



Integration Of Servqual And Quality Function Deployment As An Effort To Increase The Services Of Minimarket

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Abstract. The abstract should summarize the contents of the paper in short terms, i.e. 15–250 words. A minimarket provides daily products with easy access and long opening hours, serving not only as a shopping place but also as part of the business and retail evolution adapting to society's needs. Despite being smaller than a supermarket, a minimarket offers a variety of products, including food, beverages, household items, books, and religious texts. The primary challenge is increasing customer dissatisfaction, which can negatively impact profitability. Darut Taqwa Minimarket, operating since 2004, focuses on convenience, customer satisfaction, and excellent service while developing entrepreneurial skills among students. To tackle customer dissatisfaction, the SERVQUAL and QFD methods were utilized. This study employed seven SERVQUAL aspects: tangibility, reliability, responsiveness, assurance, empathy, communication, and security. QFD was used to integrate customer desires verified by the company. The QFD analysis revealed the highest Customer Importance value (4.60) on the indicator "Cost/price of products matches the quality provided" and the lowest value (4.02) on "Minimarket employees greet new customers." The highest Customer Satisfaction Level (SCL) value (4.20) was on "Security's promptness and decisiveness in securing and organizing the minimarket area," and the lowest (3.69) on "The minimarket often holds events (promotions) or discounts." Data processing according to the Technical Requirement assessment indicated the highest priority for improvement was "Communication Skills Training by Management" with a weight of 72 (7.16%) due to its significant contribution to customer satisfaction. The second priority was "Employee training in customer service" (6.27%) to enhance customer service skills, followed by "Providing training and briefing to employees" (5.27%) to improve task knowledge and understanding. The lowest priority was "In-store promotions" (0.50%) due to its minimal impact on improving minimarket services.

Keywords: Improvement, Service, Minimarket, SERVQUAL, Quality Function Deployment (QFD), Productivity.

1 Introduction

Minimarkets, as a concept of small stores, have become a crucial element in modern society. Combining elements of supermarkets on a small scale with a target market like traditional markets, minimarkets provide a variety of everyday products with easy access and extended opening hours. The role of minimarkets extends beyond being a mere shopping place, reflecting changes in business and retail, and adapting to the needs of a busy society. Despite being smaller than supermarkets, minimarkets like

in Pasuruan, East Java, strive to offer a diverse range of products, including food, beverages, household items, and even reading materials.

The rapid growth of minimarkets in Indonesia, especially in Pasuruan, highlights the strategic position of the city as one of the largest minimarket growth centers in East Java. Darut Taqwa Minimarket, established in 2004 under the auspices of an Islamic boarding school, serves as an example of a minimarket with goals beyond retail business. As part of the Islamic boarding school, this minimarket aims to develop entrepreneurial skills among the students, encompassing religious and business aspects.

In conducting its business activities, Darut Taqwa Minimarket emphasizes comfort, service, and customer satisfaction. Various types of products, such as food, household needs, health products, and more, are available in this minimarket. As consumer behavior becomes increasingly critical, service quality becomes a key factor in the success of businesses, especially in the service industry.

This research aims to evaluate the factors influencing customer satisfaction and expectations at Darut Taqwa Minimarket. The method used involves developing a Service Quality (SERVQUAL) model with seven dimensions: tangible, reliability, responsiveness, assurance, empathy, communication, and security. To translate customer desires into enhanced specifications, Quality Function Deployment (QFD) analysis is employed using the House of Quality (HoQ) matrix.

Through the analysis using the SERVQUAL and QFD methods, it is expected that the evaluation of service quality can enhance customer satisfaction at Darut Taqwa Minimarket, achieving the expected crowd and occupancy levels.

2 Research Methods

Conceptual Model

The research methodology chapter outlines the steps and procedures used in the study to address research questions and achieve research objectives. It begins with the identification of the problem, focusing on improving the service quality and customer satisfaction of Minimarket Darut Taqwa. Understanding the operations, inventory management, product layout, sales processes, and customer interactions is involved in the identification phase.

To create a model using the Service Quality (SERVQUAL) method, the next step involves modifying attributes based on previous research. The model includes seven variables (Tangibles, Reliability, Responsiveness, Assurance, Empathy, Communication, and Security), 25 hypotheses, and 54 attributes.[1] The research method discusses the unique nature of the service sector and justifies the use of the SERVQUAL method due to its high frequency of use and statistical validity. Minimarket Darut Taqwa, as a service-oriented center, is deemed suitable for the SERVQUAL method combined with Quality Function Deployment (QFD) in the House of Quality matrix.[2]

Identification of variables and measurement attributes involves determining the aspects to be measured, such as tangibility, reliability, assurance, empathy, responsiveness, communication, and security. A table is created listing variables and measurement attributes for each dimension.[3] The establishment of variables for the questionnaire

follows Parasuraman, Zeithaml, and Berry's five dimensions of service quality: Tangibles, Reliability, Responsiveness, Assurance, Empathy, Communication, and Security. The questionnaire is designed using a Likert scale (1 to 5) [4] to measure customer satisfaction, importance, and expectation levels. Pre-questionnaires are conducted to test validity and reliability. Data collection methods include observations, interviews, and documentation. The population and sample are determined using accidental sampling, and the sample size is calculated using the Slovin formula.

The SERVQUAL formula, developed by Parasuraman, Zeithaml, and Berry, calculates service quality (Q) as the difference between perceived service (P) and expected service (E):

$$Q = P - E \tag{1}$$

where:

- Q = Service Quality
- P = Perceived Service by users
- E = Expected Service by users

Perceived service (P) is calculated as the sum of all perceived service scores divided by the number of respondents:

$$P = \frac{\sum \rho}{n} \tag{2}$$

where:

- P = Perceived service
- $\sum \rho$ = Total sum of perceived service scores
- n = Number of respondents

Expected service (E) is calculated similarly:

$$E = \frac{\sum E}{n} \tag{3}$$

where:

- E = Expected service
- $\sum E$ = Total sum of expected service scores
- n = Number of respondents

A positive Q value indicates good service quality, while a negative value suggests poor service quality.

