Difference analysis of revenue of robusta coffee business in three variants

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Abstract. The purposes of this study were to determine the processing stages of the three variant coffee powder, to determine the income received by the robust coffee businessman into a three variant coffee powder and to determine the difference in income obtained from processing the three variant coffee grounds. Determination of Research Areas by Purposive (deliberate) at UD. Tanpak Sidikalang The sampling method is the census method. Methods of data analysis using descriptive analysis, income calculation and One Way ANOVA Test. the results of the study can be concluded: the processing of three variants of coffee powder has been semi-modern, processing consists of sorting raw materials, roasting, grinding of raw materials, and packaging, net income received by the three variants of coffee powder entrepreneurs is IDR 21,844,974.97. F arithmetic> F table (44.165> 3.35) it can be concluded that Ho is rejected so that there is a difference in income between the original variant, special variant and tonggal variant.

1. Introduction
Plantation crops can be grouped into two, namely seasonal and annual plants. Seasonal crops are plants that are only harvested once with a relatively short plant life that is no more than one year, for example, rice, corn, tomatoes, and others. While annual crops require a long time to produce and can produce up to decades and can be harvested more than once, for example, oil palm, rubber, cocoa, clove, coffee, and pepper. As a commodity, plantation crops have other names, namely trade plants and industrial plants [1].

One of the plantation crops is coffee. Coffee is a plantation crop that has long been a cultivated crop. Coffee plants are a source of people's income and also increase the country's foreign exchange.

Coffee as a beverage ingredient is already familiar, and its fans are the entire nation in the world. The taste is fragrant, the taste is typically delicious, and its properties can provide stimulation to refresh the body, making coffee quite familiar on the tongue and favored [2].

Based on the survey results of the Indonesian Coffee Exporters Association (AEKI) in, the Indonesian community is one of the large coffee consumers, where Indonesian coffee consumption tends to increase every year. This increase occurred, in addition to the habits/traditions of the community as well as by changes in lifestyle/trends in which coffee was demanded by all walks of life from various backgrounds [1].
In addition to being a consumer, Indonesia is the third-largest coffee producer in the world after Brazil and Vietnam, which consists of two variants, namely Robusta coffee and Arabica coffee. Both of these coffee variants have different names/designations based on their planting area. From Sumatra, Aceh known as Gayo coffee, North Sumatra with Sidikalang Coffee and Lintong or Mandheling Coffee, South Sumatra with Besemah Coffee, Lampung with Lampung Coffee, Bengkulu with Bengkulu Robusta Coffee. From Sulawesi region, South Sulawesi is known as Bulu Kumba coffee, from Tana Toraja it is known as Tana Toraja coffee and from Flores, it is known as Wamena Coffee.

Data on area and production of smallholder coffee in Indonesia in 2017, can be seen in table 1 below.

