International Journal of Sustainable Applied Sciences (IJSAS)
Vol. 4, No. 9, 2026: 1059-1066

Optimizing Menu Performance Through Menu Engineering & Culinary Heritage Approach

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A R T I C L E I N F O

Keywords: Menu Engineering, Culinary Heritage, SWOT Analysis, Sustainability, Hotel Restaurant.

Received : 20, July
Revised : 22, August
Accepted: 20, September

A B S T R A C T

This study aims to evaluate the performance of the Indonesian Culinary Heritage menu at Restaurant D, a three-star hotel restaurant in Kuta, Bali, using the Menu Engineering method and SWOT analysis. A mixed methods approach was employed by integrating quantitative and qualitative data collected through menu sales records, observations, site visits, and semi structured interviews during a 12-month period. The analysis classified menu items into Star, Plowhorse, and Dog categories based on popularity and profitability. The findings indicate that Culinary Heritage menus demonstrate strong business performance and higher sustainability potential. The results provide practical recommendations for improving menu profitability, operational efficiency, and the long-term preservation of Indonesia's culinary heritage.

DOI: https://doi.org/10.59890/ijsas.v4i9.66
ISSN-E: 3025-5597
http://ijsasjournal.my.id/index.php/ijsas

INTRODUCTION

The rapid growth of Bali's tourism industry has significantly contributed to the development of its hospitality and food service sectors. Hotel restaurants are increasingly expected not only to provide high-quality dining experiences but also to promote local culinary identity through authentic food offerings. Among these, Indonesian Culinary Heritage menus have become an important attraction because they reflect the cultural values, traditions, and history of the region while enhancing the overall guest experience. However, maintaining the authenticity of traditional cuisine must be balanced with business performance to ensure long term competitiveness and sustainability.

Previous studies have highlighted the importance of Menu Engineering as a strategic tool for evaluating menu performance based on popularity and profitability. This method enables restaurant managers to classify menu items into Star, Plowhorse, Puzzle, and Dog categories, providing valuable insights for pricing, promotion, and menu development. In addition, SWOT analysis has been widely used to identify internal strengths and weaknesses, as well as external opportunities and threats, that influence restaurant performance and strategic decision making.

Despite the growing body of research on menu performance, limited studies have specifically examined Indonesian Culinary Heritage menus in three-star hotel restaurants while integrating Menu Engineering with sustainability considerations. This study addresses this gap by investigating Restaurant D, a three-star hotel restaurant located in Kuta, Bali, which offers a variety of traditional Indonesian dishes. By combining Menu Engineering, SWOT analysis, and sustainability assessment, this research provides a comprehensive evaluation of menu performance from both business and environmental perspectives.

This study aims to evaluate the performance of the Indonesian Culinary Heritage menu at Restaurant D based on its popularity and profitability, identify the restaurant's strategic position through SWOT analysis, and assess the sustainability of its menu offerings. The findings are expected to contribute to the enrichment of knowledge in hospitality and food service management by demonstrating how Menu Engineering can be integrated with sustainability principles to improve menu profitability, strengthen restaurant competitiveness, and support the preservation of Indonesia's culinary heritage.

LITERATURE REVIEW

Restaurant Theory

According to Walker (2021), a restaurant is a professional food and beverage establishment that provides meals and beverages while delivering quality service to customers. Similarly, Davis et al. (2022) stated that hotel restaurants serve not only to satisfy guests' dining needs but also to create memorable dining experiences that enhance customer satisfaction. In this study, Restaurant D, a three-star hotel restaurant located in Kuta, Bali, represents a hospitality business that combines Indonesian culinary heritage with hotel food and beverage services to strengthen its competitive advantage.

Menu Engineering Theory

Menu Engineering is a management technique used to evaluate menu performance based on two key indicators: popularity and profitability. According to Kasavana and Smith (1982), menu items are classified into four categories: Star, Plowhorse, Puzzle, and Dog, enabling managers to identify which items should be maintained, promoted, improved, or removed. Safitri et al. (2023) further emphasized that Menu Engineering supports strategic decision-making by improving menu profitability and operational efficiency. Therefore, this method was applied to evaluate the performance of the Indonesian Culinary Heritage menu at Restaurant D.

This study adopts a contextual framework to evaluate the performance of the Indonesian Culinary Heritage menu at Restaurant D. The research begins with collecting menu sales data, including selling price, food cost, contribution margin, and sales volume. These data are analyzed using the Menu Engineering method to classify menu items into four categories: Star, Plowhorse, Puzzle, and Dog, based on their popularity and profitability.

