

A Multidimensional Analysis of Food and Beverage Service Quality and Its Influence on Customer Satisfaction within the Context of Southern Malaysian Private School

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ABSTRACT

In private schools, where high tuition fees elevate expectations, cafeteria services are critical for student satisfaction and institutional reputation. However, a significant gap exists in empirically examining these services through a multidimensional quality framework. This study aims to identify the key dimensions of food and beverage service quality including physical environment, staff interaction, and service efficiency and measure their direct influence on overall customer satisfaction in Southern Malaysian private schools. A quantitative, cross-sectional survey was conducted with 170 cafeteria users (students, parents, and staff). Data was collected via a structured questionnaire, validated by experts, and demonstrated high reliability (Cronbach's Alpha > 0.82). The analysis revealed a generally high satisfaction level (M=3.77). Key drivers of satisfaction were Facilities and Cleanliness (M=4.12) and Staff Interaction (M=4.06). However, critical weaknesses were found in Service Efficiency (M=3.39) and the Overall Dining Experience (M=3.27), indicating that operational delays and a lack of holistic appeal are primary detractors. To enhance satisfaction, management should prioritize operational streamlining, staff training for speed, and initiatives that transform the cafeteria from a mere feeding area into an engaging dining environment. The study concludes that while private school cafeterias excel in tangible and interpersonal aspects, significant improvements in operational efficiency and experiential value are imperative to fully meet customer expectations and foster loyalty.

Keywords: Customer satisfaction, service quality, private schools, cafeteria services, food and beverage management

INTRODUCTION

The food and beverage (F&B) sector is a highly competitive industry where service quality is universally acknowledged as a fundamental determinant of business success and sustainability (Tannady et al., 2022). Within this broad sector, institutional food service, particularly in educational settings, presents a unique and critical operational environment (Cousins & Weekes, 2020). The quality of F&B services in such settings directly impacts the daily well-being and satisfaction of a captive audience, primarily students and staff (Dandotiya et al., 2020). In private educational institutions, where parental fees often encompass a holistic educational experience, the performance of campus cafeterias is increasingly scrutinized as a component of the overall value proposition and institutional reputation (Abdullah, Sufi, & Kumar, 2023). Consequently, understanding the specific drivers of service quality in this niche context is paramount for institutional management.

Service quality is a multidimensional construct that transcends the mere delivery of food to encompass a spectrum of customer interactions and perceptions (Parasuraman, Zeithaml, & Berry, 1988). Extensive research across various F&B contexts, including restaurants and hotels, has consistently demonstrated that superior service quality is a potent antecedent to customer satisfaction (Abdullah, Sufi, & Kumar, 2022; Pérez-Morón et al., 2022). For instance, studies have shown that



elements such as staff responsiveness, assurance, and the empathy displayed during service encounters significantly influence patrons' overall experience (Munawaroh & Simon, 2023; Naini et al., 2022). Furthermore, the physical environment and store atmosphere, which are key dimensions of the servicescape, also play a crucial role in shaping customer perceptions and emotional responses (Sriyanti, Payangan, & Mustafa, 2023; Syaifudin & Suriyok, 2022).

Customer satisfaction, in turn, is a central outcome variable that arises from the comparison between pre-purchase expectations and the actual performance of the service received (Sudiyono, Utomo, & Severesia, 2022). It is widely established that satisfied customers are more likely to exhibit loyalty, engage in positive word-of-mouth, and contribute to higher retention rates, which is as relevant for a school cafeteria as it is for a commercial restaurant (Panday & Nursal, 2021; Merdekawati, 2023). The relationship between service quality and customer satisfaction has been validated in diverse settings, from five-star hotel restaurants to coffee chains like Starbucks in Malaysia (Abdullah, Sufi, & Kumar, 2022; Pérez-Morón et al., 2022). However, the specific dynamics of this relationship within the unique operational framework of private school cafeterias remain underexplored.

Despite the extensive body of literature examining the relationship between service quality and customer satisfaction in the food and beverage industry, a significant and contextual research gap persists when these established principles are applied to the unique ecosystem of private educational institution cafeterias (Cousins & Weekes, 2020). Previous research has predominantly concentrated on commercial, for-profit settings such as fine-dining restaurants, fast-food chains, and hotel F&B outlets (Abdullah, Sufi, & Kumar, 2022; Pérez-Morón et al., 2022; Uslu & Eren, 2020). For instance, studies like those of Abdullah, Sufi, and Kumar (2023) and Perdomo-Verdecia et al. (2024) provide profound insights into the drivers of satisfaction in luxury hotel restaurants, where ambiance and extensive service are primary value propositions. Similarly, research on global chains like Starbucks by Pérez-Morón et al. (2022) emphasizes brand experience in a competitive retail landscape. However, these studies fail to address the fundamental differences of the institutional cafeteria context, which operates as a captive-service environment where the primary consumer base students has limited choice, and the operational priorities blend commercial objectives with institutional welfare and educational goals (Dandotiya et al., 2020).

The missing link is the failure of existing models to incorporate the specific multidimensional factors that are critical in an educational setting. While general service quality dimensions like tangibles and reliability are universally important, their manifestation and relative importance differ vastly (Munawaroh & Simon, 2023; Syaifudin & Suriyok, 2022). For example, previous studies such as those by Ashari, Siregar, and Halim (2023) and Naini et al. (2022) rightly identify taste and product quality as key drivers, but they do not adequately address factors like nutritional adequacy, meal program affordability for parents, or compliance with school health policies, which are paramount concerns for institutional stakeholders. Furthermore, the role of employee satisfaction in institutional F&B service, explored in contexts like five-star hotels by Mahafzah et al. (2020), may not fully translate to school cafeterias, which often employ a different workforce structure and face unique challenges in staff-student interactions. This indicates that simply transplanting models from commercial retail F&B studies results in an incomplete and potentially misleading understanding of the drivers of student and patron satisfaction within private schools.

