

Analysis of quality control toward Ultra Milk

Case study: PT Ultra Jaya Milk Industry

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ABSTRACT

Purpose – This Research objective is to find the cause of each type of failure by using the fishbone diagram (fish-bone diagram) along with proposals to overcome

Design/methodology/approach - Descriptive method used to conduct research and qualitative and quantitative analysis is used to analyze the data.

Findings - After analyzing the results the total production from January to December 1999 was 6,874,258 liters with a total of 34 484 liters of product failure or equal to 0.501%. The largest percentage change in taste is the biggest failure of the product to become acidic, which is 69.53%, while other types of failure that is the packaging of the product becomes bloated with percentage of 30.70%

Research limitations/implications – This research method of measurement of variables from the quality viewed as a whole (global) is less specific, so that in future studies measuring the quality of more specific variables based on the dimensions of customer such as Reliability, Responsiveness, Competence, Access, communication, and Tangibles.

Practical implications – Fishbone diagram in practice can be used as a tool to identify the cause of the failure of a product.

Originality/value – This research is a new way to look a failure by using the fishbone diagram (fish-bone diagram) along with proposal to overcome

Keywords – Quality control, Fishbone Diagram

Paper type – Research paper

1. Introduction

Seeing the situation of an increasingly global marketplace at the moment, many companies engaged in similar industries especially food and beverage industry, so competition is happening more and more strict. Companies must be able to automatically analyze strengths weaknesses, opportunities and threats owned companies to sustain its existence

Given that consumers of a products at this time is more critical view of the quality of a product mainly of food products and beverages, then in the end only good

quality products and to meet the needs of customers who can be accepted by consumers

Quality is the one important element in producing the product, because the element of this quality is actually covered the functions of a product in accordance with what is expected and in accordance with product usage, the specifications and standards set by the company

In order for the company to maintain its existence the company should be able to improve both the quality control of raw materials, final products, as well as ongoing production process because the presence of quality control, in addition to improving product quality, also can keep the product specifications have been defined so as to reduce the number of products. The resulting damage.

Research objective is to find the cause of each type of failure by using the fishbone diagram along with proposals to overcome

2. Relevant Work which is done, The Term Under layer

Competition is getting tight, causing the quality of production of the company becomes a measure of the success of companies competing in the competition

2.1. Quality

The definition of quality according to The American Society for Quality (Ross Johnson and William D. Winchell was quoted as saying by Jay Heizer and Barrie Render, 1996: 78).

“Quality is the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs”.

Other definition of quality according to Everret E. Adam, Jr. dan Ronald J. Ebert (Everret E. Adam, Jr. dan Ronald J. Ebert, 1992:1) :

“Quality or product Quality is the degree to which the design specifications for a product are appropriate to its functions and use, and degree to which the product conforms to its design specifications”.

While the notion of quality according to Dale H. Besterfield based on ANSI/ ASQC standard A3-1983 as follows (Dale H. Besterfield, 1994:1) :

“Quality is all the features and characteristics of a product or service that contribute to the satisfaction of customer’s needs. These needs involve price safety, availability, maintainability, reliability, and usability.

Quality is conformance to specification and degree of conformance is the measure of quality”.

2.2. Quality Control

According to A.V. Feigenbaum in his book Total Quality Control, the notion of quality control is (A. V Feigenbaum, 1991:6) :

“Quality control is an effective system for integrating the quality development, quality maintenance, and quality improvement efforts of the various group in a organization”.

2.3. Tools Assist in Quality Control

In quality control activities normally use tools to process data or analyze the data before the problem solved. The tools commonly used in existing seven. The seven tools are :

1. Check Sheet

Check sheet is a form, where the items will be checked have been printed in that form, with the intention that the data can be collected easily and concisely

2. Pareto Diagram

Pareto diagram is a bar graph that shows the problem in order of number of occurrences. Basically pareto diagram can be used as a tool of interpretation for (Vincent Gasperz, 1998: 53) :

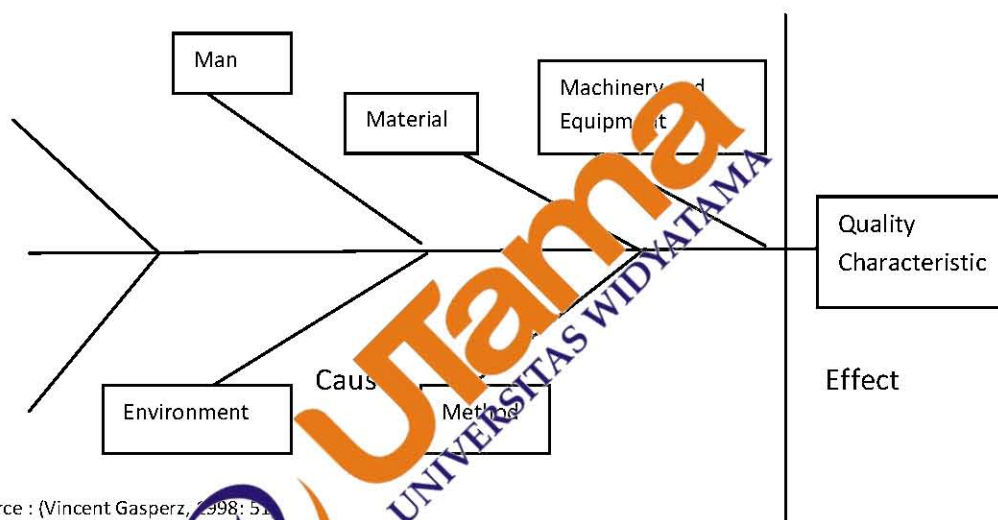
- ❖ Determine the relative frequency and order of importance the problems or the cause of the problem.
- ❖ Focusing attention on critical issues and important through the act of ranking to the problems or the causes of the problem in the form of a significant

