JOHAR – Journal of Hospitality Application & Research
21 (1) 2026, 107-139
www.publishingindia.com/johar/
https://doi.org/10.21863/johar/2026.21.1.005

Submitted: 24 January, 2025
Revision: 04 July, 2025
Accepted: 09 September, 2025

SERVING UP QUALITY: HOW QFD AND SERVQUAL USE THE VOICE OF THE CUSTOMER TO IMPROVE RESTAURANT SERVICE

Megan Wydick Martin*, Drew Rosen, Stephen Mahar*****

**Congdon School of Supply Chain, Business Analytics and Information Systems, Cameron School of Business, University of North Carolina Wilmington, Wilmington, NC. Email: martinmw@uncw.edu*

***Congdon School of Supply Chain, Business Analytics and Information Systems, Cameron School of Business, University of North Carolina Wilmington, USA. Email: rosenl@uncw.edu*

****Villanova School of Business, Villanova University, USA. Email: stephen.mahar@villanova.edu*

Abstract

This paper presents a systematic approach to developing and refining new services and service processes by integrating the voice of the customer (VOC) through SERVQUAL and Quality Function Deployment. By quantifying VOC data and prioritizing customer requirements, companies can identify significant factors that most influence perceived service quality and translate them into actionable improvement strategies. Focusing on the restaurant industry, the study uses pre- and post-service surveys to classify service winners and service qualifiers. The resulting framework provides service providers with the agility to respond to changing customer expectations, shorter service life cycles, and increasing competitive pressures driven by rapid technological advancements and the push for sustainable practices.

How to cite: Martin, M. W., Rosen, D., & Mahar, S. (2026). Serving up quality: How QFD and SERVQUAL use the voice of the customer to improve restaurant service. *JOHAR – Journal of Hospitality Application & Research, 21*(1), 107-139.

Keywords: *Quality Function Deployment, SERVQUAL, Voice of the Customer, New Service Development, Restaurant Industry, House of Quality*

Introduction

Effective new service development (NSD) strategies are gaining attention as organizations face shifting customer demands, shorter service life cycles, and competitive pressures rooted in digitalization and sustainability (Fitzsimmons & Fitzsimmons, 2006). With service-providing industries accounting for roughly 80% of U.S. employment in 2023, and projected to generate 60% of net job growth through 2034 (U.S. Bureau of Labor Statistics, 2023), innovative NSD will allow service organizations to keep pace with customer expectations, a prerequisite for competitive advantage (Sharma, 2023; Sjödin et al., 2020). Consumer behavior mirrors this growth, with 65% (almost two-thirds) of household spending on services, such as travel and entertainment, with dining out as a leading priority at 38% (Coggins et al., 2024; U.S. Department of Commerce, 2024). Therefore, restaurants must implement processes that drive the ongoing development of successful service offerings, despite challenges in quantifying customer experiences.

Restaurants must meet two objectives simultaneously: 1) maximize fit with customer needs and 2) minimize time to market (Chapman et al., 2003; Cooper, 2019). However, achieving these often involves trade-offs, as listening to the voice of the customer (VOC) can conflict with the need for speed (Cooper, 2011). NSD in the restaurant industry is especially vulnerable to launch delays (e.g., rapid technological advancements and the drive for sustainable practices), which can result in loss of customer interest or failure to capitalize on peak seasons (Wynn & Jones, 2022). Yet, fast launches are futile if consumer needs remain unmet.

Adapting new product development (NPD) processes to service contexts offers a practical solution (Kindström et al., 2013; Patrício et al., 2018). A flagship NPD tool, Quality Function Deployment (QFD), minimizes development time while incorporating the VOC to meet customer expectations by addressing both spoken and unspoken needs (Froehle et al., 2000; Hull, 2004; Mazur, 1993; Ulrich & Eppinger, 2016). Traditional QFD translates customer input on product attributes into design requirements, yet the intangible nature of services can complicate this process. To assist in quantifying the VOC and identify gaps between expected and perceived service quality, we begin with SERVQUAL as a diagnostic tool to measure gaps between customers' expectations of a service and their perceptions of the service actually delivered (Parasuraman et al., 1988).

Department of Management Studies, BIT-Mesra, Ranchi-835215

The integration of SERVQUAL and QFD is grounded in their complementary strengths in service quality management (Gavahi et al., 2023). While SERVQUAL effectively diagnoses service gaps (Brady et al., 2002), it does not provide guidance for translating these insights into operational improvements. QFD addresses this limitation by transforming customer feedback into technical or managerial actions. Together, they create a dual-stage framework that positions customer-driven metrics (SERVQUAL) as the basis for design-centric deployment (QFD) (Tanto et al., 2024).

Although other popular service quality frameworks, such as the Kano Model and Service Blueprinting, are widely used, they address different managerial questions. Kano classifies attributes as *must-be*, *one-dimensional*, or *attractive*, helping managers prioritize product or service delighting features (Kano et al., 1984), whereas Service Blueprinting visualizes end-to-end processes to expose fail points but does not rank improvements (Hummel & Murphy, 2011). These tools may excel at prioritization and process visualization, but neither offers a gap-to-design integration. By contrast, pairing SERVQUAL's diagnostic precision with QFD's design logic, our study offers a more direct pathway for restaurant operators.

Our approach aligns with emerging evidence that the SERVQUAL-QFD integration accelerates service improvement in hospitality. For example, Maslikhan & Singgih (2024) demonstrate its value in Indonesian mini markets, while Oktoriano et al. (2024) apply a similar logic to non-star lodging. Building on these studies, our results show how the SERVQUAL-QFD framework creates a cohesive roadmap from insight to implementation in the restaurant industry and highlights attributes to dining settings.

Purpose and Research Question

This study proposes a methodology for developing and refining successful services and service processes by quantifying the VOC by integrating SERVQUAL with QFD. The approach identifies service winners and service qualifiers, extends VOC assessment to determine importance weights based on perceived quality scores, and uses the QFD framework to prioritize service quality dimensions. It further demonstrates how these factors can be translated into targeted, actionable service quality improvement strategies. This study addresses the research question:

How can an integrated SERVQUAL-QFD approach quantify the VOC, identify service winners and service qualifiers, translate them into technical service requirements, and thereby drive the design and prioritization of new or

refined services and service processes that align with customer expectations and elevate overall service quality?

Methodology

New productivity metrics must capture the distinctive, and often intangible, contributions of service organizations; thus, service quality is now widely regarded as a key performance indicator (KPI) (Czepiel et al., 1985; Heskett et al., 2008; Kamakura et al., 2002; Seth et al., 2005). A 2024 meta-analysis confirms that service firms reach peak profitability when cost efficiency and perceived quality are monitored together rather than separately (Hofmeister et al., 2024). Echoing this finding, the OECD Compendium of Productivity Indicators 2024, recommends pairing traditional revenue-based metrics with customer-experience KPIs to reflect the growing weight of services in advanced economies (OECD, 2024).

Defining service quality remains challenging because the concept is context-specific and inherently subjective. Most definitions follow one of two perspectives: 1) the *Nordic* view of functional and technical quality, and 2) the *American* view, which emphasizes dimensions that shape the service encounter (Anderson & Fornell, 2000; Brady & Cronin, 2001). Aligned with the latter, Zeithaml et al. (1985) describes service quality as the gap (or discrepancy) between customers' expectations and their perceptions of the delivered service. Because customers actively participate in service delivery, their judgments hinge on satisfaction with both the process and the outcome (Smith, 1999; Zeithaml et al., 1996; Zins, 2001).

Customers ultimately assess quality by comparing expectations with actual experience: meeting or exceeding those expectations remains the surest path to loyalty (Oliver, 2014; Yu & Dean, 2001). For example, a quick-service chain, such as Chick-fil-a, consistently earns top customer satisfaction ratings by delivering on its target market's expectations, such as speed, reliable food quality, and courteous service, even without luxury amenities (e.g., upscale décor or elaborate menus).

It is not surprising that there are challenges in defining and measuring service quality, particularly in the restaurant industry. In restaurants, service quality stems from an interplay of physical, behavioral, and psychological cues, so direct management through checklist-based control is largely ineffective (Czepiel et al., 1985; Park et al., 2013; Seth et al., 2005). Recent reviews further emphasize that process control, rather than end-point inspection, is the most reliable route to consistent quality, especially as digital ordering and AI-supported kitchen systems shorten feedback loops (Mendocilla et

al., 2026; Udayalakshmi & Sridevi, 2023). Consequently, instruments such as SERVQUAL or its "smart" variants remain the most actionable tools for monitoring customers' perceptions and driving continuous improvement (Brady et al., 2002; Suneeta & Koranne, 2014).