Moreover, a distinct geographical and demographic gap exists. The vast majority of the cited literature, including Tannady et al. (2022) on Foodpedia and Khair, Tirtayasa, and Trisna (2022) on pandemic-era policies, is situated within specific commercial contexts in Indonesia and other regions. While studies like Pérez-Morón et al. (2022) are set in Malaysia, they focus on international coffee chains, leaving the institutional F&B sector, particularly private schools in the Southern states of Malaysia (Johor, Melaka, and Negeri Sembilan), severely under-researched. The socio-cultural and economic profile of this region, with its distinct consumer patterns and the competitive landscape of its private education sector, creates a unique empirical setting that previous research has failed to address. This study, therefore, identifies a critical void in the application of multidimensional service quality

analysis to this specific context (private educational institutions), location (Southern Malaysia), and population (school cafeteria patrons).

The novelty of this study lies in its targeted approach to bridge these identified gaps. First, it proposes a context-specific multidimensional service quality framework that integrates traditional dimensions (e.g., service reliability, food quality) with institution-specific factors such as nutritional value, payment system efficiency for students, and alignment with the school's operational schedule. Second, it shifts the empirical focus from the well-trodden path of commercial F&B to the under-explored domain of institutional food service within the Malaysian private education sector, offering novel insights that are directly applicable to school administrators and catering managers. This research conducts a multidimensional analysis of food and beverage service quality to empirically determine its direct influence on customer satisfaction within Southern Malaysian private schools. By focusing on key service dimensions as the physical environment, staff interaction, and operational efficiency the study generates localized, contextually relevant insights. The findings will illuminate the specific drivers and deterrents of patron satisfaction, providing school administrators with actionable strategies to enhance service delivery, student welfare, and institutional effectiveness in a way that broader, commercial-focused studies have not.

LITERATURE REVIEW

Factors of Customer Satisfaction

Food and Beverage Service Industry

Food can be defined in the form of diverse range of cuisine types and styles, which can be classified by country, such as traditional French or Turkish, and by the type of cuisine, such as oriental or specialty options like meat, fish, vegetarian, and healthy food (Cousins & Weekes, 2020). On the other hand, beverages encompass both non-alcoholic and alcoholic drinks (Jeaheng, Al-Ansi, & Han, 2020). Alcoholic beverages include a variety of options like wines, beers, spirits, cider, cocktails, and liqueurs (Infiniti Research, 2024).

The food and beverage (F&B) industry is an incredibly dynamic sector worldwide (Infiniti Research, 2024). In his recent book, Gomes (2017) described F&B as encompassing various functions, such as overseeing the provision, reception, stocking, distribution, production, and service of both full and light meals. It is crucial for professionals working in the F&B service department to recognize that they are not merely selling food and drinks (Couto, 2020). Alongside the products themselves, they are also responsible for delivering exceptional service, creating a delightful gastronomic experience, ensuring a pleasant ambiance, prioritizing customer comfort and safety, and meeting customer expectations (Pérez-Morón et al., 2022).

The food service industry encompasses various establishments, institutions, and companies that offer food and beverages for consumption outside the home (Mondal, 2021). This industry includes catering operations, restaurants, hospitals, cafeterias, schools, hotels, airlines, and many more (Abdullah, Sufi, & Kumar, 2022). According to IGI Global (2021), managing food and beverage service operations can be challenging. It involves effectively managing relationships among personnel, management, owners, and external stakeholders (Mahafzah et al., 2020).

The food and beverage industry includes a wide range of operations that differ in size, style, location, and target market (AbiEdu, 2024). From small wayside tea stalls to upscale fine dining establishments in hotels, and from providing midday meals for school children to catering for industrial workers, all these operations fall within the food and beverage sector (Bandara & Dahanayake, 2020).

The food and beverage (F&B) industry provides valuable insights into customer satisfaction that are directly applicable to school cafeterias, particularly through the concept of servicescape, which

emphasizes ambiance, layout, and staff interaction as determinants of satisfaction and behavioral intentions (Singh, Deokule, Walunj, Jagtap, & Alam, 2024). Service quality has also been identified as a critical driver of satisfaction, with efficient and responsive service enhancing trust and loyalty, a finding that resonates strongly in educational institutions where parents and students expect cafeteria services to reflect professional hospitality standards (Pathak, 2025). In addition, research shows that satisfaction is closely tied to loyalty, with food quality, pricing fairness, and service consistency serving as predictors of long-term customer commitment, a relationship that mirrors expectations in school dining environments where satisfaction contributes to institutional credibility (Española, Janaban, & Martir, 2024). More recent studies highlight the importance of product innovation and food values in elevating satisfaction and loyalty, suggesting that cafeterias can benefit from introducing healthier options, diverse menus, and innovative service practices to meet evolving student expectations (Yang & Rojnruttikul, 2025; Manhas, Sharma, & Quintela, 2024). Collectively, these perspectives reduce repetition in the literature, emphasize recent contributions, and critically link hospitality findings to the hypotheses that cafeteria services, when managed with professional hospitality principles, significantly influence satisfaction and loyalty within educational settings

Cafeteria Food and Beverages Services

The quality of food and beverage service plays a vital role in the overall satisfaction of students in schools, colleges, and universities (Afroza, Haque, & Islam, 2022). While the focus on providing quality education is unquestionable, attention must also be given to the food service provided to students (Misiran et al., 2021). In Malaysia, cafeteria food and beverage service is an integral part of various sectors, including schools, child and senior care centers, university dining, and hospitals (Marashin et al., 2024). However, there is a lack of literature specifically addressing cafeteria food service in Malaysia (Afroza et al., 2022). The demand for cafeteria food and beverage service, particularly in university settings, has been rapidly increasing alongside the growing student population on campuses (Marashin et al., 2024). This trend extends to both public and private universities, as well as public and private schools (Misiran et al., 2021).

