THE IMPACT OF QUALITY MANAGEMENT IMPLEMENTATION ON COFFEE QUALITY AT UPH WULANG PARI COFFEE

Sofia Fitini Nefi[1*], Maria Salestina Ngoni[2], Wensislaus Arman Ndau[3]
[1-3]*Socio-Economic Study Program of Agriculture, Faculty of Agriculture and Animal Husbandry St. Paul Catholic University of Indonesia, Ruteng.*
Email: fjnefi90@gmail.com [1], mariasalestina8@gmail.com

Abstract*:* UPH Wulang Pari Coffee is one of the coffee processing facilities located in Langgo, Carep Village, Ruteng City. UPH Wulang Pari was established in 2013 and is now a facility that manages the coffee process from drying, peeling, roasting, grinding, packaging and selling. This study aims to determine the process of implementing quality management and to determine the effect of implementing quality management on coffee quality at UPH Wulang Pari Coffee. The research method used is a quantitative method. Sampling using purposive sampling technique with 34 respondents. Data analysis using multiple linear regression analysis and comparing using the T test and F test. The results of the study indicate that the process of implementing quality management at UPH Wulang Pari Coffee consists of drying, grinding, sorting, roasting, powdering and packaging. The drying, milling, sorting, roasting, powdering and packaging processes simultaneously and partially affect the quality of coffee at UPH Wulang Pari Coffee. The most dominant quality management implementation process that affects the quality of coffee at UPH Wulang Pari Coffee is sorting. The β coefficient value of sorting is greater than drying, milling, roasting, powdering and packaging.

Keywords*: Quality Management, Quality and Coffee.*

INTRODUCTION

One of the tropical countries in the world that has quite extensive plantation land is Indonesia. The type of plantation commodity that is quite fertile and quite well-known is coffee plants. According to data (BPS. Indonesia, 2024) The area of coffee plantations in Indonesia in 2023 was 1,265.93 thousand Ha. According to Tito et al., (2024) the types of coffee commonly planted in Indonesia are arabica and robusta. Arabica coffee can grow well at altitudes between 500 and 2,500 meters above sea level. The most ideal altitude is in the range of 800 to 1,500 meters above sea level. Meanwhile, robusta coffee can grow at altitudes between 0 and 1,000 meters above sea level with the best growth occurring at altitudes of 400 to 800 meters above sea level. Coffee is a very profitable commodity and has economic value for all Indonesian people.

Based on data from the Indonesian Plantation Statistics Agency (BPS), (2024) that of the 38 provinces in Indonesia, 29 of them contribute to coffee production with a total of 720.20 thousand tons/year. While the other 9 provinces do not contribute to coffee production but contribute to other types of plantation commodities, such as coconut, rubber and cocoa. East Nusa Tenggara (NTT) Province is one of the provinces in Indonesia that produces quite a lot of coffee. This is evidenced by the coffee

production in NTT such as robusta and arabica which is quite a lot so that it becomes Indonesia's leading commodity in the international market.

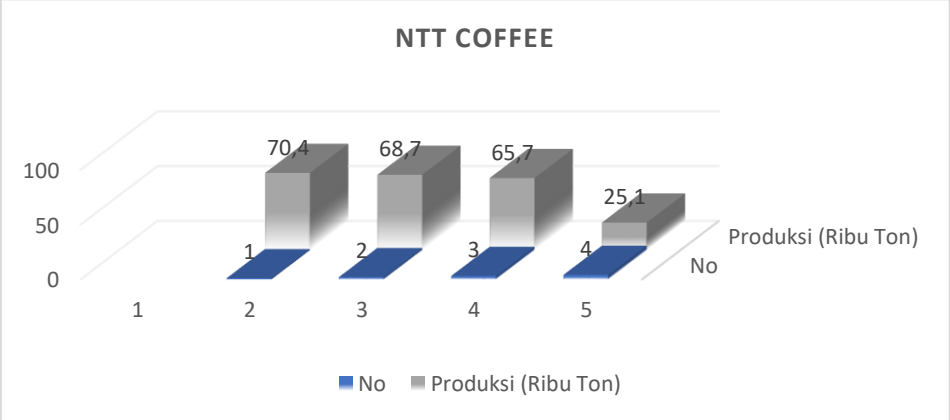

Figure 1Coffee production in East Nusa Tenggara 2020-2023
Source: BPS. East Nusa Tenggara Province (2024)

The diagram above shows that coffee production in NTT has decreased from year to year. The largest coffee production occurred in 2020, which was 70.40 thousand tons. NTT coffee contributes 3% of national coffee production. According to BPS Perkebunan Indonesia data, (2024) The five largest coffee producing districts in East Nusa Tenggara (NTT) are East Manggarai, Ende, Manggarai, Ngada, and Southwest Sumba. The distribution of coffee production from the five districts can be seen in the table below.