Voice of the Customer and SERVQUAL

Our SERVQUAL-QFD integrated process begins with market research that captures the needs and wants of the customer (the VOC). Customer expectations fall into three categories: *basic specifications*, *service qualifiers*, and *service winners* (Kenny, 1988). Basic specifications are the explicitly stated customer needs that form the service's minimum blueprint. Service qualifiers are unstated elements customers simply assume will be present and are therefore necessary for market entry (Dwivedi & Sharma, 2002; Hill, 1995). The presence of these requirements is necessary for a service to enter the marketplace. Service winners are unexpected enhancements or innovations that delight customers and differentiate the service.

Adapted from Kenny (1988), Fig. 1 shows how these three categories relate to customer satisfaction. Enhancing service qualifiers, such as airline safety, rarely boosts satisfaction or loyalty because customers already expect them. By contrast, introducing service winners, such as complimentary high-speed Wi-Fi for all airline passengers, exceeds expectations and significantly improves satisfaction and retention.

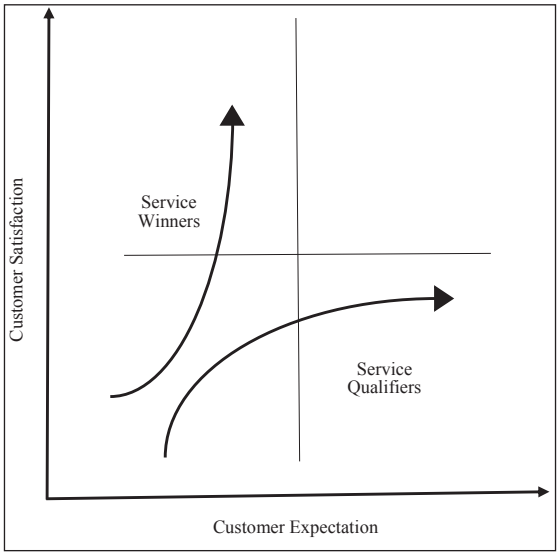

Fig. 1: Customer Quality Perceptions (Kenny, 1988)

In the relentless pursuit of total quality, most organizations now treat customer satisfaction as a primary decision-making criterion, and there is strong support for embedding VOC data in service design (Parasuraman et al., 1994; Sureshchandar et al., 2002). SERVQUAL is a widely used framework for identifying the key dimensions of perceived service quality (Gharakhani & Eslami, 2012; Paryani et al., 2010; Rosen & Karwan, 1994; Yildirim et al., 2019). The modified SERVQUAL instrument used in this study underwent extensive testing and refinement by its original authors. Iterative analyses reduced the initial 97-item instrument to a 22-item version, consolidating 10 dimensions into the familiar five: tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 1994; Yoon & Cha, 2020). Table 1 provides a description of each dimension.

Table 1: SERVQUAL Dimensions

SERVQUAL Dimension	Description
Tangibles	Physical aspects of the service environment including facilities, equipment, and appearance of personnel.
Reliability	Ability to consistently perform the promised service dependably and accurately.
Responsiveness	Willingness and readiness of employees to help customers and provide prompt service.
Assurance	Knowledge, competence, and courtesy of employees and their ability to inspire trust and confidence.
Empathy	Ability to provide caring and individualized attention the firm provides its customers.

SERVQUAL continues to be the most-cited instrument for detecting service quality gaps because managers appreciate its simplicity, low deployment cost, and adaptability across settings (Yuan & Gao, 2019). Its relevance in the restaurant and foodservice industry has only strengthened, with recent findings consistently linking stronger SERVQUAL performance to repeat patronage, loyalty, and mobile-app retention (Bichler et al., 2021; Bojanic & Rosen, 1994; Razak et al., 2020; Udayalakshmi & Sridevi, 2023). While these studies largely stop at diagnosis, our integrated SERVQUAL-QFD method transforms the ranked service quality gaps into a prioritized action matrix, giving managers a concise roadmap for targeted service improvements.

Quality Function Deployment

QFD, originally devised for NPD, is now widely applied in services because it translates evolving, often intangible customer needs and wants into actionable design specifications that lift both perceived quality and internal process efficiency (Mazur, 2008). Unlike broader mapping tools such as Service Blueprinting (Bitner et al., 2008) or prioritization frameworks such as the Kano Model (Kano et al., 1984), QFD employs a series of linked matrices that map customer requirements to product characteristics, to part characteristics, to process design, and, ultimately, day-to-day operations. The technique is termed as such because it aims to translate or *deploy* customer expectations into technical and operational requirements in an integrated manner across all relevant functions within an organization.

QFD typically unfolds in four-phases: house of quality, product design, process design, and operations planning, illustrated in Fig. 2 (Akao & Akao, 2004; Mizuno et al., 1994).

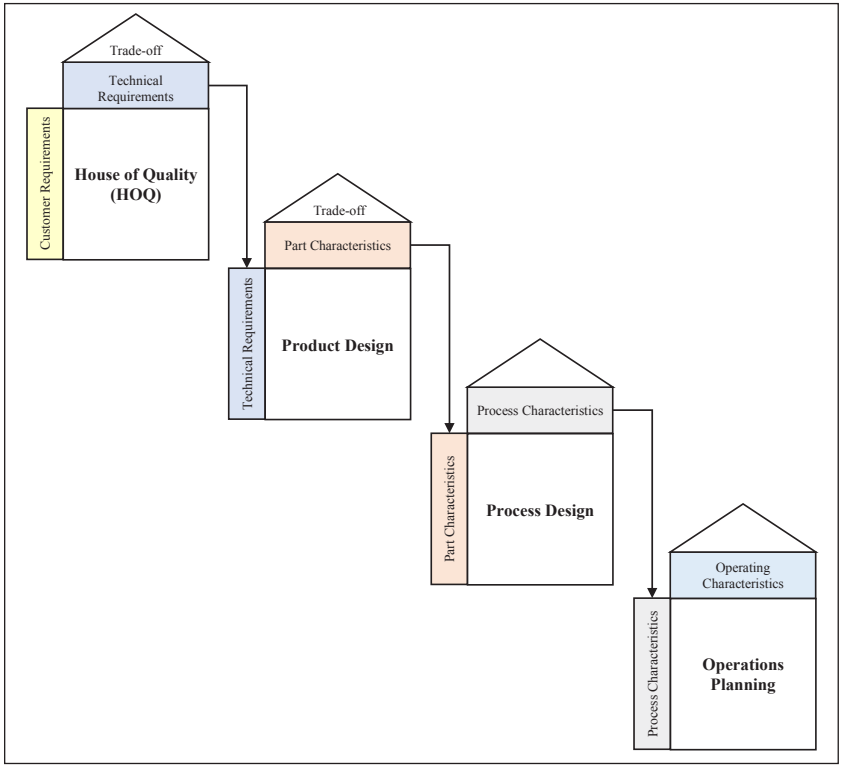

Fig. 2: Four-Phase Process of QFD

In this study, we adapt QFD for NSD in restaurants, concentrating on the initial House of Quality (HOQ) matrix. The HOQ ranks customer requirements and links them to technical requirements. Following Hauser et al. (1988) and Russell and Taylor (2014), the classic HOQ includes seven sections (Fig. 2).

- Customer requirements identify customers' needs, wants, and requirements.
- Relative importance is a tool to rate or order customer requirements based on importance.
- Competitive assessment evaluates the current company against the competitors based on customer requirements.
- Technical requirements are the technical terms linked to the customer requirements.
- The relationship matrix is the crucial connection between customer requirements and technical requirements. The relationship matrix will detect a gap if a customer requirement is not covered in a technical requirement. If a customer requirement is covered by multiple technical requirements, the matrix will show redundancy.
- Trade-off matrix identifies trade-offs between the technical requirements.
- The target values generally add quantitative values through a technical assessment of the technical requirements.