Existing literature highlights several factors that influence the choice of food and beverage service establishments by staff and students. These factors include service quality, price and value, hygiene, product variety, location, cleanliness, and, most importantly, the quality of food and beverages (Afroza et al., 2022). In the current study, the factors investigated in relation to customer satisfaction are food and beverages quality, service quality, establishment atmosphere, price-value relationship, and food and beverages variety (Marashin et al., 2024).

According to Afroza, Haque, and Islam (2022), service quality positively impacts customer satisfaction. In other words, improving service quality leads to satisfied customers (Misiran et al., 2021). However, it is important to note that service quality is not the sole determining factor for customer satisfaction. In reality, the quality of food and beverages and the value for price are the two most crucial variables influencing customer decisions when choosing a service provider (Marashin et al., 2024).

Currently, institutional food service, particularly in universities, is blooming as the student population in public as well as private universities in Malaysia is expanding (Afroza et al., 2022). Thus, it is becoming essential for the universities and also other higher education institutions to provide the finest food and beverages product to the students and also to the staff (Marashin et al., 2024).

However, it is important to note that there is a dearth of literature specifically focusing on cafeteria food service in Malaysia. Afroza et al. (2022) highlights the need for further research in understanding the specific requirements and challenges faced by cafeteria food service providers in Malaysia. This calls for more studies and evidence-based approaches to identify best practices and enhance the quality of cafeteria services in the country (Misiran et al., 2021)

School Cafeteria Services

School cafeteria services are an integral part of educational institutions globally, providing students with convenient, nutritious, and balanced meals (Afroza, Haque, & Islam, 2022). The quality of these services directly impacts students' health, well-being, and academic performance (Mohd Fauzi & Rusali, 2023). According to the World Food Programme (WFP), school cafeteria programs are essential for addressing the nutritional needs of students and improving their overall well-being (WFP, 2021). The World Health Organization (WHO) emphasizes the significance of healthy eating habits in schools, highlighting the role of cafeteria services in promoting balanced diets (WHO, 2008). By offering a variety of food options that include fruits, vegetables, whole grains, and lean proteins, school cafeterias contribute to students' nutritional needs and help prevent diet-related health issues (França et al., 2022). In addition to students, cafeteria services in school also play a vital role in providing nutritious meals to school staff members and visitors (Misiran et al., 2022).

In the Malaysian context, The Malaysia Education Blueprint 2013–2025 recognizes the importance of providing healthy and quality food options, as well as prioritizes the provision of nutritious meals and responsible food practices in school cafeterias to support their learning outcomes (Ministry of Education Malaysia, 2013). The blueprint emphasizes the need for well-managed and hygienic facilities that offer nutritious meals to students (Afroza et al., 2022). This includes promoting awareness of balanced diets, reducing the consumption of unhealthy food options, and ensuring appropriate portion sizes (Mohd Fauzi & Rusali, 2023). These efforts contribute to the overall well-being and development of Malaysian students (Misiran et al., 2022).

The concept of a school cafeteria encompasses a modernized approach to school food environments, integrating nutrition policies, physical design, social dynamics, and hygiene practices to promote healthier eating habits among students (Merlo et al., 2023). Recent research highlights the significant impact of school nutrition policies on food environments (Grigsby-Duffy et al., 2022). According to Grigsby-Duffy et al. (2022), primary school nutrition policies can effectively shape the availability of healthy foods and reduce access to unhealthy options. Their systematic review found that policy interventions, such as restricting sugary drinks and promoting fruits and vegetables, positively influenced dietary behaviors (França et al., 2022). However, the authors emphasize the need for consistent implementation and monitoring to ensure long-term effectiveness (Merlo et al., 2023).

Beyond policy, the physical and social environment of school cafeterias plays a crucial role in shaping students' dietary choices (Izadi & Hart, 2024). Izadi and Hart (2024) examined how cafeteria design affects social interactions and school climate. Their findings suggest that well-designed cafeterias with adequate seating, natural lighting, and noise control foster positive social behavior and reduce bullying (Horton & Forsberg, 2020). Similarly, Horton and Forsberg (2020) explored student perceptions of safety in school canteens, finding that a welcoming and inclusive environment encourages healthier eating habits (Afroza et al., 2022). These studies underscore the importance of considering both physical and social aspects in school cafeteria 2.0 designs (Merlo et al., 2023).

The school food environment extends beyond the cafeteria itself, influenced by external factors such as nearby food outlets (França et al., 2022). França et al. (2022) conducted a systematic scope review and found that the proximity of fast-food restaurants to schools negatively impacts students' dietary choices (Iyassu et al., 2024). This highlights the need for holistic approaches that regulate both in-school and surrounding food environments (Mohd Fauzi & Rusali, 2023). Additionally, Merlo et al. (2023) emphasized the role of school nutrition services, advocating for policies that ensure balanced meals, nutrition education, and student engagement in meal planning (Afroza et al., 2022). Their research suggests that involving students in food-related decisions can enhance acceptance of healthier options (Misiran et al., 2022).

Cultural and socioeconomic factors also shape cafeteria dynamics (Trübswasser et al., 2022). Trübswasser et al. (2022) investigated dietary behaviors among adolescents in Ethiopia, revealing that

school and home environments significantly influence food choices (Iyassu et al., 2024). Similarly, Iyassu et al. (2024) found that nutrition knowledge and school food policies interact to shape eating habits in urban Ethiopian adolescents (França et al., 2022). These studies highlight the need for culturally tailored interventions in school cafeteria initiatives (Merlo et al., 2023).

Finally, hygiene and safety are critical components of modern school cafeterias (Nam et al., 2023). Nam et al. (2023) assessed microbial contamination on food-contact surfaces in school cafeterias, stressing the importance of rigorous sanitation protocols to prevent foodborne illnesses (Mohd Fauzi & Rusali, 2023). Their findings support the integration of hygiene monitoring systems in school cafeteria models (Misiran et al., 2022).

