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Quality control analysis of Best Fried Chicken (BFC) products in Prabumulih City

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ABSTRACT
The development of an increasingly advanced era requires all business people to innovate, maintain and improve the quality of their respective products. Best Fried Chicken (BFC) is a company engaged in the culinary field that sells fast-food fried chicken products with a partnership system in its business activities. Best Fried Chicken (BFC) Prabumulih City always pays attention to the quality of its products by controlling their quality. However, customers often still need to give more favourable comments about the quality of fried chicken products at Best Fried Chicken (BFC) in Prabumulih City. One way to control product quality is with Statistical Process Control (SPC). This study aims to analyze whether the product quality control at Best Fried Chicken (BFC) in Prabumulih City is still within tolerance limits and to determine the causal factors that affect the quality of the product. The products studied were fried chicken products produced from January 4th to February 2nd, 2023, with the result that the level of damage was still within tolerance limits. According to the cause and effect diagram, the main damage factor is people, methods, and raw materials. The most dominant product damage among the types of scorch damage, inappropriate size, and hard texture is damage to the size that does not match the most dominant causal factors found in humans and methods. Quality control at Best Fried Chicken (BFC) in Prabumulih City can be further improved from all aspects, both humans and the methods used, so that that product damage can be minimized and quality control can run effectively.

KEYWORDS
Quality Control; Statistical Process Control; BFC; Prabumulih

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Introduction

Today's increasingly sophisticated era necessitates that all individuals increase one another's productivity in the business world. In order to maintain their businesses, businesspeople in Indonesia are required to think more creatively and innovate continuously. Intense business competition influences environmental conditions in a way that enhances consumer preferences, thereby influencing the level of consumer demand necessary to meet a need. Controlling the quality of the products manufactured is one of the most vital factors for the survival of a business. According to Lasander (2013), product quality has a significant impact on consumer satisfaction and is closely tied to the creation of company profits. According to Helena Anggica et al. (2020), if quality control is executed effectively, it will have a positive effect on the quality of the company's products. A company must maintain and enhance product quality and the quality of its production activities by implementing effective quality control to boost product quality. Quality control, according to Montgomery DC (2009), is an engineering and management activity. If there is a discrepancy between the actual appearance and the standard, we can measure the product's quality characteristics, compare them to the specifications or requirements, and take the necessary precautions. Whether a product's quality is excellent or not is determined not only by its end result, but also by every aspect of its production activities. Quality control is also performed to minimize the number of defective products produced by a company in the event of an error that will result in financial losses; therefore, the company must pay close attention to the quality of its products. In such a scenario, the company's operational activities will be plagued with problems, which will reduce consumer satisfaction with its products.

To conduct out quality control in production activities, there must be multiple stages and a method for determining whether the quality of the product is satisfactory. Setia Bakti et al. (2020) state that quality products can be manufactured in accordance with company specifications by implementing quality control. According to Sopyan Saori (2021) and Syarif et al. (2017), their quality control analysis utilized statistical quality control methods to obtain data on failure products in every production activity by employing multiple data analyses, including Pareto Diagrams, Cause and Effect Diagrams, and Control Charts. According to research conducted by Immanuel Sihombing (2017), quality control effects the quality of the production process and quality costs; therefore, by maintaining quality control, businesses can reduce and streamline costs, including production costs and quality costs. According to Prstavka et al. (2016) and Colledani & Tolio (2006), every quality control will influence a company's operational production activities and system performance.

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Changes in the consumption habits of various individuals have spawned the concept of convenient food delivery. One of these is the type of fast cuisine consumed. There is no need to start a new profession, so many shareholders in the fast-food restaurant industry have embraced this business opportunity locally and internationally. The PT Cipta Aneka Selera brand is one of the entities that operate Best Fried Chicken fast food restaurants. With increasing competition and the emergence of new pioneering competitors among large competitors, the company can make numerous efforts to surmount this competition. BFC is one of the indigenous fast-food brands in Indonesia that operates using a partnership model. In contrast to the products of competitors, BFC offers affordable fast food and beverages that consumers can experience directly. The signature dish at this BFC is flour-wrapped fried poultry. BFC also offers geek chicken, burgers, french fries, sausages, chicken sirloin, spaghetti, and nuggets in addition to fried chicken. Best Fried Chicken (BFC) has numerous competitors in the fast food industry, particularly in the fried chicken industry. Best Fried Chicken (BFC) is a well-known fast food restaurant in several Indonesian cities, including Prabumulih, South Sumatra. The Best Fried Chicken (BFC) restaurant can be found at Lingkar St. No. 183, Gunung Ibul, Prabumulih. This restaurant has a large space and a tranquil ambiance, making it ideal for family gatherings. This restaurant has two ordering systems for its products; the first system orders directly to the clerk, while the second system is given a menu from which to order the product.

Quality is directly related to consumer satisfaction, so business actors who want to win the competition in the business world must put forth maximum effort in this area. According to Diana (2021), consumer contentment will increase in proportion to the quality of a company's products. Full attention to the aspect of product quality will have a positive effect on the enterprise in two ways: on production costs and on revenue. The impact on production costs is caused by operational product processes that have a high level of conformity to existing standards so that they are free from the level of damage that is likely to occur; consequently, the production or operational processes of a business that prioritizes quality will produce quality products that are free from damage and avoid unnecessary costs, resulting in lower production costs per unit and more competitive product prices. A company's production process must be effective and efficient, so implementing appropriate and structured quality control is essential. However, in this study, the issue is limited to controlling the quality of BFC's products because, according to data from business owners and a survey of several BFC consumers, the occurrence of product quality problems is found in the output of chicken products that do not adhere to the established quality standards and do not meet consumer expectations. Businesspeople and personnel have performed their duties to the best of their abilities. However, in every production activity at Best Fried Chicken (BFC), there are still defects or damage to the chicken products; therefore, BFC must conduct quality control to counteract this.

