



# The influence of just in time and total quality management on production cost efficiency at CV. Daeng Makassar

S. Widad Ahmad<sup>1</sup>, Ludya Lutfi<sup>2</sup>

<sup>1,2</sup> Manajemen, University Islamic Alauddin, Makassar, Indonesia

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## ABSTRACT

This study aims to analyze the effect of Just in Time and Quality Management on Production Cost Efficiency at CV Daeng Kuliner Makassar. The sampling technique in this study was carried out by purposive sampling with the collection technique by distributing questionnaires, namely asking or making a list of questions addressed to respondents in this case to certain employees at CV Daeng Kuliner Makassar which logically relates to the research problem, namely the influence of Just In Time and Total Quality Management on Production Cost Efficiency. The data processing technique in this study uses Smart PLS software. The results of this study indicate that Just In Time partially has a positive and significant effect on Production Cost Efficiency at CV Daeng Kuliner Makassar. Total Quality Management partially has a positive and significant effect on Production Cost Efficiency at CV Daeng Kuliner Makassar. While Just In Time and Total Quality Management simultaneously have a positive and significant effect on Production Cost Efficiency at CV Daeng Kuiner Makassar.

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### Corresponding Author:

S. Widad Ahmad,  
Manajemen,  
UIN Alauddin Makassar,  
Jl. Sultan Alauddin No.63, Romangpolong, Sulawesi Selatan 92113, Indonesia.  
Email: [widadahmad411@gmail.com](mailto:widadahmad411@gmail.com)

## 1. INTRODUCTION

In the current competitive era, the large number businesses in the food sector means that companies must have the ability to compete. One of them is by carrying out company operations efficiently and effectively (Aprilianti & Hidayat, 2019). In every company, costs are a very important component to support business activities to achieve a goal if the costs incurred have been calculated appropriately in order to create cost efficiency. In order to increase cost efficiency, one of the costs that must be reduced is production costs, because production costs are very large costs incurred by companies in the production process. In traditional systems, production based on future predictions has a greater risk of loss compared to production due to actual demand due to overproduction (Efrianti, 2018).

Just in time (JIT) is a very effective commercial manufacturing system, because it will produce where there is an order, so the company will avoid possible losses. The real goal in time is not set inventory levels to zero, but to minimize inventory to lower level (Hasanah & R. Pandin, 2021).

Total quality management (TQM) is also a systematic management method for organizations, customers and markets (Heizer, 2010). Through real improvements in creative quality, management productivity is realized between investigating actual facts and solving problems, thereby creating real quality, improving quality, productivity and other organizational performance (Gaspersz, 2006).

CV. Daeng Kuliner Makassar, is one of the traditional Sulawesi food places in Makassar with several restaurant brands spread out with varied food characteristics and affordable prices. Raw material purchasing activities and production activities cannot be separated from logistics management activities. Logistics activities include all costs that will be processed into finished food and other variable costs including fixed costs and factory overhead. Problems with CV. Daeng Culinary Makassar in the city of Makassar is the purchase or supply of raw materials to fulfill the unpredictable production process due to excess storage of raw materials. Due to fluctuating production demand factors and uncertainty in information such as incorrect order quantities, excess purchasing of raw material costs due to the absence of potential buyers for spoilage, as well as excess production of a material.

At the same time, companies require quality, reduce costs and eliminate waste due to storage or supply of raw materials. Therefore, companies that can survive in the business environment are companies that can produce high-quality products, reduce inventory costs, and produce less according to consumer demand. Tight competition between all the company's business units has proven that they can save money on production and inventory, and are still able to survive and run their production effectively.

## 2. RESEARCH METHOD

The type of research used is associative research, which is research that aims to determine the influence or relationship between two or more variables. This research has the highest level compared to descriptive and comparative because with this research a theory can be built that can function to explain, predict and control a phenomenon.