3. Cause-And-Effect Diagram

The function of a Cause and Effect Diagram is (Vincent Gasperz, 1998:51) :

- ❖ Identify the root cause of the problem
- ❖ To generate the ideas for solutions to a problem
- ❖ Assist in the investigation of further fact-finding

Picture 2.1.
FISHBONE DIAGRAM



Source : (Vincent Gasperz, 1998: 51)

4. Histogram

Histogram can be used as a tool for (Vincent Gasperz, 1998: 69) :

- ❖ Communicate information about the variation in the process
- ❖ Assist management in making decisions that focus on improvement effort (continuous improvement effort).

5. Scatter Diagram

Scatter Diagram is a tool used for data interpretation

6. Run Chart

Run Chart is a form of a line graph that used as an analytical tool to collect and interpret data (Vincent Gasperz, 1998 : 101)

7. Map Controls

Map controls were first introduced by Dr. Walter Andrew Shewart of *Bell Telephone Laboratories, USA* in 1924 with the intent to eliminate the abnormal variation through the separation of variation due to specific causes (special causes variation) of the variation caused by common cause (common- causes variation)

3. DESIGN, MODEL, AND IMPLEMENTATION

Research objects are PT. Ultra Jaya Milk Industry, This study uses descriptive research method that attempts to describe phenomena related to population, subjects or estimate the proportion of the population that has a particular characteristic. In this research data collecting technique done by interview and observation

4. RESULT

Quality control will determine good and bad product. Therefore quality control is needed in all activities of the company's operations from the planning until the product reached the market

4.1. Percentage of failed products PT. Ultrajaya Milk Industry & Trading Co. Tbk

This Study focused only to ultra dairy products, In the table below you can see the percentage of failed products :



Table 4.1.
Percentage of failed products
PT. Ultrajaya Milk Industry & Trading Co. Tbk.
Januari-Desember 1999

Month	Total Production (Litre)	Total Failed Products (Litre)	Presentase Produk Gagal (%)
January	609469	5800	0.95
February	469840	302	0.06
March	474390	789	0.17
April	372440	1960	0.53
May	651595	880	0.14

June	616189	2073	0.34
July	478862	187	0.04
August	714451	3106	0.43
September	612938	14385	2.35
October	811768	3204	0.4
November	618752	1110	0.18
December	443564	688	0.15
Total	6874258	34484	0.5

Sumber : PT. Ultrajaya Milk Industry & Trading Co. Tbk.

The average percentage of failures of the entire production process is 0,5% per month. In September occurred the highest percentage of failure is 2,35%, and the smallest percentage of failures occurs in July, which is 0,04%

4.2. Types Of Failure

For dairy products ultra product failure can be known after the product is in the packaging and the product is stored in an incubator chamber with Sterility test and Organoleptic test.

After products are tested Sterility type of failure usually happens is the product packaging bloated, this happens because there is formation of gas produced from bacteria, if the product is tested organoleptic, product failure is usually the case shown by the change in taste and formation of acid.

Table 4.2.
Total and Percentage product failure by type of failure
Bulan Januari-Desember 1999

Month	Total Product failure by type of failure		Total	Percentage of Product failure by type of failure		Total
	Bloated	Acidic		Bloated	Acidic	
January	2	5584	5800	3.72%	96.28%	100%
February	239	63	302	79.14%	20.86%	100%

March	656	133	789	83.14%	16.86%	100%
April	574	1386	1960	29.29%	70.71%	100%
May	294	586	880	33.41%	66.59%	100%
June	1788	285	2073	86.25%	13.75%	100%
July	166	21	187	88.77%	11.23%	100%
August	1432	1674	3106	46.10%	53.90%	100%
September	771	13614	14385	5.36%	94.64%	100%
October	2789	415	3204	87.05%	12.95%	100%
November	1046	64	1110	94.23%	5.77%	100%
December	614	74	688	89.24%	10.76%	100%
Total	10585	23899	34484	-	-	-
Rata-rata	882	1992	2874	30,70%	69.30%	100%

Source : PT. Ultrajaya Milk Industry & Trading Co. Tbk.

