

## **Difference Production Management System of The Packaging Product in 2016 and 2017 at PT. XYZ Indonesia-Jakarta**

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### **Abstract**

The development of Company is determined by the management who manage it. With a good and well planned management, the Company would be able to produce products with good quality, punctuality in production and delivery, as well as competitive prices. The objective of this research is to find out impact of the differences between the management production system before 2017 with the new management production system in 2017. The research method used is non parametric approach with Wilcoxon Match Pairs Test. The research conducted at PT. Global Pak Indonesia-Jakarta. This research used variable based on secondary data of the Company from 2013 to 2017. The resultsof the study indicated a difference in outcomes between the used of management production system before 2017 with new management production system in 2017. The research recommended that the Company should use a new management production system, which began to be used in 2017, because by using this new management production system, Company's revenue will increase.

**Keywords:** Management Production System, Company competitiveness, Packaging Product.

### **Introduction**

In order to deal with a trading climate, which is getting more and more competitive, the traffic of goods circulating in accordance with customer needs spread throughout Indonesia, even to foreign countries, even abroad. To protect the goods needed by these customers, it requires packaging. A good and appropriate packaging will maintain the quality and protect the goods, which will prevent any risks such as defecting the goods itself or even damaging it.

To be able to meet the customer needs, good quality, punctuality, service and price is the barometer for determining whether the industry is success. It is therefore expected that the industry will achieve a huge profit.

Economic reform in the current era of globalization has caused a really intense competition in the industrial sector. Hence it is necessary to build

packaging that has high competitiveness. The packaging industry must continually seek innovation to achieve the most optimal efficiency in meeting consumer needs. Efficiency to be achieved include efficiency in production so as to produce cheaper packaging prices with predetermined quality specifications, punctuality in production and keep the goods safe during the shipping. Production is one of the most important parts of a manufacturing Company whose activities produce something by transforming raw materials into finished products that have more value than before or according to customer needs. (Willem Siahaya, 2016).

PT. XYZ is one of the pioneers of packaging manufacturers who use environmentally friendly paper materials, as a substitute for wood and styrofoam products. Packaging products are produced on orders from customers, where each customer has a variety of designs, shapes and sizes. With so many different types of goods to be produced, it is necessary to make a systematics in production to achieve specific targets. But this type of order is not continuously ordered every month, but ordered according to the customer requirements. In serving Heavy Duty Packaging orders must be designed in advance and adjusted to the form of items to be packaged and sent. Whereas Paper Intermediate Bulk Container does not need to be designed in advance, because the packaging for 1,000 ml is available.

The surprisingly tight competition in the Industrial sector affected PT. XYZ as well. Since 2013 PT. XYZ has experienced a decline in the number of customers which resulted in a decreasing amount of production. In 2013 the total production of 877,317 pieces, in 2014: 363,972 pieces, in 2015: 384,712 pieces and in 2016: 192,027 pieces with a value in 2016 of Rp. 7,880,698,346, - during all these years, the manual/ simple SOP was applied. The alleged cause of the decline in the number of packaging-product production until 2016, in addition to the decrease in the number of customers due to the influence of the global economy, where packaging users also experienced a decline in marketing, was also possible because the work system and customer service were less satisfactory.

From the data the authors obtained, in 2017 there was an increase in production capacity and an increase in the value of production/turnover which was quite huge. In 2017 the amount of production slightly increased to 215,093 pieces, but the value of production/turnover rose to Rp. 14,421,293,364,-. Are there differences in packaging product production between 2016 (using the Basic/Manual Production Management Procedures), and 2017 (after using a New Production Management System)?

In this case the author analyzes the difference between the 2016 production management system and the 2017 production management system. As well as forecasting Packaging Product Orders for the next 3 years.

### Method

The research was conducted at PT XYZ, Jakarta in 2017 for 4 months from September 2017 to December 2017. In this study the author uses secondary data or Company's documentation data for 5 (five) years from 2013-2017 with monthly data, the primary data from the interviews are used as supporting data.

The methods the authors used was:

#### A. Descriptive Method,

Non-parametric statistics collection and presentation of data in form of tables, diagrams, graphs and other quantities.

#### B. Comparative Method,

Non-parametric statistics with *Teknik Uji Beda* (Different Test Techniques) using the Wilcoxon Match Pairs Test to test the significance of the comparative hypothesis of two correlated samples, if the data is ordinal. Analyze by comparing  $Z_{hit} = \frac{T - \mu_T}{\sigma_T}$  with  $Z_\alpha$  (tables).