**Table 1. Area and production of smallholder coffee plantation by the province in 2017**

| Province               | Area (Ha) | Production (Ton) |
|------------------------|-----------|-----------------|
|                        | TBM       | TM              | TTM              | Total     |                |
| Aceh                   | 25,501    | 69,128          | 26,597           | 121,226   | 46,828         |
| North Sumatera         | 13,768    | 58,051          | 9,655            | 81,474    | 60,307         |
| West Sumatera          | 6,465     | 34,514          | 1,147            | 42,126    | 33,616         |
| Riau islands           | 584       | 3,170           | 758              | 4,911     | 2,830          |
| Riau                   | 7         | -               | 48               | 55        | -              |
| Jambi                  | 5,162     | 18,695          | 2,789            | 26,464    | 13,636         |
| South Sumatera         | 20,539    | 206,018         | 23,614           | 250,172   | 110,481        |
| Kep. Bangka            | 4         | 17              | 4                | 25        | 6              |
| Belitung               |           |                 |                  |           | 56,817         |
| Bengkulu               | 7,312     | 77,264          | 6,075            | 90,651    | 110,368        |
| Lampung                | 12,543    | 137,928         | 11,549           | 162,026   | 34,000         |
| Dki Jakarta            | -         | -               | -                | -         | -              |
| Jawa Barat             | 9,546     | 20,659          | 3,387            | 33,592    | 16,582         |
| Banten                 | 418       | 4,568           | 729              | 5,715     | 2,435          |
| Central Jawa           | 5,719     | 29,813          | 2,535            | 38,067    | 20,349         |
| D.I. Yogyakarta        | 747       | 913             |                  | 1,660     | 409            |
| East Jawa              | 12,000    | 46,800          | 5,100            | 63,900    | 34,000         |
| Bali                   | 5,755     | 25,095          | 3,781            | 34,631    | 15,288         |
| West Nusa Tenggara    | 3,040     | 8,069           | 793              | 11,902    | 4,615          |
| East Nusa Tenggara    | 18,655    | 40,809          | 4,841            | 64,305    | 20,914         |
| West Kalimantan        | 586       | 7,232           | 3,883            | 11,683    | 3,899          |
| Central Kalimantan     | 235       | 805             | 406              | 1,446     | 412            |
| South Kalimantan       | 270       | 2,894           | 294              | 3,458     | 1,767          |
| East Kalimantan        | 203       | 1,597           | 1,230            | 3,030     | 224            |
| North Kalimantan       | 518       | 832             | 386              | 1,736     | 543            |
| North Sulawesi         | 1,262     | 5,503           | 587              | 7,352     | 2,738          |
| Gorontalo              | 168       | 1,047           | 621              | 1,837     | 885            |
| Central Sulawesi       | 2,596     | 4,288           | 1,837            | 8,721     | 2,851          |
| South Sulawesi         | 10,704    | 45,883          | 14,809           | 71,396    | 29,902         |
| West Sulawesi          | 3,557     | 3,594           | 6,681            | 13,832    | 1,647          |
| Southeast Sulawesi     | 1,109     | 6,360           | 1,729            | 9,198     | 2,917          |
| Maluku                 | 284       | 552             | 264              | 1,100     | 444            |
| North Maluku           | 36        | 630             | 924              | 1,590     | 127            |
| Papua                  | 3,466     | 4,371           | 2,362            | 10,199    | 1,914          |
| West Papua             | 120       | 276             | 117              | 514       | 134            |
| Indonesia              | 172,860   | 867,377         | 3,667            | 13,402    | 599,902        |

(Source: Statistics Indonesia, 2017)

From table 1, we could know that North Sumatra was the third-largest coffee producing province in Indonesia after the Provinces of South Sumatra and Lampung. This showed that North Sumatra Province had enormous potential for the development of coffee plants. In addition to a suitable
climate, North Sumatra Province also had very fertile soil. In North Sumatra Province itself, the type of coffee that was widely cultivated is Arabica and Robusta.

North Sumatra consists of 27 districts / cities namely Nias, Mandailing Natal, North Tapanuli, Central Tapanuli, South Tapanuli, Toba Samosir, Labuhan Batu, Asahan, Simalungun, Dairi, Karo, Deli Serdang, Langkat, South Nias, Humbang Hasudutan, West Pakpak, West Pakpak, Samosir, Serdang Bedagai, Batu Bara, Padang Lawas Utara, Padang Lawas, Labuhan Batu Selatan, Labuhan Batu Utara, North Nias, West Nias, Padang Sidempuan and Gunung Sitoli. From 27 regencies/cities, Robusta Coffee production was also found in Dairi Regency. The production, productivity, and number of Robusta coffee farm households in Dairi Regency are as follows:

Table 2. Production, productivity, number of robusta coffee farming households in Dairi regency

