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Research Paper

Model Kano and Servqual in QFD (Quality Function Deployment) Integration to Improve AHASS Customer Satisfaction

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Abstract

The main actor of the service industry is service performance provided by the company to consumers. Service quality is a relevant concept to be applied and developed in the field of after-sales service in the automotive industry. This research integrates Servqual and Kano models into QFD. Servqual is used to determine the gap between consumer perceptions and expectations using 7 servqual dimensions. Kano's model for classifying consumer retention, QFD, and a link between consumer needs and the service design process requires a HoQ matrix consisting of six elements. Strengthen the determination of technical requirements elements; structured tools are used to find the problem root (gap), namely, the fishbone. The reason for integration is the goal of Servqual is to determine the gap so that the improvement process is only based on the gap value, while the Kano model method is only able to classify VoC based on 5 dimensions but is not yet able to assess performance attributes, so it is integrated into QFD because it can unite consumer desires with the company. This research was conducted at AHASS. The highest negative gap is the availability of brochures and information of -0.89, so the improvement step is to provide updated information boards and socialize brompit application. The HoQ matrix concludes that the technical response with the highest priority, 10.59%, is carrying out periodic performance evaluations. Highest goal of 4.97 is B04, B05, and B06. The highest improvement ratio was 1.22 (availability of brochures or information). Meanwhile, the obtained CSP of 4.66 is E01 and adjust importance score of 15.2 is C04.

Keywords *Automotive, Fishbone, Kano Model, QFD, Servqual*

INTRODUCTION

A defensive strategy has been adopted to retain existing consumers to build long-term relationships with customers (Khyat et al., 2020). Service quality determines whether consumers stay with the company or move to competitors because a deep understanding of consumer needs and expectations is a prerequisite for achieving customer satisfaction (Shang et al., 2005). Providing good quality service is a long-term strategy for consumers, so service quality is a matter of sustainability for a business operating in the service sector. The service sector is experiencing revolutionary changes that affect the way of life and work; companies are required to fulfil consumer desires. Service quality is a factor that influences the emergence of a gap or difference between the perception of quality by consumers and the activities carried out by the company.

Servqual has 5 attributes as service assessment indicators, namely empathy, assurance, reliability, responsiveness, and tangibility (Parasuraman et al., 1985). In this research, two new dimensions were added, namely agility and flexibility, because flexible and agile service systems can provide services that can be tailored to individual needs by offering various service options that customers can choose according to their needs (Gronroos, 1984). Servqual dimensions have a significant influence on customer satisfaction at Suzuki Motor Company Dealers in Thailand. Agility, assurance, reliability, scalability, safety, responsiveness, and usability positively influence customer satisfaction and loyalty (Agarwal & Dhingra, 2023). Kano model is a method used to

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classify consumer needs for a service based on the level of quality attributes and has 5 dimensions in classifying consumer retention, namely must-be, one-dimensional, attractive, indifferent, and reserve (Chen & Chou, 2011). QFD has been successfully used in various fields, and several studies have been conducted regarding QFD, such as Beheshtinia and Azad (2019).

Servqual and Kano on QFD for Hospitality is important to design services in the hotel industry based on the priority desires of consumers. Other studies by Raziei et al. (2018) even proposed a model that provides a comprehensive strategy for hospital managers to provide required services and meet patient needs efficiently. The reason for the need to integrate the Servqual and Kano Model into the QFD method is that organizations can develop more advanced and effective strategies to improve service quality to consumer desires. Fishbone was added, which helps determine technical responses to help prepare the HoQ matrix into QFD. This integration can help companies improve service quality, customer satisfaction, and company performance. Determining the problem, of course, involves consumers and AHASS (Astra Honda Authorized Service Station) management so that the root of the problem presented by consumers is approved by management, which is up to the management, who has the authority to determine the solution. So this research aims to find out how the Servqual and Kano models are integrated into QFD, which in the QFD analysis process in the customer requirements element uses a fishbone diagram to determine the technical response or solution for high gap. Apart from that, the second objective is to determine the priority of technical responses in QFD analysis, especially in automotive companies that focus on after-sales service.