#### C. Trend Linier Method,

To see the development of a data/ object in the future. This Method uses the Least Square Method Data Analysis Technique (*Teknik Analisis Data Metode Kwadrat Terkecil*) with the formula:  $Y = a + bX$  (equation of the trend line)

## Discussion and Result

Based on the 12 months production data in 2016 and 12 months production data in 2017, researchers calculated the different test of production results and value between the production in 2016 and 2017 with using Wilcoxon technique.

### 1. Initial Hypothesis

$H_0 = \rho = 0$ : there is no difference in production results in 2016 and 2017

$H_a = \rho \neq 0$ : there is a difference between 2016 and 2017

### 2. Determine $Z_{hit} = \frac{T - \mu_T}{\sigma_T}$ Formula 3.5 (Sugiyono, 2012)

$T$  : Number of levels/ the smallest ranking = 12

$$\sigma_T = \sqrt{\frac{n(n+1)(2n+1)}{24}}$$

$\mu_T$  : Average number of levels  $\mu_T = \frac{n(n+1)}{4}$

$n$  : Number of samples = 12

Calculation :

$$Z_{hit} = \frac{T - \mu_T}{\sigma_T} = \frac{12 - \frac{12(12+1)}{4}}{\sqrt{\frac{12(12+1)(2 \times 12 + 1)}{24}}} = 2,1226$$

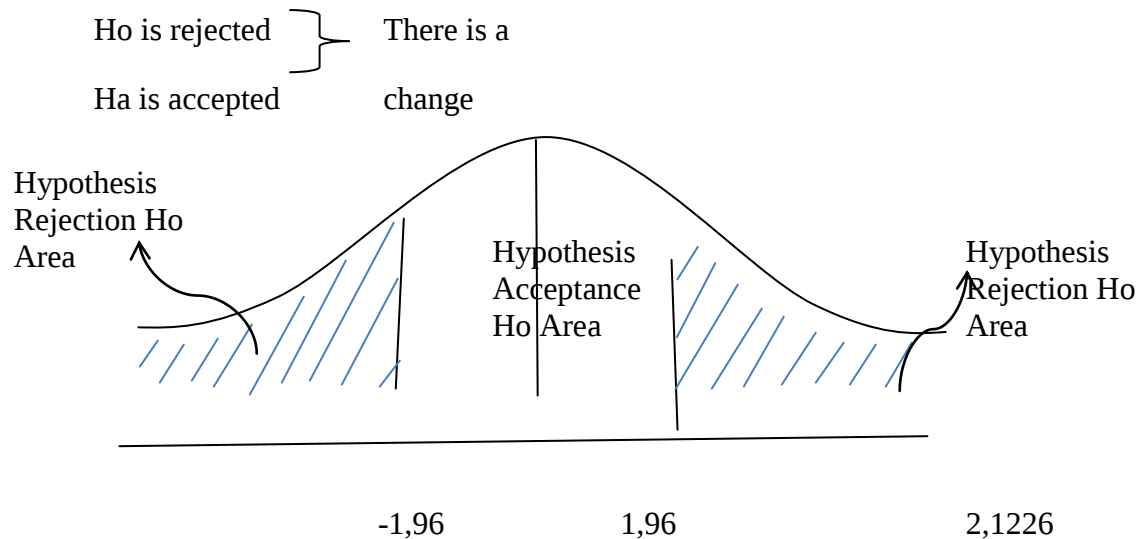
$Z_t$  : Table XIV (Critical Prices Z Table in Observing Normal Distribution)

Error rate (p) = 0,05  $\rightarrow Z_t = 1,64$

Error rate (p) = 0,025  $\rightarrow Z_t = 1,96$

### 3. Compare $Z_{hit}$ with $Z_t \rightarrow Z_{hit} > Z_t$

4. Conclusion:



**Figure 1. Graph of Production Different Test Techniques between in 2016 and in 2017**

Source: Author

From the graph above can be concluded, that because the value of  $Z_{hit} = 2.1226$  is in the rejection  $H_0$  area, then  $H_a$  is accepted. Thus there is a significant difference between the old management system and the new management system in the production of packaging products.

