



The Effect of Raw Material Quality on Donut Texture and Taste: A Case Study of a Donut Micro, Small, and Medium Enterprise (MSME) in Naga Timbul Village

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ABSTRACT

Raw material quality is one of the key factors determining the quality of food products, particularly in the bakery industry. The donut-producing Micro, Small, and Medium Enterprise (MSME) in Naga Timbul Village faces several challenges in maintaining product consistency due to variations in the quality of raw materials used during the production process. This study aims to analyze the influence of raw material quality on the texture and taste of donuts produced by the MSME in Naga Timbul Village, Tanjung Morawa District, Deli Serdang Regency. This research employed a qualitative approach using a descriptive method. Data were collected through direct observations, semi-structured interviews with the business owner and employees, and documentation of the production process. Data were analyzed using the interactive model of data analysis, including data reduction, data display, and conclusion drawing. The findings indicate that the quality of raw materials, particularly wheat flour, yeast, sugar, eggs, margarine, and cooking oil, significantly influences the texture and taste of the donuts. The use of high-quality raw materials produces donuts with a softer texture, better elasticity, more appealing aroma, and superior flavor preferred by consumers. In addition, appropriate fermentation and frying processes contribute to maintaining consistent product quality. The study concludes that effective raw material quality control and proper production practices are essential for improving product quality, increasing customer satisfaction, and enhancing the competitiveness of MSMEs. The findings are expected to provide practical recommendations for MSME owners in implementing sustainable quality control practices to improve product performance and business competitiveness.

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INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) constitute one of the primary pillars of national economic development, as they contribute significantly to job creation, income generation, and the strengthening of regional economic resilience. In the food sector, the success of MSMEs is not solely determined by production capacity but also by their ability to produce high-quality and consistent products that meet consumer expectations (Kotler & Keller, 2022; Tjiptono, 2022).

Donuts are among the bakery products with high market demand due to their diverse flavors, relatively affordable prices, and ease of distribution. In the production process, the quality of raw materials such as wheat flour, sugar, yeast, eggs, margarine, and cooking oil plays a crucial role in determining product quality. According to Garvin (1987), product quality can be assessed through several dimensions, including performance, reliability, conformance to standards, durability, aesthetics, and perceived quality. The application of these quality dimensions in the food industry indicates that the use of high-quality raw materials results in products with superior texture, taste, and appearance compared to those made from lower-quality inputs.

In the bakery industry, the quality of wheat flour influences gluten formation, which determines dough elasticity and the softness of donut texture. Additionally, yeast activity affects the fermentation process, thereby influencing dough expansion, while sugar, eggs, margarine, and cooking oil contribute to flavor, aroma, color, and overall sensory characteristics of the product. Therefore, the selection of appropriate raw materials is a critical factor in producing high-quality bakery products with strong market competitiveness.

The donut-producing MSME in Naga Timbul Village, Tanjung Morawa District, Deli Serdang Regency, is one of the local businesses that supplies donuts to meet community demand. Based on preliminary observations, several challenges were identified in the production process, including inconsistencies in the quality of raw materials supplied, the absence of standardized criteria for material selection, and relatively

simple quality control practices. These conditions result in inconsistencies in the texture and taste of the donuts produced, which may affect consumer satisfaction and business competitiveness.

Previous studies have demonstrated that raw material quality is closely related to the quality of food products. The use of flour with appropriate protein content, active yeast, and proper control of fermentation and frying processes can produce bakery products with softer textures, better volume, and more desirable flavors. Conversely, the use of low-quality raw materials can lead to products that are less developed, denser in texture, and inferior in taste.

Although numerous studies have examined the quality of bakery products, research specifically analyzing the influence of raw material quality on the texture and taste of donuts in MSMEs in Naga Timbul Village remains limited. This condition indicates the existence of a research gap that warrants further investigation, particularly as a basis for developing strategies to improve product quality in small-scale food MSMEs.

Based on the above considerations, this study aims to analyze the influence of raw material quality on the texture and taste of donuts produced by MSMEs in Naga Timbul Village. The findings are expected to provide recommendations for MSME practitioners in implementing effective raw material quality control and production processes, thereby enhancing product quality, consumer satisfaction, and business competitiveness.

METHODS

This study employed a qualitative approach with a descriptive research design. This approach was selected to obtain an in-depth understanding of the influence of raw material quality on the texture and taste of donuts produced by the Donut MSME in Naga Timbul Village, Tanjung Morawa District, Deli Serdang Regency. The descriptive qualitative approach enables researchers to reveal actual field conditions based on observations, interviews, and documentation without manipulating research variables.

The research was conducted at a Donut MSME located in Naga Timbul Village, which was selected purposively because the business actively produces donuts as its main product and represents one of the food-based MSMEs in the area. The study was carried out during the field research period according to the predetermined schedule.