This research was conducted at all CV Daeng Kuliner Makassar outlets in Makassar City. When this research was carried out, it was carried out for 2 months, namely July 2023 to September 2023. In this research, the population was 300 employees of CV Daeng Kuliner Makassar, which is the total of all employees at all outlets. The sampling technique in this research was carried out using a purposive sampling technique where the samples taken were only aimed at certain employees. The employees in question are the director, head of production, financial manager, production staff, and raw material inventory staff, with a total sample of 50 people.

The type of data used in this research is quantitative data which is then processed and analyzed using mathematical or statistical calculation techniques (Sugiyono, 2017, 2019a, 2019c). The data source used in this research is primary data obtained from respondents, namely certain employees from CV Daeng Kuliner Makassar who filled in the questionnaire that was distributed.

The data collection technique used is by distributing questionnaires, namely asking or making a list of questions addressed to respondents which are logically related to the research problem, namely regarding the influence of Just In Time and Total Quality Management on Production Cost Efficiency.

### Descriptive Statistical Test

Descriptive statistical tests are test tools used to provide an overview or description of data from the average value (mean), maximum (max) and minimum (min) values of standard deviation (sdev), summation (sum); and the maximum and minimum values of the difference (range) (Ghozali, 2016).

### Data Quality Test Validity Test

According to Sugiyono (2019), Validity Test is the accuracy between the data collected and the data that actually occurs on the object under study. According to Ghozali (2012:52), the Validity Test is carried out by comparing the calculated value with  $r_{table}$ , by comparing the calculated value of the output results (Corrected Item Total Correlation) with  $r_{table}$ . Total correlation with the following criteria: if  $r_{count} > r_{table}$  and the value is positive, then the question item is valid, but if  $r_{count} < r_{table}$  then the question item is invalid.

#### Reliability Test

According to Sujarweni (2015), Reliability Test is a measure of the stability and consistency of respondents in answering matters related to question constructs which are dimensions of a variable and are arranged in the form of a questionnaire. Reliability testing can be carried out simultaneously on all question items. If the Cronbach alpha value is  $> 0.60$  then it is declared reliable.

#### Classic Assumption Test Normality Test

According to Santoso (2012), apart from the classic assumption test of multicollinearity and heteroscedasticity, another classic assumption test is the normality test, which will test the independent variable data (X) and the dependent variable data (Y) in the resulting regression equation which is normally distributed or not normally distributed. A regression equation is said to be good if it has independent variable data and dependent variable data with a distribution that is close to normal or completely normal. The normality test is used to test whether the distribution of the variables related to each particular independent variable is normally distributed or not in the linear regression model. This assumption is indicated by the error value which is normally distributed. A good regression model is a regression model that has a normal or close to normal distribution, so it is feasible to carry out statistical testing. The data normality test was carried out using the Kolmogorov-Smirnov Normality Test.

According to , the basis for decision making is based on probability (Asymptotic Significant), namely: If the probability is  $> 0.05$  then the distribution of the regression model is normal; and If the probability  $< 0.05$  then the distribution of the regression model is not normal.

#### Multicollinearity Test

The multicollinearity test aims to test whether the regression model finds a correlation between independent variables. An indicator of a good regression model is the absence of correlation between independent variables (Ghozali, 2012:105). If the independent variables are correlated with each other, then these variables are not orthogonal. Orthogonal variables are independent variables whose correlation value between independent variables is equal to zero.

#### Heteroscedasticity Test

According to Ghozali & Latan (2015), there are several ways to detect heteroscedasticity, namely by looking at whether there is a certain pattern in the scatterplot graph between ZPRED and SRESID where the Y axis is the Y that has been predicted, and the X axis is the residual (predicted Y - actual Y) that has been studentized. Homoscedasticity occurs if in the scatterplot the points resulting from data processing between ZPRED and SRESID spread below or above the origin point (number 0) on the Y axis and do not have a regular pattern. According to Sunyoto (2016), Heteroscedasticity occurs if in a scatterplot the points have a regular pattern, either narrowing, widening or wavy.