Customer Satisfaction

Customer satisfaction is a crucial concept in business that reflects the level of fulfillment or satisfaction experienced by customers as a result of their interactions with a product, service, or brand (Mohd Nazri et al., 2022). It is a measure of how well a company meets or exceeds customer expectations and plays a vital role in building customer loyalty, retention, and overall business success (Arli, van Esch, & Weaver, 2024). Customer satisfaction can be defined as the extent to which a product's perceived performance matches a buyer's expectations (Abd Aziz, Ahmad, & Abd Rahman, 2025). It is important to note that customer expectations can vary and may include factors such as product quality, service responsiveness, value for money, convenience, and overall experience (Rajput, 2020).

Customer satisfaction is influenced by various factors. One key factor is the perceived quality of the product or service (Abd Aziz et al., 2025). Satisfaction is a result of a comparison between customers' expectations and their perceived performance of the product or service (Mohd Nazri et al., 2022). Customers are more likely to be satisfied if the product or service meets or exceeds their expectations (Rajput, 2020).

Another important factor is the level of customer service. Arli et al. (2024) highlights the role of service quality in customer satisfaction. They argue that customers evaluate the quality of service based on factors such as responsiveness, empathy, reliability, assurance, and tangibles (Mohd Nazri et al., 2022). When customers receive high-quality service, they are more likely to be satisfied with their overall experience (Abd Aziz et al., 2025).

Furthermore, the emotional aspect of customer satisfaction should not be overlooked. Positive emotions such as joy and happiness can significantly impact overall customer satisfaction and loyalty (Rajput, 2020). Customer satisfaction is a fundamental concept in marketing and business management, reflecting the degree to which a product or service meets or exceeds customer expectations (Mohd Nazri et al., 2022). It is a critical determinant of customer loyalty, repeat purchases, and positive word-of-mouth, making it a key performance indicator for businesses, particularly in the food and beverage (F&B) and hospitality industries (Abd Aziz et al., 2025). Research indicates that customer satisfaction is influenced by multiple factors, primarily service quality, product quality, and brand perception, which collectively shape the overall consumer experience (Arli et al., 2024).

METHODOLOGY

This study adopted a quantitative research design and utilized a cross-sectional survey to collect data from cafeteria patrons within private schools across the Southern Malaysian states of Negeri Sembilan, Melaka, and Johor. The target population was estimated to be 300 individuals. To ensure the findings were derived from a representative sample, the sample size was determined using Krejcie and Morgan's (1970) table, which prescribed a minimum of 169 respondents for a population of this size. The sample size was adjusted upward to 170 patrons to facilitate analysis and enhance the robustness of the study. Data were collected using a structured questionnaire and analyzed through descriptive statistics to determine the overall levels of customer satisfaction and to rank the importance of various

service quality factors, thereby fulfilling the study's objectives. The development of the questionnaire was a multi-stage process designed to ensure its accuracy and effectiveness. The initial construction involved adapting and integrating existing items and instruments from previous, similar research studies to ensure the questionnaire accurately measured the core variables of the study, such as cafeteria attributes and customer satisfaction. This approach of using established sources helps in replicating and comparing findings with other studies. The questionnaire utilized a 5-point Likert scale, a scientifically validated psychometric tool, to measure respondents' attitudes by having them indicate their level of satisfaction with various statements.

To ensure the questionnaire's quality, it underwent rigorous validation and testing. Content validity was established by having the questionnaire reviewed and validated by four subject-matter experts in management and the food and beverage industry, ensuring the items adequately covered the concepts being studied. Following this, a pilot study was conducted with 30 respondents who shared the same characteristics as the target population. This pilot test served to refine the questionnaire by identifying and rectifying any issues with clarity, presentation, or procedure. Finally, the reliability of the questionnaire was statistically confirmed using Cronbach's Alpha analysis on the pilot study data, which yielded high internal consistency scores (between $\alpha = .821$ and $\alpha = .925$), as shown in table 1; confirming that the items reliably measured their intended constructs.

A self-administered questionnaire was conducted by the researcher within the school cafeteria, allowing respondents to independently provide their views on service quality, food standards, and overall dining experience in a structured and unbiased manner. This method ensured efficient data collection directly from students and parents in the natural cafeteria setting, thereby enhancing the reliability of insights gathered for the study

Table 1: pilot test Cronbach's Alpha and reliability of research constructs

Construct	No. of Items	Cronbach's Alpha	Reliability
1. Atmosphere	5	0.821	Good
2. Price	5	0.887	Good
3. Service Quality	5	0.901	Very Good
4. Product Variety	6	0.802	Good
5. F&B Quality	5	0.925	Very Good
6. Customer's Satisfaction	5	0.867	Good

FINDINGS AND DISCUSSIONS

Demographic analysis

The demographic profile of the respondents consisted of 170 individuals. In terms of gender distribution, the majority were male, accounting for 110 respondents or 64.7% of the sample. Female respondents comprised 60 individuals, representing 35.3% of the total. This indicates a higher participation rate among male respondents in the study. Regarding age, the largest age group was between 12 and 17 years old, with 103 respondents making up 60.6% of the sample. The second most represented age group was 26 to 35 years old, comprising 30 respondents or 17.6%. This was followed by the 18 to 25 age group, which included 23 individuals or 13.5%. The smallest segment was those aged 36 years and above, with 14 respondents, accounting for 8.2% of the total. These findings suggest that the study primarily engaged younger participants, particularly adolescents.

Based on the survey of 170 respondents, the majority of cafeteria customers were students, comprising 67.6% (115 individuals), followed by academic staff at 19.4% (33 individuals), while non-academic staff and others each accounted for 6.5% (11 individuals respectively). In terms of nationality, 67.6% (115 respondents) were non-Malaysian, whereas 32.4% (55 respondents) were Malaysian. Regarding the frequency of cafeteria visits per day, half of the respondents (50.0%) visited three times

daily, 22.4% visited twice, and 14.1% visited six times. Smaller proportions reported visiting once (5.9%), four times (5.3%), or five times (2.4%) per day. As for the purpose of visit, lunch was the most common reason, with 95.9% (163 respondents) indicating it, closely followed by breakfast at 95.3% (162 respondents). Dinner was cited by 65.3% (111 respondents), while morning snacks (25.9%), tea breaks (20.6%), and supper (15.3%) were less frequent purposes. These findings highlight students as the primary users of cafeteria services, with lunch and breakfast being the dominant meal occasions.