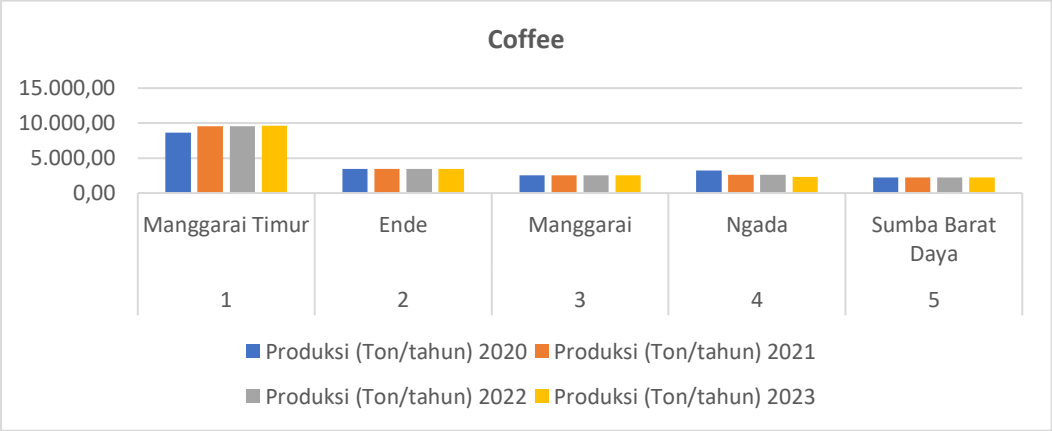

Figure 1. 1 Coffee Production from Five Districts in NTT Province (2020-2023)
Source: BPS. East Nusa Tenggara Province (2024)

The diagram above explains that East Manggarai Regency is one of the regencies that has contributed the most coffee in the last four years in NTT Province, followed by Ende Regency, Manggarai Regency, Ngada Regency and finally Southwest Sumba Regency. If you look at the table above, Manggarai Regency is one of the regencies that produces quite a lot of coffee. Manggarai is one of the regencies in NTT Province that uses the coffee industry as a place to test its agriculture. The development of the

coffee industry in Manggarai Regency will be the focus of the government, especially in promoting this commodity as a superior product (Anggraini, 2022) .

Langke Rembong is one of the sub-districts in Manggarai Regency that produces quite a lot of coffee. Although Langke Rembong Sub-district in Manggarai Regency produces coffee, its production is still relatively low compared to other sub-districts. Constraints in optimal land use hamper the increase in coffee production by local farmers.

Table 1. 1 Coffee Production in Manggarai Regency (2019-2023)

No	Subdistrict	Production (Tons/Year)				
		2019	2020	2021	2022	2023
1	Satar mese	0,24	0,24	250,15	103	206
2	Satar mese barat	0,1	0,1	46,35	43,6	96
3	Satar mese utara	0,2	0,2	31,18	198	198
4	Langke rembong	0,11	0,11	103,93	114,28	113
5	Ruteng	0,54	0,54	236	537,72	540
6	Wae ri'i	0,21	0,21	135,5	214,9	210
7	Lelak	0,17	0,17	207	168	169
8	Rahong utara	0,29	0,29	224	294	292
9	Cibal	0,43	0,43	199,72	427	429
10	Cibal barat	0,24	0,24	205,5	243	244
11	Reok	0	0	0	3,200,00	0
12	Reok barat	0,02	0,03	8,5	24	25

Source: BPS. Manggarai Regency (2024)

According to Anggraini (2022) the low coffee yield in Langke Rembong District is caused by farmers' inadequate knowledge of planting techniques and weak bargaining position due to direct sales at prices determined by buyers. Increasing production requires management of existing potentials and challenges, as well as collaboration between farmers, government, and the community. If coffee production increases, it can bring benefits because of good market prospects and opportunities, and can increase activities in the field of coffee product processing. Therefore, one solution to overcome these problems is to establish a Wulang Pari Coffee Processing Unit (UPH).

UPH Wulang Pari Coffee in Langgo, Carep Village, Langke Rembong District, Manggarai Regency, has gained popularity among the Manggarai community, consumers outside the region, and even internationally. Its success is due to high-quality coffee beans with a unique taste and aroma, distinguishing it from other coffee processing units in Greater Manggarai. Quality standards and consumer satisfaction are the keys to the sustainability and development of UPH Wulang Pari Coffee. Coffee quality at UPH Wulang Pari Coffee is the main criteria that needs to be considered so that UPH Wulang Pari Coffee can meet consumer demand starting from the type of ground coffee, green ben and Roasted been. UPH Wulang Pari Coffee has six types of coffee flavor variants with each type of coffee going through the same quality

management process. The types of coffee provided by UPH Wulang Pari Coffee are; Robusta, Arabica, Arabica Lanang, Yelow Catura, Reed Cautura, and Juria with different price specifications according to the type of coffee and weight per package. These six types of coffee flavor variants are what make UPH Wulang Pari Coffee unique and can distinguish it from other UPHs in Manggarai Raya. Another thing is also because in the current era of globalization, the number of similar products circulating on the market is very large and these products generally have the same price, quality and basic function. Therefore, the only measure that can be used to distinguish similar products is product quality. Efforts to improve product quality are very important for every company, whether small, medium, or large scale, especially in maintaining customer loyalty. This statement is supported by research (Hasanuddin et al., 2020) showing that product quality, service quality, and customer trust together have a significant effect on customer loyalty.