The data sources in this study consisted of primary and secondary data. Primary data were obtained through direct observation of the donut production process, in-depth interviews with the MSME owner and employees, and consumer responses regarding the texture and taste of the products. Secondary data were collected from business documents, scientific literature, books, and previous studies related to raw material quality and food product quality.

Data collection techniques were conducted through three stages: observation, interviews, and documentation. Observation was carried out to directly examine the selection of raw materials, dough mixing process, fermentation, frying, and product presentation. Interviews were conducted in a semi-structured manner with the MSME owner and employees to obtain information regarding raw material selection, quality control, and challenges encountered during the production process. Documentation was used to complement the research data in the form of photographs of production activities, raw materials used, and other supporting documents.

Data analysis referred to the interactive model proposed by Matthew B. Miles, A. Michael Huberman, and Johnny Saldaña, which consists of four stages: data collection, data reduction, data display, and conclusion drawing. Data obtained from observations, interviews, and documentation were reduced to select information relevant to the research objectives. Subsequently, the data were presented narratively to analyze comprehensively the relationship between raw material quality and the texture and taste of donuts. The final stage involved drawing conclusions based on patterns identified throughout the research process.

To ensure data validity, this study applied source triangulation and technique triangulation. Source triangulation was conducted by comparing information obtained from the business owner, employees, and consumers. Meanwhile, technique triangulation was carried out by comparing the results of observations, interviews, and documentation, thereby enhancing the credibility of the data obtained.

RESULTS AND DISCUSSION

Research Findings

The results of the observations indicate that raw material quality is a critical factor determining the quality of donuts produced by the MSME in Naga Timbul Village. The primary raw materials used include wheat flour, sugar, yeast, eggs, margarine, and cooking oil. Each of these ingredients plays a distinct role in shaping the physical and sensory characteristics of the final product. Based on interviews with the business owner, the selection of raw materials is determined by freshness, brand quality, availability, and affordability in accordance with the enterprise's financial capacity.

Observations during the production process revealed that the use of high-protein wheat flour produces a more elastic dough, allowing fermentation to proceed more effectively and resulting in a softer donut texture. In contrast, the use of lower-quality flour leads to dough that is difficult to expand, producing denser donuts. A similar pattern was observed in the use of yeast. Active yeast facilitates optimal fermentation, increasing the volume of the donuts and producing a softer texture.

In addition to flour and yeast quality, the quality of cooking oil also affects the color, aroma, and taste of the product. The use of fresh oil results in a uniform golden-brown color and a more appealing aroma. Conversely, repeatedly used oil causes darker coloration and negatively affects the flavor of the donuts.

Interviews with consumers indicate that the most important aspects considered when purchasing donuts are texture softness, balanced taste, distinctive aroma, and product appearance. Consumers expressed a preference for donuts that are soft, non-greasy, and remain tender even after several hours of storage. These findings demonstrate a strong relationship between raw material quality and consumer satisfaction.

Discussion

The findings of this study demonstrate that raw material quality has a significant influence on the texture and taste of donuts. The quality of wheat flour, yeast, sugar, eggs, margarine, and cooking oil serves as a primary determinant of product quality prior to the influence of production processes. These findings are consistent with previous studies on quality control in MSME donut production, which identify raw material quality as a major factor contributing to product variability, alongside fermentation and frying processes.

The quality of wheat flour affects gluten formation, which determines dough elasticity. Flour with appropriate protein content produces a stronger gluten network, enabling the dough to retain fermentation gases more effectively. This condition results in donuts with greater volume, finer crumb structure, and softer texture. Conversely, the use of low-quality flour leads to less elastic dough, resulting in denser and less expanded donuts.

Yeast is a crucial component in the fermentation process. Observations indicate that active yeast accelerates the production of carbon dioxide gas, allowing optimal dough expansion. Proper fermentation produces a more uniform crumb structure and a softer texture. In contrast, reduced yeast quality leads to incomplete fermentation, resulting in dense products. These findings are consistent with studies in MSME-scale donut industries that identify underdeveloped dough as a major cause of product defects.

From a sensory perspective, the study shows that a balanced composition of sugar, eggs, margarine, and other ingredients produces a flavor profile preferred by consumers. In addition to taste, the use of high-quality cooking oil contributes to a fresher aroma and more attractive product color. Repeated use of oil reduces sensory quality due to the development of rancid odors and darker coloration. Therefore, consistent raw material quality control is essential to maintain product standards.

Beyond raw materials, the production process also contributes significantly to product quality. Observations indicate that stable frying temperatures produce donuts with uniform color and improved texture. Conversely, excessively high temperatures cause the outer layer to cook rapidly while the interior remains undercooked. Studies on improving bakery product quality in MSMEs also demonstrate that controlling process parameters—such as yeast composition, heating temperature, and equipment hygiene—can significantly reduce product defects.