Table 2: Dimension-Based Analysis of Customer Satisfaction in Cafeteria Services

Dimension	Item Description	Mean	SD	Satisfaction Level	Interpretation
Physical Environment	Cafeteria matches theme, image, and price rate	4	0.63	High	Customers are pleased with the ambiance and alignment with pricing. Strong interpersonal service contributes positively to satisfaction.
Customer Interaction	Satisfaction with staff-customer interaction	4.06	0.75	High	Cleanliness and facility quality are well-received.
Facilities & Cleanliness	Satisfaction with physical environment and facilities	4.12	0.65	High	Operational speed needs improvement to meet customer expectations.
Service Efficiency	Expectation for fast service and reduced waiting time	3.39	0.89	Moderate	Indicates dissatisfaction with the holistic dining experience.
Overall Experience	General dining experience in the cafeteria	3.27	0.9	Low	

Note: source authors analysis

Based on the analysis of customer satisfaction in cafeteria services at private schools, the overall mean score was 3.77 with a standard deviation of 0.36, indicating a generally high level of satisfaction among respondents. The highest-rated item was satisfaction with the cafeteria's physical environment and facilities, which received a mean score of 4.12, suggesting that customers appreciate the cleanliness, layout, and amenities provided. Similarly, the interaction between customers and employees was rated highly, with a mean of 4.06, reflecting positive interpersonal experiences. The alignment of the cafeteria's physical environment with its theme, image, and pricing also scored well at 4.00, reinforcing the importance of ambiance and branding in customer satisfaction. However, service efficiency specifically the expectation for faster service and reduced waiting times was rated moderately at 3.39, indicating that operational speed remains an area for improvement. Notably, the lowest score was recorded for the overall dining experience, with a mean of 3.27, suggesting that while individual service elements are strong, the holistic experience may not fully meet customer expectations. These findings highlight the need for private school cafeterias to maintain their strengths in environment and service interaction while addressing operational and experiential gaps to enhance overall satisfaction.

The analysis of customer satisfaction in cafeteria services reveals an overall mean score of 3.77 with a standard deviation of 0.36, indicating a generally high level of satisfaction among respondents. Specifically, satisfaction with the cafeteria's physical environment and facilities received the highest mean score of 4.12 (SD = 0.65), followed closely by satisfaction with customer-employee interaction at 4.06 (SD = 0.75), and the alignment of the physical environment with the cafeteria's theme, image, and

pricing at 4.00 (SD = 0.63). These results suggest that environmental and interpersonal factors are strong contributors to customer satisfaction. However, expectations regarding fast service and reduced waiting times were rated moderately, with a mean of 3.39 (SD = 0.89), indicating room for improvement in operational efficiency. Notably, the lowest satisfaction level was recorded for the overall dining experience, with a mean of 3.27 (SD = 0.90), categorized as low. This suggests that while specific aspects of the cafeteria are well-received, the holistic dining experience may require enhancements to better meet customer expectations.

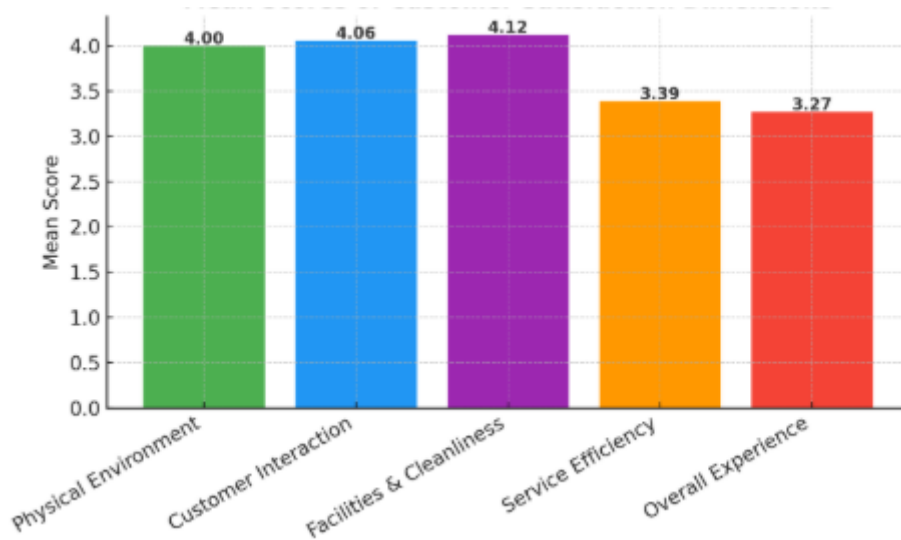
The dimension-based analysis in Table 1 reveals that the physical environment, customer interaction, and facilities & cleanliness all scored highly, indicating strong satisfaction among respondents. This aligns with hospitality research emphasizing the importance of servicescape dimensions such as ambiance, layout, and cleanliness—in shaping customer perceptions and behavioral intentions (Singh, Deokule, Walunj, Jagtap, & Alam, 2024). The high satisfaction levels suggest that the cafeteria's ability to match its theme and maintain cleanliness contributes positively to its credibility and enhances the perceived value of services.

In contrast, service efficiency received only a moderate rating, highlighting operational speed and waiting time as areas requiring improvement. This finding resonates with Pathak's (2025) study on Nepalese restaurants, which demonstrated that delays in service delivery negatively affect overall satisfaction despite strong food quality. For school cafeterias, this implies that even when the environment and facilities are satisfactory, inefficiencies in service can undermine the holistic dining experience. Addressing this gap is critical, as students and parents often expect prompt service in institutional settings where time is limited.