Based on the observation results until now UPH Wulang Pari Coffee often faces problems. There are two main problems that are often faced, namely lack of knowledge of farmers (suppliers) in implementing good post-harvest handling practices for coffee and also the high competition demands that UPH Wulang Pari Coffee make efforts to implement good quality management with the aim of maintaining and improving product quality according to market/consumer needs. Based on the problems above, the researcher is interested in conducting a study entitled "The Effect of Implementing Quality Management on Coffee Quality at UPH Wulang Pari Coffee".

METHOD

This study uses quantitative methods to collect data in the form of numbers from UPH Wulang Pari Coffee customers through interviews and questionnaires. The focus of the study includes six stages of the coffee quality management process: drying, peeling dry skin (grinding), separating beans, roasting, powdering, and packaging (packing).

This research was conducted at the Wulang Pari Coffee Processing Unit (UPH) located in Langgo, Carep Village, Langke Rembong District, Manggarai Regency, which lasted for one month, starting from March 29 to April 30, 2025.

The population of the study included 150 customers of UPH Wulang Pari Coffee. Sampling used purposive sampling technique, a probability sampling method that selects representative samples from the population based on certain criteria. Research respondents must meet the following criteria: (a) minimum age 17 years, (b) have purchased coffee at UPH Wulang Pari Coffee more than twice, (c) understanding the coffee processing process at UPH Wulang Pari Coffee.

Based on information from the manager of UPH Wulang Pari Coffee , the number of regular customers of UPH Wulang Pari Coffee recorded to date is 150 people. Since the population is more than 100 respondents, the researcher used the Slovin formula to determine the sample size. The Slovin formula was chosen because it is considered appropriate to determine the final sample size in the selection process (Indriana et al., 2023) .

$$n = \frac{N}{1 + N(e)2}$$

Information:

n: number of samples

N: population size

e: error or error rate 15%

Where:

$$n = \frac{150}{1 + 150(0{,}15)\text{^}2} = 34 \text{ orang}$$

From 150 customers, the Slovin formula was used with a 5% error rate resulting in a sample of 34 people. These 34 customers were selected to participate in the study. Library research is data collection through library research in the form of books, journals, UPH documents Wulang Pari Coffee, thesis, statistics of East Nusa Tenggara Province and other sources.

In this study, there are three techniques used to collect data which can make it easier for researchers, namely Interviews, Questionnaires, Observations .
Data analysis techniques used in this study were as follows.

a. Validity Test

Validity testing is used to ensure that the questionnaire items accurately measure the quality of products and services assessed by customers, so that the data produced is reliable and accurate for further analysis. Validity testing that connects each indicator item with the total construct score is a method used to assess how well each item in the questionnaire measures the intended variable or construct. To find out the testing criteria, namely:

If the calculated r value is greater than the table r value , it indicates that the measuring instrument can be considered valid or valid. Conversely,
calculated r value is smaller than the table r value , it indicates the invalidity or invalidity of the measuring instrument used (Study et al., 2024) .

b. Reliability Test

Reliability test measures the consistency and reliability of the measuring instrument in producing the same results when used repeatedly. Reliability test uses Cronbach's Alpha. If the Cronbach's Alpha value is greater than the r table value, then the measuring instrument is declared reliable (Study et al., 2024) .

c. Multiple Linear Regression Analysis

Regression analysis aims to describe the mathematical relationship between independent variables (X) and dependent variables (Y). In this study, the multiple linear regression relationship can be formulated mathematically with the following equation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e$$

Information:

X_1 : Independent Variable (Sunbathing)

X2: Independent Variable (Dry Skin Peeling)

X_3 : Independent Variable (Sorting)

X_4 : Independent Variable (Roasting)

X_5 : Powdering (Refining)

X_6 : Packaging

Y: Dependent Variable (Coffee Quality)

a: Constant

β: Model regression coefficient

e: margin of error 5%

d. Hypothesis Testing

a) Determination Coefficient Test (R^2)

The determination coefficient test is used to determine how much influence the independent variable has on the dependent variable. Putri & Lestari, (2019) , the analysis of the determination coefficient in multiple linear regression is used to determine the contribution of the influence of the independent variables (X1, X2 ...) simultaneously on the dependent variable.

b) F Test

The F test is used to understand how much influence the independent variables simultaneously have on the dependent variable. If the significance value is <0.05 or $F_{count} > F_{table}$, then it can be concluded that the independent variables have a significant influence simultaneously on the dependent variable (Putri & Lestari, 2019) .

c) t-test

According to Putri & Lestari, (2019) the t-test aims to see the influence of independent variables one by one on the dependent variables. If the significance value is <0.05 05 or $t_{count} > t_{table,}$ then it can be concluded that the independent variable has a significant influence on the dependent variable.

RESULTS

1) Validity and Reliability Test Results

The results of the validity and reliability tests can be seen in table 2 below.