The difference between expectations and perceptions, termed as the gap, determines customers' perception of service quality.[5] Therefore, gap analysis is a method used to compare customer expectations against the service received. Service quality measurement in the Servqual model is based on a multi-item scale designed to measure customer expectations and perceptions across service quality dimensions.[6] These dimensions are detailed in several question items for expectation and perception variables based on a Likert scale. The formula used in analyzing service quality is as follows:

$\text{Gap} = P \text{ (Perceived Service)} - E \text{ (Expected Service)}$

The Importance-Performance Analysis (IPA) in the form of a Cartesian diagram is a procedure to indicate the relative importance of various indicators in determining fundamental indicators, thereby indicating areas or indicators for improving service quality.[7] IPA can be determined through the level of conformity, which compares the service scores given with the importance or customer expectations scores. This conformity level determines the priority order of customer satisfaction factors to be improved. In this method, the company's service level can be depicted in variable X, while the customer's desired expectations can be depicted in variable Y. The conformity level between service and customer expectations is got using the following equation:

$$CSI_i = \frac{X_i}{Y_i} \times 100\% \tag{4}$$

CSI_i = Customer Satisfaction Index for item

X_i = Perceived Service Score for item

Y_i = Customer Expectations Score for item

In the Cartesian diagram, the horizontal axis (X) represents the range of average service rating scores, while the vertical axis (Y) represents the range of average customer expectation rating scores.[8] Two boundaries are formed, representing the total average of service rating scores and customer expectation rating scores. The formulas are:

$$\bar{X} = \frac{\sum_{i=1}^N X_i / N}{K} \quad \& \quad \bar{Y} = \frac{\sum_{i=1}^N Y_i / N}{K} \tag{5}$$

where:

N = Number of Respondents

K = Number of Customer Satisfaction Factors

The conformity level for each customer satisfaction factor is then depicted in four quadrants on the Cartesian diagram.

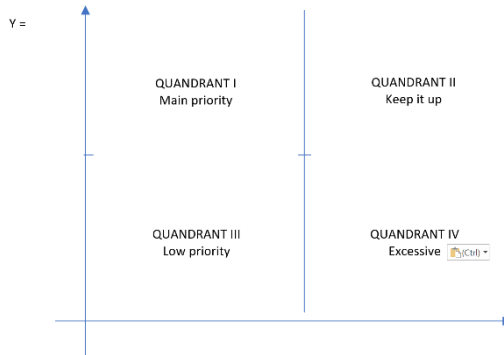


Figure 1, Cartesian Diagram Source: [9]

Variable and Indicators

The study employs seven variables (dimensions) aimed at identifying customer characteristic factors through the SERVQUAL method. In defining the variables for the questionnaire, the researcher refers to the opinions of Parasuraman, Zeithaml, and Berry. The variables used in the questionnaire are based on seven service dimensions. The explanation of the seven variable dimensions used in the study is as follows:

1. **Tangibles:** The physical manifestation including facilities, equipment, employees, and information or communication means.
2. **Reliability:** The ability to deliver promised services promptly, accurately, and satisfactorily.
3. **Responsiveness:** The activities of the staff to assist customers and provide attentive service, addressing customer complaints or expectations.
4. **Assurance:** Competence that provides security from danger, risk, or doubt, and includes knowledge, courtesy, and trustworthiness of the staff.
5. **Empathy:** The quality and ability to give full attention to customers, ease of contact, good communication, and fulfilling individual customer needs.
6. **Communication:** The ability to convey clear and easily understandable information to customers.
7. **Security:** The customers' feeling of safety and protection while using the services of a company.

The variables and each quality measurement attribute can be seen in Table 1 as follows:

Table 1, Research Variables and Indicators

No	Dimensi	Code	Attribute
1	Tangibility	X1.1	Neatness and cleanliness minimarket employee
		X1.2	Cleanliness of the minimarket area/ environment
		X1.3	Beauty or comfort minimarket interior/ exterior design
		X1.4	Arrangement/layout of product easily encountered by customers
		X1.5	Availability of trolley and basket shopping in a minimarket
		X1.6	Neatness products displayed on the shelves
		X1.7	Cleanliness facility support (toilet, room change, parking area, place worship. etc)
		X1.8	Availability place adequate parking
		X1.9	Facility seating in the minimarket area
		X1.10	Cooling temperature the room (AC) felt cold in a way evenly (not in position certain just)
2	Reliability	X2.1	There are instruction directions where the location product is at
		X2.2	Frequent minimarket hold an event (promo) or piece price
		X2.3	Convenience consumers look for need required products with existing instruction direction or layout good stuff
		X2.4	Accuracy price products (eg similarity or suitability price stated on the product)

		X2.5	Product prices are listed under price at the checkout
		X2.6	Completeness of product under need consumer
		X2.7	Products sold quality high, esp for product beauty, fashion books reading, and theory education (study religion)
		X2.8	Product price under standard circle/class/minimarket level
		X2.9	Payment Can use a debit card, credit card, or e-money
3	Assurance	X3.1	Cost/price product under the quality provided
		X3.2	Timely return guarantee happen damaged product
		X3.3	Guaranteed goods quality (no dented, rusty, open packaging, expired, damaged)
		X3.4	The information provided by minimarket employees is correct and accurate
		X3.5	Employees can be reliable (can help face problems required by customers)
		X3.6	Guarantee security in park vehicle
		X3.7	Guarantee condition appropriateness product (free from the expiration date or free to disabled)
		X3.8	Suitability price products offered to the consumer
4	Emphaty	X4.1	Friendliness employee moment serves consumer
		X4.2	Consumer given attention personally by the party minimarket employee
		X4.3	Patience employee in face consumer
		X4.4	Justice employee moment serves consumer (no choice love)
		X4.5	Complaints and suggestions are responded to with seriously by minimarkets
		X4.6	Customer service or another officer asked sorry if do error
5	Respon- siveness	X5.1	Admin offers promotional products/products addition before transaction payment
		X5.2	Speed employee in respond needs/complaints of consumer
		X5.3	The role of the involved employee in help / serve consumers quickly if necessary.
		X5.4	Speed and responsiveness waiter moment customer queue at the cashier
		X5.5	Response employee in listening to complaint consumer
		X5.6	Employees are quick and precise in serving consumer
		X5.7	Employees are very understanding will the products that sell goods in facet placement or condition product
		X5.8	Readiness/alacrity employee in help consumers when needed
		X5.9	If there are complaints from customers, minimarkets immediately respond