| sub-district      | Production of Robusta Coffee Plants (Ton) | Robusta Coffee Plant Productivity (Kg/Ha/Year) | Number of Robusta Coffee Farmer Households |
|-------------------|------------------------------------------|-----------------------------------------------|-------------------------------------------|
| Sidikalang        | 0                                        | 0                                             | 0                                         |
| Berampu           | 16                                       | 533.33                                        | 105                                       |
| Sitinjo           | 0                                        | 0                                             | 0                                         |
| Parbuluan         | 0                                        | 0                                             | 0                                         |
| Sumbul            | 80                                       | 615.64                                        | 800                                       |
| Silahisabungan    | 0                                        | 0                                             | 0                                         |
| Silima Pungga-pungga | 270                                       | 613.64                                        | 1050                                      |
| Lai Parira        | 180                                      | 654.55                                        | 900                                       |
| Siempat Nempu     | 265                                      | 662.5                                         | 980                                       |
| Siempat Nempu Hulu | 208                                      | 640                                           | 875                                       |
| Siempat Nempu Hilir | 115                                      | 657.14                                        | 925                                       |
| Tiginalingga      | 232                                      | 618.67                                        | 980                                       |
| Gunung Sitember   | 239.5                                    | 622.08                                        | 700                                       |
| Pegagan Hilir     | 0                                        | 641.51                                        | 730                                       |
| Tanah Pinem       | 170                                      | 0                                             | 0                                         |
| **Total**         | **1775.5**                               | **634.11**                                    | **8045**                                  |

(Source: Statistics Dairi Regency, 2017)

Table 3 showed that Sidikalang District does not have a coffee crop production. However, Sidikalang is known as a producer of high-quality coffee grounds, and is well-known as one of the producers of coffee powder which is quite large, so that many businesses stand in the management of ground coffee managed by local communities from small to medium scale with various product brands, including Ida Coffee, Nona Nantampukmas Cap Coffee, Zest Coffee, Cap Lesung Coffee, Serimpi Cap Coffee, and one of them is Tanpak Ground Coffee.

Coffee Powder Business UD. Tanpak Sidikalang is interesting to discuss because it is a pioneer in the establishment of ground coffee business in Sidikalang. UD ground coffee business Tanpak is famous for its uniqueness, where this ground coffee is made from a choice of Original Robusta coffee that grows in the Dairi district and surrounding areas. The specialty of this Sidikalang coffee taste is worth a try; the taste of real coffee is clearly felt even when it is first opened. Besides Tanpak ground coffee also has an affordable price. Tanpak ground coffee has three variants including Tanpak Coffee, and this coffee is original flavored coffee. Special Tanpak Coffee is original coffee whose coffee beans
are perfectly cooked. Moreover, Tonggal Coffee, this coffee is a coffee with the raw material of a single male seed that serves to increase vitality in men. Of the three variants of UD, Tanpak coffee powder, the researchers want to see the difference in income of the three variants of Robusta coffee powder in the study area.

Purposes of the study. To find out the processing of three variants of coffee powder in the study area, to find out the amount of coffee powder revenue of three variants in the study area, To determine the differences in income derived from processing coffee grounds in three variants in the study area

2. Methods

2.1. Method of determination of research areas
The determination of the research area was carried out purposively. The study was conducted in the city of Sidikalang, Dairi Regency, North Sumatra Province. Sidikalang District is one of the Robusta coffee-producing districts in the Dairi Regency, North Sumatra Province.

2.2. Method of determination of research samples
The sampling method was done by the census method, where all members of the population were sampled. The samples in this study were three variants of coffee powder entrepreneurs that conducted for one month and every day of production.

2.3. Method of collecting data
The data used in this study include primary data and secondary data. Primary data were obtained from interviews and filling out questionnaires by respondents, as well as direct observation while secondary data was complementary data sourced from various agencies related to the central statistical body.

2.4. Method of data analysis
For the problem statement (1) a descriptive method was used, namely regarding the processing of coffee grounds using

For the formulation of the problem (2) calculating income could be calculated using the following formula:

Formula: \( I = TR - TC \)

With: \( TR = P \times Q \) and \( TC = FC + VC \)

Explanation:

\[ I = \text{Income} \]

\[ TR = \text{Total revenue} \]

\[ TC = \text{Total cost} \]

(Soekartawi, 1993)

For the problem formulation (3) analyzed using the One Way ANOVA Test

(Rahim, Abd dan Diah R.D. 2008)

3. Results and discussions

3.1. Processing of three variant coffee powder

3.1.1. Supply of raw materials. The first stage carried out by the Three Variant Coffee powder entrepreneurs was to buy dried Green Bean from farmers and agents in the study area or outside the study area
3.1.2. *Sorting of green bean*. The second stage was sorting Green Bean or often called rice coffee. It aimed to separate the damaged coffee beans and coffee beans that were still intact. This process was carried out after obtaining raw materials from farmers and agents.