The findings of this study suggest that improving product quality requires not only the use of high-quality raw materials but also the implementation of quality control at every stage of production. For MSMEs, consistent quality control enhances customer satisfaction, reduces defect rates, strengthens business competitiveness, and supports long-term sustainability. This is consistent with various studies in the bakery

industry emphasizing that product quality consistency is a key factor in maintaining customer loyalty and improving MSME competitiveness.

CONCLUSION

This study demonstrates that raw material quality plays a crucial role in determining the texture and taste of donuts produced by the MSME in Naga Timbul Village. High-quality primary ingredients, such as wheat flour, yeast, sugar, eggs, and cooking oil, are capable of producing donuts with a softer texture, better elasticity, and superior flavor compared to those made with lower-quality materials. In addition, the production process, including dough mixing, fermentation, and frying, significantly influences the final product quality. The findings also indicate that consistent use of high-quality raw materials and the implementation of appropriate production processes can enhance customer satisfaction and strengthen the competitiveness of MSMEs. Therefore, MSME actors are encouraged to implement strict raw material quality control, select reliable suppliers, and conduct regular evaluations of production processes to maintain product quality. However, this study has limitations as it employs a qualitative approach focused on a single research object, which restricts the generalizability of the findings to all donut-producing MSMEs. Future research is recommended to adopt quantitative or mixed-method approaches with a larger number of respondents to enable a more comprehensive analysis of the relationships among raw material quality, production processes, customer satisfaction, and product quality.

REFERENCES

- Aini, N., & Rahmawati, D. (2023). The effect of raw material quality on bakery product quality in small food industries. *Journal of Food Quality and Safety*, 7(2), 115–126. <https://doi.org/10.1016/j.jfqs.2023.02.005>
- Garvin, D. A. (1987). Competing on the eight dimensions of quality. *Harvard Business Review*, 65(6), 101–109.
- Ghozali, I. (2021). *Aplikasi Analisis Multivariate dengan Program IBM SPSS* (10th ed.). Badan Penerbit Universitas Diponegoro.
- International Organization for Standardization. (2018). *ISO 22000:2018 Food safety management systems—Requirements for any organization in the food chain*. ISO.
- Kotler, P., & Keller, K. L. (2022). *Marketing Management* (16th Global ed.). Pearson.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2020). *Qualitative Data Analysis: A Methods Sourcebook* (4th ed.). SAGE Publications.
- Mukti, A. B., Widayanti, A. D., & Prasastono, N. (2022). Pengaruh penggunaan sari buah strawberry terhadap tekstur, aroma, warna, dan rasa churros. *Jurnal Teknologi Pangan Indonesia*, 17(1), 35–44.
- Nugroho, R., & Lestari, S. (2022). Product quality and customer satisfaction in micro food enterprises. *International Journal of Business and Society*, 23(3), 1421–1434.
- Purnomo, H., & Sari, D. P. (2023). Quality control implementation in food micro enterprises. *Journal of Small Business Innovation*, 9(1), 44–58.
- Rachmawati, E., & Suryani, D. (2021). Pengaruh proses fermentasi terhadap kualitas produk bakery. *Jurnal Teknologi Hasil Pertanian*, 14(2), 97–106.
- Rahmah, A., & Fitriani, L. (2024). The influence of ingredient quality on consumer acceptance of bakery products. *Food Research Journal*, 8(1), 61–71.
- Riyanto, S., & Hatmawan, A. A. (2020). *Metode Riset Penelitian Kuantitatif Penelitian di Bidang Manajemen, Teknik, Pendidikan, dan Eksperimen*. Deepublish.
- Sari, D. P., & Wulandari, R. (2021). Pengaruh suhu penggorengan terhadap karakteristik sensoris donat. *Jurnal Agroindustri Indonesia*, 10(3), 151–160.
- Sugiyono. (2023). *Metode Penelitian Kualitatif* (3rd ed.). Alfabeta.
- Suryani, T. (2022). *Perilaku Konsumen di Era Digital*. Graha Ilmu.
- Tjiptono, F. (2022). *Strategi Pemasaran* (5th ed.). Andi.
- Wibowo, A., & Prasetyo, H. (2023). Food ingredient quality and production consistency in Indonesian SMEs. *Journal of Food Processing and Preservation*, 47(8), e17025.
- Yunindya, R. P., & Murtini, E. S. (2021). Pengaruh suhu air terhadap kualitas donat kentang. *Jurnal Pangan dan Agroindustri*, 9(4), 201–210.

- Yusuf, M., & Hasanah, N. (2024). Product quality improvement strategy for food SMEs through raw material standardization. *International Journal of Gastronomy and Food Science*, 36, 100912.
- Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2021). *Business Research Methods* (10th ed.). Cengage Learning.
- Zulfikar, M., & Handayani, S. (2023). Quality assurance practices in Indonesian food SMEs. *Journal of Entrepreneurship and Small Business*, 15(2), 87–101.