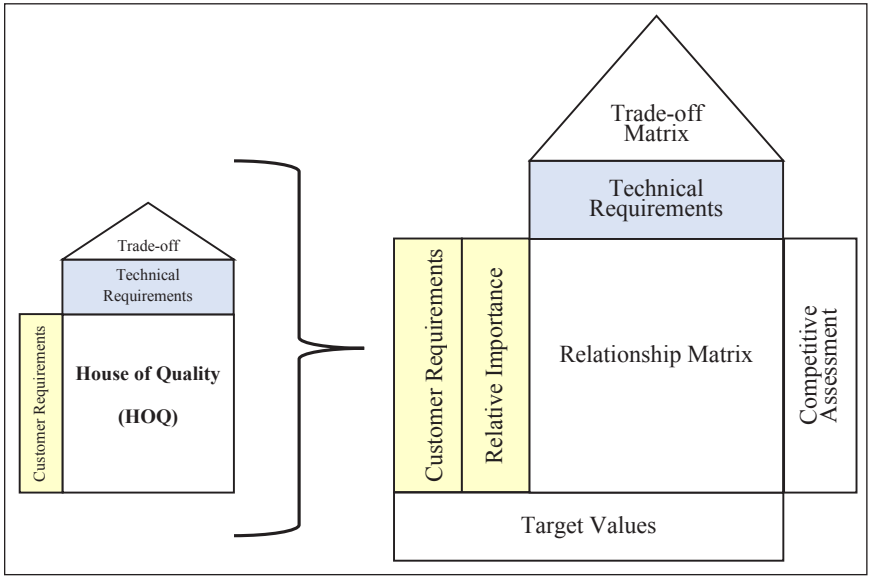

Fig. 3: House of Quality Breakdown

Despite its robust framework, QFD is still under-represented in service research; pure-service applications account for only 10-15% of all QFD studies (Carnevalli & Miguel, 2008; Chan & Wu, 2002; Huang et al., 2022; Michael et al., 1999). This low adoption rate reflects two challenges: 1) QFD's original, product-centric logic can be awkward to map onto services, whose outputs are intangible, co-created, and perishable (Edvardsson, 1998; Kamvysi et al., 2023), and 2) capturing the VOC with enough granularity to fuel the HOQ can be resource-intensive and cumbersome (Shen et al., 2022). A practical remedy, and the focus of the present study, is to pair QFD with SERVQUAL. We adapt the HOQ into a House of *SERVQUAL* Quality (HO*S*Q), showing how SERVQUAL data can be mapped and weighted to reveal the relative importance of each service quality factor.

House of SERVQUAL Quality

The first step in building the HO*S*Q is to specify the customer requirements that appear on the left side of the matrix (see Fig. 3). SERVQUAL's five core dimensions can be unpacked into finer subdimensions and used as a comprehensive set of customer requirements. Using this expanded set of quality subdimensions, known as *reverse* SERVQUAL, simplifies the often time-consuming process of market research for determining customer requirements (Behara & Lemmink, 1993).

The next step in the HO*S*Q process is to assign importance weights (or relative importance) to each customer requirement, typically on a scale of 1 (very poor) to 5 (very good). Prior studies show that SERVQUAL data are well suited for deriving these weights (Johns & Pine, 2002; Parasuraman et al., 1994; Rosen & Karwan, 1994). We extend this logic by first calculating the weights by regressing the overall perceived quality score on the SERVQUAL subdimension scores and then systematically mapping both the customer requirements and its weights onto the HO*S*Q. This intricate level of detail in the HO*S*Q gives restaurant owners the ability to convert prioritized customer requirements into concrete technical requirements before problems arise.

Once customer requirements are identified and weighted, the restaurant determines specific technical service requirements (e.g., planning, procedures, and personal aspects) that meet these needs. These technical requirements are listed across the top of the HO*S*Q, forming a relationship matrix (See Fig. 3). The matrix evaluates the correlation between customer requirements and technical requirements, with values of 9 (strong), 3 (moderate), or 1 (weak).

These values are multiplied by the corresponding importance weights and recorded in each cell to highlight high-leverage improvement areas.

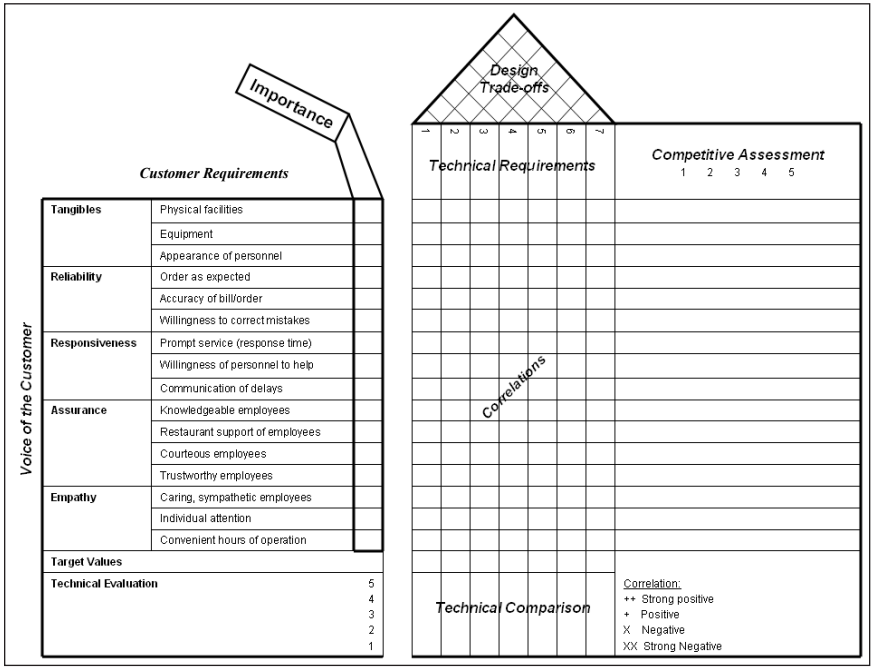

Fig. 4: House of SERVQUAL Quality: Restaurant Application Overview

Next, the restaurant conducts a technical comparison, rating its current performance on a 1 to 5 rating scale, where 5 indicates excellent performance. This step helps assess alignment with customer needs. The roof of the HO*S*Q then flags synergies (marked with a checkmark) or conflicts (marked with an X) among technical requirements, supporting proactive design trade-offs between customer requirements and technical requirements. Although a baseline competitive assessment is often included, it falls outside the scope of this article.

Table 2 offers a concise, seven-step guide for integrating SERVQUAL data into the HO*S*Q framework so managers can locate, rank, and close service quality gaps.

Table 2: Step-by-Step Guide for Integrating SERVQUAL into HO*S*Q

Step	Description	Details
1	Capture the VOC	● Administer SERVQUAL survey pre- and post-service.
2	Translate VOC into granular customer requirements	● Break down SERVQUAL dimensions into more specific subdimensions based on market research. ● Use this expanded list as the full set of customer requirements for HOQ requirements.
3	Compute gap scores using SERVQUAL data	● Quality = Perception Score – Expectation Score ● Calculate service quality gaps for each subdimension by subtracting the average expectation score from the average perception score. ● Assign service winner and service qualifier status. ● Negative quality scores indicate areas where expectations exceed actual performance.
4	Derive importance weights of customer requirements	● Regress overall satisfaction on individual SERVQUAL gap scores. ● Ensure the regression model is statistically significant and evaluate model fit using metrics such as adjusted R^2. ● Examine p-values to identify significant predictors. ● Check for multicollinearity using VIF. ● Square beta coefficients (β^2) to obtain normalized weights.
5	Build the HO*S*Q	● Create the HO*S*Q matrix by listing detailed customer requirements (rows) and technical service requirements (columns). ● Map the strength of the relationship between each row-column pair using numeric scores (e.g., 9 = strong and 1 = weak).

Step	Description	Details
6	Select improvement plans	• Choose a balanced strategic plan (e.g., quick wins versus strategic builds). Initiatives can include items such as staff training, updated procedures, or process improvement.
7	Implement and monitor	• Pilot, train, and refine standard operating procedures to align with strategic initiatives. • Re-run SERVQUAL after 3-6 months to verify gap closure. • Use the HO*S*Q as a dynamic tool to guide ongoing resource allocation and continuous quality improvement efforts.

Results and Discussion

The following section demonstrates how the SERVQUAL-QFD integration can be used to 1) quantify the VOC and 2) derive and evaluate the relative importance of factors that shape perceived service quality improvement strategies at a mid-priced restaurant in a major southeastern U.S. city. This restaurant is part of a national chain known for offering a casual dining experience in an attractive and friendly environment serving a diverse clientele (i.e., young professionals, college students, and families). The restaurant features bar and grill service with high-quality, moderately priced food and beverage options.