3.1.3. *Roasting*. The third stage was sangria (roasting) this was done to get blackish-brown coffee beans. This process was done by using a modern frying machine with fire and gas.

3.1.4. *Grinding*. The fourth stage was grinding. Roasted coffee was then ground to obtain ground coffee.

3.1.5. *Packaging*. The fifth stage was packaging. This stage was carried out after grinding, which aimed to package ground coffee that had been ground using a press machine and then marketed.
3.1.6. Production cost. Production costs were costs incurred during the production process take place in the production cycle. Costs consist of fixed costs and variable costs. Fixed costs are costs whose value is fixed to a certain extent, while variable costs are costs whose value changes according to the volume produced.

| Variants | Raw Material | Price (IDR) | Total (IDR) |
|----------|--------------|-------------|-------------|
| I        | 495          | 30,000      | 14,850,000  |
| II       | 150          | 40,000      | 6,000,000   |
| III      | 10           | 100,000     | 1,000,000   |
| Total    | 655          | 170,000     | 21,850,000  |

Supporting material was the material used for making arabica coffee powder so that different flavor variants were obtained. What distinguishes the variant was composed of raw materials. For the original variant, the coffee beans used were the first sort of coffee beans. For particular taste used coffee beans that had been done several times in order to get better quality coffee beans. Whereas for tonggal variants obtained from coffee beans that did not experience perfect reproduction or coffee beans that were one piece that was different from coffee beans, which were usually two pieces. Because such differences result in the price of raw materials and the amount produced was also different. For the original variant, the price of raw materials was 30,000 IDR with 495 kg of raw materials. For unique variants, the price of raw materials was IDR 40,000 with a total raw material of 150 kg and for tonggal variants, the price of raw materials was IDR 100,000 with a total raw material of 10 kg.

3.1.7. Supporting Material. Supporting materials used are wood, gas, labeled packaging, and electricity. The supporting costs incurred in processing the three variants of coffee powder can be found in the following table 4.

| Variants | wood (cubic) | Gas (Kg) | Labeled Packaging (sheet) | Electricity | Total Cost of Supporting Materials (IDR) |
|----------|--------------|----------|---------------------------|-------------|----------------------------------------|
| I        | 120,000      | 1,800,000| 240,000                   | 3,287       | 3,243,287                              |
| II       | 30,000       | 1,800,000| 120,000                   | 3,287       | 1,953,287                              |
| III      | 0            | 450,000  | 60,000                    | 3,287       | 513,287                                |
| Total    | 150,000      | 4,050,000| 420,000                   | 9,861       | 5,709,861                              |

Supporting materials of three variants of coffee powder were wood, gas, labeled packaging, and electricity. For the original variant, the total cost of supporting materials was IDR 3,243,287, for the particular variant IDR 1,953,287 and the tonggal variant IDR 513,287

3.1.8. Labor costs. Energy costs were one important factor in the processing process. In the processing of coffee powder, three sample variants used TKLK (External Family Workers) which were sterilized in accordance with what was done each time the production process. The labor expenditure costs incurred for three variants of coffee grounds could be seen in the following table 5.
Table 5. Average costs for labor expenditure of three variants of coffee powder in a month

| Variants | Sorting (IDR) | Roasting (IDR) | Grinding (IDR) | Packaging (IDR) | Total (IDR) |
|----------|----------------|----------------|----------------|-----------------|-------------|
| I        | 150,000        | 200,000        | 100,000        | 100,000         | 550,000     |
| II       | 100,000        | 200,000        | 100,000        | 100,000         | 500,000     |
| III      | 0              | 100,000        | 100,000        | 100,000         | 300,000     |
| Total    | 250,000        | 500,000        | 300,000        | 300,000         | 1,350,000   |

Of the three variants of ground coffee from UD. Tanpak, it had a different amount of labor usage, seen from the used of labor for the original variant of IDR 550,000, a particular variant of IDR 500,000 and tonggal variant of IDR 300,000.

3.1.9. Depreciation Equipment Costs. Depreciation costs were costs used during the processing based on the usage period for processing three variants of coffee grounds. Below was a breakdown of the cost of depreciating equipment in the processing process, which could be seen in table 6.