Table 2. Validity and Reliability Test Results

Item-Total Statistics						
Indikator	Pernyataan	*Scale Mean if Item Deleted*	*Scale Variance if Item Deleted*	*Corrected Item-Total Correlation*	*Cronbach's Alpha if Item Deleted*	Keterangan
Penjemuran (X_1)	P1	148,5882	213,098	0,475	0,94	Valid
	P2	148,6176	212,789	0,543	0,939	Valid
	P3	148,5	212,742	0,426	0,94	Valid
	P4	148,8235	203,786	0,659	0,938	Valid
	P5	149,0882	205,477	0,542	0,939	Valid
	P6	148,6471	213,144	0,525	0,939	Valid
Penggilingan (X_2)	P7	148,7941	206,775	0,516	0,94	Valid
	P8	148,6471	210,841	0,562	0,939	Valid
	P9	148,7647	207,337	0,609	0,938	Valid
	P10	148,9412	204,118	0,711	0,937	Valid
Sortasi (X_3)	P11	148,8824	203,865	0,732	0,937	Valid
	P12	148,5588	208,133	0,702	0,938	Valid
	P13	148,7647	208,185	0,544	0,939	Valid
	P14	148,6176	206,971	0,578	0,939	Valid
	P15	148,8529	202,553	0,642	0,938	Valid
Roasting (X_4)	P16	148,7353	210,746	0,478	0,94	Valid
	P17	148,4118	212,613	0,573	0,939	Valid
	P18	148,5588	214,921	0,409	0,94	Valid
	P19	148,6471	205,811	0,733	0,937	Valid
Pembubukan (X_5)	P20	148,6176	211,94	0,5	0,939	Valid
	P21	148,7647	212,004	0,485	0,94	Valid
	P22	148,7941	209,138	0,535	0,939	Valid
	P23	148,6176	212,425	0,414	0,94	Valid
	P24	148,9118	208,325	0,577	0,939	Valid
	P25	148,7647	212,064	0,45	0,94	Valid
	P26	148,7941	214,532	0,335	0,941	Valid
Pengemasan (X_6)	P27	148,6765	213,801	0,407	0,94	Valid
	P28	148,6471	211,326	0,536	0,939	Valid
	P29	148,7059	209,002	0,525	0,939	Valid
	P30	148,6471	210,053	0,605	0,939	Valid
Kualitas Kopi (Y)	P31	148,5294	212,014	0,536	0,939	Valid
	P32	148,3235	216,347	0,414	0,94	Valid
	P33	148,5	212,318	0,521	0,939	Valid
	P34	148,6176	206,789	0,613	0,938	Valid
	P35	148,6471	209,023	0,66	0,938	Valid

Source: Processed Primary Data, 2025.

Table 2. shows that all statements in each variable have met the validity requirements and can be used for further analysis, because all $_{\text{calculated r values}}$ are greater than the r $_{\text{table value}}$ (0.3388) . The results of the reliability test also show that all variables in this study have a Cronbach's Alpha of more than 0.3388, which means that all variable indicators in this study can be considered reliable. From these results, it can be concluded that all indicators in this study can be trusted for further analysis.

2) Multiple Linear Regression Test Results.

The results of the multiple linear regression equation:

$\hat{Y}$ = 14.518+ 0.43555X1 + 0.2912

The multiple linear regression equation above has the following meaning:

1) The constant a is 14.518, which means that if drying, milling, sorting, roasting, powdering and packaging are not included in the study, the quality of coffee at UPH Wulang Pari Coffee will still increase by 14.518%.

2) The coefficient β1 has a value of 0.43555, which shows that if the drying process is increased by 1%, the quality of coffee at UPH Wulang Pari Coffee will increase by 0.43555% assuming other factors remain constant.
3) The coefficient β2 is 0.2912, which means that if the grinding process increases by 1%, the quality of coffee at UPH Wulang Pari Coffee will increase by 0.2912% if other factors remain constant.
4) The coefficient β3 is 1.0405, meaning that if sorting is increased by 1%, the quality of coffee at UPH Wulang Pari Coffee will increase by 1.0405% assuming other factors remain constant.
5) The coefficient β4 has a value of 0.20265, which means that if the roasting variable increases by 1%, the quality of coffee at UPH Wulang Pari Coffee will increase by 0.20265% assuming other factors remain constant.
6) The coefficient β5 is 0.36335, meaning that if powdering increases by 1%, the quality of coffee at UPH Wulang Pari Coffee will increase by 0.36335% assuming other variables remain constant.
7) The coefficient β6 is 1.334, which shows that if the packaging is increased by 1%, the quality of coffee at UPH Wulang Pari Coffee will increase by 1.334% assuming other factors remain constant.

From the discussion above, it can be concluded that the most dominant quality management implementation process that influences the quality of coffee at UPH Wulang Pari Coffee is sorting. The β coefficient value of sorting is greater than drying, milling, roasting , powdering and packaging.

3) Hypothesis Test Results.

1) Coefficient of Determination (R2) Test.

The results of the determination coefficient test can be seen in table 3 below.

Table 3. Determination Coefficient Test.

Model *Summary*

Model	R	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.745139	.65523	.35639	1,67126

a. *Predictors: (Constant),* X_6, X_3, X_5, X_1, X_4, X_2

Source: Processed Primary Data, 2025 .