The proprietor of Best Fried Chicken (BFC) in Prabumulih stated that fried chicken products are of high quality if they adhere to the company's specifications or quality standards and have damage tolerance limits of less than or equal to 5%. The average degree of damage is 5.99%, which exceeds the company's damage tolerance limit. According to Supardi and Dharmanto (2020), the damage to BFC fried chicken products that exceeds the limit can influence sales and consumer confidence, despite the fact that each BFC location has unique issues. Then, according to Diana's research from 2021, product quality and minimal damage are factors that can influence consumers' purchasing decisions. Market conditions and consumer demand also have a significant impact on a company's ability to maintain its business. Price, advertising, and product quality can affect the degree of consumer demand. Product quality is an essential consideration for consumers when making a purchase. According to Kotler and Armstrong in Widjoyo Putro Shandy et al. (2014), the relationship between product quality and the product's capacity to perform its functions has an effect on sales results. If consumers are satisfied with a product that was purchased with a focus on quality, this will result in customer loyalty and future purchases. Production activities are not yet perfect; there are errors such as burnt fried chicken, chicken with a tough texture, chicken that is the wrong size, raw materials whose quality does not meet requirements, varying spice dosages, inconsistency in each production process, and errors in the source human resources; this will inevitably result in products that are damaged and do not meet the expected and predetermined quality standards. The damage or discrepancy is a loss for the company because damaged and inferior production must be discarded and reduces consumer satisfaction with the product. A business is effective if its products are of sufficient quality to influence consumers to make future purchases.

Literature review

Operations Management

Management operation is an essential management component for overseeing, planning, and directing all company production activities. The company's operational activities are intricately intertwined with the planning and regulation of raw materials, energy, quality, information, consumer needs, production capabilities, finances, and other outputs. Observing the increasingly sophisticated business development in various food industries, including small, medium, and large businesses, they employ operational management to carry out their production activities.

Quality

American Society for Quality explains the definition of quality according to Heizer & Render (2013) in Operations Management: Sustainability and Supply Chain Management: "Quality is the totality of features and characteristics of a product or service that affect its ability to satisfy a stated or implied need." According to Andespa's definition of quality in Sopyan Saori (2021), quality can be interpreted as desirable characteristics, such as utility and

customer satisfaction. According to Kotler, Phillip, and Kevin Keller (2013), product quality is the ability of a product to perform its functions; this ability includes the product's overall durability, dependability, and precision. Every company that processes and transforms raw materials into a product that can be used to satisfy consumer needs requires quality. Before being accepted by end consumers, businesses must prioritize quality and focus on product quality.

Quality Control

According to Ahyari in Syarif et al. (2017), quality control is an activity (company management) to maintain and direct in order to maintain product and service quality as planned. Vincent Gasperz explains in Yuliyarto and Surya Putra Yanuar (2014) that quality control is an operational activity and technique used to satisfy quality requirements. Quality control is an engineering and management activity that allows us to measure the product's quality characteristics, compare them to specifications or requirements, and take the necessary precautions if their appearance deviates from company standards.

According to Gryna in Puryanti (2007), quality control is considered to be within control limits if common causes cause only errors and if there are important benefits, namely:

1. The process has stability that enables the organization to predict behaviour, at least in the short term;
2. The process has an identity in compiling a set of conditions that are essential for making future predictions.
3. Processes in the "limit statistical control" condition operate with less variability than processes with special causes; achieving a low variability level is essential for competition success.
4. Processes with special causes are unstable and rife with errors that must be eliminated by implementing changes to achieve improvement.
5. Suppose the process is known to be within the statistical control limits. In that case, it will guide the employees in carrying out the process, or if the data is within the control limits, there is no need to make additional unnecessary adjustments or changes.

Statistical process control

According to Heizer & Render (2013) in the book Operations Management (Sustainability and Supply Chain Management), statistical process control is a process used to monitor standards by establishing measurements and corrective actions for a produced product or service. SPC is intended to provide a statistical signal when special causes of variation occur. According to Montgomery DC (2009), Statistical Process Control is a collection of problem-solving tools useful for achieving process stability and increasing capabilities by reducing variability. It is one of the greatest technological advances of the 20th century because it is based on simple principles and can be applied to any process. From the two definitions of statistical process control provided above, statistical process control is a statistical method or tool used to monitor standards to solve problems by collecting data and performing quality control from the beginning to the end of the production process.

Method

The subject of study

This research was conducted at the Best Fried Chicken (BFC) restaurant on Lingkar St. No. 183, Gunung Ibul, East Prabumulih District, Prabumulih City, South Sumatra Province. The variable under investigation is the quality control method utilized by BFC Restaurant. This is to the issues BFC faces, namely the imperfect production process, which can lead to budget overruns due to the not-yet-optimal implementation of quality control, as evidenced by many substandard products.

Research techniques

According to Sugiyono (2009), the research method is a scientific way to gather information for a particular purpose. This study consists of survey research employing data analysis techniques. According to Sugiyono (2009), the survey method is a quantitative research method used to gather information about past or present beliefs, opinions, characteristics, behaviours, and relationships and to test several hypotheses about variables. All data and information were obtained from the Best Fried Chicken (BFC) Restaurant in Prabumulih City for this study. After the data is collected, the results will be displayed. Then, they will be analyzed to determine how well the current quality control method works if the product is still within tolerance limits and to determine the best quality control method to reduce the number of substandard chicken products.

Data and information collection method

This research requires both primary and secondary sources of information. Best Fried Chicken (BFC) owners and employees in Prabumulih City were directly observed on the job to collect primary data regarding the company's product quality control procedures. The source of secondary data is archives or company records. Examples of secondary data include the number of products produced or the number of broken products in a given production. This study may employ library research, interviews, and documentation as data collection methods. The population is the domain of generalization; objects or subjects with specific qualities and characteristics as determined by researchers are studied, and conclusions are then drawn. (Sugiyono, 2009). This study's population represents all fried chicken produced in BFC (Best Fried Chicken) Prabumulih City. BFC produces chicken products daily; therefore, this study will be conducted from January to February 2023 with a one-month observation period (30 days).

Data analysis

Using the Statistical Process Control (SPC) technique, several quality control tools will be applied to the data. The procedure is as follows:

1. Create a checklist.

Besterfield (2012) states that a check sheet is a tool that facilitates and simplifies data recording. Form and content are modified to meet the requirements of the current work. In order to facilitate data collection, it is necessary to create a form that ensures the data collected for quality control and problem-solving is entered carefully and accurately by production employees. In this study, the researcher will separate and list the data for the number of high-quality and low-quality products based on the quantity of production data. The primary causes of the issue are overcooked fried chicken, improperly sized fried chicken, and fried chicken with a tough texture as a guide for composing check sheets.

