

CHAPTER 5

Finding Customer's Requirements and selecting important activities for their fulfillment

To manage healthcare waste effectively, it is necessary to understand the needs of healthcare facilities (customers) and to identify relevant activities to meet those needs; QFD is used in this chapter.

In this study, QFD is applied using the HOQ matrix. To transform customer requirements into precise functional design requirements, this study used the TISM and QFD frameworks (Debata *et al.*, 2012). A company may be able to discover the design needs and develop a connection between those factors using TISM (Thakkar *et al.*, 2011). QFD can help a company better comprehend its planning demands (Thakkar *et al.*, 2011). According to Chen and Ko (2011), Jin *et al.* (2016), and Li *et al.* (2018), Quality Function Deployment (QFD) is a Total Quality Management (TQM) tool that systematically develops customers' needs and expectations. QFD was developed in the late 1960s and early 1970s by Mitsubishi for shipbuilding requirements. QFD is a structured approach for converting the voice of the customer to technical requirements. The "voice of the customer drives the QFD process"; therefore, the process begins by capturing the "voice of the customer." QFD is not restricted to the only quality department. It is a valuable tool for everyone (Ficalora, 2019).

5.1 Introduction: Extensive literature on healthcare waste is discussed in Chapter 2, and the finalization of barriers using ISM and DEMATEL is in Chapter 4. Based on these value perceptions, decision-makers must identify the factors required to manage healthcare waste properly. This chapter aims to develop a balanced approach between customers' and design requirements.

As a result, the following research questions become relevant:

RQ1: What are the factors that influence customer satisfaction?

RQ2: What are the contributing factors (FDRs) to meeting customer requirements?

RQ3: How can a structured connection be made between the design needs and the customer requirements?

5.2 Methodology:

HOQ presents "What's" as the Voice of customers and "How's" as technical requirements for "What's." The flow chart for QFD is shown in Figure 5.1

The following are steps to be followed for the HOQ tool.

- Make the set of customers' spoken and unspoken needs (What's)
- Find customer priority.
- Find the technical requirements (How's).
- Generate a correlation matrix
- Generate a relationship matrix
- Give priority to the technical requirements.
- Find which technical requirement to deploy

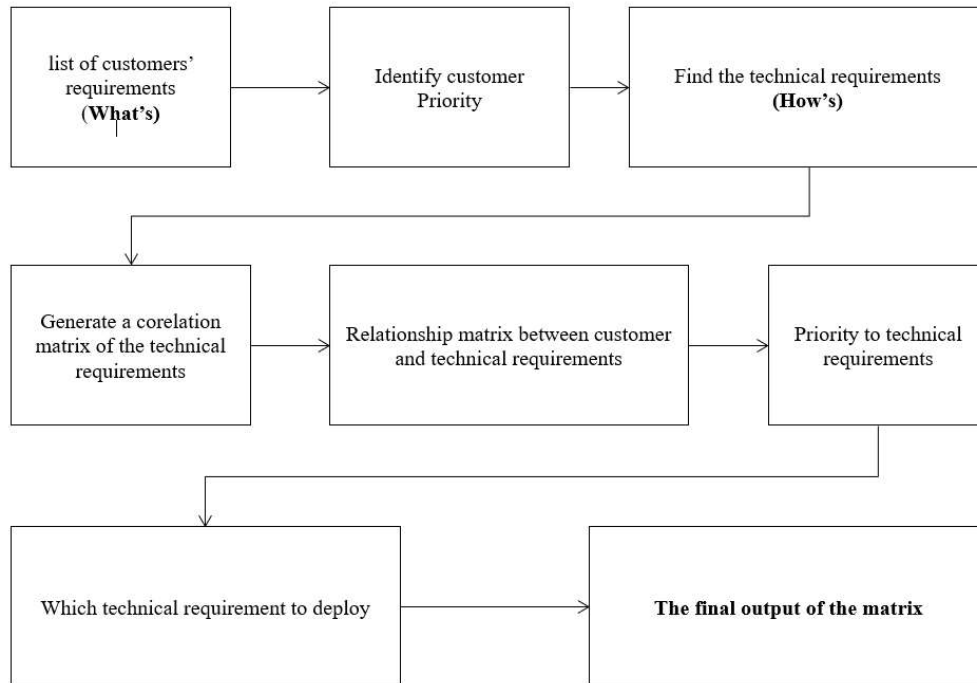


Figure 5.1 Flow Chart for QFD

Step 1: Make the set of customer requirements (What's)

In this step, the customer requirements, known as the "voice of the customers," are identified and defined as the "what's" in the HOQ matrix. Responses from 7 experts are collected; five are from Government hospitals and two from private hospitals. All the experts have over 10 years of experience in the Healthcare sector. This group will assist in identifying customers' needs and raising the standard of healthcare waste management services. The group was approached by phone and email for more information.