LITERATURE REVIEW

Service management is the planning, design, delivery, and control process that provides added value for customers and other parties (Fitzsimmons & Fitzsimmons, 2011). Service processes can be sustainable and always trusted by consumers, so a strategy in service management is needed. Service management is a process of planning, organizing, implementing, and controlling activities to create, provide, and maintain services to meet consumer needs. This includes human resources, operations, information technology, and organizational system support needed to provide quality services. In customer experience science, the correlation between consumers and companies will occur through various contacts, which consumers will accumulate as a whole in a service experience or product use. Service should be approached from the consumer's perspective because consumers as users are the result of service perceptions (Andreassen & Lindestad, 1998). So, consumers can evaluate service quality based on experience gained when using services from a company. Therefore, in this research, quality improvement will use the consumer perspective in service quality or customer experience, which is validated by company management. Categorizing attributes can enrich satisfaction data from Servqual so companies can know which attributes should be prioritized.

To carry out an analysis of service quality, an appropriate special method is needed. Hence, the analysis results are relevant to addressing service issues to create sustainable consumer satisfaction. Parasuraman et al. (1985) developed a service quality measurement model called servqual; this working model can help companies understand consumer expectations and perceptions based on 5 dimensions. In this research, two new dimensions were added, namely agility and flexibility. Agility is ease in responding to balance aspects of exploitation and exploration (Tallon et al., 2019). Consumer satisfaction will be fulfilled if the service process to consumers is by what consumers perceive (Omar et al., 2016). Servqual only extends to gap analysis, so another method is needed to provide a more comprehensive analysis, namely being integrated with the Kano model, which is used to classify consumer rents. Chen et al. (2011), in model Kano distinguishes several attributes that are desired to influence consumer satisfaction: must-be, one-

dimensional, attractive, indifferent, and reserved. The servqual method and Kano model only focus on consumer retention analysis, so QFD is needed; therefore, it is necessary to determine the priority level when developing solutions (Korać & Simić, 2019). Research regarding the development of the integration of the Servqual and Kano model into QFD has also been carried out by Rahmana et al. (2014), which combined framework can be shown as follows:

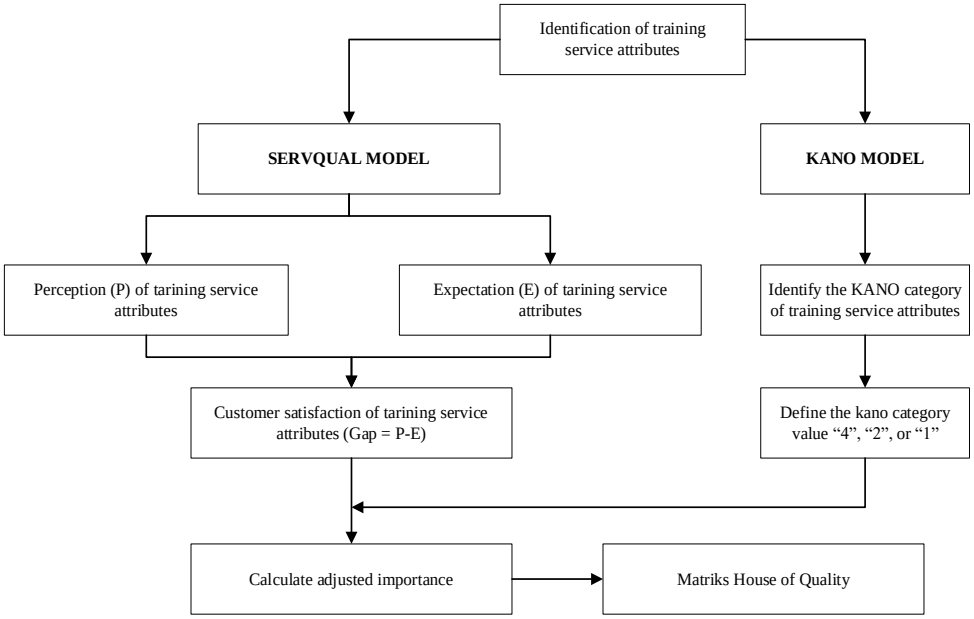

Figure 2. Integration of Servqual and Kano Model Into QFD

Source: Rahmana et al. (2014).