For this analysis, the five standardized SERVQUAL dimensions (Table 1) were broken down into 16 restaurant-specific subdimensions (Table 3) refined through workshops with the owners, local management team, and two external hospitality experts. The mapping of the five SERVQUAL dimensions to the 16 subdimensions is provided in Table 3.

Table 3: SERVQUAL/HO*S*Q SERVQUAL Dimensions and Subdimensions

SERVQUAL Dimension	#	Customer Requirements *(SERVQUAL Subdimensions)*
Tangibles	1	Physical Facilities
	2	Equipment
	3	Appearance of Personnel

Department of Management Studies, BIT-Mesra, Ranchi-835215

SERVQUAL Dimension	#	**Customer Requirements** *(SERVQUAL Subdimensions)*
Reliability	4	Order as Expected
	5	Accuracy of Bill/Order
	6	Willingness to Correct Mistakes
Responsiveness	7	Prompt Service (Response Time)
	8	Willingness of Personnel to Help
	9	Communication of Delays
Assurance	10	Knowledgeable Employees
	11	Restaurant Support of Employees
	12	Courteous Employees
	13	Trustworthy Employees
Empathy	14	Caring, Sympathetic Employees
	15	Individual Attention
	16	Convenient Hours of Operation

The SERVQUAL surveys were administered in a two-step process. First, a pre-survey was given to the customers as they waited for a table to elicit their service expectations before engaging in the service encounter (Appendix A). Second, at the completion of dinner, a post-survey was given to the customers to evaluate their perception of the actual service that they received (Appendix B). For example, SERVQUAL survey questions related to tangibles captured reactions to the physical facilities, equipment, and appearance of staff, whereas reliability items addressed order accuracy, the correctness of the bill, and the restaurant's willingness to rectify mistakes.

Data was collected during a one-week period in spring using paper-based SERVQUAL surveys and a total of 85 customers completed both surveys. Table 4 summarizes the resulting expectation and perception scores, each measured on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The five-factor SERVQUAL structure demonstrated strong reliability and internal consistency, with a Cronbach's alpha of 0.823, within the threshold of 0.8 to 0.9 range for service quality research (Pizam & Ellis, 1999; Yu & Dean, 2001). In addition, item-to-total correlations ranged from 0.45 to 0.75, confirming that each dimension contributes meaningfully to the overall construct of perceived service quality.

Table 4: SERVQUAL/HOSQ Customer Requirements and Summary

SERVQUAL Dimension	Customer Requirements *(SERVQUAL Subdimensions)*	Expectation[a]		Perception[b]		Quality[c]	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Tangibles	Physical Facilities	5.85	1.57	4.90	1.15	-0.95	1.34
	Equipment	6.46	0.99	5.18	1.27	-1.28	1.50
	Appearance of Personnel (AoP)	6.14	1.42	4.80	1.31	**-1.34**	1.41
Reliability	**Order as Expected (OaE)**	5.91	1.28	4.58	1.27	**-1.33**	1.25
	Accuracy of Bill/Order	6.38	1.38	5.31	1.27	-1.07	1.23
	Willingness to Correct Mistakes	5.20	1.73	4.59	1.53	-0.61	2.09
Responsiveness	Prompt Service (Response Time)	5.91	1.63	5.28	1.35	-0.64	1.55
	Willingness of Personnel to Help	5.87	1.16	5.53	1.18	-0.34	1.48
	Communication of delays	5.92	1.43	4.69	1.19	-1.22	1.81
Assurance	**Knowledgeable Employees (KE)**	5.78	1.56	4.44	1.53	**-1.34**	2.28
	Restaurant Support of Employees	5.13	1.69	4.01	1.39	-1.12	2.03
	Courteous Employees (CE)	6.39	1.18	4.60	1.03	**-1.79**	1.38
	Trustworthy Employees	6.35	1.19	5.36	1.21	-0.99	1.64
Empathy	**Caring, Sympathetic Employees (CSE)**	6.39	1.13	4.96	1.10	**-1.42**	1.60
	Individual Attention	5.79	1.76	5.00	1.34	-0.79	1.30
	Convenient Hours of Operation	4.74	1.85	5.01	1.62	0.27	2.42

Note. [a]Expectation scores are measured on a 7-point scale on which the higher the number, the greater the expectation of the service; [b]Perception scores are measured on a 7-point scale on which the higher the number, the better the perception about the service; [c]Service quality scores are the difference between the perception and expectation scores (P-E) with a possible range of values from -6 to 6.

After compiling the SERVQUAL survey responses, the service quality gap (labeled Quality in Table 4) for each customer requirement was calculated (Perception-Expectation). Negative values indicate underperformance that expectations exceeded the actual service; in other words, the restaurant under-delivered against customers' expectations. As summarized in Table 4, 15 out of 16 customer requirements produced a negative quality score (gap), signalling broad opportunities for improvement. The top five largest shortfalls were courteous employees (M_{CE} = -1.79), caring, sympathetic employees (M_{CSE} = -1.42), knowledgeable employees (M_{KE} = -1.34), the appearance of personnel (M_{AoP} = -1.34), and order as expected (M_{OaE} = -1.33). The sole customer requirement that exceeded expectations was convenient hours of operation (M_{CHoO} = 0.27).

Initially, these negative gaps highlight areas for managerial attention (Table 4). At this point, the restaurant could implement many different strategies to address the service quality deficiencies. The two customer requirements that show the deepest concern (largest negative gap) are courteous employees and caring, and sympathetic employees (Table 4); therefore, front-of-the-house behavior must be the primary focus. In an effort to close the service quality gap, management could introduce short, scenario-based workshops on active listening and empathy, a format that recent hospitality trials have linked to double-digit gains in perceived courtesy (Lajante et al., 2023).

The gaps in knowledgeable employees and the appearance of personnel point to shortcomings in onboarding and communication. To start, a structured onboarding program that covers menu knowledge, ingredients (including allergen information), recommended pairings for food and beverages, and outlines uniform standards not only improves employee knowledge but reduces allergen incidents, therefore improving customer trust in the restaurant (Alkhalaf et al., 2024; Shandilya et al., 2023). In addition, ongoing training workshops and easily accessible quick-reference job aids (e.g., app-based) help employees answer customer questions confidently (Shail, 2019).

And finally, to reduce errors and ensure customers receive *orders as expected*, the restaurant could create or revise process controls, such as additional quality checks during order preparation, before serving, and table-side. Staff could also be trained to confirm order details with customers and proactively communicate any changes or delays.

However, tackling all areas with negative quality scores (even the top 5) at once is overwhelming and impractical, especially with limited resources.

Moreover, gap scores alone reveal where the shortfalls lie, but not which requirement has the greatest impact on overall perceived quality. It is therefore essential to prioritize efforts, first addressing the customer requirement that most strongly influences gap closure and service quality improvement. Our integrated SERVQUAL-QFD framework supports this effort by applying relative importance weights of customer requirements to identify the most critical technical service requirements to address for the greatest leverage in the HO*S*Q (Fig. 4).

To determine the importance weights for the 16 customer requirements, the overall perceived quality score (dependent variable) was regressed against the SERVQUAL scores for the 16 individual subdimensions (or independent variables). Specifically, we computed each customer's overall perceived quality by averaging post-survey questions 23, 24, and 25 (Appendix B). As with any analysis of this nature, multicollinearity between variables is a potential concern. Table 5 presents the variance inflation factor (VIF) for each independent variable, with all VIF values ranging from 1 to 2.2, indicating statistical independence of the results (Greene, 2000).

Continuing with the regression analysis, the *p*-values indicate the significance of the service quality dimensions, while the beta weights (β^2) indicate the relative importance of the dimensions. The regression model is statistically significant ($p < 0.05$), and the F-statistic further supports the model's validity, demonstrating that the included predictors have a meaningful collective impact. Overall, the performance of the model is comparable to and in some cases higher than the explanatory power reported in earlier SERVQUAL-QFD studies in hospitality (e.g., Milunović-Koprivica et al. (2019), Rakhmat Kabul et al. (2023)).

