

# Dining experience and customer satisfaction: Evidence from service quality and health-supportive food quality in Padang, Indonesia

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**Abstract.** This study examines how casual dining restaurants in Padang, Indonesia, respond to the growing demand for healthy eating by positioning health-supportive food quality and service quality as primary drivers of customer satisfaction, alongside atmosphere and physical environment as complementary factors. Data were collected from 123 customers through a structured questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationships between dining experience attributes and satisfaction. The findings reveal that health-supportive food quality ( $\beta = 0.282$ ,  $p = 0.001$ ) and service quality ( $\beta = 0.472$ ,  $p < 0.001$ ) significantly enhance customer satisfaction, while atmosphere and physical environment do not have a significant impact. Descriptive analysis shows consistently high ratings for freshness, cleanliness, and serving temperature, but relatively lower ratings for the availability of high-fiber, low-sugar menu options. These findings highlight the need for managers to expand health-oriented menu offerings and strengthen proactive service behaviors, while treating atmosphere and physical environment as baseline expectations.

## 1 Introduction

The foodservice industry is a critical component of the food system, offering meals to consumers and at the same time connecting them to the upstream stages of the food supply chain. This position enables it to influence sustainability across environmental and health dimensions. Sustainability is assessed not only from an ecological perspective—such as the use of organic and locally sourced ingredients—but also from its impact on consumer health [1,2]. As a sector that shapes society's eating patterns, the foodservice industry contributes to sustainability by creating dining experiences that foster health through the provision of nutritious and wholesome menu options.

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In recent years, the demand for healthier food options has grown significantly, with consumers—particularly in urban areas—seeking dining experiences that align with their health-conscious lifestyles [3]. This shift has driven notable changes in the foodservice industry, where offering healthy and sustainable menu choices has become increasingly important. Research has evolved from focusing on low-fat menus to examining the reliability of nutritional information [4], menu attitudes, and broader restaurant sustainability. Healthy food consumption thus represents both a commitment to health and a core element of sustainable dining, encompassing environmental responsibility, local sourcing, and nutrition.

Indonesia has approximately 4.85 million foodservice businesses, of which 1.20 million (24.75%) are classified as restaurants. These restaurants generated USD 30.2 billion in revenue, representing a 6% increase from USD 28.5 billion in the previous year. The majority (95%) of this revenue is contributed by international fast-food chains such as McDonald's, KFC, Pizza Hut, and Starbucks [5]. Although fast-food outlets dominate the Indonesian market, the casual dining sector has demonstrated notable growth, expanding by 3% nationally in 2023 to reach 9,031 units. This segment offers a balanced dining experience, combining high-quality food, a comfortable atmosphere, and reasonable prices, thereby attracting a broad and diverse customer base.

Padang City has experienced dynamic growth in its dining sector, with the number of registered restaurants increasing from 335 in 2022 to 341 in 2024 [6]. This growth reflects not only the sustained popularity of traditional cuisine served at Padang restaurants but also the rising demand for modern dining options. As one of the emerging foodservice segments in the city, casual dining restaurants offer a more diverse range of menu options, including dishes that are perceived as healthier by consumers.

While numerous studies have examined the relationship between dining experience attributes—such as food quality, service quality, atmosphere, and physical environment—and customer satisfaction, most have been conducted in developed countries [7,8]. Moreover, research explicitly addressing how casual dining establishments accommodate the growing trend of healthy eating—particularly from the consumer's perspective—remains limited, especially in emerging markets such as Indonesia.

This study specifically evaluates the extent to which casual dining restaurants in Padang integrate and promote healthy eating practices as part of their dining experience, as perceived by customers. The focus is on health-supportive food quality, alongside service quality, atmosphere, and the physical environment, and how these factors collectively influence customer satisfaction. By adopting this perspective, the study contributes to the literature on sustainable dining while providing practical insights for the restaurant industry in responding to the growing consumer demand for healthier food options.

## **2 Theoretical background and development of hypotheses**

In service research, customer satisfaction is regarded as a core construct that captures consumers' global evaluation of a service experience. In the context of restaurants, this evaluation is shaped by factors such as food quality, service quality, atmosphere, fairness of pricing, and the state of physical facilities. Expectation–Confirmation Theory posits that satisfaction emerges when perceived performance is equal to or greater than what customers initially expected. This framework has been extensively applied in hospitality and foodservice research, emphasizing that customer satisfaction is a combination of both cognitive and affective responses to the dining experience.

Sustainable food consumption—the demand-side of a sustainable food system—emphasizes consumer choices that ensure nutritious and safe food while supporting environmental, social, and economic sustainability [1,2]. In this context, dining experiences should be evaluated not only for service quality and sensory appeal but also for their role in

fostering responsible, health-oriented consumption. This study adapts the traditional satisfaction framework by redefining food quality to include health-supportive indicators—healthy options, nutritional value, freshness, temperature, portion size, and cleanliness—alongside service quality, atmosphere, and physical environment, to assess casual dining in Padang, Indonesia.

