental Plantation
6	White tea and packaged tea factory
7	Improved seeds of tea and cinchona
8	AMDK Gamboeng Spring Water
9	Guest House, Hotels & Agro-tourism
10	Arabica coffee plantation
11	Stevia plantation

White tea and packaged tea SBU can be induced into the "Star" group by increasing the production capacity of the plantation, factory and marketing capabilities. For the SBU production of tea and cinchona improved seeds, it can be promoted into the "Star" group by approaching the shareholders (PTPN IV, VI, VII, VIII, IX, and XII) to purchase superior quality seeds from PPTK as the PVP rights holder of the superior clones of the Gambung series (GMB 1-11), avoid to procure their own seeds of which quality and purity is not guaranteed.

Green Tea Plantation and Processing Factory SBU, has a great opportunity to become a "Star" group by profit sharing cooperation strategy with green tea market leader in Indonesian market, PT KBP Chakra, that production capacity and market share can be improved for both domestic and export market. Arabica Coffee Plantation SBU has the opportunity to become a "Star" by cooperating with the competent Research Center for Coffee and Cocoa on this SBU. The Research Cooperation SBU also has the opportunity to become a "Star", by attempting to improve networking with research institutions and universities as well as the organizers of Competitive Grant Research competitions both in domestically and abroad.

3.3 Results of SBU Cost Structure Analysis

From the 11 SBUs in PPTK, there are only three SBUs that have yielded positive margin or generated profit which are:

1. White Tea and Packaged Tea Factory SBU;
2. Improved Seed Tea and Cinchona; and
3. Arabican Coffee Plantation.

SBUs that contribute to profit are those of which business prospects are improved or whose business growth is above 10%, and its revenues are relatively large compared to variable costs. The disadvantages of SBUs in PPTK are mostly related to the high fixed cost charges ranging from 28.7% to 75.5%. The high fixed cost in some SBUs are resulted by the use of the use of responsible persons business (SBU managers) whose class has been quite high like the researcher group (above Group III), but the business scale is still relatively small.

3.4 Managerial Implications at Strategic Business Unit (SBU) Level in PPTK

In accordance with Kotler's theory [15], Build strategy is a strategy to increase investment in a product or business unit in order to increase market share, as it can be implemented to promote business units in the Question Marks into Star category. This Build strategy has a great opportunity to encourage SBUs into the "Star" category, namely (1) Production of Tea and Cinchona Improved Seeds SBU which has produced the highest profit; (2) White Tea and Packaged Tea which has also produced the second most profitable business performance; and (3) Arabican Coffee Plantation SBU.

Production of improved seeds of tea and cinchona SBU can be promoted to the "Star" group by approaching customers (PTPN IV, VI, VII, VIII, IX, and XII) to purchase superior quality seeds from PPTK as PVP rights holder of superior clones of Gambung tea series (GMB 1-11), by avoiding to conduct their own seed procurement of which quality and purity is not guaranteed. Therefore, it is necessary to approach PTNN III Holding as Holding of PTPN IV, VI, VII, VIII, IX and XII. The main programs required to be proposed are rejuvenation and rehabilitation program of old, damaged and less varied population tea plantations and expansion of tea plantations in new areas, among others, in the area of Community Forest Planting (PHBM) and in areas outside Java. With the creation of such opportunities, it can urge the business unit of tea and cinchona improved seed production from the Question Mark into the Star group. PPTK is an inventor of the superior clones of Gambung Tea Series (GMB 1-11) which are tea superior clones as the official recommendation by the Government for rejuvenation, rehabilitation and extensification programs of tea plantations throughout Indonesia.

In order to accelerate the realization of improved seed production unit into Star business group, it is expected that PPTK can expand its improved seeds market, not only improved seeds of tea cutting, but also increase its market share for improved seeds of tea and cinchona ready for planting with high added value. In order to compete in the improved seeds market of ready-to-plant tea, the superiority that must be continuously improved is the purity of plant material; quality of prime seeds; after sales service in seeds handling technology during transportation; technological guidance for planting and maintenance of Non-Productive Plants (TBM). In addition, research to support improved seed quality also needs to be a research priority, in order to connect research and business as suggested by Arbige [13].

White tea and packaged tea SBU can be promoted to the "Star" group by way of increasing the production capacity of the plantation, factory, and marketing management. Currently the production capacity and white tea factory is still 2 tons of white tea per year from the raw materials plantations of 100 Ha. In order to increase the capacity of the factory, one more factory with an investment of white tea factory amounting to approximately Rp 1 billion per factory, can be conducted by submitting the proposal of new plant establishment to the West Java local government both Bandung province and regency, the raw material will be obtained from the surrounding tea plantation. This proposal is a win-win strategy, whereby PPTK can get additional white tea raw materials, while by the increasing prices and added value of the community tea, local government has the opportunity to improve regional economic welfare.

Meanwhile the opportunity of Arabican Coffee Plantation SBU to become the "Star" category can be achieved by conducting collaborative management with Indonesian Coffee and Cocoa Research Center (PPKKI) which is competent in this SBU and under the coordination of PT RPN. Therefore, it is necessary to engage with PT RPN in order to actualize the management cooperation of Arabican Coffee Plantation SBU between PPTK and PPKKI.

It is expected that with the suggestions of the SBU portfolio strategy in PPTK, it can improve the business performance of PPTK to accelerate the independence of PPTK financially. Some governmental research institutions are also now encouraged to achieve financial independence [16]. It is likely that by improving the performance of business portfolio in PPTK will also increase the PPTK value [17].

CONCLUSIONS AND SUGGESTIONS

4.1 Conclusion

Based on the results of the research presented in the previous chapter, thus it can be summarized as follows:

1. From the result of EFE and IFE analysis, it is known that the weakness of PPTK is more dominant compared to its strength, and PPTK opportunity is more dominant than its threat, in other words PPTK position is

anengagement between internal factors of Weakness and Opportunity. Thus the suggested strategy recommendation is Divestment/Investment.

2. The BCG matrix of PPTK indicates that most of SBU PPTK (8 SBUs) are in the "Question Mark" position; the rest are in the "Cash Cow" group (2 SBUs) and only one SBU is included in the "Dog" category. None of the PPTK SBUs are included in the "Star" category.
3. From the total of 11 SBUs in PPTK, there are only 3 SBUs that have resulted in positive or profit margins, namely (1) SBU of White Tea and Packaged Tea Factory; (2) Improved Seed of Tea and Cinchona; and (3) Arabica Coffee Plantation. SBUs that provide profit contribution are those whose business growths are above 10% and their revenues are relatively larger than its variable cost.
4. The three SBUs can be induced from the "Question Mark" to the "Star" category using the Build strategy which is a strategy to increase investment in a product or business unit in order to increase market share.

4.2 Suggestion

Based on the presented results of research and conclusions, suggestions based on the results of the analysis conducted are:

1. PPTK management is expected to improve the financial condition of PPTK with strategies to overcome the weakness and take advantage of opportunities.
2. Further research can analyze the business portfolio with other methods such as General Electric analysis, Quality Function Deployment (QFD), etc.

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