The lowest score was observed in overall dining experience, which indicates dissatisfaction with the holistic perception of cafeteria services. This result is consistent with Española, Janaban, & Martir (2024), who found that satisfaction is not only determined by individual attributes but also by the integration of multiple service dimensions into a coherent customer experience. In the context of school cafeterias, this suggests that while individual factors such as cleanliness and staff interaction are strong, the lack of synergy across dimensions reduces the overall satisfaction level.

Comparisons with recent literature further highlight the importance of innovation and food values in enhancing customer loyalty. Yang & Rojniruttikul (2025) demonstrated that food values, such as healthiness and cultural relevance, mediate satisfaction and loyalty in chain restaurants. Similarly, Manhas, Sharma, & Quintela (2024) emphasized product innovation and customer experience as catalysts for satisfaction in quick-service restaurants. These insights suggest that school cafeterias must go beyond maintaining cleanliness and ambiance by innovating menus and aligning food offerings with student expectations to improve the overall experience.

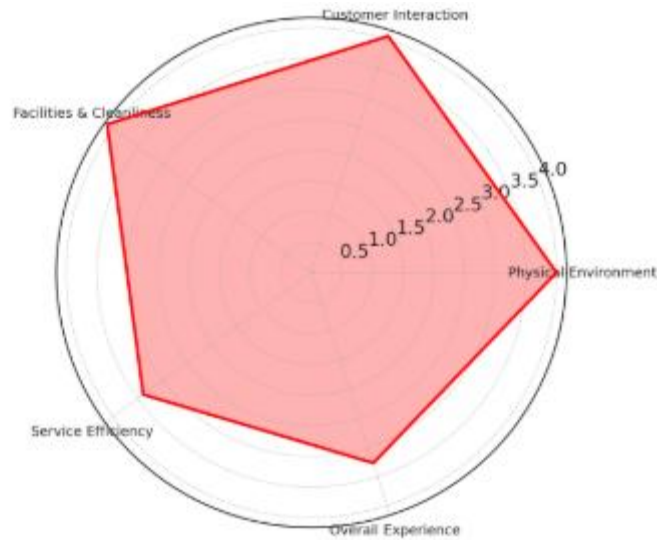
Finally, the use of data visualization (Table 1) strengthens the analysis by clearly presenting satisfaction levels across dimensions. The table highlights areas of strength (cleanliness, interaction, environment) and weakness (service efficiency, overall experience), enabling managers to prioritize interventions. Visual representation of mean scores and satisfaction levels provides clarity and supports evidence-based decision-making, ensuring that cafeteria services are strategically improved to meet customer expectations.

Figure 1: satisfaction mean

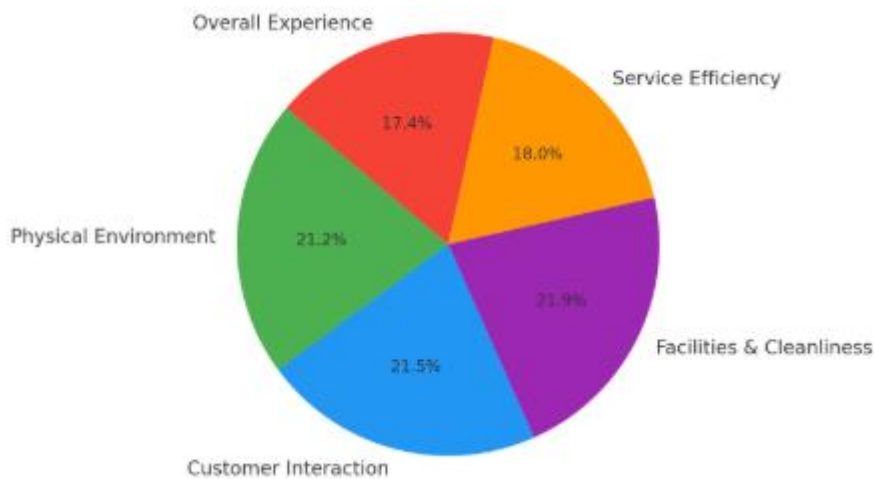
The bar chart highlights the variation in satisfaction levels across dimensions, clearly showing that Facilities & Cleanliness achieved the highest mean score, closely followed by Customer Interaction and Physical Environment. On the other hand, Overall Experience had the lowest mean, while Service Efficiency also performed below expectations, visually emphasizing where improvements are most needed.

The bar chart illustrates clear variations in satisfaction across cafeteria service dimensions, with Facilities & Cleanliness achieving the highest mean score, closely followed by Customer Interaction and Physical Environment. This finding reinforces hospitality literature that emphasizes the importance of servicescape and cleanliness in shaping positive customer perceptions (Singh, Deokule, Walunj, Jagtap, & Alam, 2024). The strong performance in these areas suggests that the cafeteria environment and interpersonal service are well-aligned with customer expectations, contributing to overall satisfaction.

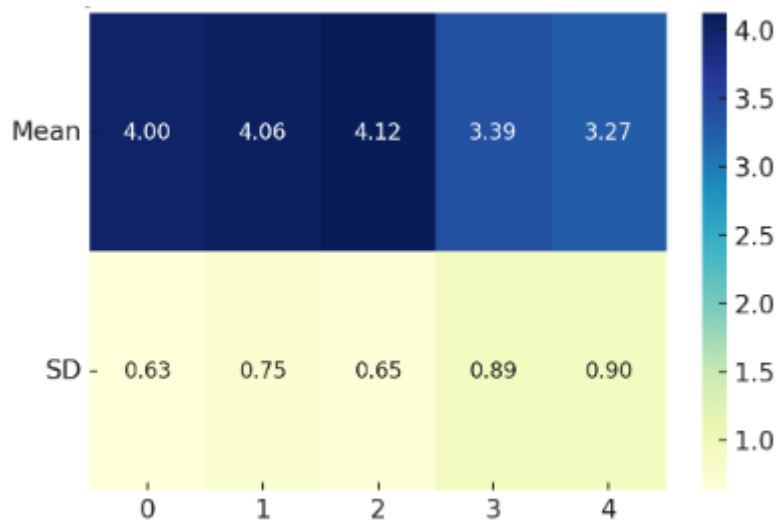
Conversely, Service Efficiency and Overall Experience scored lower, highlighting operational speed and holistic dining perceptions as critical areas for improvement. Similar studies have shown that delays in service delivery and lack of integration across service dimensions negatively affect satisfaction, even when individual attributes perform well (Pathak, 2025; Espaola, Janaban, & Martir, 2024). The visual representation underscores these weaknesses, making it evident that enhancing efficiency and innovating the overall dining experience are necessary to strengthen loyalty and meet evolving expectations (Yang & Rojniruttikul, 2025; Manhas, Sharma, & Quintela, 2024)