## 2.1 Food quality

Food quality has consistently been identified as one of the most influential determinants of customer satisfaction in restaurant settings. Traditional measures focus on taste, freshness, portion size, and presentation. In the context of sustainable dining, however, food quality also encompasses health-related attributes such as nutritional value, menu diversity for healthy choices, appropriate serving temperature, and hygiene standards. Prior studies define healthy food in terms of nutrient composition (e.g., low fat, reduced sugar, high fiber, calorie limits), food types (e.g., fruits, vegetables, whole foods), ingredient quality (e.g., freshness, organic), and healthy cooking methods [9]. Restaurants can also promote healthy consumption through strategies such as labeling healthy options, providing nutrition information, offering reduced-size portions, and accommodating special requests for healthier modifications.

In this study, food quality is operationalized as health-supportive food quality, reflecting the degree to which menu offerings encourage healthy eating. Measurement indicators—derived from prior literature—include the availability of healthy menu options, perceived nutritional value, serving temperature, visual cleanliness, freshness, and portion adequacy. When customers perceive that the food served aligns with their health-conscious preferences, they are more likely to experience satisfaction, as it meets both their sensory and health-related expectations [10].

**H1:** Food quality positively influences customer satisfaction.

## 2.2 Service quality

While food quality is central to dining satisfaction, service quality plays a crucial role in shaping emotional and relational connections between customers and restaurants. Service quality is often defined as the discrepancy between what customers expect and how they perceive the service actually delivered. In restaurant settings, aspects such as responsiveness, empathy, and assurance play a crucial role in shaping a favourable customer experience. When service quality is high, it can increase perceived value, stimulate repeat patronage, and reinforce customer loyalty.

**H2:** Service quality positively influences customer satisfaction.

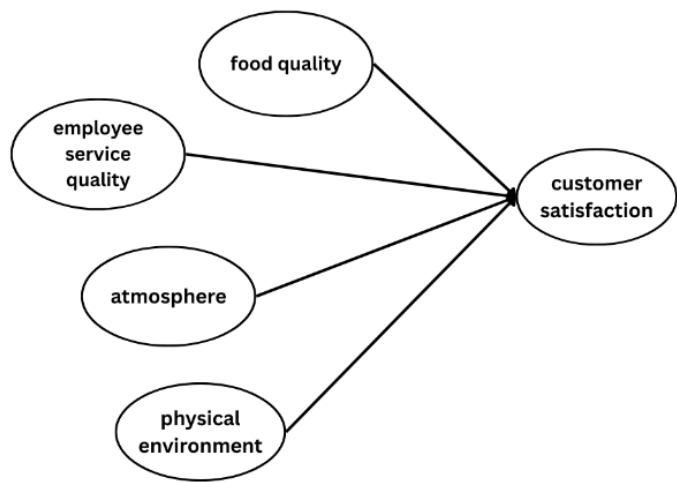
## 2.3 Atmosphere and physical environment

Ambiance—covering interior design, lighting, temperature, music, and seating arrangement—affects both the sensory and emotional aspects of the dining experience. A pleasant atmosphere not only enhances comfort but also encourages longer stays and positive word-of-mouth. Similarly, the physical environment, including cleanliness, facility maintenance, and the availability of functional amenities, contributes to the tangible dimension of service quality.

**H3:** Atmosphere positively influences customer satisfaction.

**H4:** Physical environment positively influences customer satisfaction.

The hypotheses in this study are derived from previous empirical research to clarify the main determinants of customer satisfaction in sustainable dining settings. The resulting conceptual model is illustrated in Fig. 1.



**Fig. 1.** Conceptual framework

**3 Method**

Data were collected through an online survey using Google Forms, distributed via open links on social media and WhatsApp groups between January 1 and February 2, 2025. A purposive sampling technique was employed, targeting respondents who met the criteria of being at least 18 years old and having dined at casual dining restaurants in Padang City within the past three months. The survey was disseminated using an accidental approach, allowing participation from individuals who accessed the link and met the criteria. Before starting the survey, participants were informed that their responses would be kept confidential and their participation would be completely anonymous. Respondents could withdraw if they did not meet the requirement.

The questionnaire was divided into two main parts. The first part collected respondents’ socio-demographic information, including gender, age, education, occupation, monthly income, and frequency of restaurant visits. The second part comprised items assessing perceptions of food quality, service quality, atmosphere, physical environment, and overall customer satisfaction. Respondents indicated their agreement with each statement on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = somewhat agree, 4 = agree, 5 = strongly agree). The survey instrument was designed to analyse how dining experience attributes—namely food quality, service quality, atmosphere, and physical environment—are related to customer satisfaction in casual dining restaurants.