Table 6. Average total cost of depreciation of three variant coffee powder equipment in a month

| Variants | Filtering (IDR) | Sorting Machine (IDR) | Roasting Machine (IDR) | Grinding Machine (IDR) | Press Machine (IDR) | Total Cost of Depreciation Material (IDR) |
|----------|-----------------|-----------------------|------------------------|------------------------|---------------------|------------------------------------------|
| I        | 555.33          | 925.67                | 3,703.67               | 2,777.67               | 925.67              | 8,888.01                                 |
| II       | 555.33          | 925.67                | 3,703.67               | 2,777.67               | 925.67              | 8,888.01                                 |
| III      | 555.33          | 925.67                | 3,703.67               | 2,777.69               | 925.67              | 8,888.01                                 |
| Total    | 1,665.99        | 2,777                 | 11,111                 | 8,333                  | 2,777              | 26,664.03                               |

The equipment used in the processing of three variants of ground coffee was filtering, sorting machines, roasting machines, grinding machines, and press machines. The total depreciation expense was IDR 26,664.03

3.1.10. Total Production Cost. The total cost was all costs incurred during the processing of three variants of coffee powder, which consists of variable costs and fixed costs. Variable costs were the use of raw materials, supporting materials and labor. While the fixed costs were depreciation of equipment. The total cost was IDR 28,936,525.03. The following was a breakdown of the total cost during the processing of the three variants of coffee powder could be seen in table 7 below:

Table 7. Average of total powder processing costs for three variants in a month

| Types                      | Cost (IDR)     |
|----------------------------|----------------|
| Variable Cost              |                |
| a. Raw Material Costs      | 21,850,000     |
| b. Supporting Material Costs| 5,709,861      |
| c. Labor costs             | 1,350,000      |
| Total Variable Cost        | 28,909,861     |
| Fixed Cost                 |                |
| Depreciation Equipment     | 26,664.03      |
| Total Cost (VC + FC)       | 28,936,525.03  |
3.1.11. Total Acceptance of Three Variant Coffee Powder Processing. Revenue was the output obtained from the processing of three variants of coffee powder expressed in rupiah.

Table 8. average production, selling price, total reception of three variants of coffee powder in a month

| Variants | Average | Cost (IDR) | Total (IDR) |
|----------|---------|------------|-------------|
| I        | 361.95  | 70,000     | 25,336,500  |
| II       | 121.5   | 150,000    | 18,225,000  |
| III      | 7.22    | 1,000,000  | 7,220,000   |
| Total    | 490.67  | 1,220,000  | 50,781,500  |
| Average  | 163.55  | 406,666.67 | 16,927,166.67 |

Revenues obtained from production were multiplied by the coffee selling price of IDR 16,927,166.67, which was obtained from the receipt of original, special and tonggal variants of coffee powder.

3.1.12. Revenue for Processing Three Variants Coffee Powder. Revenue was the difference between the receipts obtained from the processing of three variants of coffee powder with the production costs incurred in the processing, the average processing income of three variants of coffee powder was once production.

Table 9. Average of coffee powder revenue of three variants in a month

| Description | Unit | Average   |
|-------------|------|-----------|
| A.Fixed cost|      | IDR 26,664.03 |
| Depreciation Equipment Costs | IDR | 26,664.03 |
| B.Biaya Variabel | | |
| Raw materials | IDR | 21,850,000 |
| Supporting materials | IDR | 5,709,861 |
| Labor cost | IDR | 1,350,000 |
| Total TC | IDR | 28,936,525.03 |
| C.Reception | IDR | 50,781,500 |
| D.Revenue | IDR | 21,844,974.97 |

Based on table 9 it could be seen that the acceptance of the three variant coffee powder entrepreneurs was IDR 50,781,500, the production cost was IDR 28,936,525.03, so the income of the three variant coffee powder processor was IDR 21,844,974.97. Systematically net income from the sale of diamonds, i.e.

\[
\pi = TR - TC = IDR 50,781,500 - IDR 28,936,525.03 = IDR 21,844,974.97
\]

