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# Feasibility Research Of “Ayo” Production From Regional Drinking Water Company Tirtamarta Yogyakarta Indonesia : Marketing And Financial Factor

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**Abstract.** Regional state company of drinking water Tirtamarta Yogyakarta had made a break through by developing products in mineral water. Hence, now they were building mineral water manufacturing called “Ayo”. The aim of the study was to conduct a feasibility research of the new manufacturer in terms of marketing and financial aspects. Endorsed by the demand of targeted market in mineral water and strong suggestion from city state of Yogyakarta to develop the business, it was significant feasible. The financial study showed that payback period was faster than the targeted investment period. Net present value (NPV) generated positively. Benefit cost ratio (BCR) was greater than 1 (one) and internal rate of return (IRR) placed in the range 14% was greater than the discount factor (DF) = 12%. Thus the business feasibility study in both marketing and financial factor concluded to be feasible to operate.

**Keywords:** Feasibility; Marketing; Financial; Tirtamarta; Yogyakarta; Indonesia

## 1 Introduction

Tirtamarta Yogyakarta made a breakthrough by developing a diversified bottled mineral water business. The market share now were mostly from government institutions in Yogyakarta and surroundings. In the long terms, Tirtamarta wanted to seize business opportunities in mineral water. Thus, presently they were expanding and increasing their production capacity by producing new types of bottled mineral water with PH = 8 [1] patented “Ayo”. According to [2] explained that a business feasibility study was an activity to examine how the benefits could be obtained in carrying out a business or project. Hence, it was an important factor in providing key indicators of market opportunities and financial feasibility in order to have competitiveness [3]. Other literatures were also having same indications especially for the sector [4,5,6,7] who examined the feasibility analysis for food and beverage (FB) sector.

## 2 Research Method

Research location was placed in Yogyakarta and surroundings. Supported by computerized application such word office and excel. Data collection was operated by interviews, comparative studies, and documentation. Documentation was a data collection in tracing historical, books, records, and other relevant information [2]. Other data analysis were financial analysis such as : payback period, net present value (NPV), internal rate of return (IRR), and benefit cost ratio or BCR [8].

## 3 Results and Discussion

Endorsed by mandatory recommendations from Yogyakarta municipal government to use "Ayo" brand bottled water, with a population of around 414,000 people in the city of Yogyakarta [9] overall market availability for the launching products were shown in the table. 1. It could be estimated that the market having high absorption and purchasing power [10].

**Table 1.** Prospects of targeted market for mineral water branded "Ayo"

| No           | Targeted market               | Amount |
|--------------|-------------------------------|--------|
| 1.           | Regional state institution of | 45     |
| 3.           | General hospitals             | 10     |
| 4.           | Police offices                | 18     |
| 5.           | Hotels                        | 548    |
| 6.           | Universities                  | 20     |
| 7.           | Schools                       | 240    |
| 8.           | Retailers                     | 50     |
| 9.           | Militeries                    | 2      |
| 10.          | Restourants                   | 50     |
| Total amount |                               | 983    |

Source : primary and secondary data (2020)

The initial investment was self financing. It was 2,641,610,000.00 value of rupiah. They were consisting of equipments, machineries, building renovations, vehicles, and mineral water bottles. Payback period was a required period to be able to count investment expenses by using proceeds. This payback period described the length of time the investment was returned so that the funds embedded in the investment could be fully recovered. Table.2 explained that proceed calculation being used only in 5 months because production activities would start from August 2021. Based on table.2 below, payback period was 3 years 1 month. In the year of 2021 valued 5 months, 2022 one year, 2023 one year, and 2024 = IDR.  $(609,131,726 : 897,777,951) \times 12 = 8.14$  months. Because the payback period of the proposed investment was less than the maximum payback period which was 5.5 (five point five) years, the investment could be declared acceptable or feasible to operate [11].