6	Communication	X6.1	Customer service offers promotional/discount products with friendly and polite without There is coercion
		X6.2	The convenience store employee chanted greetings to new customers who visit
		X6.3	Say "accept love" given to employee at the end of service
		X6.4	Communication style minimarket employees are very good with consumer
		X6.5	Employees serve with polite, courteous, friendly tidy, neat, and smiling.
7	Security	X.7.1	The Minimarket area is facilitated with CCTV cameras
		X.7.2	Promptness and firmness security in as well as tidying up the minimarket area
		X.7.3	Security moment use facilities (debit card, credit card, e-money, and other digital money)
		X.7.4	Security goods default in shopping (like wallets, jewelry, and children small)
		X.7.5	Security consumers are guaranteed from crime while in the minimarket area
		X.7.6	There is tool safety as well as facility extinguisher fire moment a disaster is not desired
		X.7.7	Security product free from expiry time (expiration)

Source: Data Processing

Characteristics and General Description of Respondents

The sample size for this study is 70, determined by the 10-times rule for multivariate analysis, which requires a minimum of 10 times the number of variables being studied. As there are 7 variables, the sample size is calculated as 7 multiplied by 10, resulting in 70 samples[10], This research aims to identify the population and sample for studying and finding solutions to the problem. The study utilizes the Accidental sampling method, a technique where individuals are selected based on chance encounters. This method relies on spontaneity, allowing anyone who coincidentally encounters the researcher and meets the criteria to be chosen as a sample (respondent).

To ensure that a sample can represent the population, it is necessary to determine if the data is sufficient. In this research, the author uses the Slovin formula calculation method[11] to determine the sample size.

$$n = \frac{N}{1 + N \cdot (e)^2} \tag{6}$$

Explanation:

n = Sample size

N = Population size

e = Margin of error or maximum tolerated error (0.05)

The determination of the population size in this study is based on the population of this Minimarket approximately 10.000. From this population data, the sample size for this study can be calculated as follows:

$$\begin{aligned} n &= \frac{10.000}{1 + 10.000 \cdot (0,10)^2} \\ &= \frac{10.000}{1 + 10.000 \times 0.01} \\ &= \frac{10.000}{1 + 1.01} \\ &= \frac{10.000}{1.01} = 99.0099 \end{aligned}$$

The results of the sum according to the Slovin formula are known to be 99.0099, but within one month the researcher obtained a sample of 152 customers, which means it exceeds the required sample size (representative and valid). Customer satisfaction occurs when customer expectations are aligned with perceived performance. This satisfaction is assessed by customers based on the goods or services received compared to their expectations. In this study, data analysis used 152 respondents[12] from Minimarket Darut Taqwa. Information about respondents, including name, age, gender, education, and status/occupation, was obtained through the distribution of questionnaires conducted by the researcher. The presentation of respondent identity data aims to provide an overview of the respondent group.

The data analysis conducted in this research encompasses various demographic aspects of the respondents. Firstly, the age of the respondents becomes a crucial focus in understanding age group characteristics and the potential differences in perceptions.[13] The data indicates that the majority of respondents fall within the age range of 21-30 years, reaching 44% of the total sample, followed by the age group of 16-20 years at 24%, and others with lower percentages. Furthermore, the gender of the respondents is also analyzed, with results indicating a balanced distribution between males and females, approximately 51% and 49%, respectively.[14]

Additionally, the education level of the respondents is a relevant factor in evaluating the data. The results show that most respondents have completed high school and bachelor's degrees, with percentages around 36% and 37%, respectively. Higher education levels such as diploma (D4) and master's (S2) record lower percentages.

Finally, the employment status of the respondents is a crucial part of the demographic analysis. There is variation in employment status, with the majority being students, religious students (santri), and entrepreneurs. This research aims to use this data as a basis to identify whether there are significant differences in customer perceptions and satisfaction based on demographic characteristics. The goal is to assess whether improvements in service quality need to be focused on specific groups or whether services already meet the expectations of various customer groups.

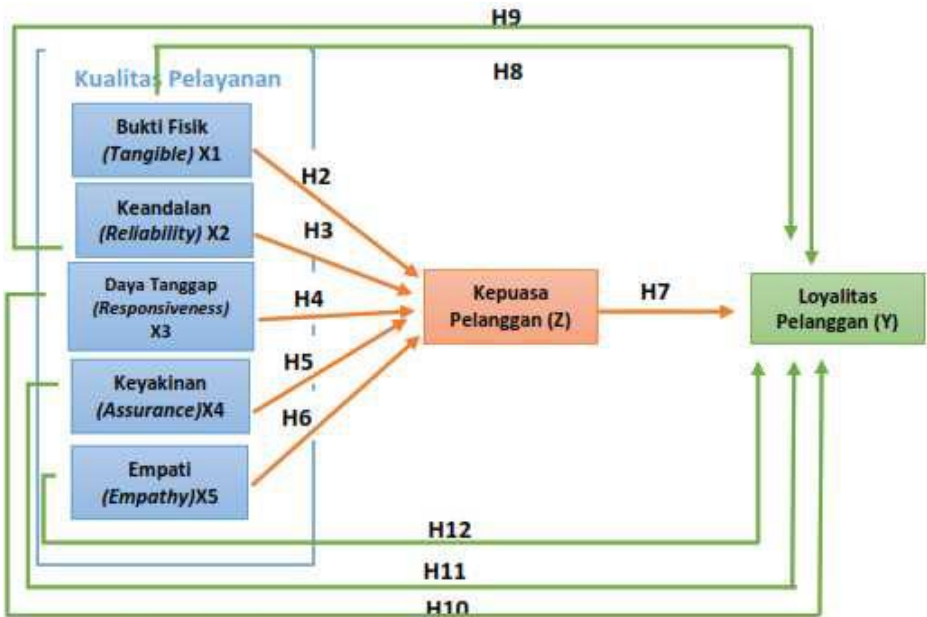


Figure 2, Conceptual Model Source: [15]

Instrument

This study was conducted using a questionnaire survey to obtain data, which was then processed using the Service Quality method [15] and Quality Function Deployment (QFD) [16] with the help of the House of Quality (HoQ) matrix.[17] The first part of the questionnaire includes questions related to the respondents' demographic data, such as gender, age, education level, and occupation. The second part includes questions for users of minimarket services. The third part covers measurement items for the variables. A total of 54 indicators were used in the study, derived from 5 SERVQUAL dimension items.