So the net income in a month of production was IDR 21,844,974.97

3.1.13. The difference from three variant coffee powder revenue. Coffee variants in UD Tanpak consist of 3 namely, original, special, and tonggal. From the three variances, you would see the difference in UD Tanpak coffee powder income as follows:
Table 10. Descriptives

| Revenue | N   | Mean        | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | Minimum | Maximum |
|---------|-----|-------------|----------------|------------|---------------------------------|---------|---------|
| Original | 10  | 8,265,435.22 | 1,851,613.48   | 585,531.59 | 6,940,870.73 - 9,589,999.71    | 6,478,935 | 11,083,935 |
| Special  | 10  | 10,218,935.22| 237,170.82     | 75,000.00  | 10,049,273.43 - 10,388,597.01  | 9,993,935 | 10,743,935 |
| Tonggal  | 10  | 5,673,935.22 | 214,993.54     | 67,986.92  | 5,520,138.11 - 5,827,732.33    | 5,453,935 | 5,953,935 |
| Total    | 30  | 8,052,768.55 | 2,163,506.36   | 395,000.41 | 7,244,902.00 - 8,860,635.11    | 5,453,935 | 11,083,935 |

Of the three variants of ground coffee from UD. Tanpak, after the SPSS test, it could be seen that there were differences in income between the three variants, namely the original variant, special variant and tonggal variant. The descriptives were seen as mean (mean) for the original variant of 8,265,435.22, for the special variant of 10,218,935.22 and for the tongal variant of 5,673,935.22 which meant that the special variant had the highest income than the original variant income and variant income tonggal. The income of the special variant was high due to the difference between the price of raw materials and the selling price of coffee grounds. The price of the raw material for the special variance was IDR 40,000 / kg while the price was quite high, namely IDR 150,000 / kg.

Table 11. Homogeneity test

| Revenue | Levene Statistic | df1 | df2 | Sig.  |
|---------|------------------|-----|-----|-------|
|         | 110.988          | 2   | 27  | .060  |

Homogeneity variance test performed by using the Levene test, this test was used to find out whether the variants of the three variance groups are the same. The data that qualify was if the same variant or subject comes from a homogeneous group.

The significance value of 0.060 and compared with the level of errors that can still be tolerated. In this case, the authors took an error rate of 5%, so it could be concluded that the probability value (significance) 0.060 > 0.05, so that Ho was accepted. Thus the three variants were the same (original variant, special variant, and tonggal variance).

Levene Statistics showed the smaller the value, the greater the homogeneity, df1 = number of data groups 1 or 3-1 = 2, while df2 = number of data - number of data groups or 30-3 = 27.

Table 12. One way ANOVA test

| Revenue | Sum of Squares | df | Mean Square | F     | Sig.  |
|---------|----------------|----|-------------|-------|-------|
| Between Groups | 103,963,531,666,666.72 | 2  | 51,981,765,833,333.360 | 44.165 | .000  |
| Within Groups  | 31,778,502,500,000.01  | 27 | 1,176,981,574,074.075 |       |       |
| Total       | 135,742,034,166,666.73 | 29 |              |       |       |

Hypothesis
Ho : there is no income difference between the original variant, special variant and tonggal variant
H1 : there is a difference in income between the original variant, special variant and tonggal variant
Using a 95% confidence level, $\alpha = 5\%$, df1 (number of data groups 1) or $3-1 = 2$ and df 2 (n-3) or $30-3 = 27$, the results obtained for the F table are 3.35. Then it could be compared F count with F table $F_{\text{count}} > F_{\text{table}}$ ($44.165 > 3.35$) it could be concluded Ho was rejected so that there was a difference in income between the original variant, special variant and tonggal variant.

4. Conclusions and recommendations

The stages of processing in Tiga Varian Coffee Powder in the research area are carried out in the same way, starting from the supply of raw materials, sorting of raw materials, roasting, grinding, packaging, processing of Green bean robusta into three variants of coffee powder which is still classified as semi-modern using power humans and machines.

Net income received by three variants of coffee powder is IDR 21,844,974.97. Analysis of the One Way ANOVA Test looks $F_{\text{count}} > F_{\text{table}}$ ($44.165 > 3.35$) it can be concluded that Ho is rejected so that there are differences in income between the original variant, special variant and tonggal variant.

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