#### Multiple Linear Regression Analysis

The data analysis method used in this research is multiple linear regression. This regression is used to measure more than one independent variable against the dependent variable. Multiple Linear Regression Analysis is an analysis used by researchers, if they intend to predict what the condition will be (up and down) of the dependent variable (criterion), if two or more independent variables as predictor factors are manipulated (increasing and decreasing their value)(Sugiyono, 2019b). The multiple linear regression analysis formula for testing hypotheses is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e \quad (1)$$

Information:

Y = Production Cost Efficiency.  $\alpha$  = Constant or coefficient  $b_1$  = Just In Time coefficient  $b_2$  = Total Quality Management coefficient

X1 = Just In Time

X2 = Total Quality Management

e = Error rate

#### Hypothesis testing

##### T Test (Partial Test)

The T test is used to see whether the independent variables, namely the Just In Time (X1) and Total Quality Management (X2) variables, partially (individually) have a positive and significant effect on the Production Cost Efficiency (Y) variable. The hypothesis model used in this calculated t test is:  $H_0: b_1 = 0$ , meaning that partially (individually) there is no significant influence between the independent variables, namely the Just In Time (X1) and Total Quality Management (X2) variables, on the dependent variable namely Production Cost Efficiency (Y).

$H_a: b_1 \neq 0$ , meaning that partially (individually) there is a significant influence between the independent variables, namely the Just In Time (X1) and Total Quality Management (X2), on the dependent variable, namely Production Cost Efficiency (Y).

##### Decision making criteria in the T Test

$H_0$  is accepted if  $t_{count} < t_{table}$  at  $\alpha = 5\%$  and the sig value.  $> 0.05$ , meaning that the independent variable does not significantly influence the dependent variable; And  $H_a$  is accepted if  $t_{count} > t_{table}$  at  $\alpha = 5\%$  and the sig value.  $< 0.5$ , meaning that the independent variable influences the dependent variable significantly. F Test (Simultaneous Test).

The calculated F test is used to see whether the independent variables, namely the Just In Time (X1) and Total Quality Management (X2) variables, together have a positive and significant effect on the dependent variable, namely Production Cost Efficiency. The hypothesis model used in this calculated F test is:

$H_0: b_1 = b_2 = 0$ , meaning there is no significant and positive influence between the independent variables, namely Just in Time (X1), Total Quality Management (X2), on the dependent variable, namely Production Cost Efficiency (Y); And  $H_a: b_1 \neq b_2 \neq 0$ , meaning that there is a significant and positive influence between the independent variables, namely Just In Time (X1), Total Quality Management (X2), on the dependent variable Production Cost Efficiency (Y).

Decision making is done by comparing the  $F_{count}$  value with the  $F_{table}$  value. With decision making criteria:

$H_0$  is accepted if  $F_{count} < F_{table}$  at  $\alpha = 5\%$ , meaning that the independent variables together do not influence the dependent variable significantly; And  $H_a$  is accepted if  $F_{count} > F_{table}$  at  $\alpha = 5\%$ , meaning that the independent variables together influence the dependent variable significantly.

##### Coefficient of Determination (R<sup>2</sup>)

According to (Ghozali, 2016). the Coefficient of Determination (R<sup>2</sup>) is used to measure which factor has the most influence from the independent variable on the dependent

variable. A large R2 value indicates the independent variable has the most dominant influence on the dependent variable. The purpose of calculating the Coefficient of Determination (R2) is to find out which independent variable is most dominant over the dependent variable.

### 3. RESULTS AND DISCUSSIONS

The discussion can be made in several sub-chapters. The data processing technique in this research uses Smart PLS software. Descriptive statistical tests are test tools used to provide an overview or description of data from the average value (mean), maximum (max) and minimum (min) values of standard deviation (sdev), summation (sum); and the maximum and minimum values of the difference (range)(Ghozali & Latan, 2015).

#### Data Quality Testing

In carrying out data analysis, there are several criteria used. One way is by using the Smart PLS application which is used to assess the outer model which includes Convergent Validity, Internal Consistency Reability and Discriminant Validity(Hair, J.F., Black, W.C., Babin, B.J. and Anderson, 2010).