The findings from the Menu Engineering analysis are then integrated with SWOT analysis to identify the restaurant's internal strengths and weaknesses, as well as external opportunities and threats. The combined results provide a comprehensive understanding of menu performance and support the development of strategic recommendations for improving profitability, operational efficiency, sustainability, and the competitiveness of Restaurant D.

METHODOLOGY

This study employed a mixed methods approach with a descriptive case study design at Restaurant D, a three-star hotel restaurant located in Kuta, Bali. The research aimed to evaluate the performance of the Indonesian Culinary Heritage menu using the Menu Engineering method and SWOT analysis. Quantitative data were obtained from menu sales records, including selling prices, food costs, contribution margins, and sales volumes over a 12-month period. Qualitative data were collected through direct observations, site visits, and semi-structured interviews with the Restaurant Manager, Executive Chef, and Food and Beverage staff.

The study population consisted of all menu items offered at Restaurant D. The sample included 92 menu items, which were classified into Indonesian (Nusantara) and Non-Indonesian menus. The analysis focused on the Indonesian Culinary Heritage menu to evaluate its popularity, profitability, and strategic performance.

Data were analyzed using Menu Engineering to calculate Menu Mix (popularity) and Contribution Margin (profitability), classifying menu items into four categories: Star, Plowhorse, Puzzle, and Dog. A SWOT analysis was then conducted to identify the restaurant's internal strengths and weaknesses, as well as external opportunities and threats. Finally, the findings were integrated with a sustainability assessment to formulate practical recommendations for improving menu performance, profitability, and Restaurant D's long-term competitiveness.

RESEARCH RESULT

This study was conducted through several sequential stages to evaluate the performance of the Indonesian Culinary Heritage menu at Restaurant D. The first stage involved collecting menu sales data, including menu prices, food costs, contribution margins, and sales volumes over a 12-month period. These data were then processed using the Menu Engineering method to determine the popularity and profitability of each menu item. Subsequently, a SWOT analysis was performed to identify the restaurant's internal strengths and weaknesses, as well as external opportunities and threats. Finally, the findings from both analyses were integrated with a sustainability assessment to formulate managerial recommendations.

A total of 92 menu items available at Restaurant D were analyzed in this study. The menus were first categorized into two main groups: Indonesian (Nusantara) and Non-Indonesian menus. Using the Menu Engineering approach, each menu item was then classified into one of four performance categories Star, Plowhorse, Puzzle, or Dog based on its popularity and contribution margin. The analysis identified 30 Star items, 43 Plowhorse items, 13 Puzzle items, and 6 Dog items. These findings provide a clear overview of the performance of each menu item and serve as a basis for evaluating menu effectiveness and developing strategic recommendations for menu improvement at Restaurant D.

Balinese Specialities

NO	MENU ITEM NAME	NUMBER OF ITEM SOLD (MONTH)												TOTAL	MENU MIX (%)	FOOD COST	FOOD SELL PRICE	ITEM CM	MENU COST	TOTAL REVENUE	TOTAL PROFIT	CM CATEGORY	MM CATEGORY	MENU CATEGORY
		JAN	FEB	MAR	APR	MEI	JUN	JUL	AGS	SEP	OKT	NOV	DES											
1	Crispy Pork Belly Betutu Sauce	7	7	6	6	7	7	8	9	7	7	7	10	88	20%	35,200	95,000	59,800	3,097,600	8,360,000	5,262,400	High	High	Star
2	Nasi Campur Bali	5	4	4	4	4	5	6	6	4	4	5	5	56	13%	27,346	75,000	47,654	1,531,376	4,200,000	2,668,624	Low	High	Plowhorse
3	Ayam Pangang Sambal Matah	6	6	6	6	6	8	8	7	7	6	8	81	18%	25,450	80,000	54,590	2,958,270	6,480,000	4,421,790	High	High	Star
4	Ayam Bumbu Bali	7	7	7	6	6	8	9	9	7	6	7	8	87	20%	26,510	80,000	53,490	2,306,370	6,960,000	4,653,630	High	High	Star
5	Ayam Betutu	6	5	6	7	7	9	7	8	6	10	8	11	90	20%	28,270	80,000	51,730	2,544,300	7,200,000	4,655,700	Low	High	Plowhorse
6	Tuna Sambal Bongkot	3	2	3	3	3	3	4	4	3	3	3	4	39	9%	28,000	80,000	51,950	1,093,950	3,120,000	2,026,050	Low	Low	Dog
TOTAL NUMBER OF MENU SOLD (12 MONTHS)														441	100%				12,031,806	42,990,044	30,298,238			
TOTAL OF MENU ITEM															6									

TOTAL			
Cost	Revenue	Profit	Sales
134,444,740	459,604,132	325,159,392	5,488

Figure 1: Draft Worksheet Analysis Menu Engineering
[Source: Analyst Team Restaurant D, 2026]

Based on the 12 month sales data, Ayam Betutu recorded the highest sales volume at 90 portions (20%), followed by Crispy Pork Belly Betutu Sauce with 88 portions (20%), Ayam Bumbu Bali with 87 portions (20%), Ayam Base Genep Sambal Matah with 81 portions (18%), Nasi Campur Bali with 56 portions (13%), and Tuna Sambal Bongkot, which had the lowest sales at 39 portions (9%). These results indicate that chicken-based dishes and traditional Balinese cuisine are more popular among customers than other menu offerings.