Analysis Data

This study tests the development of a new model based on previous research. The new model includes 5 dimensions: Tangible[3], Reliability[15], Responsiveness[3], Assurance[18], and Empathy[19]. In this study, it was expanded to 7 dimensions by adding Communication[20] and Security[21], with 54 service quality assessment indicators used to measure customer satisfaction. The study utilizes the integration of SERVQUAL and Quality Function Deployment (QFD) tools, employing the House of Quality (HoQ) matrix at Darut Taqwa minimarket to determine the level of satisfaction, expectations, and perceived gaps experienced by customers.

3 Analysis and Results

Respondent Profiles

The minimum sample size in SERVQUAL analysis ranges from 30 to 100 samples [22]. Therefore, this study uses a sample of 152 respondents with the criteria of respondents who have experienced minimarket services, aged 16-50 years. From the profile characteristics of the questionnaire results, it is known that 51% or 76 of the respondents are male, and 49% or 75 are female. The age characteristics are as follows: 24% or 48 respondents are aged 16-20 years, 44% or 89 respondents are aged 21-30 years, 7% or 14 respondents are aged 31-40 years, and 1% or 1 respondent is aged 41-50 years. Based on the respondents' latest education level, 17% or 26 respondents have a junior high school education, 36% or 55 respondents have a high school education, 7% or 10 respondents have a diploma, 38% or 57 respondents have a bachelor's degree, and 3% or 4 respondents have a master's degree. Based on occupation, 13% or 20 respondents are students, 15% or 23 respondents are private employees, 18% or 27 respondents are entrepreneurs, 1% or 1 respondent is a housewife, 6% or 9 respondents are civil servants, and 46% or 70 respondents are categorized as students or religious students (santri).

Service Quality Data Processing (SERVQUAL)

The discussion in this subsection will involve testing the research instrument through validity and reliability tests. Furthermore, it will be followed by the calculation of Gap-5 (Perception Gap).[22] This represents the gap between internal customer perceptions and service expectations based on the data collected from 152 respondents. Each respondent provides an evaluation of the services they receive (customer satisfaction perception), the services they should receive (customer satisfaction expectations), and the importance level of the services they receive.

Validity test

The validity testing in this study uses the calculation of Pearson product-moment correlation based on the data from the questionnaire distribution. The validity test is conducted on all indicators of Darut Taqwa minimarket service quality with the decision as the basis for the validity test:[23]

1. If the r-value is greater than the critical r-value, the indicator is considered valid.
2. If the r-value is smaller than the critical r-value, the indicator is considered not valid.

The results of the questionnaire validity test on perceptions, expectations, and importance, which were developed by the researcher with a total of 54 questions and distributed to 152 respondents who are customers of Darut Taqwa minimarket, with an r-value ≥ 0.16 , are as follows:

Table 2, Service Validity Test Results

Variable	<i>r-table</i>	r-calculation			Description
		Perception	Expectation	Importance	
X1.1	0.16	0.56	0.61	0.54	Valid
X1.2	0.16	0.54	0.47	0.58	Valid
X1.3	0.16	0.57	0.47	0.55	Valid
X1.4	0.16	0.62	0.45	0.58	Valid
X1.5	0.16	0.51	0.48	0.53	Valid
X1.6	0.16	0.65	0.48	0.59	Valid
X1.7	0.16	0.66	0.59	0.52	Valid
X1.8	0.16	0.75	0.50	0.67	Valid
X1.9	0.16	0.76	0.56	0.53	Valid
X1.10	0.16	0.71	0.16	0.52	Valid
X2.1	0.16	0.38	0.54	0.58	Valid
X2.2	0.16	0.24	0.54	0.52	Valid
X2.3	0.16	0.47	0.65	0.56	Valid
X2.4	0.16	0.44	0.50	0.55	Valid
X2.5	0.16	0.43	0.47	0.50	Valid
X2.6	0.16	0.36	0.52	0.56	Valid
X2.7	0.16	0.54	0.47	0.61	Valid
X2.8	0.16	0.75	0.49	0.59	Valid
X2.9	0.16	0.51	0.41	0.59	Valid
X3.1	0.16	0.53	0.56	0.50	Valid
X3.2	0.16	0.46	0.45	0.39	Valid
X3.3	0.16	0.38	0.56	0.45	Valid
X3.4	0.16	0.44	0.40	0.51	Valid
X3.5	0.16	0.37	0.28	0.35	Valid
X3.6	0.16	0.39	0.43	0.50	Valid
X3.7	0.16	0.64	0.38	0.42	Valid
X3.8	0.16	0.66	0.56	0.68	Valid
X4.1	0.16	0.36	0.56	0.63	Valid
X4.2	0.16	0.32	0.60	0.64	Valid
X4.3	0.16	0.35	0.63	0.61	Valid
X4.4	0.16	0.33	0.65	0.69	Valid

X4.5	0.16	0.40	0.65	0.60	Valid
X4.6	0.16	0.36	0.62	0.47	Valid
X5.1	0.16	0.42	0.57	0.58	Valid
X5.2	0.16	0.37	0.61	0.53	Valid
X5.3	0.16	0.46	0.56	0.63	Valid
X5.4	0.16	0.48	0.52	0.55	Valid
X5.5	0.16	0.52	0.61	0.48	Valid
X5.6	0.16	0.62	0.57	0.46	Valid
X5.7	0.16	0.47	0.36	0.53	Valid
X5.8	0.16	0.50	0.27	0.46	Valid
X5.9	0.16	0.43	0.52	0.45	Valid
X6.1	0.16	0.30	0.53	0.54	Valid
X6.2	0.16	0.46	0.55	0.40	Valid
X6.3	0.16	0.44	0.65	0.35	Valid
X6.4	0.16	0.58	0.52	0.42	Valid
X6.5	0.16	0.56	0.46	0.23	Valid
X.7.1	0.16	0.58	0.37	0.39	Valid
X.7.2	0.16	0.39	0.47	0.42	Valid
X.7.3	0.16	0.44	0.49	0.46	Valid
X.7.4	0.16	0.54	0.35	0.51	Valid
X.7.5	0.16	0.50	0.16	0.19	Valid
X.7.6	0.16	0.52	0.46	0.59	Valid
X.7.7	0.16	0.47	0.45	0.55	Valid

Source: Data Processing

The customer satisfaction indicators, which have been verified for validity and reliability, are analyzed through gap and CSIndex.[24] The calculation of satisfaction levels is done by averaging customer expectations and perceptions for each indicator.[25] The gap, the difference between expectations and perceptions, is calculated, with negative values indicating customer dissatisfaction. These results are also classified into satisfaction levels based on CSIndex,[26] following the standard table in Table 3.

