

# Analysis of Variance Quality Culture on a Different Scale Production

Ayi Tejaningrum

**Abstract**— Production scale reflects a company's performance, high-scale production show that the company has a good business performance. One factor supporting the achievement of the scale of production is the implementation of a quality culture. This study wanted to see if there is a difference in the quality of the cultural significance of the implementation of the different production scale, by using descriptive qualitative research methodology by taking a sample of 34 SMEs in the food industry. Anova one way of testing with the help of Minitab 16 software obtained F value of 114.20 with a P value 0.00, shows that there is a significance difference in the average execution quality culture at different production capacities. This indicates that culture plays an important role in improving the quality of production capacity.

**Keywords**— Analysis of Variance, SMEs, Scale Production, Quality Culture.

## I. INTRODUCTION

THE company has a requirement for a quality oriented , considering the quality becomes dominant in winning the competition . The long history of the concept of quality in the company by presenting some quality improvement methods include TQM , Six Sigma , QFD , QCC , Kaizen , Servqual , etc. All of these methods are directed to how the company can deliver the product without defects . To achieve this, the company should be able to build a culture of quality so that the orientation on customer satisfaction levels both internally and externally into a habit . This study aimed to see if there are differences in the implementation of quality culture on SMEs (Small Medium Enterprises) with different business scale . Researchers have confidence that the culture of quality will affect the level of production capacity , where the higher the value of a quality culture among the employees of the company , the higher level of production kepatitas , because of internal and external customers will be more satisfied. field conditions at the time of preliminary surveys plasticity was no difference in the process of handlers quality on a scale of micro, small and medium enterprises.

### A. Aims and Objectives of research

- To see how the implementation of a quality culture in SMEs based on different production capacity
- To see the differences in the implementation of quality culture in SMEs based on a different scale of business

Ayi Tejaningrum, Management Departement, STIE EKUITAS, Bandung Indonesia. (e-mail : ayitejaningrum@yahoo.com)

## II. CONCEPT OF QUALITY

### A. Concept of Quality

Although there is no accepted definition of quality in abundance universal, there are enough similarities between definitions so that elements of the same element can be extracted. elements of the same element is 1) include the quality meets or exceeds customer expectations 2) applies to the quality of products, services, people, processes and the environment 3) Quality is an ever-changing circumstances (Goetsch and Davis 1997:3).

The quality of the resulting product is oriented to the form of goods or services , generally the quality can be defined as a specification that is expected by consumers and are dynamic over time . The concept refers to the quality of what is delivered , Goetsch & David ( 1997 : 3 ) , Shigeru Mizuno ( 1997 : 6 ) . Juran (1995 : 9 ). In general, quality is defined as follows (Tejaningrum, 2012) :

- Meet the specifications that match or even exceed the expected customer specifications , customer both internal and external customers where the specification should include specifications for goods and services to deliver them;
- The quality is dynamic in line with changing consumer behavior over time;
- Quality dimensions should be sourced from the perception of consumers, not producers;

### B. Concept of culture

For the concept of culture refers to what is conveyed by Graves (1986 ) was as a pattern of all arrangement , either material or behavior that has been adopted by the community as a traditional way in solving the problem of its members . Culture therein also includes all the ways that have been organized, beliefs, norms, and values implicit culture, and the fundamental premise and contains a command. Schein (in Carrel.1997) defines organizational culture, namely as

- The philosophy that guide an organizations policies toward its employees and customers
- Norm of behavior that evolve in working group
- Politics
- The rules of the game for getting along in organization
- The climate of work which conveyed by the physical layout and The way people interact
- Behavior of people when they interact such an the language and demeanor the social interaction

The concept of organizational culture one presented by Kreitner and Kinichi (2014:63) is a set of assumptions that are shared and accepted implicitly granted and held by a group that determines how it feel, think and react to diverse environments. Edgar Schein (in Ivancevich, Matteson Konopaske and 2006, 44) describes organizational culture as a pattern of basic assumptions that have been created, discovered, or developed by a particular group while learning to face problems of external adaptation and internal integration that has been running well enough to be considered valid and therefore, to be taught to new members as the correct way to perform, thinking, and feeling in relation to the problems they face

The concept of culture is also conveyed by Kreinet and Kinichi (2014), Matsumoto (1996), Robbins (1990), based on the concept of the source authors conclude that culture is a value shared by all community organizations either in writing or not, and make a habit of behavior is believed to be expressed in organizational life. As for the concept of quality culture refers to what is conveyed by Goetsch and Davis (1997: ) is an organizational value system which produces an environment that is conducive to the establishment and continuous quality improvement . It consists of the values , traditions , procedures and expectations that promote quality .