The Menu Engineering analysis suggests different management strategies for each menu category. Star items Crispy Pork Belly Betutu Sauce, Ayam Base Genep Sambal Matah, and Ayam Bumbu Bali should be maintained by preserving their quality, flavor consistency, and positioning them as the restaurant's signature dishes. Plowhorse items, namely Nasi Campur Bali and Ayam Betutu, should remain on the menu while improvements in pricing, portion size, or food cost efficiency are considered to increase profitability. Meanwhile, the Dog item, Tuna Sambal Bongkot, requires further evaluation

through recipe innovation, stronger promotional efforts, or possible replacement if sales performance does not improve.

The sustainability performance of Restaurant D's menu was assessed using five criteria: raw materials, cooking methods, plating/packaging, food waste management, and social aspects. Owing to its extensive use of locally sourced ingredients, traditional Balinese cooking techniques, and emphasis on regional culinary identity, the restaurant achieved an average sustainability score of 3.8, indicating good performance. Nevertheless, there remains room for improvement, particularly in reducing food waste and adopting more environmentally friendly packaging practices.

No	Nama Menu	Skor	Kategori
1	Lumpia Semarang	9	*Culinary Heritage*
2	*Chicken Noodle Soup*	3	*Non-Culinary Heritage*
3	Tuna Sambal Bongkot	9	*Culinary Heritage*
4	Nasi Campur Bali	9	*Culinary Heritage*
5	Ayam Betutu	17	*Culinary Heritage*
6	*Crispy Pork Belly Betutu Sauce*	13	*Culinary Heritage*
7	Ayam Panggang Sambal Matah	12	*Culinary Heritage*
8	Ayam Bumbu Bali	9	*Culinary Heritage*
9	Mahi – Mahi Dabulilang	9	*Culinary Heritage*
10	*Satriya Mixed Grilled Seafood*	6	*Non-Culinary Heritage*
11	*Grilled Prawn*	6	*Non-Culinary Heritage*
12	Tempe Rendang	10	*Culinary Heritage*
13	*Egg Plant Rice Bowl*	5	*Non-Culinary Heritage*
14	Rendang Terong	10	*Culinary Heritage*
15	Terong Nyat – Nyat	9	*Culinary Heritage*
16	Tempe *Ribs*	3	*Non-Culinary Heritage*
17	Tempe Nyat – Nyat	9	*Culinary Heritage*
18	Nasi Goreng Satriya	7	*Non-Culinary Heritage*
19	Bakmi Goreng	6	*Non-Culinary Heritage*
20	*Satay on Your Choice*	10	*Culinary Heritage*
21	*Fruit of Bali*	3	*Non-Culinary Heritage*
22	Pisang Goreng	3	*Non-Culinary Heritage*

TOTAL	KATEGORI
0-8	NON - CULINARY HERITAGE
9-18	CULINARY HERITAGE

Figure 2: Menu Item Classification
[Source: Analyst Team Restaurant D, 2025]

Based on the sustainability assessment, several improvements are recommended for Restaurant D. These include increasing the use of locally sourced and sustainable ingredients, adopting more energy efficient cooking methods, reducing reliance on single use packaging, and strengthening food waste management practices. In addition, menu items with lower sustainability scores such as Chicken Noodle Soup, Tempe Ribs, Fruit of Bali, and Pisang Goreng should be reviewed by improving ingredient selection, production processes, and presentation to enhance their overall sustainability performance.

The integration of the Menu Engineering results with the sustainability assessment reveals that most Culinary Heritage dishes, including Ayam Betutu, Crispy Pork Belly Betutu Sauce, Ayam Bumbu Bali, Nasi Campur Bali, and Rendang Terong, achieved higher sustainability scores than Non-Culinary Heritage menu items. This finding suggests that traditional heritage dishes not only strengthen the restaurant's cultural identity and appeal to tourists but also contribute to more sustainable restaurant operations. Therefore, Restaurant D is encouraged to maintain and further develop its Culinary Heritage menu as a

signature offering that supports both business profitability and long-term sustainability.