Table 3, CSIndex Satisfaction Value Standard Based on Gap Range

Gap	satisfaction level
> 0,0	Very Satisfied
-0,75 ≤ Gap ≤ 0,00	Satisfied
-1,50 ≤ Gap < -0,75	Neutral
-2,25 ≤ Gap < -1,50	Dissatisfied
Gap < -2,25	Very Dissatisfied

Source: [24]

Reliability Test

In this study, a validity test was conducted on the same questionnaire attributes to measure three different aspects: 1) Customer Satisfaction Perception, 2) Customer Satisfaction Expectations, and 3) the Level of Importance regarding the variables asked to consumers or minimarket customers. The following are the Cronbach's alpha values obtained for each attribute used in the research.[27]

Table 4, Service Reliability Test Results

Perception Level		Level of Importance		Level of Importance	
Cronbach Alpha value	0.96019	Cronbach Alpha value	0.97963	Cronbach Alpha value	0.97963
Standard	0.6	Standard	0.6	Standard	0.6
Information	Reliable	Information	Reliable	Information	Reliable

Source: Data Processing

From the table above, it can be observed that all Cronbach's Alpha values are greater than 0.6. Therefore, the data and questionnaire used are highly reliable and can be very dependable.

Interest Weight Calculation

The Importance Level values indicate how crucial a service attribute is in fulfilling customer needs. Attributes considered highly important by customers can have a significant impact on the overall assessment of the obtained service. The following are the scores for the Importance Level of service attributes in the minimarket:

Table 5, Attribute Importance Level

Attribute	Code	Interest
Neatness and cleanliness minimarket employee	X1.1	4.58
Cleanliness of the minimarket area/ environment	X1.2	4.44
Beauty or comfort minimarket interior/ exterior design	X1.3	4.57
Arrangement/layout of product easily encountered by customers	X1.4	4.43
Availability of trolley and basket shopping in a minimarket	X1.5	4.50

Neatness products displayed on the shelves	X1.6	4.53
Cleanliness facility support (toilet, room change, parking area, place worship, etc)	X1.7	4.46
Availability place adequate parking	X1.8	4.49
Facility seating in the minimarket area	X1.9	4.32
Cooling temperature the room (AC) felt cold in a way evenly (not in position certain just)	X1.10	4.53
There are instruction directions where the location product is at	X2.1	4.37
Frequent minimarket hold an event (promo) or piece price	X2.2	4.47
Convenience consumers look for need required products with existing instruction direction or layout good stuff	X2.3	4.47
Accuracy price products (eg similarity or suitability price stated on the product)	X2.4	4.49
Product prices are listed under price at the checkout	X2.5	4.59
Completeness of product under need consumer	X2.6	4.53
Products sold quality high, esp for product beauty, fashion books reading, and theory education (study religion)	X2.7	4.49
Product price under standard circle/class/minimarket level	X2.8	4.45
Payment Can use a debit card, credit card, or e-money	X2.9	4.53
Cost/price product under the quality provided	X3.1	4.60
Timely return guarantee happen damaged product	X3.2	4.43
Guaranteed goods quality (no dented, rusty, open packaging, expired, damaged)	X3.3	4.53
The information provided by minimarket employees is correct and accurate	X3.4	4.44
Employees can be reliable (can help face problems required by customers) _	X3.5	4.20
Guarantee security in park vehicle	X3.6	4.56
Guarantee condition appropriateness product (free from the expiration date or free to disabled)	X3.7	4.20
Suitability price products offered to the consumer	X3.8	4.52
Friendliness employee moment serves consumer	X4.1	4.41
Consumer given attention personally by the party minimarket employee	X4.2	4.48
Patience employee in face consumer	X4.3	4.54
Justice employee moment serves consumer (no choice love)	X4.4	4.57
Complaints and suggestions are responded to with seriously by minimarkets	X4.5	4.42
Customer service or another officer asked sorry if do error	X4.6	4.47
Admin offers promotional products/products addition before transaction payment	X5.1	4.39
Speed employee in respond needs/complaints of consumer	X5.2	4.38
The role of the involved employee in help / serve consumers quickly if necessary.	X5.3	4.43
Speed and responsiveness waiter moment customer queue at the cashier	X5.4	4.39
Response employee in listening to complaint consumer	X5.5	4.08
Employees are quick and precise in serving consumer	X5.6	4.22

Employees are very understanding will the products that sell goods in facet placement or condition product	X5.7	4.38
Readiness/alacrity employee in help consumers when needed	X5.8	4.20
If there are complaints from customers, minimarkets immediately respond	X5.9	4.19
Customer service offers promotional/discount products with friendly and polite without There is coercion	X6.1	4.38
The convenience store employee chanted greetings to new customers who visit	X6.2	4.02
Say "accept love" given to employee at the end of service	X6.3	4.03
Communication style minimarket employees are very good with consumer	X6.4	4.12
Employees serve with polite, courteous, friendly tidy, neat, and smiling.	X6.5	4.17
The Minimarket area is facilitated with CCTV cameras	X.7.1	4.45
Promptness and firmness security in as well as tidying up the minimarket area	X.7.2	4.45
Security moment use facilities (debit card, credit card, e-money, and other digital money)	X.7.3	4.29
Security goods default in shopping (like wallets, jewelry, and children small)	X.7.4	4.36
Security consumers are guaranteed from crime while in the minimarket area	X.7.5	4.16
There is tool safety as well as facility extinguisher fire moment a disaster is not desired	X.7.6	4.63
Security product free from expiry time (expiration)	X.7.7	4.49

Source: Data Processing

Gap Calculation Analysis

In this study, it is found that data collection on the service system is based on the concept of service quality. The service indicators are derived from seven service quality dimensions: Tangible, Reliability, Responsiveness, Assurance, Empathy, Communication, and Security. The gap analysis results, based on the Gap range and CSIndex for each dimension, are explained in Table 6 as follows.