**Packaging Production Forecast Analysis for the next 3 years (2018, 2019, 2020) using the Linear Tren**

**Table 1. Calculation of Trend Line Equations**

| No. | Month    | Total 2017<br>pcs. Y | $X_i$ | $X_i^2$ | $Y.X_i$   | Description |
|-----|----------|----------------------|-------|---------|-----------|-------------|
| 1   | January  | 10.913               | - 11  | 121     | - 120.043 |             |
| 2   | February | 12.948               | - 9   | 81      | - 116.532 |             |
| 3   | March    | 24.306               | - 7   | 49      | - 170.142 |             |
| 4   | April    | 21.816               | - 5   | 25      | - 109.080 |             |
| 5   | May      | 28.340               | - 3   | 9       | - 85.020  |             |
| 6   | June     | 11.767               | - 1   | 1       | - 11.767  |             |
| 7   | July     | 17.764               | 1     | 1       | 17.764    |             |

|      |           |                |    |            |               |  |
|------|-----------|----------------|----|------------|---------------|--|
| 8    | August    | 18.139         | 3  | 9          | 54.417        |  |
| 9    | September | 12.266         | 5  | 25         | 61.330        |  |
| 10   | Oktober   | 19.530         | 7  | 49         | 136.710       |  |
| 11   | November  | 18.942         | 9  | 81         | 170.478       |  |
| 12   | December  | 18.362         | 11 | 121        | 201.982       |  |
| n=12 |           | <b>215.093</b> | -  | <b>572</b> | <b>30.097</b> |  |

Source: Author

Trend Line Equations:  $Y = a + bX$  from the calculation of the amount of production.

$$a = \frac{\sum Y}{n} = \frac{215.093}{12} = 17.924$$

$$b = \frac{\sum Y \cdot Xi}{\sum Xi^2} = \frac{30.097}{572} = 52,617$$

Trend Line Equations production total:  $Y = 17.924 + 52,617 X$

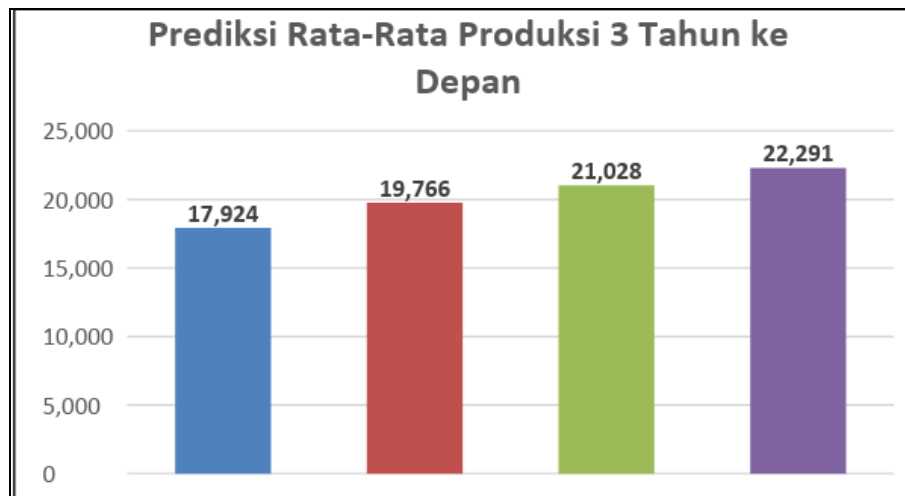


Figure 2. Prediction of Average Production for the next 3 years from 2017

Source: Author

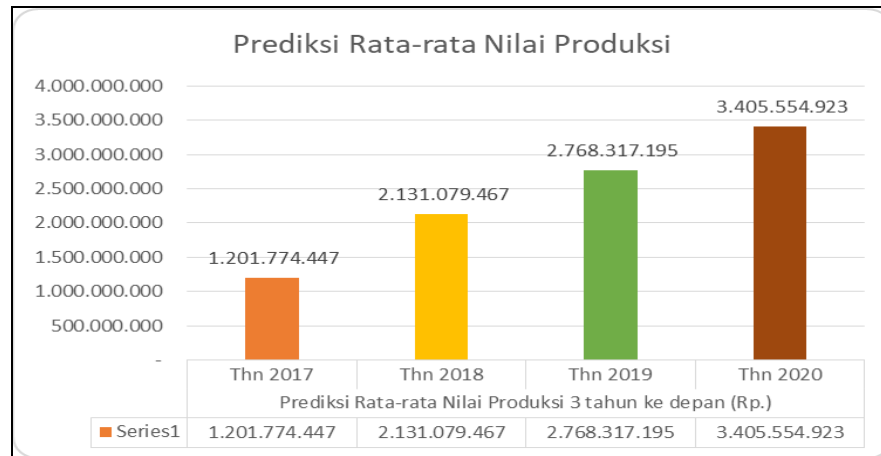
Trend Line Equations:  $Y = a + bX$  from the calculation of the value of Production