Convergent Validity is a measurement carried out to determine the extent to which a measure is positively correlated with alternative measures of the same construct. Internal Consistency Reability, often referred to as Composite Reability, is an estimate of reliability based on the intercorrelation of an indicator variable being studied. Meanwhile, Discriminant Validity is to see the extent to which a construct can truly differ from other constructs from existing empirical standards(Ghozali, 2009).

#### Convergent Data

Carried out to ensure that the measurements used are suitable for measurement (valid and reliable)(Ananda, 2015). In evaluating the outer model, start by looking at the Convergent Validity through the factor loadings. The measure of individual reflection with the construct being measured can be said to be high if the correlation is more than 0.70. In the initial process of this research analysis, we eliminated indicators that had loading factors below 0.60. Next, the researcher modified it by re-executing the model. Valid data processing results are as follows:

Table 1. Outer Loading (Measurement Model)

|     | Just In Time | Total Quality Management | Production Cost Efficiency |
|-----|--------------|--------------------------|----------------------------|
| p1  | 0,867        |                          |                            |
| P2  | 0.785        |                          |                            |
| P3  | 0.894        |                          |                            |
| P5  | 0.782        |                          |                            |
| P6  | 0.729        |                          |                            |
| P7  | 0.838        |                          |                            |
| P8  |              | 0.835                    |                            |
| P9  |              | 0.666                    |                            |
| P11 |              | 0.600                    |                            |
| P12 |              | 0.845                    |                            |
| P13 |              | 0.501                    |                            |
| P14 |              |                          | 0.871                      |
| P15 |              |                          | 0.824                      |

Based on the table above, it is known that all loading factors in this study have values above 0.60. Thus, the constructs of all variables are no longer eliminated from the

model. So that all constructs can be said to be valid and meet validity with a loading factor above 0.60.

Convergent validity can also be assessed through AVE. If a model has an AVE value above 0.50, then the model can be categorized as having high Convergent Validity. The AVE values in this research are:

Table 2. Average Variance Extracted (AVE)

| Variabel                   | Average Variance Extracted (AVE) |
|----------------------------|----------------------------------|
| Just In Time               | 0,669                            |
| Total Quality Management   | 0,493                            |
| Production Cost Efficiency | 0,774                            |

#### Discriminant Validity

Discriminant Validity is a stage carried out to find out whether the variables or indicators in the research carried out have unique values and are only related to the variables or indicators themselves. There are two stages that can be carried out to see whether the research model has good Discriminant Validity, namely cross loading and the results of the Fornell Larcker Criterion research (Indriantoro, N., & Supomo, 2013). Measuring the cross loading value, where cross loading shows that the indicators of each construct must have a higher value than indicators of other constructs. The results of the cross loading test in this research are as follows:

Table 3. Cross Loadings

| Indicator | Just In Time | Total Quality Management | Production Cost Efficiency |
|-----------|--------------|--------------------------|----------------------------|
| p1        | 0.475        | 0.867                    | 0.437                      |
| P2        | 0.467        | 0.785                    | 0.395                      |
| P3        | 0.540        | 0.894                    | 0.427                      |
| P5        | 0.529        | 0.782                    | 0.311                      |
| P6        | 0.565        | 0.729                    | 0.337                      |
| P7        | 0.684        | 0.838                    | 0.512                      |
| P8        | 0.548        | 0.346                    | 0.835                      |
| P9        | 0.505        | 0.403                    | 0.666                      |
| P11       | 0.419        | 0.207                    | 0.845                      |
| P12       | 0.311        | 0.153                    | 0.501                      |
| P13       | 0.871        | 0.534                    | 0.522                      |
| P14       | 0.824        | 0.379                    | 0.609                      |
| P15       | 0.909        | 0.696                    | 0.592                      |
| P16       | 0.912        | 0.714                    | 0.684                      |

#### Composite Reliability

To be specifically accepted in exploratory research, the composite reliability value ranges from 0.60 to 0.70. A construct is said to have high reliability if the value is 0.70. The following is the composite reliability table in this research:

Table 4. Cronbach Alpha dan Composite Reliability

| Variable                   | Cronbach's Alpha | Composite Reliability |
|----------------------------|------------------|-----------------------|
| Just in Time               | 0,900            | 0,923                 |
| Total Quality Management   | 0,731            | 0,824                 |
| Production Cost Efficiency | 0,903            | 0,932                 |

Based on table 4 above, it shows that Cronbach alpha and composite reliability show that the overall construct has a value above 0.70, so it can be said that all variables in this research model have internal consistency reliability.