PLS-SEM was employed as the research model is predictive and involves latent constructs, while the Likert-scale survey data may not meet the assumption of multivariate normality. This method does not require normally distributed data, and bootstrapping—a non-parametric resampling technique—was applied to generate an empirical distribution and assess the statistical significance of the estimated parameters. PLS-SEM consists of two components: the measurement model, which links latent constructs to their indicators, and the structural model, which tests the relationships between constructs. Both are assessed using convergent and discriminant validity, as well as path coefficients with bootstrapping [11].

Sample size was determined using G\*Power. Based on  $\alpha = 0.05$ , power = 0.80, four predictors, and a medium effect size ( $f^2 = 0.20$ ), the required minimum was 98 respondents; the 123 responses collected met this requirement for valid PLS-SEM estimation. The respondents' characteristics are summarized in Table 1.

**Table 1.** Characteristics of respondents

| Socio-demographic variables                  | Frequency | Percentage (%) |
|----------------------------------------------|-----------|----------------|
| Gender                                       |           |                |
| Female                                       | 74        | 60             |
| Male                                         | 49        | 40             |
| Age (years)                                  |           |                |
| 18-27                                        | 70        | 57             |
| 28-37                                        | 34        | 28             |
| 38-48                                        | 14        | 11             |
| 49-59                                        | 3         | 2              |
| ≥ 60 Tahun                                   | 2         | 2              |
| Education Level                              |           |                |
| Senior High School                           | 40        | 33             |
| Diploma (associate degree)                   | 11        | 9              |
| Bachelor's degree                            | 65        | 53             |
| Graduate degree (master's/doctorate)         | 7         | 6              |
| Occupation                                   |           |                |
| Student                                      | 33        | 27             |
| Government employee                          | 16        | 13             |
| Private employee                             | 31        | 25             |
| Entrepreneur/self-employed                   | 20        | 16             |
| Housewife                                    | 9         | 7              |
| Other                                        | 14        | 11             |
| Monthly income (IDR)                         |           |                |
| < 1 million                                  | 32        | 26             |
| ≥ 1–3 million                                | 39        | 32             |
| > 3–5 million                                | 25        | 20             |
| ≥ 5–10 million                               | 22        | 18             |
| > 10 million                                 | 5         | 4              |
| Frequency of the restaurant visits per month |           |                |
| 1–2 times                                    | 56        | 46             |
| 3–5 times                                    | 49        | 40             |
| 6–10 times                                   | 10        | 8              |
| Over 10 times                                | 8         | 7              |

Based on Table 1, the respondents in this study were predominantly female (60%). The majority were aged between 18-27 years (57%) and held a bachelor's degree (53%). In terms of occupation, respondents came from various professional backgrounds, with the largest proportions being students (27%) and private employees (25%). Monthly income levels varied, but most respondents reported earnings in the range of IDR 1-3 million (32%) and below IDR 1 million (26%). Regarding consumption behavior, most respondents visited restaurants 1-2 times per month (46%), followed by those who visited 3-5 times per month (40%).

4 Results

4.1 Validity and reliability of instrument analysis

Instrument validity was tested using SPSS 24 with a sample of 123 respondents at a 5% significance level, applying a critical *r* value of 0.177. Validity was assessed using the corrected item-total correlation method, with items deemed valid if  $r \geq 0.177$ . Reliability was assessed using Cronbach’s alpha, where coefficients of 0.60 or higher were considered to indicate acceptable internal consistency. As shown in Table 2, all items met the validity criterion, and each construct exceeded the reliability threshold.

Table 2. Item total correlation and cronbach’s alpha

| Item | Corrected item total correlation | Cronbach alpha |
|------|----------------------------------|----------------|
| X1   |                                  | 0.855          |
| X1.1 | 0.624                            |                |
| X1.2 | 0.583                            |                |
| X1.3 | 0.684                            |                |
| X1.4 | 0.735                            |                |
| X1.5 | 0.716                            |                |
| X1.6 | 0.650                            |                |
| X2   |                                  | 0.909          |
| X2.1 | 0.742                            |                |
| X2.2 | 0.710                            |                |
| X2.3 | 0.767                            |                |
| X2.4 | 0.729                            |                |
| X3   |                                  | 0.811          |
| X3.1 | 0.596                            |                |
| X3.2 | 0.588                            |                |
| X3.3 | 0.672                            |                |
| X4   |                                  | 0.815          |
| X4.1 | 0.693                            |                |
| X4.2 | 0.732                            |                |
| X4.3 | 0.666                            |                |
| X4.4 | 0.698                            |                |
| Y    |                                  | 0.842          |
| Y.1  | 0.694                            |                |
| Y.2  | 0.647                            |                |
| Y.3  | 0.729                            |                |
| Y.4  | 0.523                            |                |

4.2 Descriptive statistics of questionnaire items

Descriptive statistics for all questionnaire items are presented in Table 3. All items were measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Overall, the mean scores are relatively high, indicating that respondents generally evaluate the restaurants positively. Food quality items show high mean values ( $M = 4.016\text{--}4.537$ ), particularly in the statements “The food is visually clean” and “The food served is fresh”, with more than 90% of respondents agreeing or strongly agreeing. In contrast, “The restaurant offers healthy options that are high in fibre and low in sugar” (X1.1) has a comparatively lower mean ( $M = 3.935$ ).