Results  $a = \frac{\sum Y}{n} = \frac{14.421.293.364}{12} = 1.201.774.447$

$$b = \frac{\sum Y.Xi}{\sum Xi^2} = \frac{15.187.499.414}{572} = 26.551.572$$

Trend Line Equation of Production Results Value:

$$Y = 1.201.774.447 + 26.551.572 X$$



**Figure 3. Prediction of Average Production Value for the next 3 years from 2017**

*Source: Author*

From the calculation above of Trend Line Equations The Amount of Production and Trend Line Equation of Production Results Value, shows that the average amount and value of production will gradually increase each year starting from 2018, with a note, that the economy in Indonesia is stable.

Based on the method and discussion of the research it is expected to produce output that is good and relevant to the needs. Before 2017 and in 2017 there were significant differences in production management. Before 2017 the up and down trend in the amount of relative production was in line with the ups and downs of nominal production output. Around the end of 2016 Production Management evaluated the work so far, and in 2017 the production operation management system was improved by adding a number of supporting provisions (including the description in the column below) which refers to Integrated Quality Management (Quality Plan).

The following are research results that explain the differences in production management systems before 2017 (Manual/ Basic Production Management System) and the newest one, which is applied in 2017 (New Production Management System)

**Table 2. Tabel The Difference Production Management System (Basic Management and Newest Manajement)**

|    | <b>Previous Management Production System (Manual/ Basic)</b>                                                                                                                                                                                                                                     | <b>New Management Production System</b>                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | <b>Raw Material:</b> <ul style="list-style-type: none"> <li>- No Quality Control</li> <li>- The use of raw materials sometimes does not meet specifications (using existing materials)</li> </ul>                                                                                                | <b>Raw Material:</b> <ul style="list-style-type: none"> <li>- With Quality Control</li> <li>- There must be Certificate Of Analysis from the Supplier.</li> <li>- According to the specifications</li> </ul>                                                                                                                                                                                                                                                          |
| 2. | <b>Supplier:</b> <ul style="list-style-type: none"> <li>- The Supplier is not detected and does not include a Certificate Of Analysis</li> </ul>                                                                                                                                                 | <b>Supplier:</b> <ul style="list-style-type: none"> <li>- Qualified raw materials suppliers and must include a Certificate Of Analysis.</li> </ul>                                                                                                                                                                                                                                                                                                                    |
| 3. | <b>Customer:</b> <ul style="list-style-type: none"> <li>- Many customers, but the types of ordered items are low value</li> <li>- Less communication (lost contact) with customers and customers never order products again</li> <li>- Slow respond to customer complaints</li> <li>-</li> </ul> | <b>Customer:</b> <ul style="list-style-type: none"> <li>- Few customers (selected) but the types of ordered items are high value</li> <li>- Stay in contact with customers and provide best/ quick response to every complaints</li> </ul>                                                                                                                                                                                                                            |
| 4. | <b>Work Guide:</b> <ul style="list-style-type: none"> <li>- No specific work guides, therefore no measurable productions schedule</li> </ul>                                                                                                                                                     | <b>Work Guide:</b> <ul style="list-style-type: none"> <li>- Works according to work guides, thus the production is measurable by the amount of labor, raw materials, overtime (for special condition) and time</li> <li>- Cooperate between Marketing, Purchasing, PPIC and Production</li> </ul>                                                                                                                                                                     |
| 5. | <b>Work System:</b> <ul style="list-style-type: none"> <li>- No accountability in each field, so the response to resolve any problem takes forever</li> </ul>                                                                                                                                    | <b>Work System:</b> <ul style="list-style-type: none"> <li>- Each field has its own responsibility, so the response to resolve the problem is really fast</li> </ul>                                                                                                                                                                                                                                                                                                  |
| 6. | <b>Works Procedure:</b> <ul style="list-style-type: none"> <li>- Based on existing work procedure (according to the procedure flow attached)</li> <li>- No commitment</li> <li>-</li> </ul>                                                                                                      | <b>Works Procedure:</b> <ul style="list-style-type: none"> <li>- Existing work procedure plus the stages of the production process, which called Quality Plan (attached) of which there are work instructions that must be followed as a work guide</li> <li>- In accordance with the rules of Work Procedures and Instructions, therefore the production process is in accordance with the Production Standards (Quality, Time and Labor can be measured)</li> </ul> |