Structural Model

(Afnan-Holmes et al., 2015) Inner model testing was carried out to determine the relationship between constructs, significance values and R-Square and other models. This model was evaluated using R-Square for the dependent construct T Test and the significance of the structural path parameter coefficients.

Structural capital testing was carried out to see the relationship between constructs, significant values and R-Square of the research model. This model was evaluated using R-Square for the dependent construct T Test and the significance of the structural path parameter coefficient.

The model research process with PLS, starting by looking at the R-square, is as follows:

Table 5. Nilai R-Square

| Variabel                   | R Square |
|----------------------------|----------|
| Production Cost Efficiency | 0,621    |

From table 5 above, it can be seen that the R-square value for the financial distress variable is 0.621. The results show that 62.1% of the financial distress variable is influenced by solvency, liquidity and Good Corporate Governance variables, while 37.9% is influenced by other variables outside those studied.

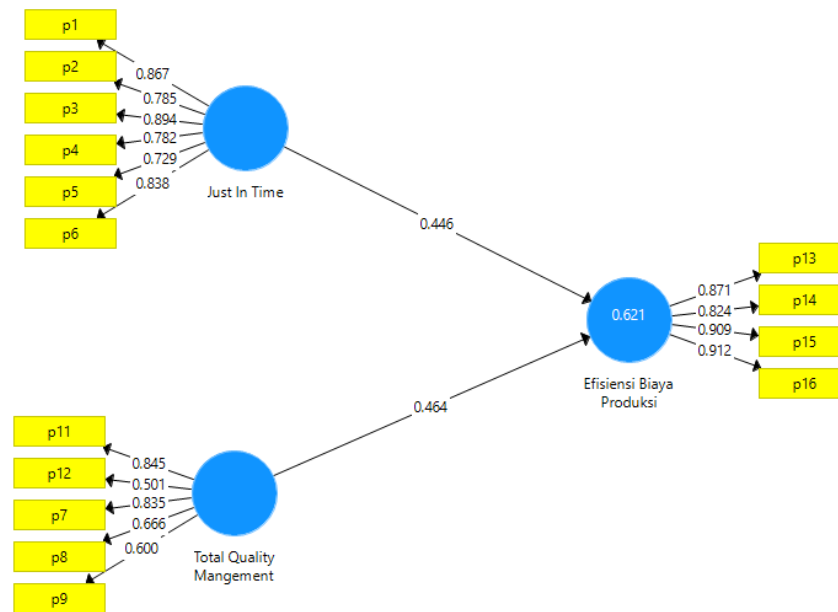


Figure 1. Structural Model

Hypothesis Test

The basis for testing the hypothesis in this research is to use the values contained in the output path coefficient. Statistical value by hypothesis testing, for alpha 10% the statistical value used is 1.96. So the criteria for accepting or rejecting a hypothesis is if the t-statistic used is > 1.96, meaning Ha is accepted and Ho is rejected. Acceptance or rejection of the hypothesis with probability means that Ha is accepted if the p value < 0.005 (Ghozali, 2014). Below is a table for testing structural models:

Table 6. Uji Hipotesis

| Hipotesis | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics ( O/STDEV ) | P Values |
|-----------|---------------------|-----------------|----------------------------|--------------------------|----------|
|-----------|---------------------|-----------------|----------------------------|--------------------------|----------|

|  |       |       |       |       |       |
|--|-------|-------|-------|-------|-------|
| Just In Time -> Production Cost Efficiency             | 0,446 | 0,445 | 0,062 | 7,150 | 0,000 |
| Total Quality Management -> Production Cost Efficiency | 0,464 | 0,468 | 0,053 | 8,686 | 0,000 |

Testing of research results using SmartPLS was carried out statistically for each hypothesized relationship using simulation. In this case, it is calculated using a bootstrap on the sample. Testing with a bootstrap is intended to minimize the problem of non-normality of research data.