Table 6, Customer Satisfaction Based on Dimensions

Dimension	Percep-tion	Expecta-tion	Gap	Satisfaction Level
<i>Tangibility</i>	4.06	4.44	- 0.37	Fairly Satisfied
<i>Reliability</i>	4.10	4.54	- 0.44	Fairly Satisfied
<i>Assurance</i>	4.06	4.46	- 0.40	Fairly Satisfied
<i>Emphaty</i>	4.01	4.50	- 0.50	Fairly Satisfied

<i>Responsiveness</i>	4.11	4.40	- 0.29	Fairly Satisfied
<i>Communication</i>	4.15	4.49	- 0.33	Fairly Satisfied
<i>Security</i>	4.48	4.38	0.10	Very Satisfied
Average	4.14	4.46	- 0.32	Fairly Satisfied

Source: Data Processing

Based on the analysis of gap values in Table 6, the results indicate the presence of negative gap values across all satisfaction dimensions, including Tangible, Reliability, Responsiveness, Assurance, Empathy, and Communication. Only the Security dimension shows a positive value. This indicates that the service quality for these SERVQUAL dimensions does not fully meet customer expectations.

Mapping using a Cartesian diagram

Importance Performance Analysis (IPA) is an analysis of the importance level of a service indicator perceived by customers, visualized in the form of a Cartesian diagram. This analysis categorizes or maps the importance level of service indicators.[28] The results of the Cartesian diagram analysis can be used by Darut Taqwa minimarket management as a basis for short-term and long-term improvements, especially for indicators where customers perceive dissatisfaction or lower satisfaction. It can also serve as a reference for enhancing or maintaining service quality in indicators with good or very satisfied ratings.[7]

In creating the Cartesian diagram, points (X and Y) are needed. In the Cartesian diagram, the horizontal axis (X) is filled with the range of average scores for perception/reality service assessments, while the vertical axis (Y) is filled with the range of average scores for customer expectations assessments. The boundary, represented by the average total of reality assessment scores and customer expectation scores, forms or determines the priority quadrants of statement items, whether they are in quadrant I, quadrant II, quadrant III, or quadrant IV. Items positioned in quadrant I are critical and need immediate improvement using the QFD method. Here are the average priority quadrant calculations based on the equation:

1. Average total perception (reality) assessment score = 4.14
2. Average total customer expectation assessment score = 4.46

Based on the boundary on the X-axis representing the magnitude of perception obtained from the perception results of the research respondents:

1. Average perception (reality) score magnitude = 4.14, where this average satisfaction value will be the point 0,0 on the X-axis.
2. If the reality value > 4.14, it can be considered as sufficiently satisfied, satisfied, or very satisfied.
3. If the reality value < 4.14, it can be considered as dissatisfied or not satisfied.

The Y-axis represents the magnitude of expectations obtained from the perception results of the research respondents:

1. Average expectation magnitude = 4.46, where this average need value will be the point 0,0 on the Y-axis.
2. If the expectation value > 4.46, it can be considered as sufficiently important, important, or very important.
3. If the expectation value < 4.46, it can be considered as less important or not important.

The result of the Importance Performance Analysis is in the form of a Cartesian diagram of the indicators used to measure customer satisfaction in the Darut Taqwa minimarket, as shown in the following figure.

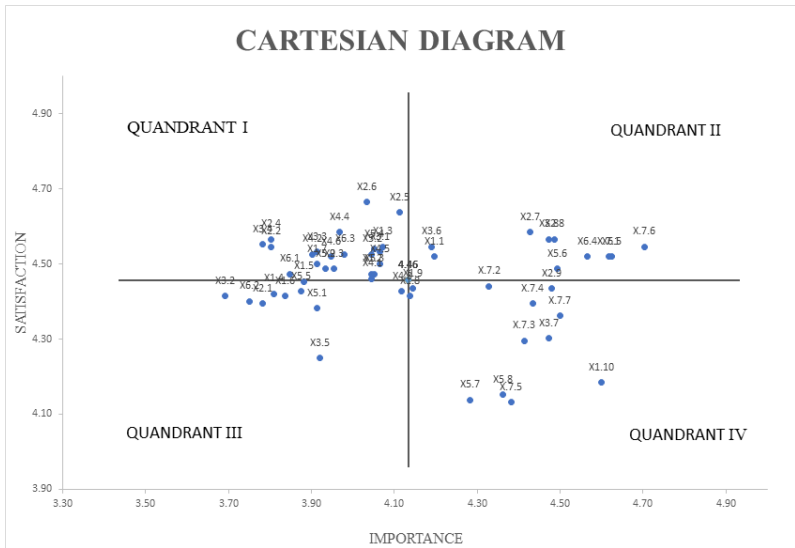


Figure 3, Cartesian diagram

Figure 3 illustrates the four quadrants of customer satisfaction resulting from the Cartesian diagram analysis. In this figure, 3 indicators fall into Quadrant I, indicating that these service aspects need immediate improvement. 2 indicators fall into Quadrant II, suggesting that these service aspects should be maintained. 16 indicators fall into Quadrant III, implying that the improvement of these service aspects can be deferred. Lastly, 1 indicator falls into Quadrant IV, meaning that this service aspect could be eliminated and replaced with another aspect of satisfaction.

Quality Function Deployment (QFD) and House of Quality (HoQ)

1. Determination of Technical Requirements / Technical Response

Technical Requirement, commonly known as Technical Response, refers to the organizational or company management's response to customer requests. Technical Response can be obtained through interviews and feedback from the management of Darut Taqwa minimarket. The purpose of the House of Quality (HOQ) is to design or improve

existing designs to meet customer expectations. Once the attributes desired by customers are obtained, management must actualize them with Technical Requirements. The goal of Technical Requirements is to fulfill customer objectives by striving for specific performance specifications from the management.[29]

2. Customer Requirements and Technical Requirements Correlation

This relationship occupies the central part of the HoQ. There is likely more than one relationship because each Customer Requirement has more than one relationship with Technical Requirements, and vice versa. Therefore, to display these relationships, an L-shape matrix is utilized, with the Technical Requirements filling the upper section and Customer Requirements filling the side section.

Technical Characteristics play a crucial role in this matrix as they represent the degree of the relationship between Customer Requirements and Technical Requirements. The relationship between technical responses and customer desires can be described as follows:

- 1) Strong Relationship (●)
Occurs when the technical response, as actions taken by the company, is closely related and significantly influences customer desires, weight = 9
- 2) Moderate Relationship (○)
Occurs when the technical response is moderately related and moderately influences the fulfillment of customer desires, weight = 3
- 3) Weak Relationship (∇)
Occurs when the technical response is not aligned and has minimal impact on customer desires, weight =1

From the relationship between Technical Requirements and Customer Requirements, it is found that there are 74 Technical Characteristics with a value of 9 (●), indicating that there are 74 Technical Requirement items with a very strong correlation to address Customer Requirements/Desires. There are 144 items with a value of 3 (○) / "Moderate" and 93 items with a value of 1 (∇) / "Weak."