Squaring the beta coefficients offers a method for evaluating the relative contribution of each predictor to the total variance explained (R^2) within the model and serves as the importance weights for the customer requirements for the HO*S*Q (Fig. 4). Higher β^2 values signify that a given predictor exerts a greater influence on the dependent variable compared to others. The four customer requirements with the greatest impact on the customer's perception of overall quality include: individual attention ($\beta_{IA}{}^2 = 0.138$, $p < 0.001$), equipment ($\beta_E{}^2 = 0.032$, $p < 0.05$), caring and sympathetic employees ($\beta_{CSE}{}^2 = 0.022$, $p < 0.05$), and communication of delays ($\beta_{CoD}{}^2 = 0.019$, $p < 0.05$). The comprehensive results of this analysis are provided in Table 5.

Table 5: SERVQUAL/HO*S*Q Results

SERVQUAL Dimension	House of Quality: Customer Requirements	*p*-Value	β	β^2	VIF
Tangibles	Physical Facilities	0.552	-0.057	0.003	2.2
	Equipment (E)	0.015	0.178	**0.032**	1.6
	Appearance of Personnel	0.198	-0.110	0.012	2.0
Reliability	Order as Expected	0.565	0.049	0.002	1.6
	Accuracy of Bill/Order	0.283	0.090	0.008	1.4
	Willingness to Correct Mistakes	0.848	-0.009	0.000	1.3
Responsiveness	Prompt Service (Response Rime)	0.654	0.034	0.001	1.9
	Willingness of Personnel to Help	0.081	-0.116	0.013	1.3
	Communication of Delays (CoD)	**0.016**	-0.139	**0.019**	1.4
Assurance	Knowledgeable Employees	0.573	0.026	0.001	1.5
	Restaurant Support of Employees	0.217	-0.059	0.003	1.3
	Courteous Employees	0.347	0.088	0.008	2.2
	Trustworthy Employees	0.200	0.082	0.007	1.5
Empathy	**Caring, Sympathetic Employees (CSE)**	**0.041**	0.149	**0.022**	1.8
	Individual Attention (IA)	**0.000**	0.372	**0.138**	2.0
	Convenient Hours of Operation	0.827	-0.009	0.000	1.2
Note: Adjusted $R^2 = 0.391$; F = 4.370; *p*-value = 0.00001.					

Notably, individual attention is more than four times as influential as the next highest predictor, confirming the preeminence of the empathy SERVQUAL dimension that many hospitality studies have observed (Markovi & Raspor, 2010; Milunović-Koprivica et al., 2019). As empathy-related requirements dominate, managers should emphasize employee selection, empathy-focused training, and personalized service initiatives, which are strategies repeatedly shown to be the strongest drivers of perceived quality in hospitality (Markovi & Raspor, 2010; Yilmaz, 2009).

This weighted importance (β^2) prioritizes customer requirements and guides the implementation path within the HO*S*Q framework. Fig. 5 illustrates how the five standard SERVQUAL dimensions are expanded into 16 restaurant-specific requirements, each assigned a β^2 weight in the matrix's relative importance column in the HO*S*Q (Fig. 5). These relative importance weights (β^2), together with the 16 subdimensions listed in Table 4, direct the prioritization of technical remedies in subsequent steps.

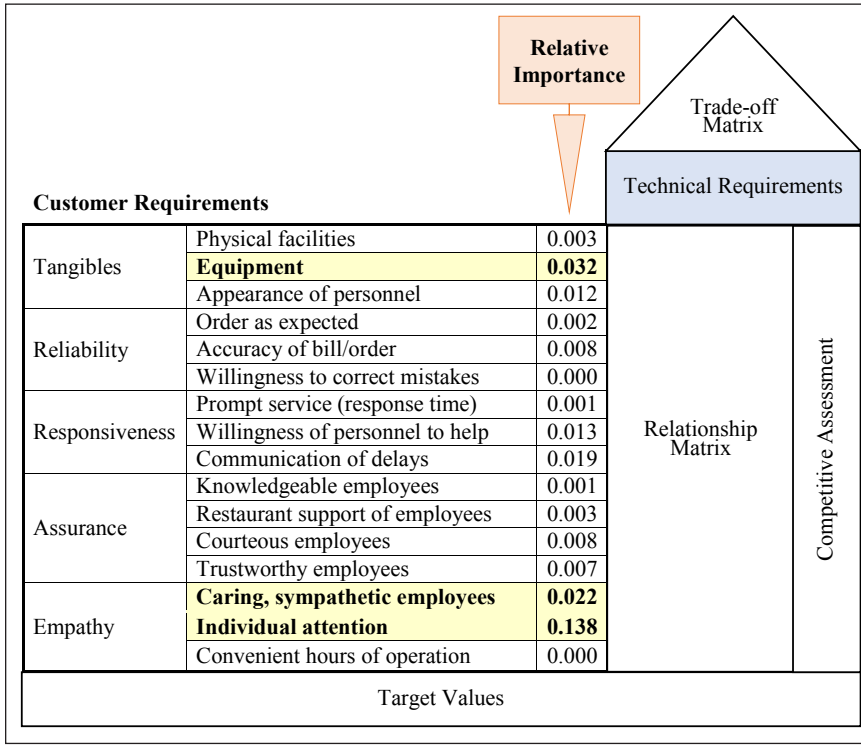

Fig. 5: House of SERVQUAL Quality: Restaurant Application Results

The next step in constructing the HO*S*Q is to specify how the restaurant will satisfy each customer requirement by listing the service attributes (technical requirements) across the top of the HO*S*Q matrix (e.g., average service response time, proportion of staff with service training certification). The relationship between customer requirements and technical requirements is the analytical core of HO*S*Q: it maps the functional relationships between the *whats* (customer requirements) and *hows* (technical requirements), attaches the β^2 relative importance weights from Table 5, and automatically highlights the levers that lead to the greatest customer-perceived value. Hospitality case studies show that using QFD in this way sharpens resource allocation and shortens improvement cycles by directing managers to the most consequential service attributes first (Paryani et al., 2010).

In the restaurant example, the SERVQUAL empathy dimension dominates: fostering caring, sympathetic employees ($\beta_{CSE}^2 = 0.022$) and delivering individual attention ($\beta_{IA}^2 = 0.138$) out rank all other requirements (Table 5). Service quality strategies should therefore concentrate on a) employee selection, b) employee training, and c) customer personalization. This could include refining recruitment processes to hire individuals who naturally exhibit empathy and friendliness, as well as training programs to develop current employees' skills in active listening and compassionate responses to customer concerns. To further enhance the dining experience, employees can use customer data, such as allergies or preferences, to tailor interactions and create a personalized experience. For instance, encouraging staff to remember regular customers' names and favorite menu items strengthens these connections and creates a welcoming and customer-centric environment. Together, these efforts equip the staff with skills to deliver personalized, exceptional customer care that meets and potentially exceeds the dining experience for the customers. Hospitality research consistently confirms empathy or individualized attention as the strongest predictor of perceived service quality (Yilmaz, 2009).

For restaurants to develop successful service strategies, they must determine customer needs and wants, map those needs and wants to service features, and choose an appropriate service delivery system to meet (and possibly exceed) them. The adapted SERVQUAL-QFD model, specifically the HO*S*Q, supports this process by reshaping how strategies are formulated and how quality assurance is managed. It facilitates early, meaningful collaboration among service delivery, service design, marketing, and management teams, leading to more cohesive and effective service delivery enhancements.

Limitations and Future Research

This study presents a systematic roadmap for NSD by integrating SERVQUAL and QFD (specifically HO*S*Q). Manager can leverage the VOC captured through SERVQUAL, link those insights to technical actions via QFD, and shorten development cycles by visualizing priorities in the HO*S*Q. In doing so, the framework treats quality simultaneously as process control and as a competitive strategy aimed at exceeding customer expectations (Cook et al., 2002; Kamvysi et al., 2023; Menor et al., 2002).

A few caveats temper these contributions. First, the restaurant study is a mid-priced, U.S. causal-dining outlet; service expectations, resource constraints, and regulatory pressures differ across hospitality formats and cultures. Replication studies in quick-service, fine-dining, or non-Western contexts would test the transferability of the integrated SERVQUAL-QFD logic. Second, our data is cross-sectional. Longitudinal studies could track how customer requirements and gap scores evolve over time, particularly in response to menu innovations or technology roll-outs, and examine whether the relative importance weights in the HO*S*Q remain stable or drift.