2. Construct a bar graph (histogram).

According to Montgomery DC (2009), a histogram is a portrait of a process that depicts the distribution of measurements and the frequency of each measurement. It is used to communicate information about variations in the process to aid management in making decisions centring on continuous improvement efforts. Besterfield (2012) states that histograms identify problems by analyzing the value distribution and arithmetic mean. This study employs a histogram to describe the types of damage in Best Fried Chicken (BFC)'s production activities in Prabumulih City.

3. Develop a control chart.

For the statistical process control analysis of the data in this study, a p-control chart (damage proportion control chart) was utilized. This p-control chart is necessitated by attribute-based quality control, and the data obtained and used as an observation sample are not normally distributed. If the collected data is not entirely within the control limits, Best Fried Chicken (BFC) must improve its quality control. This is evident from the p-chart if points move in unusual ways, indicating that there are still problems with the production process.

4. Create a cause and effect diagram.

In order to determine what factors cause damage to fried chicken products in Best Fried Chicken, a product damage factor analysis is conducted using a Fishbone Diagram that includes the raw materials used, the machines used in production activities, human resources, the methods employed, and environmental influences.

5. Making quality improvement proposals or recommendations

Based on the results of the cause and effect diagram, recommendations or suggestions can be made to improve product quality once the causes of product damage have been identified. The recommendations are anticipated to affect the production process's efficiency, consumer quality satisfaction, and the sales of Prabumulih City's Best Fried Chicken sales.

Results

Best Fried Chicken (BFC) in Prabumulih City: a profile

Best Fried Chicken (BFC), located at Ring Road no. 183, Gunung Ibul Village, East Prabumulih District, Prabumulih City, South Sumatra Province, is the subject of this study. This restaurant is a Brand of PT. Cipta Aneka Selera uses a partnership system (Franchise) for anyone interested in selling fast-food fried chicken products as Best Fried Chicken (BFC) partners. The Best Fried Chicken (BFC) restaurant in Prabumulih City was officially opened on

December 24, 2020, while there was still a Covid-19 pandemic, by an Owner named Rika Diana, who saw a Franchise business opportunity and also wanted to expand the business in the culinary industry. Initially, this restaurant only sold franchise products, namely fried chicken, but as time passed, the menu expanded to include grilled chicken, grilled fish, and other items.

The organizational structure of the business

The organizational structure of the Best Fried Chicken (BFC) restaurant in Prabumulih City includes the Owner, the Head of Employees, the Head Kitchen, the Kitchen Team, the Head of the Chicken Frying Division, the Head of Waiters, and the Team of Waiters, for a total of 15 employees.

The organizational structure of the Best Fried Chicken (BFC) Restaurant in Prabumulih City is outlined below:

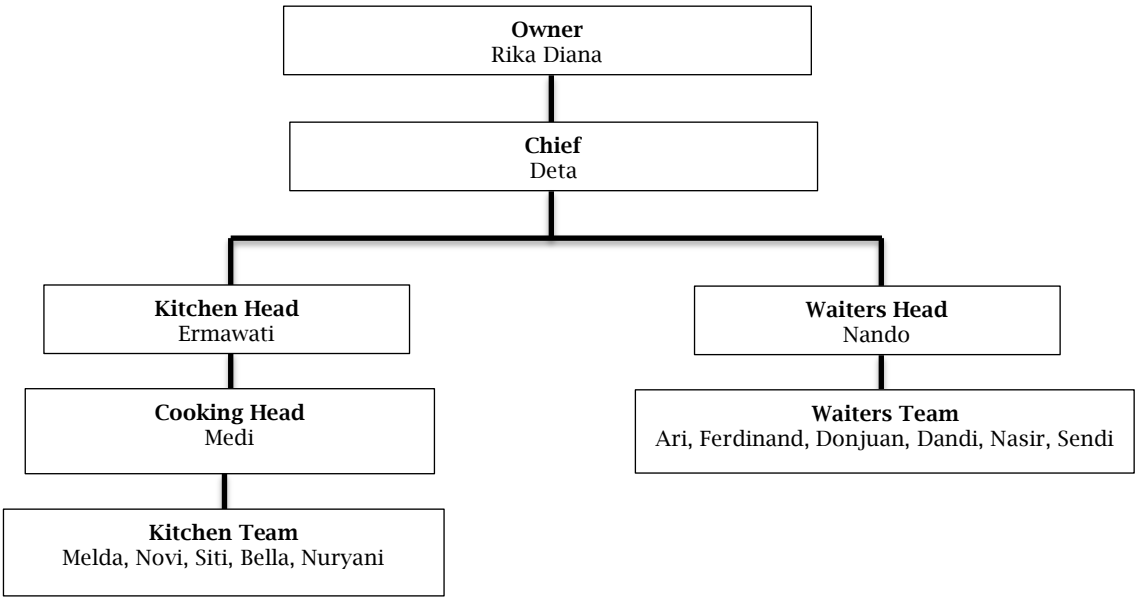

Figure 1. The organizational structure of the Best Fried Chicken (BFC) Restaurant in Prabumulih City

Company Manufacturing Operation

The Best Fried Chicken (BFC) restaurant is engaged in the food processing industry, specifically the production of fried chicken products. In its operational activities, Best Fried Chicken Restaurant (BFC) performs various activities, including transforming raw materials into finished, ready-to-sell products through multiple stages of production.

The entire production process for fried chicken still employs simple equipment. The production process for fried chicken products includes the steps below:

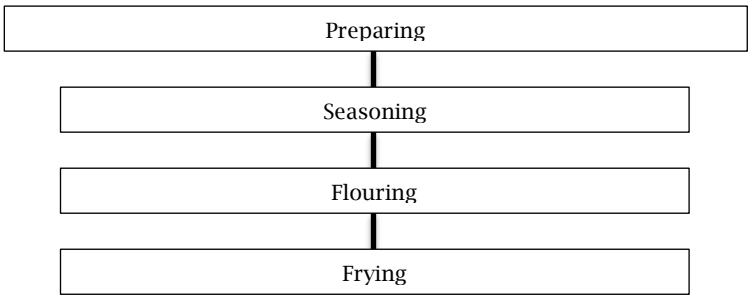

Figure 2. The production processes

Several stages comprise the production process for fried chicken products. The first step is to remove frozen raw chicken from the freezer overnight so that it is no longer frozen in the morning, thereby preventing the chicken from having a tough texture. The supplier has divided and packaged the frozen, uncooked chicken into lower thigh and wing parts and upper thigh and breast parts, with each storage package divided into two sections. A single package contains ten chicken parts. For a single production, the first shift requires five packages of lower thighs and wings and five packages of upper thighs and chest parts. After the raw chicken is removed from the refrigerator in

the evening, the morning is spent soaking the chicken in ice water and preparing the ingredients and spices. This Best Fried Chicken (BFC) includes additional white pepper and flour pre-seasoned by the supplier.