If seen from table 3. the R Square value of 0.65523 shows that the proportion of the influence of the independent variables (drying, milling, sorting, roasting , powdering and packaging) on the dependent variable (coffee quality) is 65.523%. This means that quality management (drying, milling, sorting, roasting , powdering and packaging) has a proportion of influence on the quality of coffee at UPH Wulang Pari Coffee of 65.523% while the rest, namely 34.477% (100% -65.523%) is influenced by other variables that are not in this linear regression model.

2) F Test (Simultaneous Test).

The results of the F test can be seen in table 4 below.

Table 4. F Test Results.

ANOVA b

Model	*Sum of Squares*		*df*	*Mean Square*	F	*Sig.*
1	*Regression*	94.1445	6	15.6908	5.6176	.00069
	Residual	75.4143	27	2.79312		
	Total	169.559		33		

a. *Predictors: (Constant)*, X_6, X_3, X_5, X_1, X_4, X_2

Source: Processed Primary Data, 2025.

Table 4 shows that the calculated F value is 5.617 and the F table is 2.46 so that the calculated F value > F_{table} or 5.617> 2.46, with a significant level of 0.0069 <0.005 then H0 is rejected and H1 is accepted. Thus, it can be concluded that the variables of drying (X1) , milling (X2) , sorting (X3) , roasting (X4) , powdering (X5), and packaging (X6) simultaneously or together have a significant effect on coffee quality (Y).

3) t-test (Partial Test).

The results of the t-test can be seen in table 5 below.

Table 5. t-Test Results.

Coefficientsa

Model	*Unstandardized Coefficients*		*Standardized Coefficients*	t	*Sig.*
		Std. Error	Beta		
	(Constant)	14.518	2.74715	5.28476	1.42005
	Penjemuran	.43555	.34969	.55991	2.24553	.02364
	Penggilingan	.2912	.08245	-.8389	3.5312	.00151
	Sortasi	1.0405	.54973	1.32421	2.89273	.02216
	Roasting	.20265	.08844	.50941	2.29133	.02997
	Pembubukan	.36335	.08466	.7773	4.29213	.0002
	Pengemasan	1.334	.56309	-1.6933	2.3691	.02524

Dependent Variable: Kualitas Kopi

Source: Processed Primary Data, 2025.

Table 5. shows that:

a. The significance value for the drying variable (X1) is 0.02364 < 0.05 and the calculated t in the t coefficients test results table is 2.24553 which is greater than the t table value of 2.05183 or 2.24553 > 2.05183, so it can be concluded that the variable X1 has a significant partial influence on Y.

b. The significance value for the milling variable (X2) is 0.00151 < 0.05 and the calculated t in the t coefficients test results table is 3.5312 which is greater than

the t table value of 2.05183 or 3.5312 > 2.05183, so it can be concluded that the variable X2 has a significant partial influence on Y.

c. The significance value for the sorting variable (X3) is 0.02216 < 0.05 and the calculated t in the t coefficients test results table is 2.89273 which is greater than the t table value of 2.05183 or 2.89273 > 2.05183, so it can be concluded that the variable X3 has a significant partial influence on Y.

d. The significance value for the roasting variable (X4) is 0.02997 < 0.05 and the calculated t in the t coefficients test results table is 2.29133 which is greater than the t table value of 2.05183 or 2.29133 > 2.05183, so it can be concluded that the variable X4 has a significant partial influence on Y.

e. The significance value for the powdering variable (X5) is 0.0002 < 0.05 and the calculated t in the t coefficient test results table is 4.29213 which is greater than the t table value of 2.05183 or 4.29213 > 2.05183, so it can be concluded that the variable X 5 has a significant partial influence on Y.

f. The significance value for the packaging variable (X6) is 0.02524 < 0.05 and the calculated t in the t coefficients test results table is 2.3691 which is greater than the t table value of 2.05183 or 2.3691 > 2.05183, so it can be concluded that the variable X6 has a significant partial influence on Y.

From the explanation above, it can be concluded that the independent variable (quality management) has a partial effect on the dependent variable (coffee quality). This means that H0 is rejected and H2 is accepted.

DISCUSSION

a) Quality Management Implementation Process at UPH Wulang Pari Coffee.

Based on the results of observations that have been carried out, the process of implementing quality management implemented by UPH Wulang Pari Coffee in supporting the improvement of coffee quality consists of six, namely drying, milling (peeling dry skin), bean sorting, roasting, powdering (smoothing) and packaging (packing).

1) Sun drying (drying)

Coffee received from farmers has a water content of around 40% and is dried at UPH using racks or shelves for the drying process. Coffee received from farmers has a humidity of around 40% and is placed at UPH Wulang Pari Coffee on racks or shelves for drying. This process lasts for approximately 6 to 7 days until the coffee is completely dry. According to a statement from Mr. Hubertus, the drying process using the Solar Dryer Dome is more effective and efficient than the manual method. If using the Solar Dryer Dome, the quality of the coffee is better maintained, because the temperature in the room can be adjusted as desired or according to the processing stage. After the drying process is complete and the humidity is measured, the coffee is put into a machine to peel the dry skin so that the beans are separated.

