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# Productivity Analysis of Cube Tuna Processing at PT. Aceh Lampulo Jaya Bahari

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***Abstract***
*Tuna is a pelagic marine fish belonging to the Thunnini nation, which includes several species from the skombride family, particularly the Thunnus genus. This fish is an excellent swimmer. Unlike most fish, tuna flesh is pink to dark red in color. The advancement of technology and the ever-increasing market demand have made the fish processing industry more developed, not only in terms of the processing process itself, but also in terms of adjusting it to market demand and consumer tastes.*
*However, due to the low demand for tuna cube at PT. Aceh Lampulo Jaya Bahari, the old tuna cube stock is buried, and the consumer does not return to order his order. Productivity is measured using input production data, labor productivity, total productivity, and the difference between changes in output. Productivity measurement outcomes are typically expressed as a percentage. A performance is said to be productive if the output divided by the input is 100% or 1.*
*So the value of productivity is said to be good, or if you want to increase the distribution results must increase or be more than one. On the other hand, if the result of the division decreases or is less than one, productivity decreases and can result in losses. According to the results of the calculations, the value of labor productivity on production during 2021 at PT. Aceh Lampulo Jaya Bahari is good because the results are greater than one (one) or 100 percent. With a labor productivity value of 31.04 percent, the total product*

***Keywords:*** ***Productivity Measurement, Production Process, Tuna Fish Processing***

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## I. INTRODUCTION

Tuna is a pelagic marine fish belonging to the Thunnini nation, which includes several species from the skombride family, particularly the Thunnus genus (Sadal O.I.,Marwa S.M.,Wala T.A,2012). This fish is an excellent swimmer. Unlike most fish, tuna flesh is pink to dark red in color. The quality of tuna should be taken more seriously in fishing companies, especially since tuna is an export commodity. Maintaining the quality of tuna necessitates additional processing, including the use of frozen fillets and other preparations. As a result, tuna has its own value after processing. Added value is the added value that occurs because a commodity undergoes a processing, transportation, and storage process in a production process so that its utilization, selling price and function can also increase (Hayami, 1987;Ahmad Daaboul, n.d). Productivity is a comparison of input (input) and output (output) that indicates how well resources are managed and utilized to achieve the best results. The greater the productivity, the lower the likelihood of delays. In general, the labor index is used as a reference in the Indonesian National Standard Handbook for construction cost analysis when planning and controlling manpower and scheduling project activities in Indonesia. The planning unit of labor is OH (Orang Hari/Man-Hours) (Walpole, 2005;Irena O. D, Dolganov I.M and Ivanshkina E.N, 2001). According to the above description, it can be seen that the problem of increasing productivity of the resulting production is an important matter that requires a more in-depth study, for which the author considers productivity research to be very important in increasing production output by maximizing labor productivity. Also the high demand for tuna fish products creates a great opportunity for Indonesia as a producer in exporting these products, both in the form of fresh tuna, frozen tuna and diversified tuna. The advancement of technology and the increasing market demand drive the fish processing industry to evolve, not only in terms of the processing process but also in terms of adapting to market demand and consumer tastes(Aderogba, K. A., 2011; Abiola K.). However, the low demand for tuna cube at PT. Aceh Lampulo Jaya Bahari causes the old tuna cube stock to be buried due to less-than-optimal workforce processing, so that the consumer does not return to order his order.

### 1.1. Research Methodology

Three stages are involved in the processing of research data. The identification of Productivity Calculations is carried out partially in the first stage, with the partial being part of the overall input (input), using the formula:

(i) partial productivity = (total output) / (total input x total time)

In the second stage, labor productivity is calculated using the formula:

(ii) labor productivity = (production output)/ (Labour)

Total productivity is calculated in the third stage using the formula:

(iii) Prod.Total=Total production+Prod labor.

After obtaining the Productivity results for one year, the average value of productivity is sought. The formula for calculating the average value of productivity for 2021 is:

(iv) Average value = (Total productivity)/1year

Data is also processed descriptively and quantitatively. Descriptive data processing is used to describe the company's overall condition as well as the mechanism of input and distribution of the company's product output. Quantitative processing is used for the product manufacturing process as well as the product margin percentage. The data is then manually tabulated with a calculator and Microsoft Excel.

### 1.2. Description of Research Object.

Organizational Structure and Work Procedures of the Service Technical Implementation Unit at the Provincial Animal Health and Livestock Service Office, PT. Aceh Lampulo Jaya Bahari is an operational and/or technical supporting technical device at the Aceh Fisheries Service, which is domiciled in the Capital of Aceh Province. Aceh Darussalam Nanggroe At PT. Aceh Lampulo Jaya Bahari, there were 83 people with various educational qualifications handling various process activities from the beginning to the end of the process.The factory, which was opened in 2014, has a land area of 40,000 m2 and a cold storage capacity of 2,000 tons, as well as an ice factory with a daily production capacity of 4,000 sticks of ice. Abu Bakar supplies fish to PT Aceh Lampulo Jaya Bahari and the frozen industries. PT. Aceh Lampulo Jaya Bahari's main concepts are "freshness," "hygiene," and "quality." The company's goal is to produce and process marine products such as cooked tuna, frozen seafood, and other marine products while focusing on high quality that meets international standards.