The following are the results of testing with bootstrap from SmartPLS analysis:

a. Just In Time has a positive effect on Production Cost Efficiency

Hypothesis H1 which states that just in time has a positive effect on production cost efficiency is proven. This is because the results of testing the H1 hypothesis show that just in time production cost efficiency shows a path coefficient value of 0.446 and a t-statistic of 7.150, which is a value greater than 1.96. P-Value is 0.000. P-value (0.000) <  $\alpha = 5\%$  (0.05). This means that just in time has a significant effect on production cost efficiency. Thus hypothesis H1 is accepted.

b. Total Quality Management has a positive effect on Production Cost Efficiency

Hypothesis H2 which states that Total Quality Management has a positive effect on production cost efficiency is proven. This is because the results of hypothesis testing H2 show that Total Quality Management with production cost efficiency shows a path coefficient value of 0.464 and a t-statistic of 8.686, which is a value greater than 1.96. P-Value is 0.000. P-value (0.000) <  $\alpha = 5\%$  (0.05). This means that Total Quality Management has a significant effect on production cost efficiency. Thus hypothesis H2 is accepted.

## Discussion

Based on the final results of the analysis and each test that has been carried out, a discussion will then be carried out regarding the data processing in this research, so that it can show an overview of the influence of each variable, both direct and indirect relationships in the research. Some of the variables in this research are Total Quality Management and Just In Time as Independent variables (x) and Cost Efficiency as the Dependent variable (y).

### The Effect of Total Quality Management on Cost Efficiency

The ability to implement total quality management always focuses on how to use resources and labor optimally so that time and costs can be made efficient, so that CV DAENG's food business is able to maximize it (Hasanah & R. Pandin, 2021). Where the results of this research are supported by (Abbas, 2020) where he states that increasing cost efficiency can be done, among other things, by reducing production costs without reducing product quality. then research conducted by (Gunasekaran et al., 2019) Reducing production costs in a company can be done by applying the concept of Total Quality Management (TQM), so that the production process can reduce waste and optimize the use of resources, both natural resources and human resources. Reducing waste and optimizing resources will produce quality products, without any defects which of course will cause losses for the company (Firman et al., 2020). For this reason, it is necessary to improve the design, standards and good work procedures in the company without ignoring the value of efficiency.

### The Effect of Just In Time on Cost Efficiency

According to Supriatna (2013) Every situation in a company requires a measurable timeline so that efficiency, both in terms of costs and time. Becomes an indicator of consumer assessment in each culinary business itself, so CV Daeng always prioritizes

alertness in this regard. This research is supported by (Stevenson, 2014) who stated that Just In Time (JIT) is a highly coordinated processing system where goods move through the system and services are carried out exactly when they are needed. then research conducted by (Aprilianti & Hidayat, 2019; Istiqomah et al., 2023) Inventory control in a company plays an important role in developing a business, because inventory control will affect cost efficiency, business profits and smooth production. So, with company control, it is hoped that it can help with company problems so that the production process continues to run smoothly.

#### 4. CONCLUSION

Based on the research results and discussion in this research, the influence of Just In Time and Total Quality Management on Production Cost Efficiency at CV Daeng Kuliner Makassar can be concluded as follows: The research results show that partially the Just In Time variable has a positive and significant effect on Production Cost Efficiency at CV Daeng Kuliner Makassar; The results of the research show that partially the Total Quality Management variable has a positive and significant effect on Production Cost Efficiency at the CV Daeng Kuliner Makassar Restaurant; And The research results show simultaneously that the variables Just In Time and Total Quality Management have a positive and significant influence on Production Cost Efficiency at CV Daeng Kuliner Makassar.

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