Figure 1Coffee Drying Process.

2) Dry Skin Grinding or Peeling.

The coffee grinding process is the next step after the drying or sun-drying process. Grinding is a method that functions to separate the skin and coffee beans. When grinding, it is important to pay attention to the procedure for using the machine, such as how to turn on the grinder and how to operate it. The dry coffee processing process has a significant impact on the quality of the coffee produced. One of the problems that arises in its processing is the need for time and energy which is still too high, so that the process of removing the dry coffee skin does not run efficiently. In addition, the effectiveness of the dry coffee skin peeling capacity is also not optimal because it takes too long, resulting in the time needed in the peeling stage being quite long. These problems will increase the time, cost, and effort required in the peeling process. In the dry skin peeling stage, a special machine (Huller) is used after the coffee is properly dried. Furthermore, the process is carried out with a machine to separate the horn skin or logs, so that clean (good quality) raw coffee beans are obtained.

Figure 4.4 2Grinding.

3) Sorting.

Sorting is an important element in the coffee processing process. The purpose of sorting is to ensure the quality of the coffee and maintain its aroma and taste. Without the sorting process, the taste of the coffee can be affected by a mixture of poor-quality coffee beans and good coffee beans. The sorting stage at UPH Wulang Pari Coffee is carried out using manual or traditional methods. This sorting process is carried out visually and uses traditional equipment such as Nyiru to accommodate the coffee beans to be sorted and takes quite a long time. The sorting method applied at UPH Wulang Pari Coffee is dry sorting (green bean). Coffee beans from various variants are sorted alternately, and beans that have high quality will be selected for further processing, while beans that do not meet the standards will be sold as low-quality coffee at a more affordable price.

Figure 4.5 3Bean Sorting Process.

4) Roasting

Roasting is a method of roasting uncooked coffee beans (green beans) until they reach the desired level of ripeness. The purpose of roasting is to release the natural flavors of the coffee beans so that they taste better. With increasing temperature and longer roasting duration, the coffee beans will be riper. This process requires attention at the right time. Higher temperatures and longer roasting times will affect the character of the coffee, which in turn can reduce the yield, water content, and total acidity contained in the coffee. The roasting process is carried out after the coffee beans are separated. The coffee beans are roasted using a roasting machine, and each type of coffee bean is roasted alternately, with a capacity of 5 kg for each variant. This process is one of the important elements that affects the quality of coffee, as well as the aroma and taste of quality coffee.

Operation of the coffee roaster or roasting machine at UPH Wulag Pari Coffee which has a capacity of 5 kg is equipped with a temperature controller. In the coffee roasting or roasting stage, the lowest temperature for coffee beans must reach 220 ℃ and the lowest temperature for the drum must be at 22 ℃. After the minimum temperature reaches the level set according to the roasting degree, the roasting process will begin. The roasting temperature ranges from 25-28 ^{0} C. Thus, wulang pari products are created with variants that have unique flavors and characteristics.

Figure 4Roasting Process .

5) Refining (Powdering).

After the roasting and cooling process, the next step is to grind it into coffee powder. Coffee powder has a soft nature and is easily soluble in water. The Wulang Pari Coffee Processing Unit is equipped with facilities for processing, including a machine for grinding coffee into powder. The refining process occurs after the coffee beans are roasted. Coffee that has gone through the roasting process is cooled for about 8 hours, then put into a grinding machine to produce coffee powder that is ready to be served.

Figure 5Powdering Process.

6) Packaging (Packing).

The packaging process is carried out after the coffee is crushed into powder. The coffee powder is then put into the packaging that has been prepared according to the size, namely 100 g and 250 g packaging. The packaging process is still done manually

by hand to fill the packaging, after which the ends of the packaging are glued using a siller machine to ensure the coffee is properly sealed and durable. After that, the coffee is ready to be sold.

UPH Wulang Pari Coffee packs coffee using aluminum foil to maintain quality and aroma. The packaging features songke woven motifs and Manggarai caci dance, highlighting local excellence to attract consumer interest.

Figure 4.8 6.

b) The Effect of Drying (X_1) on Coffee Quality (Y).

Based on the results of the t-test regression analysis, the drying variable has a significant partial effect on coffee quality at UPH Wulang Pari Coffee. This is indicated by a significance value of 0.02364 <0.05 and a $_{\text{calculated t value}}$ (2.24553) which is greater than the t $_{\text{table value}}$ (2.05183) or 2.24553 > 2.05183. This finding is in line with the research of Solikhin & Wicaksono, (2022) which shows that the application of post-harvest technology, such as green houses , can improve coffee quality through faster, more even drying and larger capacity.

c) The Effect of Grinding (X_2) on Coffee Quality (Y).