**Table 3.** Descriptive statistics of questionnaire items (n = 123)

| Items                                                                                            | SA | n (%) | A  | n (%) | SWA | n (%) | D  | n (%) | SD | n (%) | Mean  |
|--------------------------------------------------------------------------------------------------|----|-------|----|-------|-----|-------|----|-------|----|-------|-------|
| The restaurant offers healthy options that are high in fiber and low in sugar (X1.1)             | 41 | 33    | 41 | 33    | 34  | 28    | 6  | 5     | 1  | 1     | 3.935 |
| The food I order contains high-quality nutrients (X1.2)                                          | 34 | 28    | 59 | 48    | 28  | 23    | 2  | 2     | 0  | 0     | 4.016 |
| Food is served at the proper temperature for its type (X1.3)                                     | 61 | 50    | 55 | 45    | 5   | 4     | 1  | 1     | 1  | 1     | 4.415 |
| The food is visually clean (X1.4)                                                                | 73 | 59    | 43 | 35    | 7   | 6     | 0  | 0     | 0  | 0     | 4.537 |
| The food served is fresh (X1.5)                                                                  | 72 | 59    | 45 | 37    | 6   | 5     | 0  | 0     | 0  | 0     | 4.537 |
| Food portions are sufficient for me (X1.6)                                                       | 61 | 50    | 49 | 40    | 9   | 7     | 4  | 3     | 0  | 0     | 4.358 |
| Service is provided quickly (X2.1)                                                               | 63 | 51    | 48 | 39    | 11  | 9     | 1  | 1     | 0  | 0     | 4.407 |
| Deliver service with accuracy X2.2                                                               | 73 | 59    | 42 | 34    | 8   | 7     | 0  | 0     | 0  | 0     | 4.528 |
| Employees demonstrate friendliness (X2.3)                                                        | 73 | 59    | 40 | 33    | 10  | 8     | 0  | 0     | 0  | 0     | 4,512 |
| Staff are eager to assist customers (X2.4)                                                       | 61 | 50    | 46 | 37    | 16  | 13    | 0  | 0     | 0  | 0     | 4.366 |
| The dining room temperature is comfortable for eating (X3.1)                                     | 68 | 55    | 41 | 33    | 14  | 11    | 0  | 0     | 0  | 0     | 4.439 |
| The restaurant's layout allows for comfortable seating and easy movement (X3.2)                  | 66 | 54    | 49 | 40    | 7   | 6     | 1  | 1     | 0  | 0     | 4.463 |
| The dining area is clean and well-maintained (X3.3)                                              | 73 | 59    | 41 | 33    | 8   | 7     | 1  | 1     | 0  | 0     | 4.512 |
| The restrooms are clean and well-maintained (X4.1)                                               | 57 | 46    | 53 | 43    | 13  | 11    | 0  | 0     | 0  | 0     | 4.358 |
| The restaurant provides a clean and well-maintained prayer room (X4.2)                           | 51 | 41    | 52 | 42    | 16  | 13    | 4  | 3     | 0  | 0     | 4.220 |
| The restaurant provides free and reliable Wi-Fi that supports a relaxed dining experience (X4.3) | 37 | 30    | 45 | 37    | 26  | 21    | 15 | 12    | 0  | 0     | 3.846 |

| Items                                                              | SA | n (%) | A  | n (%) | SWA | n (%) | D | n (%) | SD | n (%) | Mean  |
|--------------------------------------------------------------------|----|-------|----|-------|-----|-------|---|-------|----|-------|-------|
| The dining set is clean, comfortable, and in good condition (X4.4) | 61 | 50    | 53 | 43    | 9   | 7     | 0 | 0     | 0  | 0     | 4.423 |
| I am satisfied with the quality of the food served (Y1.1)          | 56 | 46    | 58 | 47    | 9   | 7     | 0 | 0     | 0  | 0     | 4.382 |
| I am satisfied with the service provided (Y1.2)                    | 63 | 51    | 52 | 42    | 8   | 7     | 0 | 0     | 0  | 0     | 4.447 |
| I am satisfied with the money I spent (Y1.3)                       | 54 | 44    | 61 | 50    | 7   | 6     | 1 | 1     | 0  | 0     | 4.366 |
| Overall, I am satisfied with my dining experience (Y1.4)           | 48 | 39    | 70 | 57    | 5   | 4     | 0 | 0     | 0  | 0     | 4.350 |