Third, traditional QFD and SERVQUAL applications depend on small, point-in-time surveys that lack timeliness and granularity. Recent work demonstrates that AI-enhanced QFD matrices powered by machine learning can mine thousands of online reviews and re-prioritize technical attributes in near-real time (Liu et al., 2025; Shen et al., 2022). Parallel advances in e-SERVQUAL and hypergraph deep-learning SERVQUAL allow practitioners to mine social media sentiment and app feedback to sharpen gap detection (Yi et al., 2025; Yusuf et al., 2025). Future studies could benchmark these automated pipelines against the manual HO*S*Q procedure used here, assessing trade-offs in cost, accuracy, and managerial usability. Exploring hybrid approaches, such as pairing AI-driven VOC feeds with periodic, deep dive SERVQUAL surveys, can balance breadth with diagnostic depth.

By acknowledging these limitations and outlining concrete research avenues (e.g., AI-enabled scalability), this paper clarifies where the proposed SERVQUAL-QFD framework advances service quality and where further work is needed to generalize, update, and automate it.

Declaration of Interest Statement

The authors report there are no competing interests to declare.

Department of Management Studies, BIT-Mesra, Ranchi-835215

The article has not been published elsewhere and has not been submitted simultaneously for publication elsewhere.

References

- Akao, Y., & Akao, Y. (2004). *Quality function deployment: Integrating customer requirements into product design*. Productivity Press.

- Alkhalaf, G. A., Aljuaylan, N. A., Alsaud, J. S., Aljokaidb, B. A., & Aljalaood, F. R. (2024). Restaurant staff's knowledge, practices, and attitudes pertaining to food allergy in Qassim Region, Saudi Arabia: A cross-sectional analysis. *PLOS ONE*, *19*(10), e0311650. doi:https://doi.org/10.1371/journal.pone.0311650

- Anderson, E. W., & Fornell, C. (2000). Foundations of the american customer satisfaction index. *Total Quality Management*, *11*(7), 869–882. doi:https://doi.org/10.1080/09544120050135425

- Behara, R. S., & Lemmink, J. (1993). *Q-Net: A neural network approach to modeling service Quality Improvement*. 1722–1724.

- Bichler, B. F., Pikkemaat, B., & Peters, M. (2021). Exploring the role of service quality, atmosphere and food for revisits in restaurants by using a e-mystery guest approach. *Journal of Hospitality and Tourism Insights*, *4*(3), 351–369. doi:https://doi.org/10.1108/JHTI-04-2020-0048

- Bitner, M. J., Ostrom, A. L., & Morgan, F. N. (2008). Service blueprinting: A practical technique for service innovation. *California Management Review*, *50*(3), 66–94. doi:https://doi.org/10.2307/41166446

- Bojanic, D. C., & Rosen, D. L. (1994). Measuring service quality in restaurants: An application of the servqual instrument. *Hospitality Research Journal*, *18*(1), 3–14. doi:https://doi.org/10.1177/109634809401800102

- Brady, M. K., & Cronin, J. J. (2001). Some new thoughts on conceptualizing perceived service quality: A hierarchical approach. *Journal of Marketing*, *65*(3), 34–49. doi:https://doi.org/10.1509/jmkg.65.3.34.18334

- Brady, M. K., Cronin, J. J., & Brand, R. R. (2002). Performance-only measurement of service quality: A replication and extension. *Journal of Business Research*, *55*(1), 17–31. doi:https://doi.org/10.1016/S0148-2963(00)00171-5

- Carnevalli, J. A., & Miguel, P. C. (2008). Review, analysis and classification of the literature on QFD—Types of research, difficulties and benefits. *International Journal of Production Economics*, *114*(2), 737–754. doi:https://doi.org/10.1016/j.ijpe.2008.03.006

- Chan, L.-K., & Wu, M.-L. (2002). Quality function deployment: A literature review. *European Journal of Operational Research*, *143*(3), 463–497. doi:https://doi.org/10.1016/S0377-2217(02)00178-9

- Chapman, R. L., Soosay, C., & Kandampully, J. (2003). Innovation in logistic services and the new business model: A conceptual framework. *International Journal of Physical Distribution & Logistics Management*, *33*(7), 630–650. doi:https://doi.org/10.1108/09600030310499295

- Coggins, B., Adams, C., Alldredge, K., & Teichner, W. (2024, August 23). *An update on U.S. consumer sentiment: Consumer optimism rebounds- but for how long?* McKinsey & Company. Retrieved from https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/the-state-of-the-us-consumer

- Cook, L. S., Bowen, D. E., Chase, R. B., Dasu, S., Stewart, D. M., & Tansik, D. A. (2002). Human issues in service design. *Journal of Operations Management*, *20*(2), 159–174. doi:https://doi.org/10.1016/S0272-6963(01)00094-8

- Cooper, R. G. (2011). *Winning at new products: Creating value through innovation* (4th ed). Basic Books.

- Cooper, R. G. (2019). The drivers of success in new-product development. *Industrial Marketing Management*, *76*, 36–47. doi:https://doi.org/10.1016/j.indmarman.2018.07.005

- Czepiel, J. A., Solomon, M. R., & Suprenant, C. (1985). *The service encounter: Managing employee/customer interaction in service business*. Institute of Retail Management.

- Dwivedi, S. N., & Sharma, J. P. (2002). Role of customers in the development of innovative process and product. *International Journal of Computer Applications in Technology*, *15*(1/2/3), 24. doi:https://doi.org/10.1504/IJCAT.2002.000278

- Edvardsson, B. (1998). Service quality improvement. *Managing Service Quality: An International Journal*, *8*(2), 142–149. doi:https://doi.org/10.1108/09604529810206972

- Fitzsimmons, J. A., & Fitzsimmons, M. J. (2006). *Service management: Operations, strategy, and information technology* (5th ed). McGraw-Hill/Irwin.

- Froehle, C. M., Roth, A. V., Chase, R. B., & Voss, C. A. (2000). Antecedents of new service development effectiveness: An exploratory examination of strategic operations choices. *Journal of Service Research*, *3*(1), 3–17. doi:https://doi.org/10.1177/109467050031001

- Gavahi, S. S., Hosseini, S. M. H., & Moheimani, A. (2023). An application of quality function deployment and SERVQUAL approaches to enhance the service quality in radiology centres. *Benchmarking: An International Journal*, *30*(5), 1649–1671. doi:https://doi.org/10.1108/bij-07-2021-0411

- Gharakhani, D., & Eslami, J. (2012). Determining customer needs priorities for improving service quality using QFD. *International Journal of Economics and Management Sciences*, *1*(6), 21–28.

- Greene, W. H. (2000). *Econometric analysis* (4th ed). Prentice Hall.

- Hauser, J., Clausing, D., & Garvin, D. (1988). The house of quality. *Harvard Business Review*, May-June, 63–73.

- Heskett, J. L., Jones, T. O., Loveman, G. W., Sasser, Jr., W. E., & Schlesinger, L. A. (2008, June-August). Putting the service-profit chain to work (reprint). *Harvard Business Review*, 164–174.

- Hill, T. (1995). *Manufacturing strategy*. Macmillan Education UK. doi:https://doi.org/10.1007/978-1-349-13724-4

- Hofmeister, J., Kanbach, D. K., & Hogreve, J. (2024). Measuring and managing service productivity: A meta-analysis. *Review of Managerial Science*, *18*(3), 739–775. doi:https://doi.org/10.1007/s11846-023-00620-5

- Huang, J., Mao, L.-X., Liu, H.-C., & Song, M. (2022). Quality function deployment improvement: A bibliometric analysis and literature review. *Quality & Quantity*, *56*(3), 1347–1366. doi:https://doi.org/10.1007/s11135-021-01179-7

- Hull, F. M. (2004). Innovation strategy and the impact of a composite model of service product development on performance. *Journal of Service Research*, *7*(2), 167–180. doi:https://doi.org/10.1177/1094670504268452

- Hummel, E., & Murphy, K. S. (2011). Using service blueprinting to analyze restaurant service efficiency. *Cornell Hospitality Quarterly*, *52*(3), 265–272. doi:https://doi.org/10.1177/1938965511410687

- Johns, N., & Pine, R. (2002). Consumer behaviour in the food service industry: A review. *International Journal of Hospitality Management*, *21*(2), 119–134. doi:https://doi.org/10.1016/S0278-4319(02)00008-7

- Kamakura, W. A., Mittal, V., De Rosa, F., & Mazzon, J. A. (2002). Assessing the service-profit chain. *Marketing Science*, *21*(3), 294–317. doi:https://doi.org/10.1287/mksc.21.3.294.140

- Kamvysi, K., Andronikidis, A., Georgiou, A. C., & Gotzamani, K. (2023). A quality function deployment framework for service strategy planning. *Journal of Retailing and Consumer Services*, *73*, 103343. doi:https://doi.org/10.1016/j.jretconser.2023.103343

- Kano, S., Takahashi, F., & Tsuji, S. (1984). Attractive quality and must-be quality. *The Journal of the Japanese Society for Quality Control*, *14*(2), 39–48. doi:https://doi.org/10.20684/quality.14.2_147

- Kenny, A. A. (1988). A new paradigm for quality assurance. *Quality Progress*, *21*(6), 30–32.