The flouring process begins with chicken soaked in ice water, rubbed with seasoned dry flour, re-immersed in ice water, rubbed with flour while squeezing to prevent clumping and ensure a soft texture, and then placed in the fryer. The staff usually use a large pot and a standard stove; after that, the oil is heated before frying. The chicken is fried for an average of 15 minutes by turning it back and forth to cook evenly over medium heat, not too high nor too low, until its colour turns golden yellow. The final step after frying is draining until the oil is reduced, then placing the chicken in the display warmer window after it has been cooked.

Quality Control for the Best Fried Chicken (BFC)

All production activities, from raw materials to finished goods, must be subject to quality control. Companies must always manufacture high-quality goods by predetermined criteria and consumer expectations. Continuous quality control must be implemented in all production processes. Best Fried Chicken (BFC) in Prabumulih City performs quality control beginning with raw materials. However, this study focuses on quality control during the production process and fried chicken processing. Best Fried Chicken (BFC) and researchers engage in the following three phases of product quality control.

Quality Control of Raw Materials

The raw materials are the primary factors that can affect the quality of the final product. The raw materials used must be high quality for the final product also to be high quality. Best Fried Chicken (BFC) obtains all its raw materials from suppliers, including chicken pieces and flour. The procedure for receiving raw materials from suppliers is handled by the chief employee, while the inspection of raw materials is the responsibility of the chef de cuisine. Due to the lack of inspection of raw materials, however, the supplied frozen raw chicken cannot be inspected for size. After all, it cannot be opened because it is frozen and immediately placed in the freezer for storage. For flour received in good condition, including intact packaging, absence of leaks, and conformity to the requested package size. Several broken and spilt packages of flour were immediately returned to the supplier and replaced. In general, the supplied raw materials meet the requirements of the Best Fried Chicken (BFC) owner, and the researchers consider the raw material quality control process to be quite effective.

Quality Control of Production Procedure

Flouring and frying are crucial in producing fried chicken at Best Fried Chicken (BFC) in Prabumulih City. Each phase of the production process must be comprehended and become a point of reference for employees in the kitchen department, which includes the kitchen manager, the frying division, and the kitchen staff. Control of the production process begins with the chicken that has been removed from the freezer, and it is ensured that the chicken has completely thawed because if it is still frozen or partially frozen, there may be a trace of blood when fried, causing the chicken to have a tough texture. The chicken is then soaked in ice water for 10 to 15 minutes, which softens its texture and allows it to absorb the flour well. To enhance the flavour of the chicken, seasoned flour was combined with white pepper and mixed evenly. The chicken is then removed from the ice water and rubbed in the flour, taking care to coat the chicken with the flour evenly. The chicken that has passed the first stage of flouring is then dipped back into the ice water quickly (not soaked, but briefly) to help the flour adhere to the chicken. During this flouring, the stages must be observed while kneading the floured chicken to prevent the flour from clumping and developing a tough texture.

In order to avoid burnt fried chicken and undercooked chicken, the frying process must be carefully considered, with the oil heated to a high temperature and the flame kept at a moderate level. The chicken is then fried over medium heat for approximately 10 to 15 minutes, with the position of the chicken having to be reversed so that it cooks evenly and does not become overcooked on one side. The chicken is then removed, drained of excess oil, and placed in a warmer display case. The morning and evening shifts at Best Fried Chicken (BFC) are dedicated to producing fried chicken. (taking into account market demand conditions). Control at this stage of production, errors such as burnt fried chicken, wrong chicken size, and chicken with a tough texture still occur. The production process must pay greater attention to quality control to reduce errors and increase the effectiveness and efficiency of production costs.

Quality Control of Completed Products

Before being sold to consumers, control of finished products is conducted by sorting and examining damaged and undamaged products. Suitable for sale, fried chicken is neither too large nor too small, has a golden yellow hue and is not burnt, and has a flour coating that is both neat and attractive. Best Fried Chicken (BFC) Prabumulih City continued to sell defective products, such as burnt fried chicken, chicken whose size did not correspond to the amount of flour used, and chicken with a relatively tough texture, despite efforts to separate and differentiate them. In Prabumulih City, there is still significant consumer feedback regarding the quality of Best Fried Chicken (BFC) Fried Chicken products.

Damage types that occurred in Production

Despite quality control efforts throughout the production process, the fried chicken product was found to need to be fixed. Best Fried Chicken (BFC) must always attempt to find solutions to problems. Damage to Best Fried Chicken (BFC) fried chicken products includes the following:

1. Burnt chicken typically occurs during the frying process due to excessive frying time, excessive heat, and employees forgetting to remove the chicken.
2. Incorrect size typically occurs when the flouring process is uneven and the flour is too thick on one side, and clumps, resulting in a mismatch between one chicken and another; the size of the chicken in raw material control also influences the size of the chicken.
3. Tough texture typically occurs when the flour is not sufficiently kneaded, resulting in a chicken with a tough texture and a condition in which the chicken has not melted completely, as well as excessive frying at medium heat.