Note: SA = strongly agree; A = agree; SWA = somewhat agree; D = disagree; SD = strongly disagree. Mean based on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Service quality items also obtain high mean scores ( $M = 4.366\text{--}4.528$ ), with most respondents agreeing or strongly agreeing that employees are accurate, friendly, and willing to help. Atmosphere indicators show uniformly high ratings ( $M = 4.439\text{--}4.512$ ), suggesting that temperature, layout, and cleanliness of the dining area are perceived as standard expectations. For the physical environment, most items score high, except “The restaurant provides free and reliable Wi-Fi that supports a relaxed dining experience” (X4.3), which shows the lowest mean in this construct ( $M = 3.846$ ). Satisfaction items (Y1.1–Y1.4) also have high mean values ( $M = 4.35\text{--}4.447$ ), indicating that respondents are generally satisfied with their dining experience.

4.3 Measurement model

The measurement model defines the relationship between latent constructs and their observed indicators. To ensure accuracy, tests for convergent and discriminant validity were conducted. Convergent validity was assessed through indicator reliability and construct reliability. Indicator reliability was evaluated using factor loadings, with values  $\geq 0.60$  considered acceptable [11]. Construct reliability was assessed using Composite Reliability (CR), Cronbach’s Alpha (CA), and Average Variance Extracted (AVE), with recommended thresholds of  $\geq 0.70$  for CR and CA, and  $\geq 0.50$  for AVE [11]. These measures indicate the extent to which indicators are consistent and how well a construct explains the variance of its indicators. As shown in Table 4, all indicators and constructs met the recommended thresholds, confirming that the measurement model satisfies the criteria for convergent validity.

Table 4. Factor loadings, CA, CR, and AVE

| Construct/Item                                                                     | Factor loading | p-value | CA    | CR    | AVE   |
|------------------------------------------------------------------------------------|----------------|---------|-------|-------|-------|
| Food quality (X1)                                                                  |                |         | 0.865 | 0.899 | 0.599 |
| X1.1 The restaurant offers healthy options that are high in fiber and low in sugar | 0.751          | 0.000   |       |       |       |
| X1.2 The food I order contains high-quality nutrients                              | 0.718          | 0.000   |       |       |       |
| X1.3 Food is served at the proper temperature for its type                         | 0.803          | 0.000   |       |       |       |



| Construct/Item                                                                                 | Factor loading | p-value | CA    | CR    | AVE   |
|------------------------------------------------------------------------------------------------|----------------|---------|-------|-------|-------|
| X1.4 The food is visually clean                                                                | 0.808          | 0.000   |       |       |       |
| X1.5 The food served is fresh                                                                  | 0.794          | 0.000   |       |       |       |
| X1.6 Food portions are sufficient for me                                                       | 0.763          | 0.000   |       |       |       |
| Service quality (X2)                                                                           |                |         | 0.910 | 0.936 | 0.787 |
| X2.1 Service is provided quickly                                                               | 0.872          | 0.000   |       |       |       |
| X2.2 Deliver service with accuracy                                                             | 0.884          | 0.000   |       |       |       |
| X2.3 Employees demonstrate friendliness                                                        | 0.896          | 0.000   |       |       |       |
| X2.4 Staff are eager to assist customers                                                       | 0.895          | 0.000   |       |       |       |
| Atmosphere (X3)                                                                                |                |         | 0.811 | 0.887 | 0.723 |
| X3.1 The dining room temperature is comfortable for eating                                     | 0.846          | 0.000   |       |       |       |
| X3.2 The restaurant’s layout allows for comfortable seating and easy movement                  | 0.866          | 0.000   |       |       |       |
| X3.3 The dining area is clean and well-maintained                                              | 0.838          | 0.000   |       |       |       |
| Physical environment (X4)                                                                      |                |         | 0.829 | 0.887 | 0.662 |
| X4.1 The restrooms are clean and well-maintained                                               | 0.830          | 0.000   |       |       |       |
| X4.2 The restaurant provides a clean and well-maintained prayer room                           | 0.838          | 0.000   |       |       |       |
| X4.3 The restaurant provides free and reliable Wi-Fi that supports a relaxed dining experience | 0.787          | 0.000   |       |       |       |
| X4.4 The dining set is clean, comfortable, and in good condition                               | 0.797          | 0.000   |       |       |       |
| Customer satisfaction (Y)                                                                      |                |         | 0.841 | 0.894 | 0.679 |
| Y1.1 I am satisfied with the quality of the food served                                        | 0.821          | 0.000   |       |       |       |
| Y1.2 I am satisfied with the service provided                                                  | 0.861          | 0.000   |       |       |       |
| Y1.3 I am satisfied with the money I spent                                                     | 0.868          | 0.000   |       |       |       |
| Y1.4 Overall, I am satisfied with my dining experience                                         | 0.738          | 0.000   |       |       |       |

The next step was to assess discriminant validity, ensuring that each construct is empirically distinct. This was evaluated using cross-loading analysis, which verifies that each indicator’s loading on its assigned construct is higher than its loadings on any other construct [11]. As shown in Table 5, all indicators exhibited the highest loadings on their respective constructs, providing evidence that discriminant validity is satisfied in the measurement model.

