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# Evaluation of the Value of the Defective and Taste of Arabica Coffee (*Coffea Arabica L*) West Sumatera

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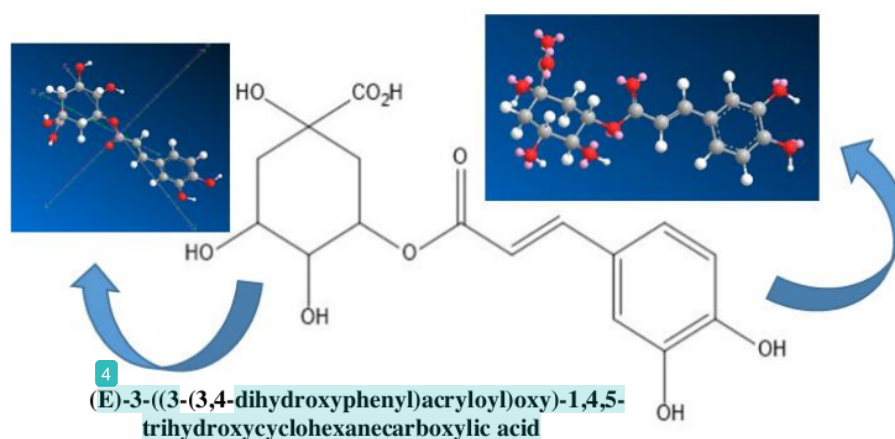
**Abstract.** The purpose of this research is to get information on the value of defectives, water content, taste, and the overall acceptance of Arabica coffee derived from 20 coffee producers in West Sumatera. Taste testing involves trained q grader. The Data of research results analyzed descriptively. The results showed that the quality defectives of coffee is at a quality level from 3 to 5 and 70% quality of coffee in accordance with SNI (Indonesian National Standards) 01-2907-2008. The type of defective in coffee beans is the rupture seeds, brown seeds, black seeds then followed by perforated seeds. Taste of coffee Brew are Excellent Aroma and complex coffee flavor, good acidity and thickness of seeds. Vanilla flavor and taste of fruits and spices. The color of the Arabica coffee powder varies from brown, black and color like cinnamon. As well as overall acceptance kinda like. This indicates the need to implement standard operational procedures to improve the quality of coffee in West Sumatera Framework

## 1. Introduction

The physical qualities and flavors of coffee are influenced by the planting, cultivation, harvesting, processing, and storage materials. The process of handling when harvesting, processing, and roasting in producing the final product is a defining stage of quality coffee products(2, 4, 6-7, 10, 12, 14-15, 17, 20). Coffee harvest is usually seen from the maturity level of fruit and is done when the fruit has been red (fruit is 10 – 11 months). There are two methods of coffee processing, namely the process of wet and dry processing. Wet processing method is done by soaking the coffee beans in water, which is beneficial to reduce the scent of sharp fruit and bitter sensations that often occur in coffee drinks. In addition, it is also beneficial to parse the mucilage in the coffee beans faster so that it is easy to clean, removing microorganisms that are on its surface all at once. The most important thing when doing wet processing is the time it takes during immersion to be precise. Quality improvement of coffee is rated more important today considering the world's coffee market conditions. For consumers, the quality of coffee cannot be released from its good flavor(5, 8, 13, 18).

The results of processed coffee commodities are generally in the form of rice coffee that can be exported and ground coffee for local and national trade. During this time the exported Rice coffee trade is managed by the collecting merchant, and the coffee price is determined based on the quality of the produced coffee. Furthermore, in the marketing of coffee nationally and internationally, the quality or grade of rice coffee will determine the price of coffee. High quality coffee has a higher price than

the low quality coffee. The specialty coffee trade began to start in the decade of 1980, as one of the strategies for breaking through the coffee market. Some examples of famous specialty coffee brands from Indonesia are Gayo coffee, Lintang coffee, Java coffee, Toraja coffee, Bali-Kintamani coffee, Flores-Bajawa coffee, Wamena coffee, and Civet coffee. At the world level, the demand for specialty coffee is much higher than the overall rate of coffee consumption. Therefore, the price of specialty coffee is much more expensive than regular coffee. The value of coffee beans is not only determined by its physical appearance, but is also determined from the flavor of the character. Coffee is consumed because of its distinctive flavor and its physiological effect as a refreshing drink. Considering that coffee is an agricultural product that relies on the quality of flavors, the final target of coffee cultivation is a high-flavoured seed product that is its determination by the taste test.