RESEARCH METHOD

Research is used as an approach to measuring consumer satisfaction with services provided by companies based on VoC. Researchers propose a framework for integrating the Servqual and Kano model into QFD, which is shown as follows:

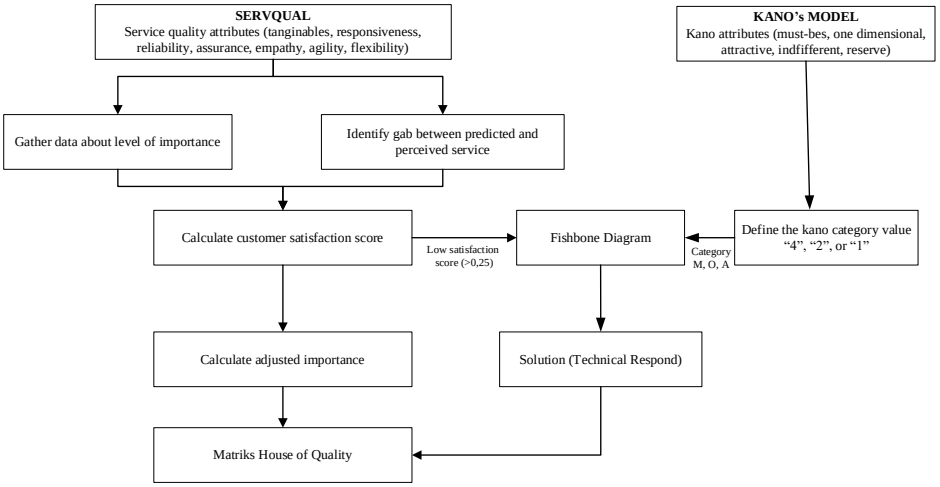

Figure 3. Conceptual Framework for Integrating Servqual and Model Kano Into QFD

This framework helps organizations measure customer satisfaction and find the type of service system needed based on priority customer requirements. Servqual helps companies to calculate the gap between perceptions and expectations. Model kano is used to classify rents that are included in the kano category. Servqual and Kano's models are only based on the perspective of consumer desires. So that consumer desires remain relevant to company goals. QFD is needed to build service designs that connect consumer perspectives with company management; QFD requires a structured matrix to integrate consumer desires with company goals, namely HoQ, which consists of six elements, namely customer requirements, planning matrix, technical requirements, inter-relationship, and roof. Technical requirements are solutions obtained from problems or attribute gaps>-0.25 and include strength attributes. This research uses structured tools to determine technical requirements, namely fishbone diagrams. As a simulation of this framework, based on interviews conducted with management and consumers, VoC was obtained as follows:

Table 1. AHASS Service Attributes

Tanginables	**Reliability**
workshop facilities update (A01)	The price is cheaper than other workshops (D03)
Choice of drinks and snacks (A02)	Availability of brochures or information (D04)
Living room with clean air circulation (A03)	Employees can answer all questions from potential consumers (D05)
Strategic workshop location (A04)	Ability to make customers believe in service quality (D06)
The parking lot at the end is spacious (A05)	When problems arise, it can calm consumers (D07)
Neat appearance of workers (A06)	Technicians can look for motorbike damage (D08)
The appearance of the workers is polite (A07)	Provide fast or timely service (D09)
Complete waiting room supporting facilities (A08)	**Assurance**
Responsiveness	Employees are reliable (can solve problems) (E01)
Employee response to listening when consumer complaints (B01)	Information provided by employees is accurate (E02)
Staff ability to understand consumer needs (B02)	Provide accurate billing (E03)
Employee response when a customer comes (B03)	Ensure that the vehicle has been serviced without any damage (E04)
Service staff responds to all consumer questions (B04)	**Agility**
Employees ask for approval before replacing spare parts (B05)	Employees have quick response in meeting needs (F01)
Friendly staff when serving (admin, technician, security guard) (B06)	Customer service is very informative to customers (F02)
Empathy	Modern service system (F03)
Employee patience in dealing with consumers (C01)	Have a structured complaint management system (F04)
Employee friendliness in dealing with consumers (C02)	Maintenance reminder for upcoming service (F05)
Employee fairness when serving consumers (C03)	Equipment used by modern (sophisticated) technicians (F06)
The service staff apologizes if they make a mistake (C04)	**Flexibility**
Reliability	Administrative service is fast or hassle-free (G01)
The technician's skills or abilities can be trusted (D01)	Ease of contact via telephone or WhatsApp (G02)
Service procedures are clear or transparent (D02)	Provide easy payment or transaction options (G03)
	Ease of scheduling appointments with mechanics (G04)