**Table 5.** Cross-loadings for discriminant validity assessment

| Items | Food quality | Service quality | Atmosphere | Physical environment | Customer satisfaction |
|-------|--------------|-----------------|------------|----------------------|-----------------------|
| X1.1  | <b>0.751</b> | 0.411           | 0.508      | 0.559                | 0.543                 |
| X1.2  | <b>0.718</b> | 0.432           | 0.356      | 0.526                | 0.544                 |
| X1.3  | <b>0.803</b> | 0.551           | 0.502      | 0.633                | 0.511                 |
| X1.4  | <b>0.808</b> | 0.653           | 0.568      | 0.662                | 0.538                 |
| X1.5  | <b>0.794</b> | 0.594           | 0.572      | 0.662                | 0.540                 |
| X1.6  | <b>0.763</b> | 0.571           | 0.444      | 0.586                | 0.531                 |
| X2.1  | 0.638        | <b>0.872</b>    | 0.517      | 0.638                | 0.651                 |
| X2.2  | 0.565        | <b>0.884</b>    | 0.591      | 0.591                | 0.642                 |

| Items | Food quality | Service quality | Atmosphere   | Physical environment | Customer satisfaction |
|-------|--------------|-----------------|--------------|----------------------|-----------------------|
| X2.3  | 0.657        | <b>0.896</b>    | 0.527        | 0.677                | 0.685                 |
| X2.4  | 0.593        | <b>0.895</b>    | 0.534        | 0.624                | 0.649                 |
| X3.1  | 0.527        | 0.493           | <b>0.846</b> | 0.571                | 0.372                 |
| X3.2  | 0.498        | 0.468           | <b>0.866</b> | 0.569                | 0.400                 |
| X3.3  | 0.584        | 0.579           | <b>0.838</b> | 0.652                | 0.502                 |
| X4.1  | 0.616        | 0.573           | 0.584        | <b>0.830</b>         | 0.567                 |
| X4.2  | 0.612        | 0.698           | 0.606        | <b>0.838</b>         | 0.556                 |
| X4.3  | 0.654        | 0.489           | 0.560        | <b>0.787</b>         | 0.501                 |
| X4.4  | 0.666        | 0.555           | 0.557        | <b>0.797</b>         | 0.561                 |
| Y1.1  | 0.631        | 0.567           | 0.448        | 0.653                | <b>0.821</b>          |
| Y1.2  | 0.500        | 0.696           | 0.434        | 0.522                | <b>0.861</b>          |
| Y1.3  | 0.660        | 0.653           | 0.472        | 0.611                | <b>0.868</b>          |
| Y1.4  | 0.474        | 0.512           | 0.302        | 0.407                | <b>0.738</b>          |

4.4 Examination of the structural model

After establishing the validity of the measurement model, we proceeded to assess the structural model to examine how the exogenous variables influence the endogenous construct, using the coefficient of determination ( $R^2$ ) as an indicator. As shown in Table 6, the  $R^2$  value for customer satisfaction is 0.620, indicating that the model explains approximately 62% of the variance in this construct, while the remaining 38% can be attributed to other factors outside the scope of the present analysis. According to [11], this value represents a substantial level of explanatory power in PLS-SEM.

Table 6. Coefficient of determination ( $R^2$ )

| Variable              | R Square | R Square adjusted |
|-----------------------|----------|-------------------|
| Customer Satisfaction | 0.620    | 0.607             |

4.5 Model fit test result

The adequacy of the model fit was examined based on the Standardized Root Mean Square Residual (SRMR) and the Normed Fit Index (NFI). As presented in Table 7, the SRMR value for both the saturated and estimated models was 0.073, which is below the recommended threshold of 0.08, indicating an acceptable fit [11]. The NFI value for both models was 0.746, which is lower than the conventional cutoff of 0.90; however, in PLS-SEM, lower NFI values are common and do not necessarily indicate poor fit. Given that SRMR is generally considered a more reliable model fit criterion in PLS-SEM, these results suggest that the model demonstrates an adequate overall fit.