Check Sheet

The first step to conducting statistical quality control is creating a Check Sheet to aid in data collection and analysis. Additionally, multiple types of product damage may occur during a single production activity. Observing production for one month (30 days) using a Check Sheet during the period January to February 2023 yielded the following results:

Num.	Date	Total production (pcs)	Type of damage			Total Damage (pcs)	Damage Percentage (%)
			Burnt (pcs)	Incorrect Size (pcs)	Tough Texture (pcs)		
1	04/01/23	90	3	2	-	5	5,56
2	05/01/23	100	-	9	-	9	9
3	06/01/23	170	5	2	3	10	5,88
4	07/01/23	130	1	3	-	4	3,07
5	08/01/23	180	4	2	6	12	6,67
6	09/01/23	90	-	-	-	0	0
7	10/01/23	90	-	-	-	0	0
8	11/01/23	170	4	3	1	8	4,7
9	12/01/23	90	1	5	-	6	6,67
10	13/01/23	150	3	3	3	9	6
11	14/01/23	210	2	5	2	9	4,28
12	15/01/23	140	5	6	2	13	9,28
13	16/01/23	80	-	-	-	0	0
14	17/01/23	100	-	3	-	3	3
15	18/01/23	120	-	2	-	2	1,67
16	19/01/23	130	-	4	1	5	3,84
17	20/01/23	130	4	2	-	6	4,61
18	21/01/23	120	-	4	-	4	3,33
19	22/01/23	180	5	5	3	13	7,22
20	23/01/23	150	-	3	2	5	3,33
21	24/01/23	120	-	2	4	6	5
22	25/01/23	110	-	2	-	2	1,81
23	26/01/23	130	-	-	3	3	2,3
24	27/01/23	140	1	6	3	10	7,14
25	28/01/23	150	-	3	-	3	2
26	29/01/23	190	3	2	6	11	5,78
27	30/01/23	190	2	9	5	16	8,42
28	31/01/23	100	-	-	-	0	0
29	01/02/23	110	-	3	-	3	2,72

30	02/02/23	120	4	2	3	9	7,5
	Total	**3.980**	**47**	**92**	**47**	**186**	**130,78**

Histogram (Bar Chart)

The check sheet displayed production data and the amount of each type of damage, so the next step is to create a histogram to make it easier to see the damage that has occurred and to determine which type of damage occurs most frequently. Damage product data is presented as a bar graph subdivided based on the type of damage for each product.

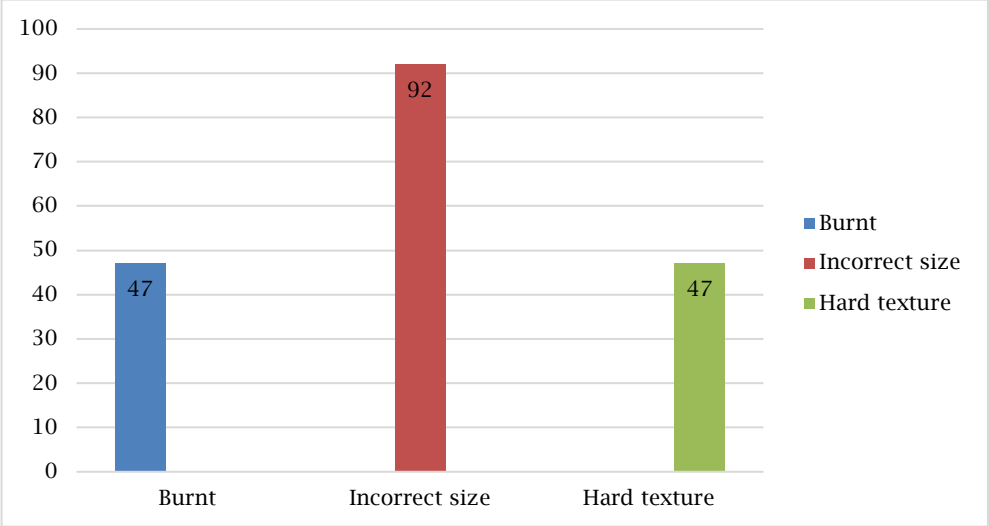

Figure 3. Amount of each damage

Because the size did not correspond to the damage for as many as 92 pieces of chicken, the damage was the most prevalent type of damage to fried chicken products at Best Fried Chicken (BFC) in Prabumulih City. Next is the damage caused by burnt fried chicken, up to 47 pieces, and damage caused by fried chicken with a tough texture, up to 47 pieces.

Control Chart

The following step is to develop a control chart. (p-chart). The Control chart is utilized to analyze fried chicken product damage at Best Fried Chicken (BFC) in Prabumulih City and to determine whether or not quality control at BFC is under control. Figure 4 displays the results of calculating the percentage of daily damage, the median line value, the lower control limit value, and the upper control limit value for the quality control chart for Best Fried Chicken (BFC) in Prabumulih City.

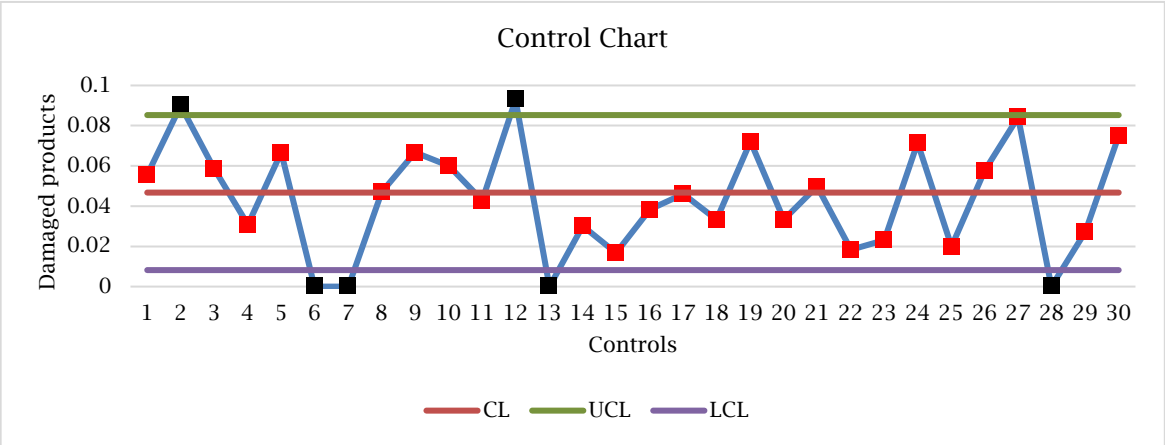

Figure 4. The Quality Control

Figure 4 depicts the control chart for quality control supervision of fried chicken products at Best Fried Chicken (BFC) in Prabumulih. The quality control for Best Fried Chicken (BFC) in Prabumulih City still has control points outside the control limits, as shown by all the data collected and displaying the proportion of damage each day. Points that pass the upper control limit are on the second and twelfth days, indicating that the quality control on the second and twelfth days could be better because it exceeds the control limits with many defects and fewer products produced than on other days. In contrast, points that pass the lower control limit are on the sixth, seventh, thirteenth, and twenty-eighth days. This indicates that even though the fluctuation point crosses the lower control limit, the results are still acceptable. The rate of product damage on day two was 9%, with a total of 9 chicken pieces suffering the incorrect type of damage. On day 12, 13 pieces of chicken were damaged, including 5 pieces of burnt fried chicken, 6 pieces that did not fit, and 2 pieces of fried chicken with a tough texture.