3. Planning Matrix

The planning matrix aims to translate consumer needs. The planning matrix comprises several elements, namely Customer Importance Level, Customer Satisfaction Level, Goals, Improvement Ratio (IR), Sales Points, and Raw Weight.[30]

Table 7, Planning Matrix

Atribut	Gab	Customer Importance	CSP	Goal	Improvement Ratio	Sales Point	Raw Weight	Normalized Raw Weight %
X1.1	0,32	4,58	4,20	4,58	1,09	1,00	19,22	0,03
X1.2	0,43	4,44	4,05	4,47	1,11	1,00	17,97	0,02
X1.3	0,47	4,57	4,07	4,57	1,12	1,00	18,59	0,03
X1.4	0,61	4,43	3,81	4,43	1,16	1,20	20,24	0,03

	-								
X1.5	0,57	4,50	3,88	4,50	1,16	1,20	20,96	0,03	
	-								
X1.6	0,58	4,53	3,84	4,53	1,18	1,20	20,86	0,03	
	-								
X1.7	0,59	4,46	3,91	4,50	1,15	1,20	20,95	0,03	
	-								
X1.8	0,28	4,49	4,14	4,49	1,08	1,00	18,57	0,03	
	-								
X1.9	0,29	4,32	4,14	4,43	1,07	1,00	17,89	0,02	
	-								
X2.1	0,61	4,37	3,78	4,39	1,16	1,20	19,83	0,03	
	-								
X2.2	0,74	4,47	3,80	4,55	1,20	1,20	20,40	0,03	
	-								
X2.3	0,53	4,47	3,95	4,49	1,13	1,20	21,23	0,03	
	-								
X2.4	0,76	4,49	3,80	4,57	1,20	1,20	20,47	0,03	
	-								
X2.5	0,53	4,59	4,11	4,64	1,13	1,20	22,66	0,03	
	-								
X2.6	0,63	4,53	4,03	4,66	1,16	1,20	21,94	0,03	
	-								
X3.1	0,47	4,60	4,07	4,60	1,13	1,00	18,70	0,03	
	-								
X3.2	0,72	4,43	3,69	4,43	1,20	1,20	19,61	0,03	
	-								
X3.3	0,62	4,53	3,91	4,53	1,16	1,20	21,29	0,03	
	-								
X3.4	0,77	4,44	3,78	4,55	1,20	1,20	20,16	0,03	
	-								
X3.5	0,33	4,20	3,92	4,25	1,08	1,00	16,48	0,02	
	-								
X3.6	0,36	4,56	4,19	4,56	1,09	1,00	19,11	0,03	
	-								
X4.1	0,41	4,41	4,05	4,46	1,10	1,00	17,83	0,02	
	-								
X4.2	0,63	4,48	3,90	4,53	1,16	1,00	17,48	0,02	
	-								
X4.3	0,31	4,54	4,12	4,54	1,10	1,20	22,43	0,03	
	-								
X4.4	0,62	4,57	3,97	4,59	1,16	1,20	21,74	0,03	
	-								
X4.5	0,43	4,42	4,07	4,50	1,11	1,00	17,98	0,02	

	-								
X4.6	0,57	4,47	3,95	4,52	1,15	1,20	21,19	0,03	
X5.1	0,47	4,39	3,91	4,39	1,12	1,00	17,20	0,02	
X5.2	0,48	4,38	4,05	4,53	1,12	1,00	17,70	0,02	
X5.3	0,42	4,43	4,05	4,47	1,10	1,00	17,97	0,02	
X5.4	0,49	4,39	4,05	4,54	1,12	1,00	17,81	0,02	
X5.5	0,55	4,08	3,88	4,43	1,14	1,20	18,97	0,03	
X5.9	0,55	4,19	3,93	4,49	1,14	1,20	19,78	0,03	
X6.1	0,63	4,38	3,85	4,47	1,16	1,20	20,24	0,03	
X6.2	0,65	4,02	3,75	4,40	1,17	1,20	18,09	0,03	
X6.3	0,55	4,03	3,98	4,53	1,14	1,20	19,23	0,03	
X7.2	0,11	4,45	4,33	4,45	1,03	1,00	19,28	0,03	

Source: Data Processing

Customer Important: Customer Important reflects the level of importance of a service attribute required by customers. A higher value indicates a greater need for that indicator in a service. In this study, the highest customer importance score was 4.60 for indicator X3.1, signifying that product pricing aligning with the provided service is a crucial attribute. On the other hand, the lowest customer importance score was 4.02 for indicator X6.2, indicating that employees greeting customers upon arrival are not highly regarded by customers.

Customer Satisfaction Level: Customer Satisfaction Level represents customers' feelings when receiving minimarket services. The highest satisfaction score, 4.20 for indicator X1.1, suggests that the cleanliness and neatness of minimarket employees are the primary satisfaction factors. However, there is room for improvement to continually enhance customer satisfaction, as seen in the lowest satisfaction score of 4.02 for indicator X3.2, indicating a lack of responsibility or return process for damaged products.

Goal: The goal value indicates the extent to which an attribute achieves the set target. The highest goal value is obtained for [mention the indicator], while the lowest goal value is obtained for (mention the indicator).

Improvement Ratio: Improvement Ratio assesses how changes can enhance customer satisfaction. The highest and lowest improvement ratio values are (mention the values).

Raw Weight: Raw Weight represents the importance assigned to each design element or characteristic based on the product development team's assessment of its significance to customer satisfaction.

4. Priorities

By referring to the QFD output, priority determination for the improvement and enhancement of minimarket customer satisfaction indicators can be implemented, considering both customer and technical perspectives.[31] The detailed priorities for each indicator can be found in the following table.