Step 2: Find customer priority.

The customers were asked to complete the questionnaire using a standard five-point Likert scale, with five assigned as the Highest Priority and one as the lowest priority. Customer

priority will be placed on the right-hand side of the customer requirements. Customer priority is shown in table 5.1

Table 5.1 User Need with Rating

User's Need (what's)	User importance (1-5; 5 highest importance)
Easy segregation & collection of waste	5
Low disposal cost of waste	5
No harmful effects of waste	4
Recycling of waste	2
Neat and clean hospital	4
Awareness of employees regarding healthcare waste	3
Less quantity of waste	3

Step 3: Find the technical requirements (How's)

The technical requirements are assigned at the top of the HOQ, known as the "How's" of the HOQ (Hussain *et al.*, 2011). TISM is used to find the technical requirements. "How's" describes how the organization will meet the customer requirements.

Step 4: Generate a correlation matrix of the technical requirements. By using the symbols: ++ for (strong positive); + for (positive); -- for (strong negative); and – for (negative) (Hussain *et al.*, 2011). Strong positive relation shows that both the technical requirements are highly dependent on each other and influence each other. Similarly strong negative association shows that both the technical requirements have no relations, one technical condition cannot

influence the other in any way. It represents those technical requirements that have a significant impact on the result. Correlation matrix is shown in figure 5.2

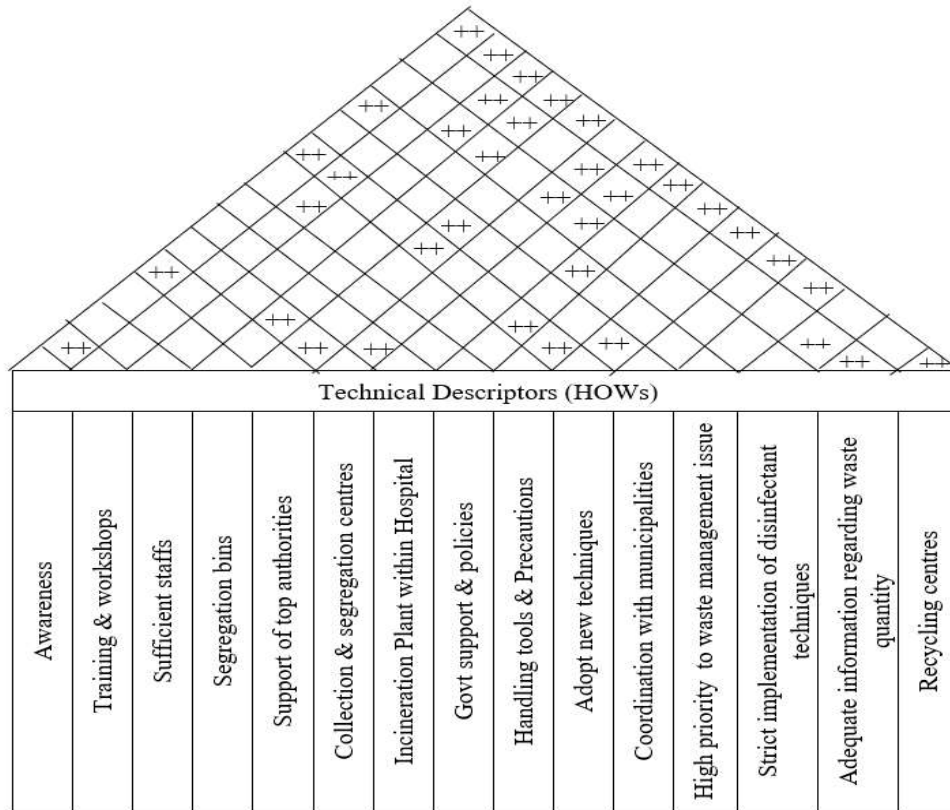


Figure 5.2 Correlation Matrix

Step 5: Development of a relationship matrix

This step will find how the how’s are related to what’s. The symbols which are used in this study are Θ = 9 (strong relation); O =3 (medium relation); Δ = 1 (weak relations); and if there is no relationship, we will use blank cells for that.