- Kindström, D., Kowalkowski, C., & Sandberg, E. (2013). Enabling service innovation: A dynamic capabilities approach. *Journal of*

Business Research, *66*(8), 1063–1073. doi:https://doi.org/10.1016/j.jbusres.2012.03.003

- Lajante, M., Del Prete, M., Sasseville, B., Rouleau, G., Gagnon, M.-P., & Pelletier, N. (2023). Empathy training for service employees: A mixed-methods systematic review. *PLOS ONE*, *18*(8), e0289793. doi:https://doi.org/10.1371/journal.pone.0289793

- Liu, P., Shi, X., Xu, Y., Dang, R., & Wu, Y. (2025). Integration of machine learning with comprehensive IVIF-QFD-MCDM framework for enhancing online hotel operations. *Information Sciences*, *720*, 122493. doi:https://doi.org/10.1016/j.ins.2025.122493

- Markovi, S., & Raspor, S. (2010). Measuring perceived service quality using SERVQUAL: A case study of the Croatian hotel industry. *Management*, *5*(3), 195–209.

- Maslikhan, A., & Singgih, M. L. (2024). Integration of SERVQUAL and quality function deployment as an effort to increase the services of minimarket. *Proceedings of the International Conference on Advanced Technology and Multidiscipline* (pp. 251–276). doi:https://doi.org/10.2991/978-94-6463-566-9_17

- Mazur, G. H. (1993). *QFD for service industries: From voice of customer to task deployment*. The Fifth Symposium on Quality Function Deployment. Japan Business Consultants.

- Mazur, G. H. (2008). *Delighting customers with quality function deployment: Voice of customer meets voice of process.* Transactions from the 14th International Symposium on Quality Function Deployment, Ann Arbor, MI.

- Mendocilla, M., Miravitlles, P., & Matute, J. (2026). Unveiling the role of service quality in the quick service restaurant sector: An integrative review. *International Journal of Hospitality Management*, *132*, 104367. doi:https://doi.org/10.1016/j.ijhm.2025.104367

- Menor, L. J., Tatikonda, M. V., & Sampson, S. E. (2002). New service development: Areas for exploitation and exploration. *Journal of Operations Management*, *20*(2), 135–157. doi:https://doi.org/10.1016/S0272-6963(01)00091-2

- Michael, L. D., Johnson, D., & Renaghan, L. M. (1999). Adapting the QFD approach to extended service transactions. *Production and Operations Management*, *8*(3), 301–317. doi:https://doi.org/10.1111/j.1937-5956.1999.tb00310.x

- Milunović-Koprivica, S., Bešić, C., & Ristić, O. (2019). QFD method application in the process of hotel service quality improvement. *Menadzment u Hotelijerstvu i Turizmu*, *7*(2), 57–66. doi:https://doi.org/10.5937/menhottur1902057M

- Mizuno, S., Akao, Y., & Ishihara, K. (Eds.). (1994). *QFD, the customer-driven approach to quality planning and deployment*. Asian Productivity Organization.

- OECD. (2024). *OECD Compendium of Productivity Indicators 2024*. doi:https://doi.org/10.1787/b96cd88a-en

- Oktoriano, A., Cahyano, C., & Safitri, E. M. (2024). Identify the quality of studio services using the servqual and quality function deployment methods. *International Journal of Social Science and Human Research*, *7*(12). doi:https://doi.org/10.47191/ijsshr/v7-i12-29

- Oliver, R. L. (2014). *Satisfaction: A behavioral perspective on the consumer*. Routledge. doi:https://doi.org/10.4324/9781315700892

- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, *64*(1), 12–40.

- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of expectations as a comparison standard in measuring service quality: Implications for further research. *Journal of Marketing*, *58*(1), 111–124. doi:https://doi.org/10.1177/002224299405800109

- Park, O.-J., Lehto, X. Y., & Houston, C. R. (2013). Assessing competitive attributes of service quality in university foodservice. *Journal of Foodservice Business Research*, *16*(3), 235–254. doi:https://doi.org/10.1080/15378020.2013.810526

- Paryani, K., Masoudi, A., & Cudney, E. A. (2010). QFD application in the hospitality industry: A hotel case study. *Quality Management Journal*, *17*(1), 7–28. doi:https://doi.org/10.1080/10686967.2010.11918258

- Patrício, L., Gustafsson, A., & Fisk, R. (2018). Upframing service design and innovation for research impact. *Journal of Service Research*, *21*(1), 3–16. doi:https://doi.org/10.1177/1094670517746780

- Pizam, A., & Ellis, T. (1999). Customer satisfaction and its measurement in hospitality enterprises. *International Journal of Contemporary Hospitality Management*, *11*(7), 326–339. doi:https://doi.org/10.1108/09596119910293231

- Rakhmat Kabul, E., Marhalinda, M., Herminda, H., Nurina, N., & Ganda Wijaya, H. (2023). Integrated approach of QFD matrix, SERVQUAL and Kano models for human resources analysis in non star hotel service quality. *Return: Study of Management, Economic and Bussines*, *2*(5), 472–482. doi:https://doi.org/10.57096/return.v2i05.103

- Razak, N. A., Aminuddin, Z. M., & Ghazali, A. R. (2020). Service quality and customer satisfaction in restaurant industry using partial least square. *European Proceedings of Social and Behavioural Sciences* (pp. 218–225). doi:https://doi.org/10.15405/epsbs.2020.10.20

- Rosen, L. D., & Karwan, K. R. (1994). Prioritizing the dimensions of service quality: An empirical investigationand strategic assessment. *International Journal of Service Industry Management*, *5*(4), 39–52. doi:https://doi.org/10.1108/09564239410068698

- Russell, R. S., & Taylor, B. W. (2014). *Operations and supply chain management* (8th ed., intern. student version). Wiley.

- Seth, N., Deshmukh, S. G., & Vrat, P. (2005). Service quality models: A review. *International Journal of Quality & Reliability Management*, *22*(9), 913–949. doi:https://doi.org/10.1108/02656710510625211

- Shah, K., Sanhvi, A., & Brahmbhatt, M. (2017). A literature review on factors affecting service quality in restaurants. *International Research Journal of Marketing and Economics*, *4*(5), 44–56.

- Shail, M. S. (2019). Using micro-learning on mobile applications to increase knowledge retention and work performance: A review of literature. *Cureus*. doi:https://doi.org/10.7759/cureus.5307

- Shandilya, G., Dubey, A., & Srivastava, P. (2023). Enhancing customer satisfaction in fast food: A novel approach integrating SEM and ANN for relationship marketing analysis. *Parikalpana: KIIT Journal of Management*, *19*(2), 142. doi:https://doi.org/10.23862/kiit-parikalpana/2023/v19/i2/223471

- Sharma, K. (2023). Revisiting service brand and customer perception. *Journal of Hospitality Application and Research*, *18*(2), 62–80.

- Shen, Y., Zhou, J., Pantelous, A. A., Liu, Y., & Zhang, Z. (2022). A voice of the customer real-time strategy: An integrated quality function deployment approach. *Computers & Industrial Engineering*, *169*, 108233. doi:https://doi.org/10.1016/j.cie.2022.108233

- Sjödin, D., Parida, V., Kohtamäki, M., & Wincent, J. (2020). An agile co-creation process for digital servitization: A micro-service innovation approach. *Journal of Business Research*, *112*, 478–491. doi:https://doi.org/10.1016/j.jbusres.2020.01.009

- Smith, A. M. (1999). Some problems when adopting Churchill's paradigm for the development of service quality measurement scales. *Journal of Business Research*, *46*(2), 109–120. doi:https://doi.org/10.1016/S0148-2963(98)00015-0

- Suneeta, B., & Koranne, S. (2014). Conceptual study of relationship between service quality and customer satisfaction. *International Research Journal of Social Sciences*, *3*(2), 9–14.