**Figure 1.** The structure of chlorogenic acid in coffee (*Chem3DUltra Pro*;2020)

The quality of rice coffee or coffee beans is determined by Indonesian national standard (SNI 01-2907-2008), which lists the specific quality requirements for Arabica coffee with a defective value system (BSN, 2008). The value of coffee beans is also determined by physical appearance, and the character of taste. The consumption of coffee is popular because of its distinctive taste and physiological effect as a refreshing drink. The Overview of Quality Characteristics, taste and arabica coffee content of the West Sumatera region is not yet known, so the purpose of this research is to obtain the information on the value of defects, moisture content, taste, and the overall acceptance of Arabica coffee Originated from 20 coffee producers in five regencies of West Sumatera province. The results of this research will provide benefits to the characteristic of West Sumatra coffee, so that one component in achieving the predicate of West Sumatra as a coffee center in Indonesia reached(9).

## 2. Methodology

This research used a descriptive method. The number of samples of coffee producers were 20 processing units of results prescribed in purposive sampling. The research consists of 2 stages namely withdrawing sample seed coffee (rice coffee) and ground coffee of each unit processing results, analysis of the quality of coffee beans in the laboratory, and the taste analysis of coffee brew by trained panelist. 12 g of ground coffee was inserted into a porcelain bowl of 150 mL volumed, then boiling water poured into it. The brew coffee was then dragged, enjoyed and summed up its taste. Quality testing of coffee beans was done by weighed as much as 300g of coffee, then calculated the number of defective values and to be classified the seed quality based on SNI (Indonesian National

Standard)01-2907-2008. Determination of the number of defective values refers to the provisions in table 1, while the quality classification based on the system of defective values, percentage defectives, and types of defectives refers to the provisions of table 2.

**Table 1.** The characteristics of Quality Coffee Defective

No	Type of Defective	Value of Defective
1	1 (one) Black Seed	1
2	1 (one) Partly black seed	1/2
3	1 (one) Rupture Black Seed	1/2
4	1 (one) Roll/Bunch Coffe	1
5	1 (one) Brown	1/4
6	1 (one) Large Size Coffee Skin	1
7	1 (one) Medium Size Coffee Skin	1/2
8	1 (one) Small Size Coffee Skin	1/5
9	1 (one) Horn Skinned Seed	1/2
10	1 (one) Large Size Horn Skinned	1/2
11	1 (one) Medium Size Horn Skinned	1/5
12	1 (one) Small Size Horn Skinned	1/10
13	1 (one)) Broken Seed	1/5
14	1 (one) Young Seed	1/5
15	1 (one) One Hollowed Seed	1/10
16	1 (one) Perforated seeds more than one	1/5
17	1 (one) Spotted Seed	1/10
18	1 (one) Twigs, large-sized land/rocks	5
19	1 (one) Twigs, Medium-sized land/rocks	2
20	1 (one) Twigs, Small-sized land/rocks	1
TOTAL		

**Table 2.** Quality classification based on defective value systems

Quality requirements Criteria	Quality
Maximum number of defective value 11	Quality 1
Total Defective Value 12 to 25	Quality 2
Total Defective Value 26 to 44	Quality 3
Total Defective Value 45 to 60	Quality 4a
Total Defective Value 61 to 80	Quality 4b
Total Defective Value 81 to 150	Quality 5
Total Defective Value 151 to 225	Quality 6

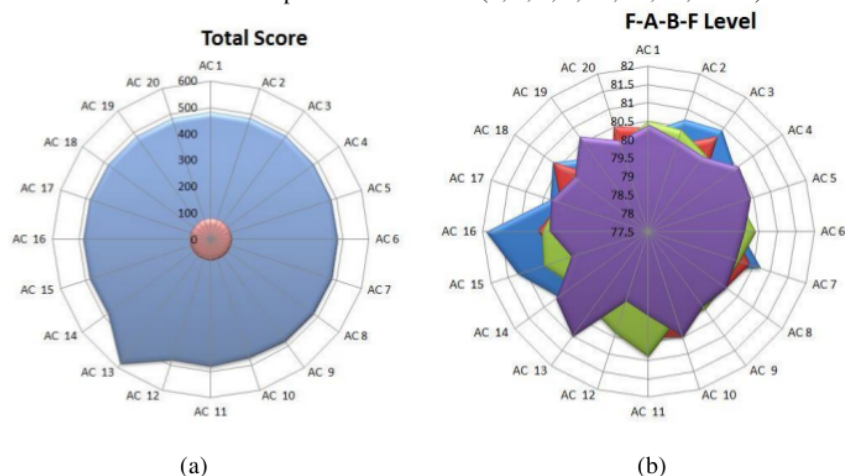
### 3.1 Coffee Beans Defective Value

The highest percentage of Arabica defective coffee of West Sumatra is the rupture seed, brown seed, black Seed then followed by perforated seeds and more than one hollowed seed. The quality of West Sumatera arabica coffee beans are at a quality level of 3 to a quality of 5 and 70% quality of coffee in accordance with SNI (Indonesian National Standard) 01-2907-2008. It is necessary to be attentive because according to Ditjenbun (2012), more than 65% of the export of coffee is quality 4 (Grade IV) upwards. Black coffee beans are usually due to diseases that attack the coffee, while black seeds will affect the total acidity (pH), perforated seeds due to insect attack. Black, brown, and perforated seeds have a strong influence on taste. rupture Seed is generally because the coffee fruit is still young, so when the process of stripping the coffee fruit (pulp) becomes broken. According to Wahyudi (1992), the physical characteristics of coffee fruits that vary in shape and size can lead to the pelled-off