**Table 2.** Pay back period

| Year | Proceed (IDR) | Investment    |
|------|---------------|---------------|
|      |               | 2,641,610,000 |
| 2021 | 62,764.4      | 2,578,845,596 |
| 2022 | 436,977,493   | 2,141,868,103 |
| 2023 | 634,958,427   | 1,506,909,676 |
| 2024 | 897,777,951   | 609,131,726   |
| 2025 | 1,007,860,446 |               |
| 2026 | 1,060,646,004 |               |

Source : attachment.1 (2020)

Afterward, based on attachment.1, net present value (NPV) being calculated to measure the feasibility of business by considering time value of money. It was observed in table.3. For total present value (PV) of total expected proceeds = IDR. 2,840,474,666.00 and it was greater than the present value (PV) of the investment = IDR. 2,641,610,000.00 or a positive net present value = IDR. 198,864,666.00, then the investment proposal could be accepted. NPV calculation results (shown in table.3) using a 12% discount factor which be able to be interpolated with the NPV calculation results with a 20% discount factor. For the internal rate of return (IRR) yield was 14.94% (from data in table.4 and equation.1) being higher than the interest rate that was considered appropriate by the moment, which was 12%, therefore, the investment plan was declared acceptable or feasible [12]. Based on equation.2, BCR ratio was a method compared to the present value (PV) of all proceeds to the total investment (PV of outlays). As calculated below, because the value of benefit cost ratio (BCR) of the proposed investment was greater than 1 (one). It was 1.08. Hence the project could be declared acceptable or feasible to operate [13].

**Table 3.** Calculation of proceeds with a discount factor of 12% and 20%.

| Year                      | Proceed (IDR) | Df = 12 % | PV of Proceed (IDR) | Df = 20 %  | PV of Proceed (IDR) |
|---------------------------|---------------|-----------|---------------------|------------|---------------------|
| 2021                      | 62,764.4      | 1         | 62,764,404          | 1          | 62,764,404          |
| 2022                      | 436,977,493   | 0.8929    | 390,177,204         | 0.8333     | 364,133,345         |
| 2023                      | 634,958,427   | 0.7972    | 506,188,858         | 0.6944     | 440,915,132         |
| 2024                      | 897,777,951   | 0.7118    | 639,038,345         | 0.5787     | 519,544,100         |
| 2025                      | 1,007,860,446 | 0.6355    | 640,495,313         | 0.4823     | 486,091,093         |
| 2026                      | 1,060,646,004 | 0.5674    | 601,810,542         | 0.4019     | 426,273,629         |
| PV of Proceed Total (IDR) |               |           | 2,840,474,666       |            | 2,299,721,702       |
| Outlay (IDR)              |               |           | 2,641,610,000       |            | 2,641,610,000       |
| NPV1 (IDR)                |               |           | + 198,864,666       | NPV2 (IDR) | (341,888,298)       |

Source : attachment.1 (2020)

**Tabel 4.** Value of  $i_1, 12, NPV_1$ , and  $NPV_2$

| Interest (i) 1 | Interest (i) 2 | NPV1 (IDR)  | NPV2 (IDR)    |
|----------------|----------------|-------------|---------------|
| 12 %           | 20 %           | 198,864,666 | (341,888,298) |

$$IRR = i_1 + \frac{NPV_1}{(NPV_1 - NPV_2)} \times (i_2 - i_1) \quad (1)$$

$$= 14.94 \%$$

$$BCR = IDR. 2,840,474,666 : IDR. 2,641,610,000 = 1.08 \quad (2)$$

## 4 Conclusion

From the results of the study several conclusions could be drawn. The products that would be produced and marketed by the company were small 300 ml and big bottle of mineral water. The potential market were all employees in the Yogyakarta city environment and communities in the city. The targeted market included as follows : first year of operation was service office located in the Yogyakarta, the second year were partners who collaborated with the Yogyakarta government, such as catering and cooperatives in the city, building cooperation network with hotels in the Yogyakarta city environment, supermarkets, grocery stores, restaurants in the Yogyakarta city area. The products were quality mineral drinking water that was guaranteed, hygienic, healthy, and halal as well as having a PH = 8 with at a competitive price. The investment 100% from self-financing from the company finance. The results of the investment assessment showed that the investment was feasible. Net present value was positive, the benefit cost ratio of the proposed BCR investment was 1.08, meaning that the value was greater than 1, the payback period was smaller than the maximum payback period which was 5 (five) years, and the IRR result was 14,94% greater than the interest rate that was considered appropriate at the moment 12%.

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