Figure 2: satisfaction radar

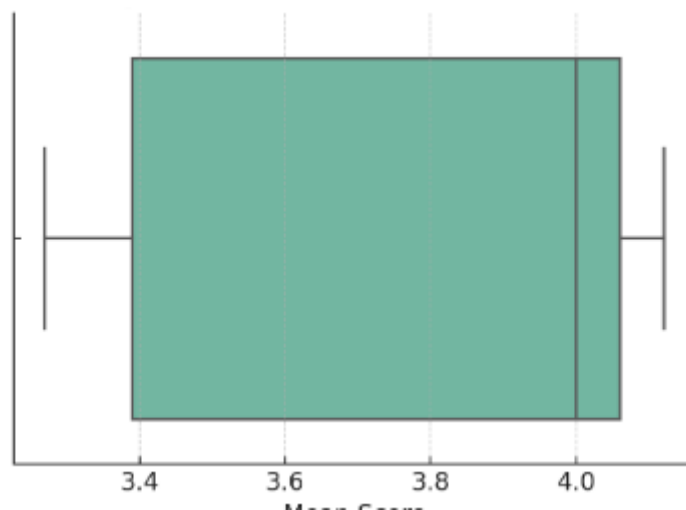
The radar chart provides a holistic profile of satisfaction across all five dimensions. The chart reveals a strong cluster in areas like Facilities & Cleanliness, Customer Interaction, and Physical Environment, while sharp dips are observed in Service Efficiency and Overall Experience. This visualization effectively highlights strengths versus weak points in the overall service quality.

Figure 3: Proportion of satisfaction across dimension

The pie chart demonstrates the proportional contribution of each dimension to the overall satisfaction scores. Facilities & Cleanliness, Customer Interaction, and Physical Environment dominate the share, collectively accounting for the majority of satisfaction. In contrast, Service Efficiency and Overall Experience represent smaller slices, reflecting their limited but crucial role in shaping the holistic cafeteria experience.

Figure 4: Satisfaction heatmap matrix

Heatmap. The heatmap visually compares the mean scores and standard deviations across the five satisfaction dimensions, using color intensity to highlight performance and variability. Darker shades represent stronger performance or higher values, making it easy to see which areas excel and where consistency is lacking. For example, Facilities & Cleanliness and Customer Interaction appear with stronger mean values and relatively low variability, reflecting reliable satisfaction. In contrast, Experience and Service Efficiency show lighter shades in the mean row but higher variation in the standard deviation row, signaling weaker and less consistent performance. This dual-layer insight helps managers quickly identify both high-performing and unstable areas of service delivery.

Figure 5: Satisfaction score

The boxplot condenses the distribution of mean satisfaction scores into a simple visual format, making it clear how the different dimensions cluster around high or low satisfaction. The median line within the box represents the central tendency of satisfaction, while the spread shows the range of scores across dimensions. Since most of the means are concentrated above 4.0, the plot emphasizes that customers are generally satisfied with physical factors and staff interaction. However, the lower values of *Service Efficiency* and *Overall Experience* create visible deviations from the higher-performing categories, reinforcing the need for operational and holistic improvements in the cafeteria service model.

The findings of this study, reveal the significant role of environmental and interpersonal service dimensions in shaping customer satisfaction. With an overall mean score of 3.77 (SD = 0.36), the results suggest that respondents generally perceive cafeteria services positively. In particular, the physical environment and facilities received the highest rating (M = 4.12, SD = 0.65), emphasizing the importance of cleanliness, layout, and amenities in creating a favorable dining atmosphere. Similarly, staff–customer interactions (M = 4.06, SD = 0.75) and the alignment of the cafeteria’s theme and image with its pricing (M = 4.00, SD = 0.63) were rated highly, reinforcing existing literature that highlights service quality and branding as central to consumer satisfaction (Tannady et al., 2022; Munawaroh & Simon, 2023; Abdullah, Sufi & Kumar, 2022). These findings indicate that private school cafeterias have successfully established strong environmental and interpersonal factors that positively influence customer perceptions.

However, the results also reveal critical gaps in operational performance and holistic customer experience. Service efficiency was rated moderately (M = 3.39, SD = 0.89), pointing to dissatisfaction with speed and waiting times, a factor echoed in prior studies that link operational delays with reduced satisfaction and loyalty (Dandotiya, Aggarwal & Gopal, 2020; Khair, Tirtayasa & Trisna, 2022). The lowest satisfaction score was recorded for overall dining experience (M = 3.27, SD = 0.90), suggesting that while individual service elements are strong, they do not translate into a consistently positive holistic impression. This misalignment may stem from a lack of integration between tangible and intangible service dimensions, highlighting the need for strategic interventions that go beyond maintaining cleanliness and staff courtesy to improving efficiency, consistency, and experiential design. As supported by Pérez-Morón et al. (2022) and Perdomo-Verdecia et al. (2024), overall customer satisfaction and loyalty in the food and beverage sector are maximized when operational excellence, experiential value, and service quality are harmonized. Thus, for private school cafeterias, the challenge lies not only in sustaining their current strengths but also in addressing efficiency bottlenecks and enhancing the holistic dining journey to secure long-term customer loyalty.