Cause and effect diagrams

Cause and effect diagrams are used to determine which factors cause product damage. The factors that influence and cause general product damage can be categorized as follows:

1. Humans: the workers who are directly involved in the production process.
2. Raw Materials: everything a company uses as a product component to be manufactured into finished goods.
3. Machine: all machines and equipment utilized in the production process.
4. Method: the instructions or work orders that must be followed for every production stage.
5. Environment: the conditions surrounding the production site that can affect the production process directly or indirectly.

The following is a picture of a cause and effect diagrams for the burnt fried chicken damage:

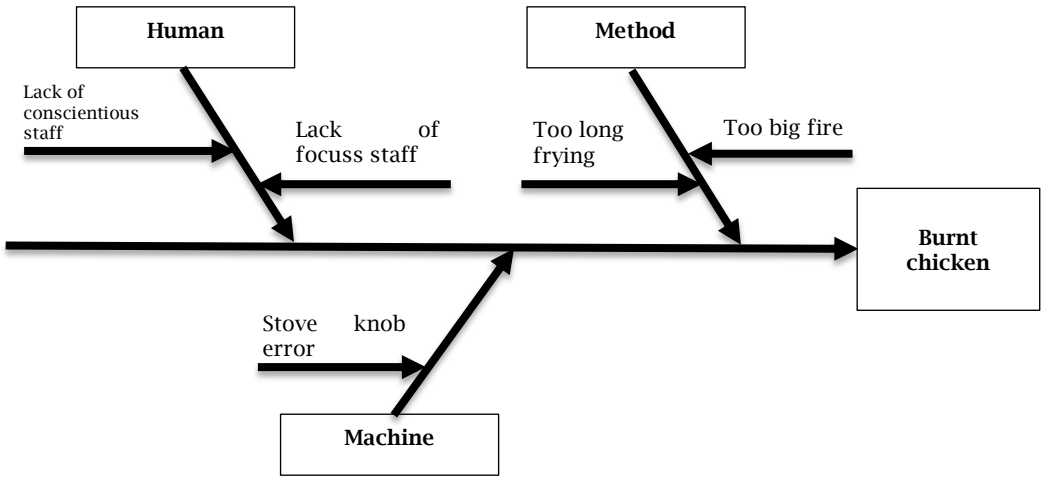

Figure 5. Cause and Effect Diagram for Burnt Fried Chicken Damage

The following is a picture of a cause and effect diagram for the inappropriate size of the chicken damage:

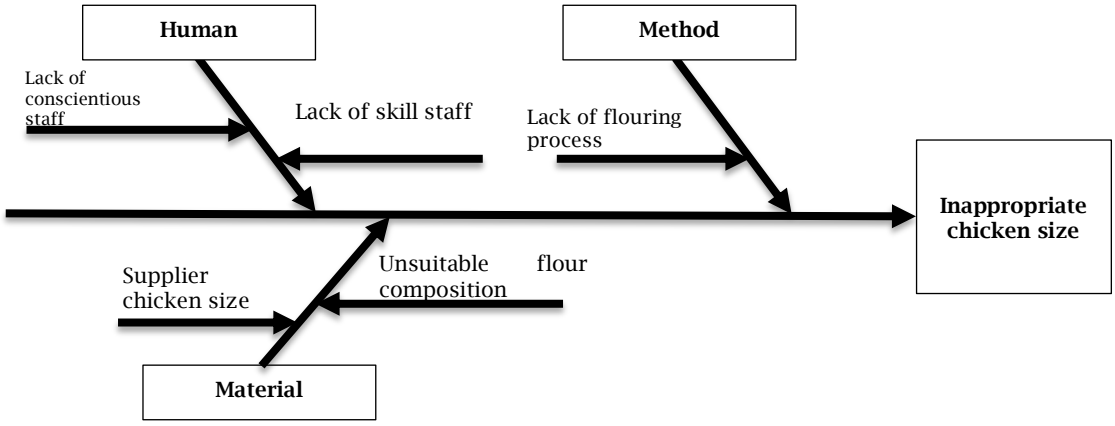

Figure 6. Cause and Effect Diagram for Inappropriate Size Damage

The following is a picture of a cause and effect diagram for the tough textured product damage:

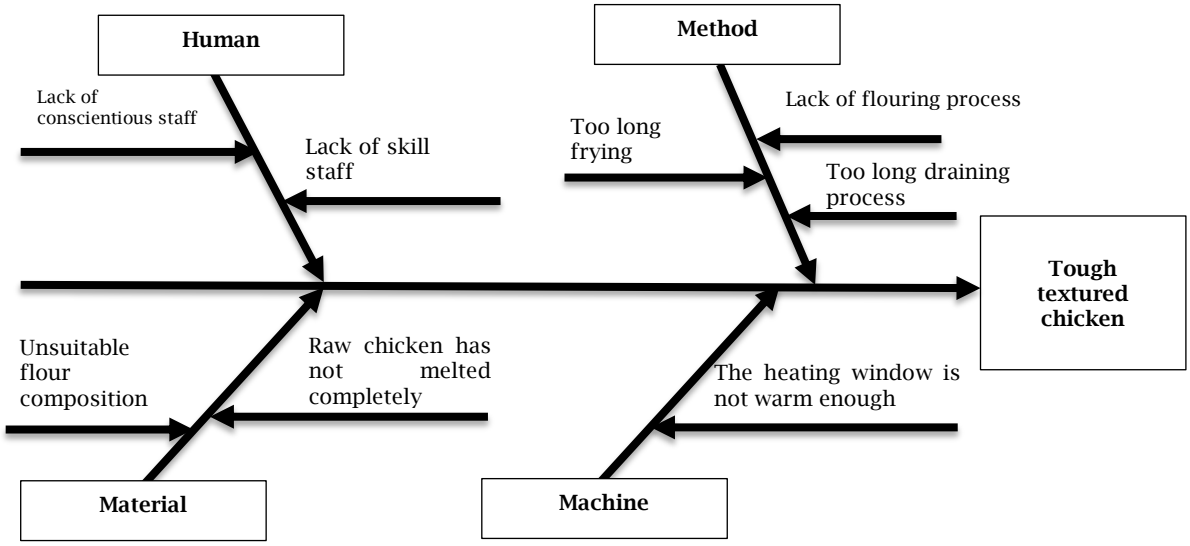

Figure 7. Cause and Effect Diagram for Tough Textured Product Damage

As seen in the Figure above, the data visualization, namely the histogram, several types of damage occur during the production process at Prabumulih City's Best Fried Chicken (BFC), including burnt fried chicken, inappropriate chicken size, and fried chicken with a tough texture. Best Fried Chicken (BFC) in Prabumulih City must take corrective measures to prevent similar damage from occurring after determining the nature of the damage. The thing that must be investigated is the reason why these damages occurred. Other than that, we also use cause and effect diagram, also called a "fishbone diagram," is used to identify the damage.

Discussion

The cause and effect diagram has identified the causes of damage or irregularities in Best Fried Chicken (BFC) fried chicken products in Prabumulih City, so the following general recommendations for product damage reduction can be made.

Proposed corrective actions for burnt fried chicken products:

Factors	Reasons	Proposed Action
Man	• Employees are less conscientious • Employees are less focused	• The owner and head of the kitchen admonish the employee who is responsible for frying the chicken so that he can be more thorough. • The owner and head of the kitchen pay more attention to the performance of employees during production activities and provide time off if employees are tired and lack focus.
Method	• The Fire condition is too big • The frying time is too long	• Pay attention to the condition of the fire when frying by not using too much heat. • Employees who are responsible for frying must pay more attention to the frying time according to what has been set by the company.
Machine	• The stove knob is jammed	• The owner must immediately replace the jammed stove knob so that it can be used immediately and does not cause jams when he wants to reduce or turn on the fire.

Proposed corrective actions for inappropriate sized fried chicken products:

Factors	Reasons	Proposed Action
Man	• Employees are less conscientious • Employees are less skilled	• The owner and head of the kitchen admonish employees who are not thorough when frying chicken so they can work more carefully by paying attention to everything that is needed during production. • The head of the kitchen and the head of the employee must provide more guidance to the employees who fry the

Factors	Reasons	Proposed Action
		chicken so they can understand the frying procedure properly.
Material	• The size of the chicken from the supplier • Inappropriate flour composition	• When receiving raw materials, the owner and chief employee must inform the supplier to re-check the size of the chicken before it is supplied to the restaurant and ask for relief so that they can first check the size of the raw chicken per package. • The head of the kitchen must provide guidelines for the dosage and composition of the ingredients during frying to the employee who is responsible for frying the chicken.
Method	• The flouring process is not optimal	• The owner, head of employee, and head of the kitchen must be more assertive in giving instructions regarding the stages of frying the chicken properly starting from preparing the ingredients, flouring to frying.

Proposed corrective actions for hard-textured fried chicken products:

Factors	Reasons	Proposed Action
Man	• Employees are less conscientious • Employees are less skilled	• The owner and head of the kitchen admonish the employees who are responsible for frying the chicken so they can be more thorough and pay attention to small things. • Provide training and guidance to employees regarding the correct method of flouring and proper frying methods so that the chicken is not hard-textured.
Material	• Raw chicken has not melted completely • Inappropriate flour composition	• The head of the kitchen and employees who fry the chicken must pay more attention to the condition of the chicken, whether it has completely melted or not before frying. • The head of the kitchen must provide guidelines for the dosage and composition of flour in flour to employees who are responsible for frying chicken.
Machine	• The heating window is not warm enough	• The owner must immediately service and repair the heating window so that it can warm the chicken that has finished frying so that it does not cause the chicken to cool quickly and have a hard texture.
Method	• The flouring process is not optimal • The frying process is too long • The draining process is too long	• The owner, head of employee, and head of the kitchen must be more assertive in giving instructions regarding the flouring process properly, such as chicken which is covered in flour must be kneaded first and so on. • The head of the kitchen must pay attention to the performance of the employees who fry the chicken and provide information about how long it takes to fry. • The head of the kitchen provides understanding and instructions on how long the chicken should drain after frying.

The Prabumulih City Best Fried Chicken (BFC) production report for the period January 2023 to February 2023, with a total observation of data collection for 1 month (30 days) of production, obtained a total production of 3,980 pieces of chicken with details of the damage, including 47 pieces of burnt fried chicken, 92 pieces of fried chicken that did not fit properly, and 47 pieces of fried chicken with a hard texture. Based on the types of damage obtained, it has been determined that improperly fitting fried chicken is the most prevalent type of damage. This type of damage occurs because the size of the chicken supplied by the supplier occasionally varies, resulting in nonstandard sizes. Combined with the imperfect flouring process and the composition of the flour used, which varies from chicken piece to chicken piece, as well as a lack of focus and thoroughness on the part of the employees, this results in chicken products of varying sizes. On days 2 and 12, the percentage of types of damage that exceeded the control limit was 9 and 9.28%, respectively, with the highest total type of damage found in chickens of the inappropriate size. On days 2 and 12, the number of products produced was lower, and the proportion of damaged goods was higher. On day two, 100 chickens were produced; on day twelve, that number increased to 140. This is due to the employee's lack of concentration during the flouring process and the flour's composition, which caused the inappropriate size. According to the product quality tolerance limit set by the owner of Best Fried Chicken (BFC) in Prabumulih City, which is less than or equal to 5%, the results described in the preceding section are as follows: The level of damage to the fried chicken production process is still below the value and tolerance limit set by the owner of Best Fried Chicken (BFC) in Prabumulih City.