FINDINGS AND DISCUSSION

This stage will discuss service quality analysis based on the integration of the Servqual framework and Kano model into QFD. Following is a description of the AHASS customer service satisfaction analysis:

Servqual and Model Kano Category

Table 2. Gap Perception and Expectations

No	Code	Gap	Perception	Expectation	Kano Category
1	A01	-0,5	4,33	4,88	A
2	A03	-0,5	4,25	4,76	A
⋮	⋮	⋮	⋮	⋮	⋮
29	F05	-0,3	4,61	4,96	A
30	G02	-0,4	4,37	4,78	A

A smaller gap means the service consumers perceive it is almost close to consumer expectations, and vice versa. The perception column shows the average score of service perception level felt by consumers when carrying out vehicle repairs at AHASS, while the expectation column is the average value of attributes desired by consumers. A gap used for further analysis is an attribute with a gap >-0.25, meaning the company has not provided the service optimally. In the Model Kano category, attributes of concern are the strength attributes because these attributes positively influence consumer satisfaction if carried out optimally. From 43 attributes, 30 attributes are included in strength categories and have a gap >-0.25, meaning that consumers really need this attribute in the vehicle repair service process. However, the company is not yet able to fulfil it to the maximum. The next step is to build a fishbone diagram to find the root cause.

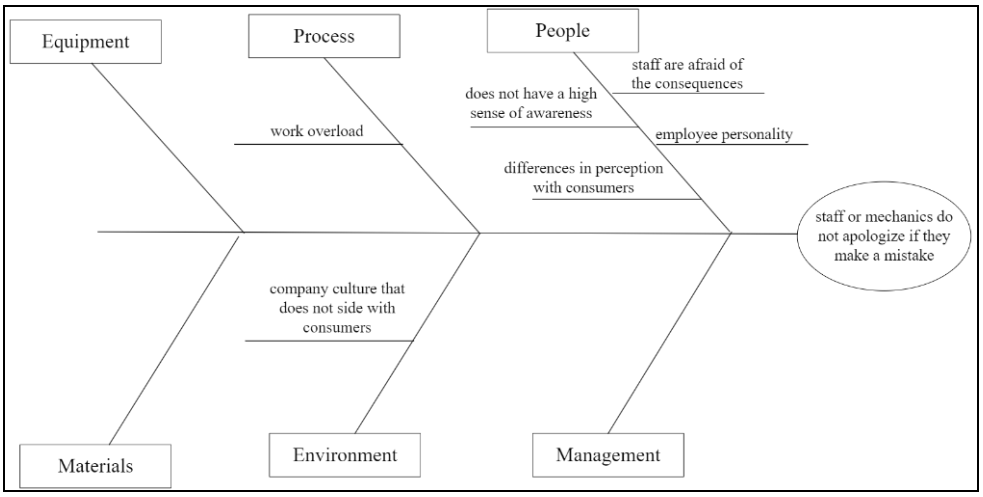

Figure 5. Fishbone Diagram

The root cause of the problem of service staff not apologizing when making a mistake is dominated by human factors, namely fear of the consequences. If caught making a mistake, the consequences can be termination as an employee, and so on. To improve that problem, we can solve with training to improve communication skills, conduct regular work evaluations, conduct briefings before work begins, create a caring work culture, and facilitate mechanical skills training.

House of Quality Matrix

One of the QFD method tools aims to map the relationship between consumers and service feature characteristics desired by consumers and structure for designing, which consists of 6 components, namely roof, planning matrix, customer requirements, inter-relationship, technical requirements, and priorities for design. The first step, HoQ, is determining the planning matrix.