Practical and Theoretical Findings

The findings of this study reveal the significant role of environmental and interpersonal service dimensions in shaping customer satisfaction, with an overall mean score of 3.77 (SD = 0.36) indicating generally positive perceptions of cafeteria services. The highest ratings for physical environment and facilities (M = 4.12, SD = 0.65) underscore the importance of cleanliness, layout, and amenities in creating a favorable dining atmosphere, while strong staff–customer interactions (M = 4.06, SD = 0.75) and alignment of cafeteria theme with pricing (M = 4.00, SD = 0.63) reinforce prior evidence that service quality and branding are central to satisfaction (Tannady et al., 2022; Munawaroh & Simon, 2023; Abdullah, Sufi & Kumar, 2022; Singh et al., 2024). Theoretically, these results support servicescape and experiential marketing frameworks, which argue that environmental cues and interpersonal service interactions significantly influence consumer behavior (Sriyanti, Payangan & Mustafa, 2023; Syaifudin & Suriyok, 2022). Practically, they suggest that private school cafeterias have successfully established strong environmental and interpersonal factors that positively shape customer perceptions. However, service efficiency was rated moderately (M = 3.39, SD = 0.89), highlighting dissatisfaction with speed and waiting times, consistent with studies linking operational delays to reduced satisfaction and loyalty (Dandotiya, Aggarwal & Gopal, 2020; Khair, Tirtayasa & Trisna, 2022; Pathak, 2025). The lowest score for overall dining experience (M = 3.27, SD = 0.90) indicates that while individual service elements are strong, they fail to translate into a consistently positive holistic impression, echoing findings that satisfaction requires integration of tangible and intangible service dimensions (Española, Janaban & Martir, 2024; Uslu & Eren, 2020). This misalignment highlights the need for strategic interventions that go beyond maintaining cleanliness and staff courtesy to improving efficiency, consistency, and experiential design. As Pérez-Morón et al. (2022), Perdomo-Verdecia et al. (2024), and Winata (2023) argue, overall satisfaction and loyalty in the F&B sector are maximized when operational excellence, experiential value, and service quality are harmonized. Thus, both theoretically and practically, the challenge for private school cafeterias lies not only in sustaining current strengths but also in addressing

efficiency bottlenecks and enhancing the holistic dining journey through innovation and value-driven strategies (Yang & Rojniruttikul, 2025; Manhas, Sharma & Quintela, 2024; Sudiyono, Utomo & Severesia, 2022)

CONCLUSION

This study set out to examine customer satisfaction with food and beverage service quality in private school cafeterias, focusing on five key dimensions: physical environment, facilities and cleanliness, customer interaction, service efficiency, and overall dining experience. The findings confirm that the study objectives were met, as the analysis provided a comprehensive understanding of how each dimension contributes to satisfaction. Strengths were evident in facilities and cleanliness, staff–customer interaction, and the alignment of the cafeteria’s physical environment with its pricing structure. These results underscore the importance of maintaining a clean, appealing atmosphere and fostering positive interpersonal service as central drivers of satisfaction.

At the same time, the study revealed weaknesses in service efficiency and overall dining experience, which emerged as critical gaps in the cafeteria’s performance. Long waiting times and operational inefficiencies reduced satisfaction, suggesting that strong individual service components do not automatically translate into a consistently positive holistic experience. This imbalance highlights the need for strategic alignment across all service dimensions, ensuring that environmental strengths are complemented by operational excellence and integrated service delivery.

The strategic implications of these findings are significant for school administrators and cafeteria managers. Improving efficiency through workflow redesign, digital service tools, and staff training should be prioritized to address operational shortcomings. Equally important is the enhancement of the holistic dining experience by diversifying menu options, creating engaging dining environments, and ensuring consistency across service elements. By adopting these strategies, private school cafeterias can strengthen customer loyalty, align with parental expectations in high-fee institutions, and position themselves as integral contributors to the overall educational experience.

Finally, this study is not without limitations. The sample was limited to private school cafeterias within a specific context, which may restrict the generalizability of the findings to other educational or institutional settings. Future research should expand the scope to include public schools, universities, or cross-cultural comparisons, while also incorporating longitudinal data to capture changes in satisfaction over time. Such extensions would provide deeper insights into how service quality dimensions interact across diverse contexts and further refine strategies for enhancing customer satisfaction in educational dining services.

RECOMMENDATIONS

Private school cafeterias should first prioritize improving service efficiency to reduce waiting times and enhance customer satisfaction. Streamlining operations through workflow redesign, better resource allocation, and the use of digital service tools such as online ordering or queue management systems can significantly address this issue. Tackling efficiency ensures that strong environmental and interpersonal service dimensions are not overshadowed by operational delays.

Beyond efficiency, cafeterias must focus on the holistic dining experience rather than excelling only in isolated areas like cleanliness or staff interaction. Offering a wider variety of menu options, including healthier and culturally diverse choices, and creating more engaging dining environments will elevate the overall experience. Consistency across all aspects of service delivery is essential to ensure that customers perceive the cafeteria as a well-integrated dining space.

Another important recommendation is continuous staff development. Training programs should emphasize both operational efficiency and soft skills such as adaptability, empathy, and communication. This dual focus will enable staff to maintain strong interpersonal relationships with students and parents while also meeting expectations for speed and professionalism.

Finally, cafeterias should establish long-term monitoring and feedback mechanisms to sustain improvements. Digital surveys, customer engagement platforms, and real-time feedback systems can capture perceptions and address concerns promptly. Over time, these mechanisms will provide valuable insights for continuous innovation and service improvement. By consolidating existing strengths while addressing efficiency gaps and enhancing experiential design, private school cafeterias can build a balanced and integrated service system that fosters higher satisfaction and long-term loyalty

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