The analysis results utilizing statistical process control (SPC) and several quality control tools can identify the damage that occurs to fried chicken products manufactured by Best Fried Chicken (BFC) in Prabumulih City and the causes of the damage. Human factors, machines, raw materials, and methods are, generally speaking, the primary factors that cause damage. Burned human factors, processes, and machines harm fried chicken products. Meanwhile,

the damage to inappropriate sized fried chicken products is due to human factors, raw materials, and methods. Damage is caused to fried chicken with a tough texture by human factors, raw materials, machines, and methods. According to the study of three damaged, fried chicken products, humans, methods, and raw materials were the most influential factors causing damage in the fried chicken production process at Best Fried Chicken (BFC) in Prabumulih City.

Conclusion

Data analysis utilizing statistical tools, namely control charts for product quality control, reveals that the quality of fried chicken products at Best Fried Chicken (BFC) in Prabumulih City is still within acceptable parameters. The most common type of damage to 186 products over 30 days was damage of the inappropriate size. Quality control must be enhanced once more to predict the number of defective products. Even though there are still points outside the upper and lower control limits, the 4.67 per cent of damaged products observed is still below the company-set limit of less than or equal to 5 per cent, which is acceptable. This indicates that the Best Fried Chicken (BFC) production process in Prabumulih City is still within acceptable parameters. Using data processing on the quality control of Best Fried Chicken (BFC) Prabumulih City fried chicken products and a cause and effect diagram analysis, it can be concluded that humans, raw materials, methods, and machines are the factors causing damage in fried chicken production activities. Human factors, processes, and machines harm burnt fried chicken. Damage to improperly fitting fried chicken is caused by human factors, raw materials, and methods. The tough texture of the fried chicken is due to human factors, raw materials, methods, and machines. Humans, methods, and raw materials were the most influential factors causing damage in the fried chicken production process at Best Fried Chicken (BFC) in Prabumulih City, as determined by the factors of the three observed damages.

The researchers suggest that the Best Fried Chicken (BFC) company in Prabumulih City implement a new strategy and use supporting infrastructure to reduce product damage after analyzing the control chart, which still reveals the highest level of damage and several points that exceed the control limits. Implementing a new strategy requires determining with certainty the number of products to be produced per day, making it even clearer to minimize the variable level of product damage and enforcing stricter supervision of all aspects of production. The supporting infrastructure can then consist of training employees responsible for fried chicken production activities, beginning with raw material, process, and finished product control, all led by the owner or head employee. This is useful for adding each employee's insight and knowledge to the production process of fried chicken products to reduce the damage level. Then, pay more attention to the quality of raw materials supplied by suppliers and the composition of flour used in the production of fried chicken products by implementing and enforcing a better comprehension of operational standards for frying chicken. This study limits quality control to the production and final processes. (the finished product). Best Fried Chicken (BFC) Prabumulih City has conducted the most stringent quality control of raw materials following established standards. In this study, quality control focused solely on the company's flagship product that is fried chicken.

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References

Colledani, M., & Tolio, T. (2006). *Impact of Quality Control on Production System Performance.*

Diana, M. (2021). *Pengaruh Kualitas Produk, Harga dan Citra Merek terhadap Keputusan Pembelian pada Best Fried Chicken (BFC) Cabang Sentosa Samarinda. 9*(2), 220–228.

Heizer, J., & Render, B. (2013). *Manajemen Operasi (Manajemen Keberlangsungan dan Rantai pasokan)* (11th ed.). Salemba Empat.

Helena Anggica, & Suryanto HS Mas. (2020). *Penerapan Metode Statistical Process Control sebagai Pengendalian Kualitas Mortar.*

Immanuel Sihombing, M., & Magister Manajemen Bisnis, M. (2017). Pengaruh Pengendalian Kualitas Bahan Baku dan Pengendalian Kualitas Proses Produksi terhadap Kuantitas Produk Cacat dan Dampaknya pada Biaya Kualitas (Cost of Quality). In *Jurnal Ilmu Manajemen & Bisnis* (Vol. 8, Issue 2).

Kotler Phillip, & Keller Kevin. (2013). *Manajemen Pemasaran* (2nd ed.). Erlangga.

Lasander Christian. (2013). Citra Merek, Kualitas Produk, dan Promosi Pengaruhnya terhadap Kepuasan Konsumen Pada Makanan Tradisional. *EMBA*, *1*(3).

Montgomery DC. (2009). *Introduction to Statistical Quality Control* (I. John Wiley & Sons, Ed.; 7th ed.).

Puryanti. (2007). *Analisis Pengendalian Kualitas Produk Jamu Batuk di PT. Air Mancur Pada tahun 2006 menggunakan diagram kontrol C*.

Setia Bakti, C., Kartika, H., & Raya Meruya Selatan, J. (2020). *Analisa Pengendalian Kualitas Produk Ice Cream dengan Metode Six Sigma.*

Sopyan Saori. (2021). Analisis Pengendalian Mutu Pada Industri Lilin. *Analisis Pengendalian Mutu Pada Industri Lilin*, *1*, 2133–2138.

Sugiyono. (2009). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Alfabeta.

Supardi, S., & Dharmanto, A. (2020). Analisis Statistical Quality Control Pada Pengendalian Kualitas Produk Ayam Geprek di BFC Kota Bekasi. *JIMFE (Jurnal Ilmiah Manajemen Fakultas Ekonomi)*, *6*(2), Inpress. https://doi.org/10.34203/jimfe.v6i2.2622

Syarif, M., Elmas, H., Manajemen, P., Ekonomi, F., & Probolinggo, U. (2017). Pengendalian Kualitas Dengan Menggunakan Metode Statistical Quality Control (SQC) Untuk Meminimumkan Produk Gagal Pada Toko Roti Barokah Bakery. In *Jurnal Penelitian Ilmu Ekonomi WIGA* (Vol. 7).

Widjoyo Putro Shandy, Samuel Hatane, & Karina M.R Brahmana Ritzky. (2014). Pengaruh Kualitas Layanan dan Kualitas Produk Terhadap Kepuasan Pelanggan dan Loyalitas Konsumen Restoran Happy Garden Surabaya. *Manajemen Pemasaran*, *2*, 1–9.

Yuliyarto, & Surya Putra Yanuar. (2014). *Analisis Quality Control pada Produksi Susu Sapi Di CV Cita Nasional Getasan*. *7*.