Table 7. Model fit indices

| Index | Saturated model | Estimated model |
|-------|-----------------|-----------------|
| SRMR  | 0.073           | 0.073           |
| NFI   | 0.746           | 0.746           |

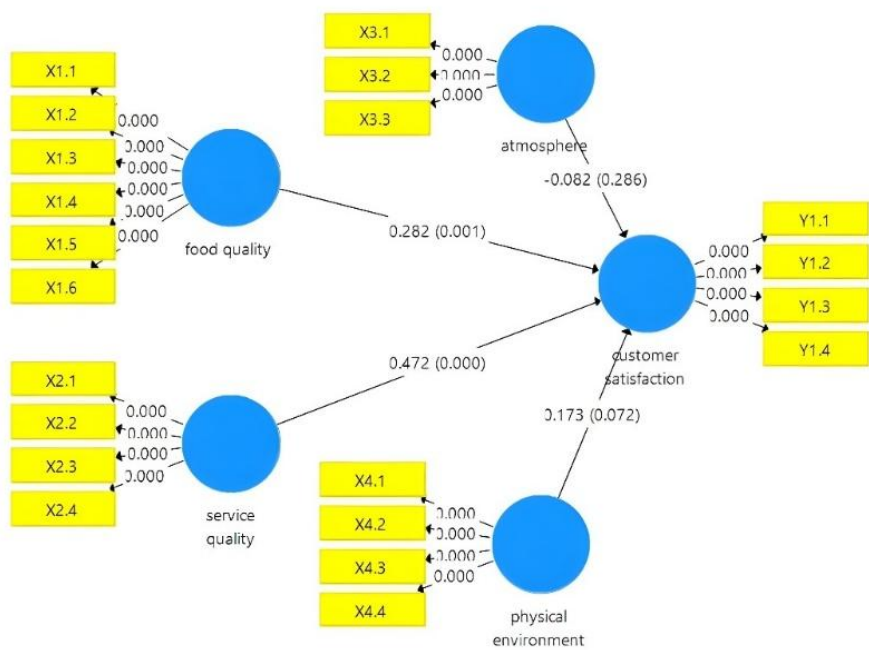
4.6 Path analysis

Path analysis within SEM is applied to estimate the strength and direction of relationships among variables specified in the structural model. Under a two-tailed t-test, a path coefficient is regarded as statistically significant when the p-value is below 0.05. In this study, the path coefficients ( $\beta$ ) indicate the magnitude and direction of the links between independent and

dependent latent constructs. The significance of these coefficients was assessed using the bootstrapping procedure in PLS-SEM, which produces t-values together with their corresponding p-values. The outcomes of this analysis are reported in Table 8 and depicted in Fig. 2.

**Table 8.** Path coefficients and significance testing

| Hypothesis | Path                                         | $\beta$ | t-Statistics | p-values | Result          |
|------------|----------------------------------------------|---------|--------------|----------|-----------------|
| H1         | Food quality → Customer satisfaction         | 0.282   | 3.377        | 0.001    | Significant     |
| H2         | Service quality → Customer satisfaction      | 0.472   | 4.520        | 0.000    | Significant     |
| H3         | Atmosphere → Customer satisfaction           | -0.082  | 1.067        | 0.286    | Not significant |
| H4         | Physical environment → Customer satisfaction | 0.173   | 1.805        | 0.072    | Not significant |



**Fig. 2.** Path structure and coefficients

The results in Table 8 indicate that two of the four hypothesized relationships are statistically significant. Food quality has a positive and significant effect on customer satisfaction ( $\beta = 0.282$ ,  $t = 3.377$ ,  $p = 0.001$ ), supporting H1. Service quality also shows a positive and significant effect on customer satisfaction ( $\beta = 0.472$ ,  $t = 4.520$ ,  $p < 0.001$ ), supporting H2. In contrast, atmosphere does not have a statistically significant effect on customer satisfaction ( $\beta = -0.082$ ,  $t = 1.067$ ,  $p = 0.286$ ), leading to the rejection of H3. Similarly, the physical environment does not significantly influence customer satisfaction ( $\beta = 0.173$ ,  $t = 1.805$ ,  $p = 0.072$ ), resulting in the rejection of H4. These findings suggest that, within the context of casual dining restaurants in Padang City, improvements in food quality and service quality are more critical for enhancing customer satisfaction than modifications to the atmosphere or physical environment.

## 5 Discussion

This study investigated how casual dining restaurants in Padang support healthy eating, with particular attention to health-supportive food quality, service quality, atmosphere, and the physical environment as determinants of customer satisfaction. The findings indicate that only food quality and service quality have a significant positive effect on satisfaction, whereas atmosphere and physical environment function mainly as complementary factors.

Food quality shows a positive and significant effect on customer satisfaction ( $\beta = 0.282$ ,  $t = 3.377$ ,  $p = 0.001$ ), with high indicator reliability (0.718–0.808). Table 3 further shows that most food quality indicators have high mean scores, such as “The food is visually clean” ( $M = 4.537$ ) and “The food served is fresh” ( $M = 4.537$ ), with over 90% of respondents agreeing or strongly agreeing. These findings suggest that consistently high standards in freshness, cleanliness, and proper serving temperature are critical in shaping customer satisfaction. However, the indicator “The restaurant offers healthy options that are high in fiber and low in sugar” has a comparatively lower mean ( $M = 3.935$ ), indicating that while hygiene and freshness are well-addressed, the explicit variety of healthy menu options is perceived as less prominent. Expanding the range and visibility of health-oriented dishes could therefore strengthen the role of food quality in sustaining satisfaction. These findings are in line with [10], which suggests that higher perceptions of food healthiness are associated with higher levels of consumer satisfaction. Similarly, the findings of [12] are consistent with our result that health-supportive food quality positively influences customer satisfaction. Overall, these results provide empirical support for H1.