### C. Concept of Quality Cultured

Furthermore Goetsch and Davis expressed the organization adopted the characteristics of the cultured quality , namely 1 ) the behavior that matches the slogan 2 ) customer input was actively sought and used to continuously improve the quality of 3) employees engaged and empowered 4) workers do in a team 5) manager loyal and engaged executive level , the responsibility for the quality of not delegated 6) disedikan sufficient resources where and when needed to ensure continuous quality improvement 7) education and training provided to ensure that employees at all levels have the knowledge and skills needed to improve the quality continuous, 8) system of rewards and promotions are based on contributions to the continuous quality improvement 9) fellow employees as internal customers see 10) the suppliers involved as a partner . Based on this, the authors conclude that quality culture is as a system of values which is believed and practiced by employees ranging from leadership down to the lowest level with respect to the measures to be compliance with the specifications that are expected by consumers .

### D. SMEs Concept

The concept of SMEs used in this study using the concepts presented in the Law of the Republic of Indonesia No. 29 of 2008, and translated into the absorption material in the form of soybean as the main raw material industry.

TABLE I  
PRODUCTION CAPACITY

	Production capacity	Number SMEs
micro	Max 1500 kg	14
small	1500 - 3000	12
medium	>3000 kg	8

Sources : Tejaningrum 2012

### E. Analysis of Variance

Analysis of variance, or ANOVA, is a powerful statistical technique that involves partitioning the observed variance into different components to conduct various significance tests. This article discusses the application of ANOVA to a data set that contains one independent variable and explains how ANOVA can be used to examine whether a linear relationship exists between a dependent variable and an independent variable. Sum of Squares and Mean Squares The total variance of an observed data set can be estimated using the following relationship: (<http://www.weibull.com/hotwire/issue95/relbasics95.htm>)

$$s^2 = \frac{\sum_{i=1}^n (y_i - \bar{y})^2}{n - 1}$$

Where:

- $s$  is the standard deviation.
- $y_i$  is the  $i$ th observation.
- $n$  is the number of observations.
- $\bar{y}$  is the mean of the  $n$  observations.

## III. RESEARCH METHODOLOGY

The study population was typical food industry SMEs centers Sumedang City West Java Indonesia , which is called the " Tahu " . Based on the production capacity , the population is divided into three business scales : micro, small and medium enterprises . The number of samples taken there were 34 crafters consists of 14 micro , small 12 and medium 8

### A. Research Methods

The method used in this research is descriptive qualitative method. Where data are described only descriptively to describe the circumstances that exist.

### B. The research hypothesis

- $H_0 : \mu_1 = \mu_2 = \mu_3$
- $H_1 : \mu_1 \neq \mu_2 \neq \mu_3$

$\alpha$  95%

The research hypothesis states that there is a significance difference between the scale of the business with the implementation of quality culture, or in other words there are cultural differences in the quality of various scales of business. It is aligning with the idea presented by Gordon (in Djojosantoso:2005) which states there is a difference in the industry sector, Kotter and Heskett that the significance of the impact of organizational culture on organizational

performance, Lorsch mentioned that there is a close relationship between strategic decision -making with corporate culture is growing in significance and impact the company's performance. (in Djojasantosso: 2005)

*C. Research Variable*

Research indicators to measure the implementation of quality culture, using what is conveyed by Goetsch and Davis (1997: 120). Assessment using a value of 1 to 5, where 1 means not at all meet these criteria, 5 means that more meets these criteria.

TABLE II  
CULTURE ASSESSMENT QUALITY INDICATORS

IndicatorS					
all employees know the organization's mission	1	2	3	4	5
all employees know their role in helping the organization achieve its mission	1	2	3	4	5
Executive management loyal to continuous improvement on quality , productivity and competition	1	2	3	4	5
workforce management treated as a valuable asset	1	2	3	4	5
the existence of a continuous open communication at all levels of the organization	1	2	3	4	5
the existence of an internal partnership of mutual support between management and employees	1	2	3	4	5
the existence of an internal partnership of mutual support among employees	1	2	3	4	5
quality specified by the customer , internal and external	1	2	3	4	5
customers participate in product development cycle	1	2	3	4	5
employees involved in the decision-making process	1	2	3	4	5
employees are empowered to contribute their ideas	1	2	3	4	5
process performance is measured scientifically	1	2	3	4	5
scientific data used in the decision-making process	1	2	3	4	5
employees receive the education and training they need to continuously improve performance	1	2	3	4	5
all employees at all levels are expected to maintain high ethical standards	1	2	3	4	5