Table 8, Improvement Priorities and Increasing Customer Satisfaction

Technical Response	Amount Weight	Percentage	Priority
Training Skill Communications by Parties Management	72	7.16%	1
Training employees to serve consumer	63	6.27%	2
Give training and briefing to employee	53	5.27%	3
Training employees To improve communication skills	43	4.28%	4
Realize Environment mutual work and care	42	4.18%	5
Emphasis on Diversity Customer	42	4.18%	5
Support Psychology and Training Skills Communication	41	4.08%	7
Provide information boards for location instructions and product	35	3.48%	8
Apply system loyalty work and monitor customer	35	3.48%	8
Develop system management centralized products	32	3.18%	10
Develop system technology centralized management	31	3.08%	11
The product is displayed on something place open so that can held, seen, and researched by the candidate buyer without help officer service	29	2.89%	12
Management arrangement product	27	2.69%	13
Optimizing arrangement product	26	2.59%	14
Give System Reporting Complaint	25	2.49%	15
Pop Up Frame for displaying promotional information on medium products _ displayed	22	2.19%	16
Do check the product in a way periodically	22	2.19%	16
Using (price holder) or placing slipping price tags on shelving boards that don't easily move (shift)	22	2.19%	16
Give instructions on how important overcome/give attention to complaining consumer	21	2.09%	19
Drafting Procedure Good security	21	2.09%	19
Do Check and clean the area regularly and periodically	20	1.99%	21
Do an analysis cost and quality product	18	1.79%	22
Do verification price in a way periodically (Data synchronization)	18	1.79%	22
Fulfillment amount Trolleys and baskets shopping must be equipped with features like a smooth wheel as well as an ergonomic handle	17	1.69%	24
Check Condition goods before or at the checkout	17	1.69%	24

Routine Arrangement and Labelling of Production Codes	14	1.39%	26
Provision of parking line vehicles in order neat and efficient	13	1.29%	27
Put officer security in the parking area	13	1.29%	27
Segmentation or grouping of types of products	13	1.29%	27
Routine Arrangement and Labeling of Production Codes	13	1.29%	27
Choose an Attractive and appropriate design with a draft minimarket design	12	1.19%	31
Apply First In First Out management	12	1.19%	31
Training Greeting Customer / Role-Playing	12	1.19%	31
Formation of return SOP product	11	1.09%	34
Implementing the Lucky Draw Strategy. Promotional programs held with stimulation prizes /bonuses	11	1.09%	34
Checking products in a way collective to suppliers	10	1.00%	36
Provision facility representative seating	9	0.90%	37
Uniformed under Company schedules and SOPs	9	0.90%	37
Open service cashier additional (Alternative Cashier)	9	0.90%	37
Create Culture Procedure Request Defined Sorry	9	0.90%	37
Provide Updated promo information	9	0.90%	37
Do controlling and monitoring effectively periodically	8	0.80%	42
Do market research	7	0.70%	43
Providing promotional frames for products on display	7	0.70%	43
Providing hangers as tools Promotion products hanging in the gaps product	5	0.50%	45
Instore Promo as effort enhancement sales in the period certain	5	0.50%	45

Source: Data Processing

The table presents a detailed breakdown of improvement priorities aimed at enhancing customer satisfaction within the minimarket setting. Topping the list is "Communication Skill Training by Management" with a substantial weight of 72 (7.16%), indicating a significant emphasis on the need for managerial-level communication skills to improve overall service quality. This underscores the critical role of effective communication channels within the organization. The following closely is "Employee Training in Customer Service" (6.27%), suggesting a recognition of the direct correlation between staff training and positive customer experiences. This highlights the importance of investing in frontline staff development to meet customer needs effectively.

"Providing training and briefings to employees" also ranks high, with a weight of 53 (5.27%), indicating a focus on comprehensive staff training to enhance their understanding of responsibilities and tasks. This suggests a strategic approach to improving service quality through better-trained employees. Additionally, "Training employees to improve communication skills" (4.28%) underscores the ongoing importance of refining communication abilities among staff members to foster positive customer interactions. Sharing the fifth priority is "Realizing a mutually caring work environment" and

"Emphasizing diverse customers" (both at 4.18%). This reflects a dual focus on fostering a supportive workplace culture and acknowledging the diverse needs of customers. These priorities suggest a holistic approach to enhancing service quality by addressing both internal and external factors.

Further down the list, priorities include implementing loyalty programs, optimizing product arrangements, and improving complaint-handling procedures, among others. These findings provide valuable insights into key areas for improvement within the minimarket sector.

For future research, it would be beneficial to conduct qualitative studies to delve deeper into customer perceptions and preferences. Additionally, exploring the impact of technology integration on customer satisfaction and operational efficiency could be an area of interest. Moreover, longitudinal studies tracking the implementation of suggested improvements over time could offer valuable insights into their effectiveness and long-term impact on customer satisfaction.

4 Conclusion

Based on the analysis and discussion regarding customer satisfaction with the services of Minimarket Darut Taqwa using the seven dimensions of customer satisfaction (tangibility, reliability, responsiveness, assurance, empathy, communication, and security), several conclusions can be drawn. The Servqual method revealed the highest perception score of 4.69 for tangibility, indicating that the physical appearance meets customer satisfaction standards and should be maintained. Conversely, the lowest perception score of 3.69 in assurance signifies a need for improved security services. The lowest expectation score of 4.14 in responsiveness, though the lowest, still falls into a high category, suggesting that ongoing improvements are necessary. The highest expectation score of 4.66 in reliability emphasizes the need for continuous service enhancement. A significant negative gap of -0.77 in assurance, specifically regarding the accuracy of information provided by employees, highlights an area requiring urgent attention.

The Cartesian diagram analysis showed that quadrant 1 is dominated by dimension X2, where high satisfaction is coupled with low service importance, indicating good performance that needs to be sustained. Quadrant 2, dominated by X5, features both high satisfaction and high importance, suggesting well-maintained service performance. Quadrant 3, dominated by X3, indicates below-average performance in areas of low importance, whereas quadrant 4, dominated by X7, signals low performance in highly important areas, necessitating prioritized improvements.

Gap analysis shows all dimensions yield "less satisfied" ratings with an average gap range of -1.5 to -0.75, indicating that while the services generally meet customer expectations, there is room for enhancement. Twenty-two indicators require immediate attention, notably in the dimensions of Tangibility, Reliability, Assurance, Empathy, Responsiveness, and Communication.

The QFD analysis underscores that the top priority for technical response is improving employee communication skills, particularly for administrative staff and those directly interacting with customers. Consequently, management's recommendation is to

enhance communication skills and employee loyalty through regular training and briefings for the staff of Minimarket Darut Taqwa.

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Disclosure of Interests. It is now necessary to declare any competing interests or to specifically state that the authors have no competing interests. Please place the statement with a third level heading in 9-point font size beneath the (optional) acknowledgments¹, for example: The authors have no competing interests to declare that are relevant to the content of this article. Or: Author A has received research grants from Company W. Author B has received a speaker honorarium from Company X and owns stock in Company Y. Author C is a member of committee Z.

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