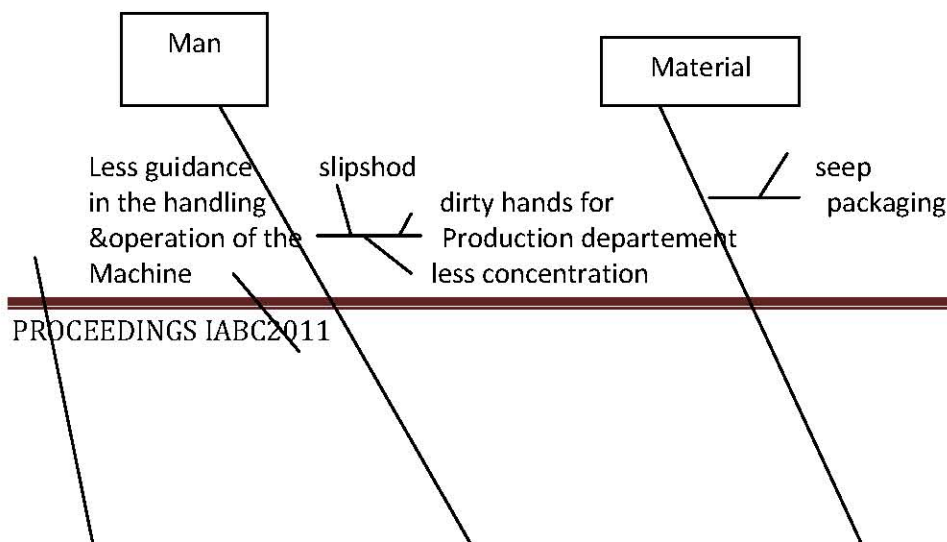
The average percentage change in taste is the biggest failure of the product to become acidic, which is 69.30%, while other types of failure that is the packaging of the product becomes bloated with percentages of 30.70%.

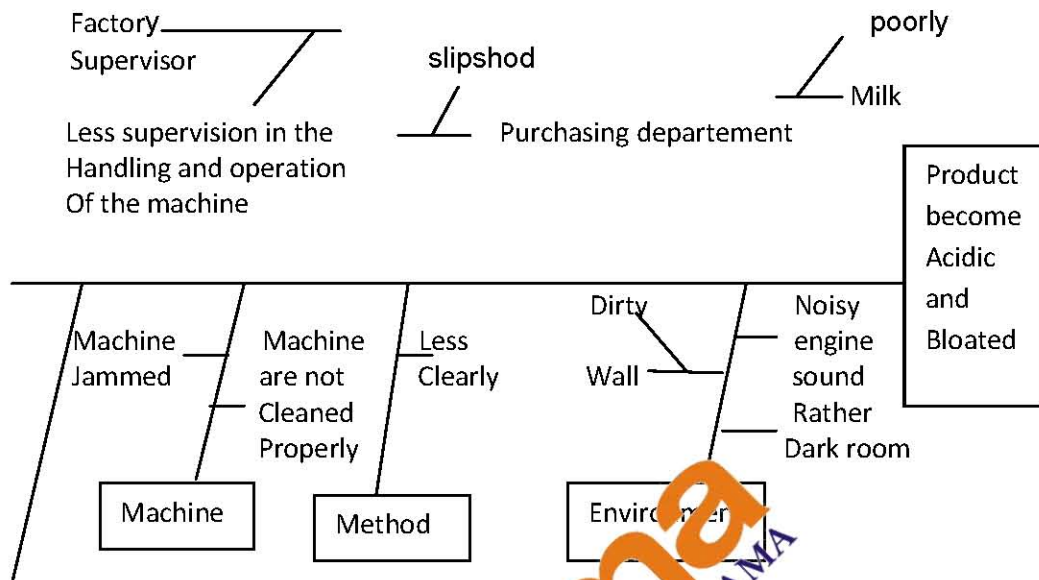
4.3 Analysis of factors that cause the failure of products with fish bone diagram

The factors causing the failure of the product must be analyzed and repaired and looking for ways to overcome, so the error does not occur in subsequent production processes.

Picture 4.1

Fishbone diagram for product failure become acidic and bloated





From the above table can be seen the factors that cause product failure, improvements that can be done by the company are:

1. **Man**, the Company should be required employees to be more obedient, orderly, thorough, and independent work. Companies also should attach a written employment regulations for discipline employees also created a better working method for each employee. Companies also must improve the relationship of communication between superiors and subordinates.
2. **Equipment and Machinery**, the Company should conduct periodic maintenance of the machine, and checking the machine before the machine is used.
3. **Materials, Methods, Environment**, the Company should pay attention to standards for better quality again for the material to be used. Companies also should make work procedures more systematic and clearer

5. CONCLUSION

1. The average failure rate of products by an average of 0.5% per month
2. The average percentage of product failure modes :
 - 30,70 % packaging of the product becomes bloated
 - 69,30 % product to become acidic
3. The factors that cause product failure are : Man, Machine and Equipment, Material, Method, Environment

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