DISCUSSION

The findings indicate that the Indonesian Culinary Heritage menu at Restaurant D demonstrates strong performance, particularly for menu items classified as Star, which achieve high popularity and profitability. This suggests that traditional Indonesian cuisine continues to attract customers and contributes significantly to the restaurant's business performance. These findings support Kasavana and Smith (1982), who argued that Menu Engineering is an effective tool for evaluating menu performance based on popularity and contribution margin, enabling managers to identify the most valuable menu items.

The presence of Plowhorse and Dog menu categories indicates that not all menu items perform equally. While Plowhorse items are popular, their profitability can be improved through adjustments to pricing, portion size, or production costs. Meanwhile, Dog items require further evaluation through recipe innovation, promotional strategies, or possible replacement if their performance does not improve. These results are consistent with Safitri et al. (2023), who emphasized that Menu Engineering supports strategic decision-making by helping restaurants optimize menu performance and profitability.

The SWOT analysis shows that Restaurant D benefits from its authentic Culinary Heritage menu and strategic location in Kuta, Bali, providing a competitive advantage in attracting tourists seeking local dining experiences. However, the restaurant also faces challenges, including increasing competition, changing customer preferences, and fluctuating raw material prices. These findings are in line with Gürel and Tat (2017), who stated that understanding internal and external business factors is essential for developing effective and sustainable management strategies.

Another important finding is that the Culinary Heritage menu demonstrates better sustainability performance than non-heritage dishes due to its greater use of local ingredients and traditional cooking methods. This indicates that preserving local culinary traditions can also support sustainable restaurant operations. By integrating Menu Engineering, SWOT analysis, and sustainability assessment, this study provides a comprehensive framework for improving menu profitability, strengthening Restaurant D's competitiveness, and preserving Indonesia's culinary heritage, thereby contributing to both hospitality management theory and restaurant management practice.

CONCLUSIONS AND RECOMMENDATIONS

This study demonstrates that the application of Menu Engineering is effective in evaluating the performance of the Indonesian Culinary Heritage menu at Restaurant D. The analysis identified three Star items, two Plowhorse items, and one Dog item, indicating that most heritage dishes perform well in terms of popularity and profitability. Furthermore, the SWOT analysis revealed that Restaurant D's major strengths are its authentic culinary heritage menu and strategic location, while its primary challenges include increasing competition, changing customer preferences, and operational efficiency. The sustainability

assessment also showed that Culinary Heritage menu items generally perform better than non-heritage dishes because of their use of local ingredients and traditional cooking methods. Overall, integrating Menu Engineering, SWOT analysis, and sustainability assessment provides a comprehensive approach to improving menu performance and supporting sustainable restaurant management.

Restaurant D is encouraged to maintain and actively promote its Star menu items while improving the profitability of Plowhorse items through pricing strategies, portion optimization, and food cost control. The Dog menu item should be reviewed through recipe innovation, stronger promotional activities, or replacement if its performance does not improve. In addition, the restaurant should strengthen sustainability practices by increasing the use of locally sourced ingredients, reducing food waste, and adopting environmentally friendly packaging. Future research is recommended to include customer satisfaction, purchasing behavior, or financial performance indicators from different hotel categories to provide broader insights into the relationship between Menu Engineering, sustainability, and restaurant competitiveness.

ADVANCED RESEARCH

This study has several limitations. First, the research was conducted only at Restaurant D, a three-star hotel restaurant in Kuta, Bali, which may limit the generalizability of the findings to other hotel restaurants or different hospitality settings. Second, the analysis focused primarily on Menu Engineering, SWOT analysis, and sustainability assessment using menu sales data collected over a 12-month period. Other factors that may influence menu performance, such as customer satisfaction, consumer preferences, service quality, and marketing activities, were not examined in this study.

Future research is recommended to include a larger sample of restaurants from different hotel categories or tourism destinations to improve the generalizability of the findings. Further studies may also integrate additional variables, such as customer satisfaction, purchase intentions, digital marketing, and financial performance, to provide a more comprehensive understanding of menu management. Moreover, longitudinal research could be conducted to evaluate the long-term impact of implementing Menu Engineering and sustainability strategies on restaurant profitability, operational performance, and customer loyalty.

ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the management of Restaurant D for providing access to the research site and the necessary operational data. Special appreciation is extended to the Restaurant Manager, Executive Chef, and the Food and Beverage team for their valuable cooperation, insights, and assistance throughout the data collection process.

The authors also wish to thank their academic supervisor and colleagues for their constructive comments and valuable suggestions, which greatly contributed to the improvement of this study. Finally, the authors acknowledge

all individuals who supported the completion of this research. No external financial support was received for this study.

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