## II. RESULT AND DISCUSSION

The results obtained are as discussed below

### 2.1. Tuna Cube Production Productivity Data

The necessary productivity data is obtained through research on the productivity of tuna cube fish production as well as internal company data. For one month, labor activities were used as field practice. Data was collected by observing each worker's activity and obtaining data using the partial productivity method. This method yields data that is divided into three types of activities: working time, contribution time, and not working time. The research data collection was carried out at PT. Aceh Lampulo Jaya Bahari.

**Table 1Tuna Cube Production Result Collection Data**

| No. | Month | Input / kg | Output / kg | Time / Minutee | Target / kg | Labor |
|---|---|---|---|---|---|---|
| 1 | January | 590 | 381 | 240 | 480 | 15 |
| 2 | February | 599 | 388 | 240 | 500 | 15 |
| 3 | March | 587 | 390 | 240 | 488 | 15 |
| 4 | April | 589 | 400 | 240 | 489 | 15 |
| 5 | May | 580 | 378 | 240 | 490 | 15 |
| 6 | June | 600 | 389 | 240 | 478 | 15 |
| 7 | July | 579 | 378 | 240 | 477 | 15 |
| 8 | August | 588 | 399 | 240 | 499 | 15 |
| 9 | September | 659 | 377 | 240 | 488 | 15 |
| 10 | October | 600 | 387 | 240 | 490 | 15 |
| 11 | November | 566 | 388 | 240 | 479 | 15 |
| 12 | December | 595 | 398 | 240 | 479 | 15 |

### 2.2. Data Processing

#### (i) Tuna Cube productivity

The monthly total output or production results for all tuna cube products in 2021 are as follows.

**Table 2 Data on the Tuna Cube Production Results**

| PT. ACEHLAMPULO JAYA BAHARI | | PRODUCTION OF ANNUAL REPORT RESULT | | |
|---|---|---|---|---|
| Dir. Operational | | Period: 2021 | | |
| **No.** | **Month** | **Target/ Kg** | **Achieved / Kg** | **Description** |
| 1 | January | 350 | 381 | Achieved |
| 2 | February | 350 | 388 | Achieved |
| 3 | March | 350 | 390 | Achieved |
| 4 | April | 350 | 400 | Achieved |
| 5 | May | 350 | 378 | Achieved |
| 6 | June | 350 | 389 | Achieved |
| 7 | July | 350 | 378 | Achieved |
| 8 | August | 350 | 399 | Achieved |
| 9 | September | 350 | 377 | Achieved |
| 10 | October | 350 | 387 | Achieved |
| 11 | November | 350 | 388 | Achieved |
| 12 | December | 350 | 398 | Achieved |

According to the table above, the annual tuna production for the 2021 period is achieved every month. With a 350 kg target set.

**Table 3 Productivity Analysis**

| No | Month | Input/ kg | Output / kg | Time (minute) |
|---|---|---|---|---|
| 1 | January | 590 | 381 | 240 |
| 2 | February | 599 | 388 | 240 |
| 3 | March | 587 | 390 | 240 |
| 4 | April | 589 | 400 | 240 |
| 5 | May | 580 | 378 | 240 |
| 6 | June | 600 | 389 | 240 |
| 7 | July | 579 | 378 | 240 |
| 8 | August | 588 | 399 | 240 |
| 9 | September | 659 | 377 | 240 |
| 10 | October | 600 | 387 | 240 |
| 11 | November | 566 | 388 | 240 |
| 12 | December | 595 | 398 | 240 |
| Total | | 7132 | 4653 | 2880 |

Productivity is calculated partially, with partial being part of the total input (input), using the formula: Partial productivity = (total output)/ (total input x total time)

$$\frac{4653}{7132x2880} = 0{,}226$$

So, using the partial (Overall) productivity formula, the total productivity of production is 0.226.

**(ii) Productivity in the Workplace**

The total workforce at PT Aceh Lampulo Jaya Bahari is 83 people, with 10 being Office Staff, 15 being specialized in the production of tuna cube fish, and 58 being associated with other fish production process lines. Employees in the Office Staff section handle administrative tasks, while the tuna cube fish production section has a permanent employee who cuts, inspects, and arranges tuna cubes in the form of dice, while other fish production divisions sort, weigh, and freeze.