Service quality emerges as the strongest predictor of customer satisfaction ( $\beta = 0.472$ ,  $t = 4.520$ ,  $p < 0.001$ ), supported by high factor loadings (0.872–0.896). As shown in Table 3, indicators such as “Deliver service with accuracy” ( $M = 4.528$ ) and “Employees demonstrate friendliness” ( $M = 4.512$ ) received strong agreement from respondents. This alignment between strong measurement reliability and high mean scores explains why service quality is the most influential driver of satisfaction. Nonetheless, “Staff are eager to assist customers” scored slightly lower ( $M = 4.366$ ), suggesting that proactive engagement and attentiveness could further enhance satisfaction. These results are consistent with [13], which shows that the quality of service staff plays a significant role in shaping customer satisfaction and, in turn, strongly influences customer loyalty. Taken together, these findings support H2, confirming the central role of service quality in driving customer satisfaction in casual dining restaurants.

In contrast, atmosphere does not significantly influence customer satisfaction ( $\beta = -0.082$ ,  $t = 1.067$ ,  $p = 0.286$ ) despite having acceptable factor loadings (0.838–0.866) and relatively high mean scores in Table 3, such as “Room layout is organized and functional” ( $M = 4.463$ ) and “The room is clean and well-maintained” ( $M = 4.512$ ). The uniformly high ratings across atmosphere indicators suggest that these attributes are perceived as standard expectations rather than differentiating factors. These results differ from [14], whose findings reveal that the dining environment—particularly restaurant style, ambiance, and design aesthetics—exerts the most substantial influence on consumer patronage. One possible explanation is that, in this context, customers may prioritise core attributes related to food and service when evaluating satisfaction, while atmosphere functions more as a hygiene factor. Consequently, H3 is not supported in this study.

Similarly, physical environment shows no significant effect ( $\beta = 0.173$ ,  $t = 1.805$ ,  $p = 0.072$ ) even though its indicators have acceptable factor loadings (0.787–0.838). Table 3 reveals variation within this construct, with “Dining sets are in good condition” ( $M = 4.423$ ) scoring high, while “Wi-Fi access is free and reliable” received a considerably lower rating ( $M = 3.846$ ). This disparity suggests that limitations in certain amenities—particularly internet access—may weaken the overall influence of the physical environment on

satisfaction. Previous research [15] shows that Wi-Fi service can have a significant positive impact on millennials' loyalty behavior across coffee shops, fast-food, and casual-dining restaurants, underscoring its potential importance as a physical amenity. A plausible explanation is that, in our sample, customers primarily evaluate satisfaction based on food and employee service performance, while the currently weak performance of Wi-Fi prevents the physical environment from emerging as a significant predictor. Accordingly, H4 is not supported in this setting.

Overall, integrating measurement quality, structural relationships, and item-level customer perceptions (Table 3) highlights that constructs with both strong indicator reliability and high perceived performance—particularly service quality—are more influential in driving customer satisfaction. In the context of casual dining restaurants in Padang City, managers should prioritize maintaining high standards in food and service quality while strategically enhancing health-oriented menu diversity and proactive service behaviors. Atmosphere and physical environment should be viewed as supporting factors, with targeted improvements focused on amenities that customers value but currently perceive as lacking, such as Wi-Fi.

## 6 Conclusion

This study provides empirical evidence that in the context of casual dining in Padang, service quality and health-supportive food quality are the most influential drivers of satisfaction, whereas atmosphere and physical environment function primarily as supporting factors. Customers consistently value freshness, cleanliness, and proper serving temperature, yet perceive explicitly healthy menu options as less prominent, highlighting an opportunity to diversify and emphasize nutritious offerings. Service accuracy and friendliness are decisive for satisfaction, although greater proactive engagement from staff could further enhance experiences. The findings imply that restaurants seeking to align with healthy dining trends should expand health-oriented menu choices, strengthen proactive service, and selectively improve amenities such as reliable Wi-Fi. While atmosphere and physical environment may not directly drive satisfaction, they can be leveraged as subtle cues to reinforce a sustainable dining image through eco-friendly design elements and well-maintained facilities. By focusing on these priority areas, casual dining restaurants—particularly in urban settings such as Padang—can better integrate sustainability principles into their operations, improve customer satisfaction, and enhance their competitive positioning in Indonesia's evolving foodservice market.

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