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|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | - Applying Environmental Management (controlling RoHs, for mercury, Lead etc.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 7. | <b>Profit (benefit; omset):</b> <ul style="list-style-type: none"> <li>- Product enter a separate Slitter and Slotter process, which takes more time, effort and cost</li> <li>- Manual press tool, using ballast and manual lifting tool</li> <li>- The glue has not dried up, but the process has been carrying out, therefore the glue is often released</li> <li>- High operational cost because the production process is not programmed/ scheduled</li> <li>- Specified delivery time, sometimes even delays</li> </ul> | <b>Profit (benefit; omset):</b><br>After arranging the management, next step is to raise the profit: <ul style="list-style-type: none"> <li>- Make the production process more efficient:                             <ul style="list-style-type: none"> <li>• Modifying tools (Slitter+Slotter)</li> <li>• Add tools (press tool, lifting equipment)</li> <li>• Quality Control (WIP=Wait In Process, waiting the glue til dry, takes around 2 days until the glue is completely dry)</li> <li>• Raw materials from the size-supplier have been determined</li> </ul> </li> <li>- Minimize operational costs</li> <li>- Increase marketing targets:                             <ul style="list-style-type: none"> <li>• In 2017 Rp. 1 Billion</li> <li>• In 2018 Rp. 2 Billion</li> </ul> </li> <li>- Maximilize the vehicle use by speeding up shipping, therefore reduce the transportation costs and the customers will be more satisfied with previous confirmation, that the package can be sent before the due date of delivery</li> <li>- Minimize customer complaints</li> </ul> |
| 8. | <b>Productivity:</b> <ul style="list-style-type: none"> <li>- No breaffing</li> <li>- Inconsistency of work schedule which leads to overtime work (up to 34.7% of salary) and will try to achieve the target of production on time</li> <li>- 25 people in production + 7 people in delivery station (few workers)</li> </ul>                                                                                                                                                                                                 | <b>Productivity:</b> <ul style="list-style-type: none"> <li>- Breaffing every morning before work by conveying the target of the day with a prayer after</li> <li>- More productive (overtime only 25% in 2017)</li> <li>- Overtime is implemented only if there is a sudden request from customer</li> <li>- Hiring more employers/ workers is better than having a large number of overtime</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 9. | <b>Labor:</b> <ul style="list-style-type: none"> <li>- No reward</li> <li>- No joint tour</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Labor:</b> <ul style="list-style-type: none"> <li>- Improve employee welfare</li> <li>- Reward for:                             <ul style="list-style-type: none"> <li>• Attendance assessment</li> <li>• Assessment of neatness</li> <li>• Diligent/ Discipline assessment</li> <li>• Assessment of environmental concerns</li> <li>• Assessment of productivity etc.</li> </ul> </li> <li>- Joint tour</li> <li>- Provide training for new products and periodically control the results</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 10 | <b>Area:</b> <ul style="list-style-type: none"> <li>- Less extensive and tends to be less organized</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Area:</b> <ul style="list-style-type: none"> <li>- Expanded and more organized although not optimal</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Source: Author

## Conclusion

Based on Different Tests in 2016 and in 2017 there is a significant difference between the productions of packaging in 2016 using the Manual/ Basic Management Procedure and the one in 2017 using the Newest Management Procedure System. This is because the new production management system has implemented integrated/total quality management. The numbers of customers are keep declining in 2016 not only due to the global economy but due to dissatisfaction from the customers, since the production management system was not implemented correctly and not systematic as well.

It is to be expected that for the next 3 years there will be a great improvement with note that the economy in Indonesia is stable.

Based on the result of the study there are many differences between the application of the Manual/Basic Production Management System and the New Production Management System. Using the New Production Management System is recommended which has implemented Integrated/Total Quality Management, which will increase the profit of the Company greatly.

The character of this packaging product is “Job Order” but for the future it is better to use the Information Technology Innovation (On Line) or Start Up Innovation Technology.

Based on empirical findings obtained through this research, there are several suggestions for the Company to increase the profit, namely:

- a. Selects qualified customers and focuses more on existing customers, which has increased the production capacity and revenue, while also serving new customers.
- b. In order not to depend on the condition of Indonesia’s economic stability, it is better to develop products, make new innovations from time to time to adjust to

consumer tastes, either diversification (opening new products) or differentiation products (changing sizes, models but raw materials are the same).

It is better to develop differentiated products, because they use the same raw materials therefore they don't incur additional costs.

- c. It is recommended that further study to be conducted on future research, especially if it can be developed on the use of Start Up Innovation Technology and E-Procurement.
- d. Input to the Company for structuring the workspace according to the spatial techniques that are adjusted to the Company's production management system.

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