horn skin along with the skin of the fruit. Coffee beans will have a faster physical and taste damage than the seeds that are still wrapped in the skin of horns. Therefore the process of sorting coffee by size can help reduce the defect caused by processing seeds.

### 3.2 Flavour Characteristics

Taste is a feeling produced by the food that is inserted into the mouth and felt by sense of taste. The result of taste test of arabica coffee flavor from various regencies in West Sumatra. The average q grader assess that the taste of West Sumatra coffee tends to be nutty, fruity and buttery. The aroma is very strong with nutty and spice accents. The acidity is very low, sweetness tend to be high, and the body generated is medium. The character flavor of West Sumatra coffee is actually similar to the coffee of Sumatra in general, the difference is The *aftertaste* is clean. Because of the character of the seed taste, this coffee is often used as a mixture for houseblend. Green/grassy flavor defects are the character of the flavor such as leaf/grass jelly, this is caused by poor post-harvest handling. In addition, the emergence of green/grassy flavors caused by the coffee that is not completely dry during the drying process. body taste is the intensity of good coffee flavor and no foreign flavor. Body Taste resulting from the area is supported by the quality of the produced coffee beans. Another defected value that results in a brew coffee flavor is the spread of dust or soil(1, 3, 5, 8, 11, 13, 16, 18-19).



**Figure 2.** Schematic results of coffee performance; (a) total score for all, and (b) FABF level of fragrance, acidity, body and flavor of coffee

The Aroma of coffee produced will differ in each coffee producing region. Taste test result of coffee aroma from various regencies in West Sumatra. Generally Coffee from various regencies in West Sumatra has a distinctive aroma of coffee. Decreased scent of coffee brew is caused by black seed defects. Black coffee beans are caused by a disease that invades coffee. Black seeds affect the total acidity (pH) of the coffee brew. The chemical and flavour analysis of ground coffee performed by *Sativa et al.*, (2014) shows that the proportion of black seed levels has a strong influence on taste. The better the quality of coffee, the aroma of coffee will be better. The results of the study of *Aklimawati et al.* (2014) shows that the sorting treatment of the quality of the origin into quality 1 will improve the aroma, and flavor of coffee.

Flavor is a mixture of Taste and aroma that is captured by the sense of smell and taste sense simultaneously. Characteristic of ground coffee color of various regencies in West Sumatra varies from brown, black and cinnamon. Color is the first impression captured by q grader before recognizing other stimulations. Color is very important for any food, interesting colors can affect consumer acceptance.

According to Prasetyo (2009), the process of coffee beans roasting affect the color of the coffee produced. The color score of ground coffee with cinnamon characteristics in some areas is caused because in the area average roasting of coffee using a machine roasters with different time and temperature. The average time and temperature used 160-240°C for 10-30 minutes. When the time of roasting, the coffee beans are taken periodically from the roasted cylinder through the side holes. The roasting is terminated when the aroma and taste of the desired coffee has been achieved, it can be determined from the change of color of the natural green seeds to cinnamon. According to *Hecimovic* (2011) Roasting to get light roast is at 145°-185°C for 5-30 minutes. The overall delight is the accumulation of all the favorite test parameters performed by q grader. The result of taste test of the overall acceptance of powdered coffee and brew coffee in various regencies in West Sumatera, generally on score 3 is a bit like. According to *Fakhrurrazi* (2009), the consumers favorite level of ground coffee products is influenced by several factors such as the color, taste and aroma of the powder coffee produced.

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### 3. Conclusion

This literature review aims to identify and analyze the trends, datasets, methods and frameworks used in the topic of attribute independence assumption assumptions on NB between 2010 and 2018. Based on the inclusion and exclusion criteria designed, it shows 71 study studies of attribute independence assumptions on the published NB between January 2010 and December 2018 are investigated in this literature review have been conducted as a review of systematic literature. A systematic literature review is defined as the process of identifying, assessing, and interpreting all available research evidence in order to provide answers to specific research questions. The results of this study identified three of the most commonly used and influential framework methods in the topic of attribute independence on the NB. They are Menzies et al. Framework, Lessmann et al. Framework, and Song et al. Framework. They are Langley et al [23], Friedman et al [22], and Wu et al [21].

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