**Table 4 Labor Productivity Calculation**

| No | Month | Gross Production | Labor | Productivity |
|---|---|---|---|---|
| 1 | January | 381 | 15 | 25.4 |
| 2 | February | 388 | 15 | 26 |
| 3 | March | 390 | 15 | 26 |
| 4 | April | 400 | 15 | 26.6 |
| 5 | May | 378 | 15 | 25.2 |
| 6 | June | 389 | 15 | 26 |
| 7 | July | 378 | 15 | 25.2 |
| 8 | August | 399 | 15 | 26.6 |
| 9 | September | 377 | 15 | 25.1 |
| 10 | October | 387 | 15 | 25.8 |
| 11 | November | 388 | 15 | 26 |
| 12 | December | 398 | 15 | 26.5 |
| Total | | 7132 | 15 | 310.4 |

The production results for the months of January to December 2021 are explained in the table above using the calculations below. The value of productivity for a year (Year 2021) is calculated as follows: Using the formula:
Labor productivity = (Output of production)/ (Labour)

$$\frac{4653}{15} = 310{,}4 = 31{,}04\%$$

The result of production is 4653 gross . The number of workers in the Tuna Cube Production Process Line is 15.Labor Productivity has a value of 31.04 percent.Results Obtained According to the above calculation, Labor Productivity in 2021 will be 31.04 percent.

Total Productivity
Total Productivity is calculated as the sum of product and labor productivity using the formula:
Total productivity =Production Process+Labor Productivity
=0.226+31.04
=31.266

As a result, total productivity is 31,226.
Difference Change in production volume and the monthly change or difference in productionis shown below.

**Table 5Result of Tuna Cube Production**

| No | Month | Total Production | Changes |
|---|---|---|---|
| 1 | January | 381 | 20% |
| 2 | February | 388 | 7.00% |
| 3 | March | 390 | 2% |
| 4 | April | 400 | 10% |
| 5 | May | 378 | 22% |
| 6 | June | 389 | 11% |
| 7 | July | 378 | -11% |
| 8 | August | 399 | 21% |
| 9 | September | 377 | -22% |
| 10 | October | 387 | 10% |
| 11 | November | 388 | 1% |
| 12 | December | 398 | 10% |
| Total | | 7132 | |

The amount of Tuna Cube production can be described as unstable or unstable, as evidenced by the production results (Thaer, A. A, 2010). The amount of production is highly volatile, with monthly decreases and increases. This is due to the fact that the number of requests varies from month to month. However, neither the time nor the amount of production can be predicted. As a result, the amount of production varies from month to month. According to the findings of field interviews with supervisors during practical work, the amount of production that varies each month is also due to different holidays or days off. Because factory operations run 7

days a week, 24 hours a day, holidays and day offs are only observed on national holidays. Because it was only a holiday at the time, production could not take place. Power outages and machine breakdowns are two other factors that contribute to fluctuating production results. Machine breakdowns or damaged machines will disrupt the production process because the production process requires machines, so maintenance is required for repairs as well as time for machine re-setup or calibration after repairs. Meanwhile, in the event of a power failure, a power outage that usually occurs unexpectedly, requires a longer set-up time after the power is restored than after repairs, the setup process for large machines usually takes eight (8) hours to complete after a power outage occurs (UOP, 1990).

After obtaining the Productivity results for one year, the average value of productivity is sought. Calculation of the 2021 average productivity value Follow the Formula:

Average value = (Total productivity)/1year

$$= \frac{31{,}04\%}{12} = 2{,}6\%$$

The details are as follows :

= Value 31.04% is Total Labor Productivity in 2021.

= Value 12 is Number of months in 1 Year

= Value 2.58% is Average value in 1 year

The Average Productivity Result for 2021 is = 2.6%.

**(iii) Productivity Evaluation**

Productivity measurement results are typically expressed as a percentage. If the output divided by the input is 100% or 1, the performance is said to be productive (one) (Xiaoming J, Gang Rong and Shuqing Wang, 2003). So the productivity value is said to be good, or if you want to increase the distribution results must increase or be greater than one. On the other hand, if the division result decreases or is less than one, productivity decreases and losses may occur. According to the results of the calculations, the value of labor productivity on production during 2021 at PT. Aceh Lampulo Jaya Bahari is good because the results are greater than 1 (one) or 100 percent. With a total productivity value of 31,226 and an average productivity value of 2.6 percent for the year.

## III. CONCLUSION

From data calculation, this researh concluded that :

1. All factors are said to be productive, but the company still makes money because there is no productivity value less than one (one); these factors are:
   a. Investment, business investment
   b. Management, employee performance management
   c. Workforce, work ethic and discipline
2. PT. Aceh Lampulo Jaya Bahari produces tuna cubes in a single year, 2020, achieving the following productivity results:
   a. Productivity = 310.4
   b. Tuna station labor = 15 people
   c. Product productivity = 0.226
   d. Labor productivity = 31.04 percent d. Total productivity = 31,226 e. Difference (change) from one month to another = (7%, 2%, 10%, 22%, 10%, 22%, 11%, 10%)

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