- Sureshchandar, G. S., Rajendran, C., & Anantharaman, R. N. (2002). The relationship between service quality and customer satisfaction – A factor specific approach. *Journal of Services Marketing*, *16*(4), 363–379. doi:https://doi.org/10.1108/08876040210433248

- Tanto, Nursanti, E., & Indra Laksmana, D. (2024). Increasing

customer satisfaction using integration of service quality, Kano and quality function deployment. *KnE Social Sciences*. doi:https://doi.org/10.18502/kss.v9i10.15738

- Udayalakshmi, C., & Sridevi, J. (2023). Service quality models: A review with respect to fast food restaurants. *BOHR International Journal of Social Science and Humanities Research*, *2*(1), 92–96. doi:https://doi.org/10.54646/bijsshr.2023.30

- Ulrich, K. T., & Eppinger, S. D. (2016). *Product design and development* (6th ed.). McGraw-Hill Education.

- U.S. Bureau of Labor Statistics. (2023). *Office of occupational statistics and employment projections* (Table 2.1 Employment by Major Industry Sector). Retrieved from https://www.bls.gov/emp/tables/employment-by-major-industry-sector.htm

- U.S. Department of Commerce. (2024, October 2). *Consumer Spending*. Bureau of Economic Analysis. Retrieved from https://www.bea.gov/data/consumer-spending/main

- Wynn, M., & Jones, P. (2022). IT Strategy in the Hotel Industry in the Digital Era. *Sustainability*, *14*(17), 10705. doi:https://doi.org/10.3390/su141710705

- Yi, W., Zhang, L., Kuzmin, S., Gerasimov, I., & Cheng, X. (2025). DSSQEM-IHK: Dynamic SERVQUAL service quality evaluation method integrating hypergraph knowledge. *Information Processing & Management*, *62*(3), 104030. doi:https://doi.org/10.1016/j.ipm.2024.104030

- Yildirim, A., Ozcan, S., & Yildirim, K. E. (2019). Integrated usage of the SERVQUAL and quality function deployment techniques in the assessment of public service quality: The case of Ardahan municipality. *Business and Economics Research Journal*, *10*(4), 885–901. doi:https://doi.org/10.20409/berj.2019.208

- Yilmaz, I. (2009). Measurement of service quality in the hotel industry. *Anatolia: An International Journal of Tourism and Hospitality Research*, *20*(2), 375–386. doi:https://doi.org/10.1080/13032917.2009.10518915

- Yoon, Y., & Cha, K. C. (2020). A qualitative review of cruise service quality: Case studies from Asia. *Sustainability*, *12*(19), 8073. doi:https://doi.org/10.3390/su12198073

- Yu, Y., & Dean, A. (2001). The contribution of emotional satisfaction to consumer loyalty. *International Journal of Service Industry Management*, *12*(3), 234–250. doi:https://doi.org/10.1108/09564230110393239

- Yuan, Q., & Gao, Q. (2019). Is SERVQUAL reliable and valid? A review from the perspective of dimensions in different typical service industries. In P.-L. P. Rau (Ed.), *Cross-Cultural Design, Methods, Tools and User Experience* (vol. 11576, pp. 338–351). Springer International Publishing. doi:https://doi.org/10.1007/978-3-030-22577-3_24

- Yusuf, I. N. A., Muda, I., & Kusuma, S. A. (2025). The role of E-SERVQUAL in enhancing online service quality: A systematic literature review. *Journal of Modern Accounting and Auditing*, *21*(3). doi:https://doi.org/10.17265/1548-6583/2025.03.001

- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, *60*(2), 31–46. doi:https://doi.org/10.1177/002224299606000203

- Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1985). Problems and strategies in services marketing. *Journal of Marketing*, *49*(2), 33–46. doi:https://doi.org/10.1177/002224298504900203

- Zins, A. H. (2001). Relative attitudes and commitment in customer loyalty models: Some experiences in the commercial airline industry. *International Journal of Service Industry Management*, *12*(3), 269–294. doi:https://doi.org/10.1108/EUM0000000005521

Appendix

The SERVQUAL Instrument[a] is reproduced from the source: Bojanic, D. C., & Rosen, D. L. (1994). Measuring Service Quality in Restaurants: An Application of the SERVQUAL Instrument. Hospitality Research Journal , 18, 3-14.

Appendix A: Pre-Survey (Expectations)

Directions: This survey deals with your opinions of restaurant services. Please show the extent to which you think restaurants should possess the features described by each statement. If you strongly agree that restaurants should possess a feature, circle the number 7. If you strongly disagree that restaurants should possess a feature, circle 1. If your feelings are not strong, circle one of the numbers in the middle. There are no right or wrong answers – all we are interested in is a number that best shows your expectations about restaurant services.

1. Restaurants shouldn't be expected to tell customers exactly when services will be performed. (-)[b]
2. It is okay if the restaurant is too busy to respond to customer requests promptly. (-)
3. Restaurants should have up-to-date equipment.
4. Employees don't always have to be willing to help customers. (-)
5. Employees should be polite.
6. When restaurants promise to do something by a certain time, they should do so.
7. Customers should be able to trust restaurant employees.
8. It is unrealistic to expect restaurants to have their customers' best interests at heart. (-)
9. Physical facilities should be appealing.
10. Employees should get adequate support from the restaurant to do their jobs well.
11. It is not realistic for customers to expect prompt service from restaurant employees. (-)
12. Restaurants should be dependable.
13. Customers should be able to feel safe in their transactions with restaurants.
14. Restaurant employees should be well-dressed and appear neat.
15. Restaurants should keep accurate records.
16. It is unrealistic to expect employees to know what the needs of their customers are. (-)

17. Restaurants should provide their services at a time they promise to do so.
18. Restaurants should not be expected to give customers individual attention. (-)
19. The appearance of the physical facilities should be consistent with the type of service provided.
20. When customers have problems, restaurant employees should be sympathetic and reassuring.
21. Restaurant employees cannot be expected to give customers personal attention. (-)
22. Restaurants should not be expected to have operating hours that are convenient to all of their customers. (-)

Appendix B: Post-Survey (Perceptions)

Directions: The following set of statements relate to your feelings about (restaurant's name). For each statement, please show the extent to which you believe (restaurant's name) has the feature described in the statement. Once again, circling a 7 means that you strongly agree that (restaurant's name) has that feature, and circling a 1 means that you strongly disagree. You may circle any of the numbers in the middle that show how strong your feelings are. There are no right or wrong answers – all we are interested in is a number that best shows your perceptions about (restaurant's name).

1. Employees of _____ do not know what your needs are. (-)
2. You do not receive prompt service from _____ employees. (-)
3. _____ physical facilities are appealing.
4. Employees of _____ are very polite.
5. You feel safe in your transactions with _____ employees.
6. _____ does not have operating hours that are convenient to all of its customers. (-)
7. _____ has up-to-date equipment.
8. _____ does not give you individual attention. (-)
9. Employees get adequate support from _____ to do their jobs well.
10. You can trust employees of _____.

11. _____ does not have your best interest at heart. (-)
12. _____ employees are well dressed and appear neat.
13. Employees of _____ do not give you personal attention. (-)
14. The appearance of physical facilities of _____ is consistent with the type of service provided.
15. Employees of _____ are too busy to respond to your requests promptly. (-)
16. _____ is dependable.
17. _____ does not tell customers exactly when services will be performed. (-)
18. Employees of _____ are not always willing to help customers. (-)
19. When _____ promises to do something by a certain time, it does so.
20. When you have a problem, _____ is sympathetic and reassuring.
21. _____ keeps its records accurately.
22. _____ provides its services at the time it promises to do so.
23. _____ quality of service is quite high.
24. I would recommend _____ to my friends for this type of service.
25. I will use _____ service over others in the future.

[a]A seven-point scale ranging from "Strongly Agree" (7) to "Strongly Disagree" (1), with no verbal labels for the intermediate scale point (i.e., 2 through 6) accompanied each statement; [b]Ratings on these statements were reverse-scored prior to data analysis.