Based on the results of the t-test regression analysis, the milling variable has a significant partial effect on coffee quality at UPH Wulang Pari Coffee. This is indicated by a significance value of 0.00151 <0.05 and a $_{\text{calculated t value}}$ (3.5312) which is greater than the t $_{\text{table value}}$ (2.05183) or 3.5312 > 2.05183 . This finding is in line with the research of Wulandari et al., (2024) regarding the Application of Quality Testing of the Coffee Production Process at UD. Tenant Berkah Lestari South Lampung (Application of the Quality Test of the Coffee Production Process at UD Tenant Berkah Lestari South Lampung). The results of the study showed that the stages of the coffee production process (sorting, roasting, milling, packaging) at UD. Tenant Berkah Lestari affected the quality of the coffee.

d) The Effect of Sorting (X_3) on Coffee Quality (Y).

Based on the results of the t-test regression analysis, the sorting variable has a significant partial effect on coffee quality at UPH Wulang Pari Coffee. This is indicated by a significance value of 0.02216 <0.05 and a $_{\text{calculated t value}}$ (2.89273) which is greater than the t $_{\text{table value}}$ (2.05183) or 2.89273 > 2.05183. This study is in line with the study conducted by Rangga & Pardani, (2024) concerning the Analysis of Coffee Post-Harvest Processes at the Gunung Ikamaja Coffee Self-Help Agricultural and Rural Training Center (P4S), Sumberjaya District, West Lampung Regency. The correct coffee post-harvest process is important to implement because it can improve coffee quality. The results of the study showed that there was a discrepancy in the coffee post-harvest process with the provisions stipulated in the Regulation of the Minister

of Agriculture Number 52/Permentan/OT.140/9/2012 concerning post-harvest processing. In the natural processing process, the appropriate stages are sorting, drying, de-horning, roasting and fine grinding, while the less appropriate stage is the packaging process.

e) The Effect of Roasting (X_4) on Coffee Quality (Y).

The results of the t-test regression analysis show that the roasting variable has a partial effect on the quality of coffee at UPH Wulaang Pari Coffee. This can be seen from the significance value of 0.02997 <0.05. and the $_{\text{calculated}}$ t value in the t- coefficients test results table of 2.29133 is greater than the t- $_{\text{table value of}}$ 2.05183 or 2.29133 > 2.05183. This study is in line with research conducted by (Marpaung & Lutvia, 2020) regarding the Effect of Roasting Duration on the Characteristics and Organoleptic Quality of Liberica Tungkal Composite Coffee Powder Brew. The results of the study showed that the duration of roasting liberica coffee beans significantly affected the quality of coffee such as pH moisture level (coffee powder), aroma, taste, bitterness level, and preference (coffee powder brew). Based on research and statistical analysis, the panelists gave the highest rating to the coffee powder brew that was roasted for 15 minutes.

f) Effect of Powdering (X_5) On Coffee Quality (Y).

The results of the t-test regression analysis show that the powdering variable partially affect the quality of coffee at UPH Wulaang Pari Coffee. This can be seen from the significance values of 0.0002 <0.05 and the $_{\text{calculated}}$ t value in the t coefficients test results table of 4.29213 is greater than the t $_{\text{table value of}}$ 2.05183 or 4.29213 > 2.05183. This study is in line with the study conducted by (Soekarno, et al., 2020) on the Robusta Coffee Grinding Process Using a Hammer Mill Type Powder Machine. Based on the results of the taste test using random untrained respondents, the most favorite ground coffee flavor was achieved when the processing process was carried out at a temperature of 160°C, for 30 and 35 minutes. The higher the engine speed and roasting temperature, the capacity and efficiency of the hammer mill type powder machine increased significantly. Therefore, the optimum combination of engine speed and roasting temperature will affect the level of fineness of the ground coffee.

g) The Effect of Packaging (X_6) on Coffee Quality (Y).

Based on the results of the t-test regression analysis, the packaging variable has a significant partial effect on the quality of coffee at UPH Wulang Pari Coffee. This is indicated by a significance value of 0.02524 <0.05 and a $_{\text{calculated t value}}$ (2.3691) which is greater than the t $_{\text{table value}}$ (2.05183) or 2.3691 > 2.05183. This study is in line with research conducted by (Saolan et al ., 2020) on the Effect of Packaging Type and Storage Time on the Quality of Robusta Coffee Powder (Coffea Robusta). The results showed that the type of packaging and storage time had a very significant effect on water, ash, and volatile compound content. The best treatment was the use of aluminum foil packaging, water content (1.87% - 3.53%), ash content (5.77% - 5.33%), volatile compounds (79.36% - 73.4%) and caffeine content (3.02%).

CONCLUSION

After conducting research and analyzing data, the researcher drew conclusions as follows:

1) The process of implementing quality management at UPH Wulang Pari Coffee consists of drying, milling, sorting, roasting, powdering and packaging.
2) The drying, milling, sorting, roasting, powdering and packaging processes simultaneously and partially affect the quality of coffee at UPH Wulang Pari Coffee. The most dominant quality management implementation process that affects the quality of coffee at UPH Wulang Pari Coffee is sorting. The Beta coefficient value of sorting is greater than drying, milling, roasting, powdering and packaging.