Table 4. Planning Matrix

No		Code Gap	I	Sn	KN	AAI	G	CSP	IR	SP	NRW
1	A01	-0,5	4,8	-2,6	4	10,6	4,9	4,3	1,13	1,2	5%
2	A03	-0,5	4,9	-2,5	4	9,9	4,9	4,3	1,15	1,2	5%
3	A05	-0,7	4,9	-3,7	4	14,6	4,9	4,1	1,20	1,2	7%
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
29	G02	-0,4	4,7	-1,9	4	7,7	4,8	4,4	1,09	1,0	3%
30	G02	-0,4	4,7	-1,9	4	7,7	4,8	4,4	1,09	1,0	3%

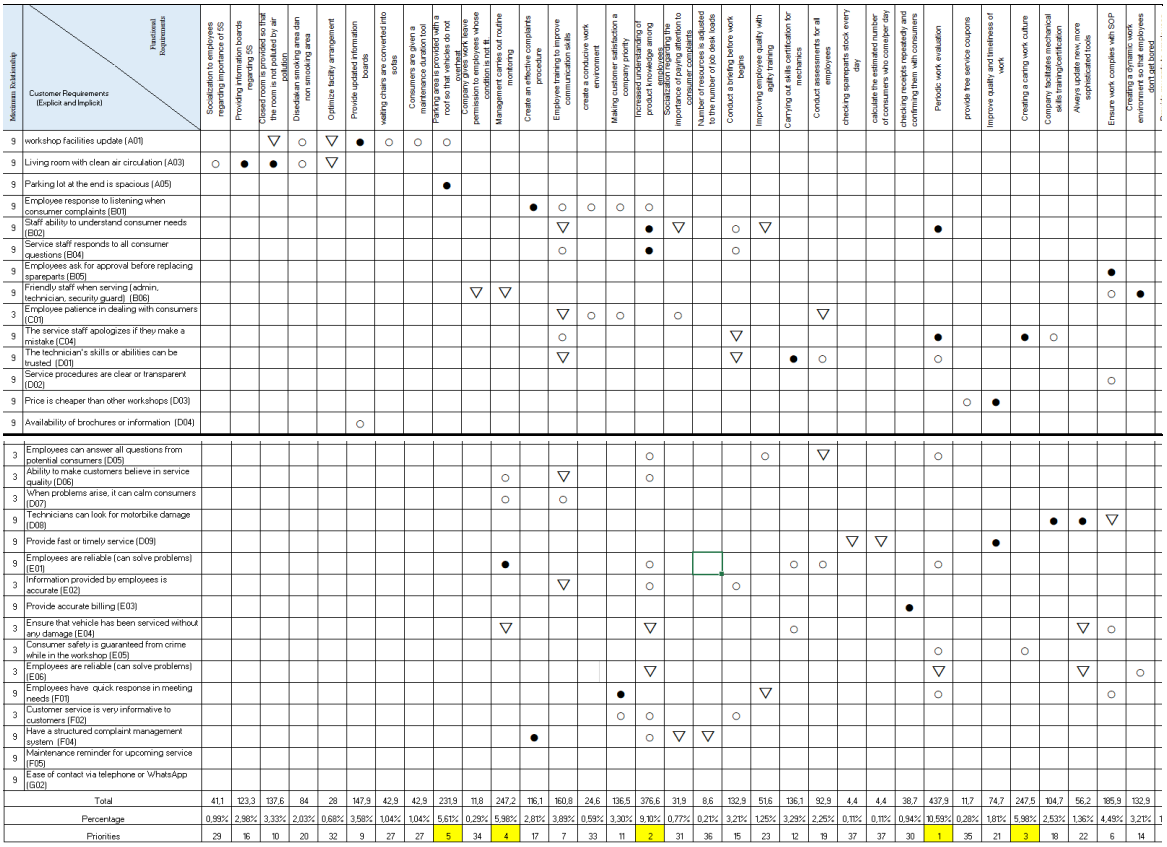

Figure 7. Matrix Inter-Relationship

Symbol description:

Weak relationship, ▽: (weight = 1)

Medium relationship, ○ : (weight = 3)