Description value of 1,2,3,4,5 is the company's response to the implementation of a quality culture with assessment (1 ) do not meet these criteria at all , ( 5 ) more meets this criteria

IV. RESULTS AND DISCUSSION

*A. Profile of SMEs Quality Culture*

Profile of SMEs based on the quality of culture of different capacities, can be seen in the following table

TABLE III  
PROFIL OF SMES BASED ON THE QUALITY OF CULTURE OF DIFFERENT CAPACITIES

micro	Small	medium
44	62	72
43	61	70
44	58	67
38	63	73
36	65	69
41	54	71
37	46	68
44	67	66
39	66	
42	61	
40	63	
43	60	
44		
45		
52		

source : processed from field data

From the table it appears that of the 15 variables which measures the quality culture assessment using a Likert scale (1-5 ) shows that the average value at the micro scale is lower than medium scale and small scale lower than the scale of being . Seen on a scale of being with a production capacity above 3000 kg, has a value of implementing higher quality culture.

V. ANALYSIS OF VARIANCE

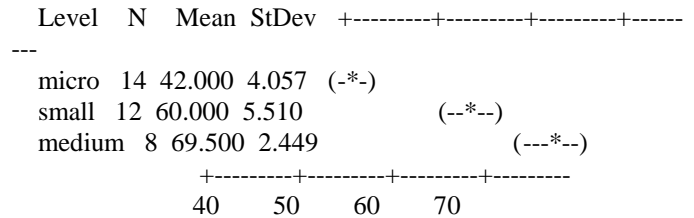
By using Minitab 16 Annova test one way based on the data in the table showed the following results:

**One-way ANOVA: micro, small, medium**

Source	DF	SS	MS	F	P
Factor	2	4346.9	2173.5	114.20	0.000
Error	31	590.0	19.0		
Total	33	4936.9			

S = 4.363 R-Sq = 88.05% R-Sq(adj) = 87.28%

Individual 95% CIs For Mean Based on Pooled StDev



Pooled StDev = 4.363

By using a 95% confidence level obtained at 114.20 F count indicates that there are differences in the average execution quality on a scale cultures of different businesses. With the help of the chart more convincing opinion.

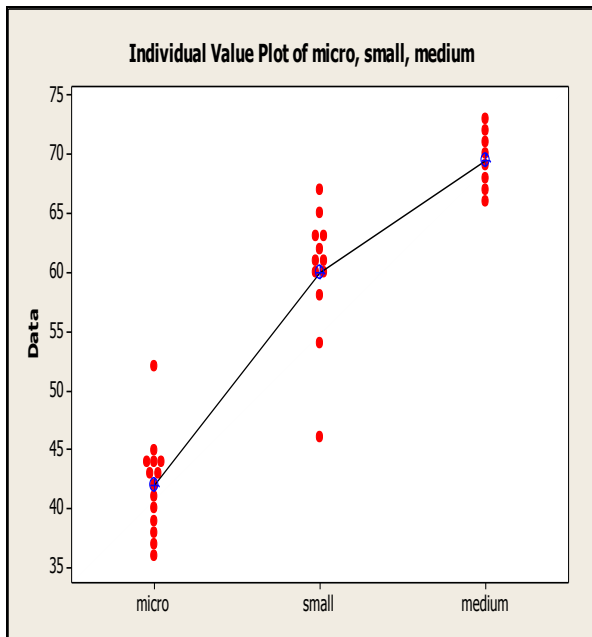


Fig. 1 Individual Value Plot of Micro, Small, Medium

Seen that the higher the implementation of quality culture, the higher the company's production capacity. It can thus be concluded that the culture could be a distinguishing quality of production capacity, which reinforces the previous opinion of this condition that will affect the quality of cultural significance on the performance of the company.

## VI. RESULTS AND DISCUSSION

### A. Conclusion

Implementation of a quality culture medium on production scale better with the average value of the total value of production 69.5 on a scale smaller than the average value of the total 60 while micro -scale enterprises have an average value of a total of 42 or implementation of a very low quality culture.

Implementation of cultural values to the lowest in quality, especially in low commitment of leaders to create a culture oriented to customer satisfaction

From the analysis of variance obtained significance of differences in the implementation of quality culture at different production scales

### B. Suggestion

The Government should continue to enhance its role in order to form a habit or a quality culture among industrial micro, small and medium enterprises through training and extension activities and other activities that support Micro-businesses should get more attention in helping readiness leaders committed to high quality products in an effort to meet do further study, especially with regard to the causes of low quality cultural barriers in the micro and small scale.

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