REFERENCES

Ambar Wulandari, L., Rimadhanti Ningtyas, K., Nugraha Agassi, T., Teknologi Pertanian, J., Studi Pengembangan Produk Agroindustri, P., & Negeri Lampung, P. (2024). Penerapan Uji Mutu Proses Produksi Kopi Di Ud Tenant Berkah Lestari Lampung Selatan Application of the Quality Test of the Coffee Production Process At Ud Tenant Berkah Lestari South Lampung. 3(1), 1–11. http://dx.doi.org/10.25181/Jupiter.v3i1.3283Website:https://jurnal.polinela.ac.id/jupiter

Anggraini, A. H. (2022). Strategi Pengembangan Usaha Pengolahan Kopi "Studi Kasus di Unit Pengolahan Hasil (UPH) Wulang Pari Coffee Di Kota Ruteng Kabupaten Manggarai" Angela. Jurnal EXCELLENTIA, XI(1), 1–8.

BPS. Kabupaten Manggarai. (2024). Produksi Kopi di Kabupaten Manggarai.

BPS. Provinsi Nusa Tenggara Timur. (2024). Produksi Kopi di Nusa Provinsi Tenggara Timur.

Hasanuddin, M. R., Rachma, N., & Wahono, B. (2020). Pengaruh Kualitas Produk, Kualitas Pelayanan Dan Kepercayaan Pelanggan Terhadap Loyalitas Pelanggan (Pada Pelanggan Kedai Kopi Mr Beard Coffee Jl, Saxophone No. 47 Tunggul Wulung Lowokwaru Malang). Jurnal Ilmiah Riset Manajemen, 9(11), 39–53. www.fe.unisma.ac.id

Indriana, I., Rosmawaty, R., & Fahria Nadiryati Sadimantara. (2023). Pengaruh Teknologi Pasca Panen Terhadap Kualitas Biji Kakao di Desa Benua Kecamatan Benua Kabupaten Konawe Selatan. Perbal: Jurnal Pertanian Berkelanjutan, 11(3), 364–377. https://doi.org/10.30605/perbal.v11i3.2869

Maidiana, M. (2021). Penelitian Survey. ALACRITY : Journal of Education, 1(2), 20–29. https://doi.org/10.52121/alacrity.v1i2.23

Marpaung, R., & Lutvia, L. (2020). Pengaruh Lama Penyangraian Yang Berbeda Terhadap Karakteristik Dan Mutu Organoleptik Seduhan Bubuk Kopi Liberika Tungkal Komposit". Jurnal Media Pertanian, 5(1), 15. https://doi.org/10.33087/jagro.v5i1.89

Putri, N. A., & Lestari, D. (2019). Pengaruh Gaya Hidup dan Literasi Keuangan Terhadap Pengelolaan Keuangan Tenaga Kerja Muda di Jakarta. AKURASI: Jurnal Riset Akuntansi

Dan Keuangan, 1(1), 31–42. https://doi.org/10.36407/akurasi.v1i1.61

Rangga, K. K., & Pardani, N. (2024). Analisis Proses Pascapanen Kopi di Pusat Pelatihan Pertanian dan Pedesaan Swadaya (P4S) Kopi Gunung Ikamaja Kecamatan Sumberjaya Kabupaten Lampung Barat (Analysis of the Coffee Postharvest Process at the Self-Help Agricultural and Rural Training Center. Jurnal Argo Industri Perkebunan, 12(2), 117–128.

Saolan, Sukainah, A., & Wijaya, M. (2020). Pengaruh Jenis Kemasan dan Lama Waktu Penyimpanan Terhadap Mutu Bubuk Kopi Robusta (Coffea Robusta). Jurnal Pendidikan Teknologi Pertanian, 6(2), 337–338.

Siregar, M. D., & Partha, I. D. P. (2020). Mengatasi Masalah Belajar Membaca Melalui Tutor di SD Negeri 2 Selong. JKP (Jurnal Konseling Pendidikan), 4(1), 20–26. https://doi.org/10.29408/jkp.v4i1.2598

Siswoyo Soekarno, Tantri Sepriska, S. J. (2020). Proses Penghalusan Kopi Robusta Menggunakan Mesin Pembubuk Tipe Hammer Mill. Industri Teknologi Pertanian, 6 (1).

Solikhin, S., & Wicaksono, P. A. (2022). Peningkatan Kualitas Kopi Pinanggih Melalui Penerapan Teknologi Pascapanen Green House. Jurnal Pasopati : Pengabdian Masyarakat Dan Inovasi Pengembangan Teknologi, 4(3), 153–156. https://doi.org/10.14710/pasopati.2022.14721

Studi, P., Rekayasa, M., Del, I. T., & Utara, S. (2024). Uji Validitas Dan Uji Reliabilitas Dalam Analisis Kualitas Website Learning Management System Studi Independent Stechoq Dengan Metode Webqual 4 . 0. 116–122.

Tito, B., Ali, F. Y., & Setyoko, U. (2024). Karakterisasi Morfologi Kopi Arabika (Coffea Arabica L .) di Kawasan Desa Sempol Kecamatan Ijen Kabupaten Bondowoso Morphological Characterization of Arabica Coffee (Coffea Arabica L .) in the Sempol Village Area , Ijen District , Bondowoso Regency. 254–260.