Strong relationship, ●: (weight = 9)

The highest gap value is -0.89 on the D04 attribute. This was caused by the company's transformation to a digital system so that all information regarding services and service bookings was available on brompit application, but the application is not socialized, so consumers do not know its use; therefore, companies must actively socialize brompit application, the lowest gap is -0.25 in the F05 attribute meaning this attribute if it is running in line with consumer expectations, needs to be maintained and improved. The higher the importance value, the more important the attribute is in service. The highest importance is 4,97, which was obtained in B04. Therefore, the friendly attitude of employees towards consumers must continue to be maintained and improved. The satisfaction column explains how well the company provides the service to consumers. The higher the satisfaction value, the better the attribute works, and the highest satisfaction was obtained at -4, namely B02. The adjust importance column explains that the higher the value of adjust importance, the more important the attribute is in the AHASS service, so the higher the value of adjust importance, the better the existence of the service attribute. The highest adjusted importance value of 15 was obtained from D01. The goal column explains that the customer satisfaction target that the company wants to achieve is based on the current condition of customer satisfaction. The next step is to build an inter-relationship matrix.

Service attributes and technical responses that have a strong relationship are providing information boards regarding 5S with A03, providing updated information boards with A01, parking lots with roofs so that vehicles do not overheat with A01, parking lots with roofs so that vehicles do not overheat with A05, management carries out routine monitoring with E01, and so on. In Technical Correlation, several responses are interconnected and have a positive relationship with the rising symbol. The more interconnected technical responses are, the better. The next step is determining technical requirements and the priorities.

Table 5. Technical Requirements and Priorities

Technical Requirements	Priorities	Facilitated attributes
Periodic work evaluation	10,59%	B02, C04, D01, D05, E01, E05, E06, F01
Increased understanding of product knowledge among employees	9,10%	B01, B02,B04,D05,D06,E01,E02,E03,E06,F02,F04
Creating a caring work culture	5,98%	C04,D05
Management carries out routine monitoring	5,98%	B06,D06,D07,E01,E04
The parking area is provided with a roof so that vehicles do not overheat	5,61%	B05, B06, D02, D08, E04, F01

Priority arrangement is based on the multiplication value between the weights in the inter-relationship matrix and normalized row weight. These values are then percentage to obtain a priority order to improve AHASS services. Data processing using the QFD approach provides results regarding what activities need to be repaired or increased by management based on consumer needs to increase consumer satisfaction. Used as input to identify service attributes that are included as VoC. Model Kano method is used to increase repair priority value according to service characteristics to find out which technical response has the highest influence on consumer satisfaction. Based on the results of data processing on the importance value for VoC, it is known that the service attribute input that has the highest priority value so that improvements continue to be made is that technician apologizes when making a mistake with a percentage of 15.2%, where this attribute is Attractive so that the skill communication and mutual caring must continue to be improved to continue to increase level of consumer satisfaction.

CONCLUSIONS

The conclusion stage where is the final stage to answer research objectives; several conclusions can be drawn; namely, the research process has shown that the use of three methods is integrated with the addition of fishbone diagram tools as support in formulating the root of the problem in a structured manner so that a more accurate technical response is produced, it can be concluded that this integration can create a better solution for changing the priority output of consumer needs into a comprehensive service design. Furthermore, QFD analysis requires the HoQ matrix to provide the conclusion that the technical response with the highest priority is 10.59% in technical responses carrying out regular work evaluations. The highest goal score of 4.97 was obtained for 4 service attributes, namely B04, B05, B06, and F02. The highest improvement ratio was obtained at 1.22, namely D04. This shows that the service attribute shows positive changes. CSP value was obtained at 4.66, namely E01.

This research does not integrate by considering two aspects, namely product and service. So, to improve this weakness, the researcher proposes several suggestions that can be carried out for further research, namely that further research can use other dimensions of service quality that are relevant to current business models and for the next few years. Future research can use more than one company as a research object so that benchmarking of two or more companies can be carried out. Further research can be integrated with PSS (Product Service System) so that researchers have two views: what if a service does not work well but the product quality is good, and whether consumers will still consider the company or not.

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