Step 6: Give priority to the technical requirements

The technical priority matrix finds the relative priority of the technical requirements.

Step 7: Find which technical requirement to deploy

Using this step, the organization can find the strategic goals by considering the requirements. From Figure 5.3, it is clear that the design requirements with higher weights than others are **Government support and policies, Awareness, Training and workshops, High priority to waste management issues, and Support of top authorities**. These factors have significant implications for people and society, so properly implementing healthcare waste management requires taking care of these factors.

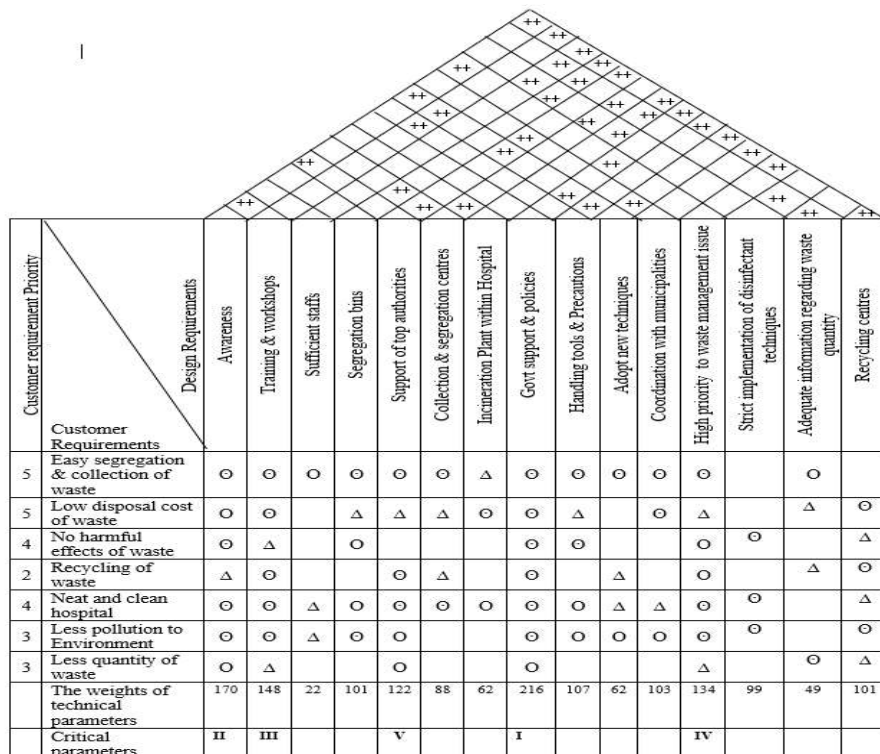


Figure 5.3: House of Quality

The result shows that government support and policies are the most important factor in the prioritized design requirement, and sufficient staff is the least important factor in the prioritized design requirement.

5.3 Discussion:

Presently health care waste management is one of the most complex issues. So, properly implementing waste management is necessary to make the atmosphere less polluted. During this study, customers' requirements were identified. Top authorities must be supportive, and there must be some good policies of the government that promote proper management of healthcare waste. Training and awareness programs must be organized at the hospital level to enhance the knowledge of workers and staff. Healthcare waste management must be on the priority list of all hospitals so that enough employees must be assigned for the management of waste correctly.

5.4 Conclusion:

This study gives a unique insight into healthcare waste management service quality. This study provides modified thoughts to select which factors consider the highest customer satisfaction. These barriers have significant implications for humans and society, so proper implementation of Health care waste management requires the elimination of these barriers. These barriers will be helpful for the policymakers and the hospital authorities to make beneficial policies for humans and society. The barriers to the healthcare waste management sector, which we identified, are the leading barriers supported by various studies (Ranjan *et al.*, 2020; Patil and Shekdar, 2001; Swain *et al.*, 2017). The barriers to implementing healthcare waste management in India are similar to most other developing nations, identified by several research (Mbongwe *et al.*, 2008; Khan *et al.*, 2019).

5.5 Theoretical and Managerial Implications:

This study investigates the origins of numerous uncertainties in managing healthcare waste, such as those internal to the organization or external, caused by ecological disturbances, societal or strict rules, etc. Additionally, it aids practitioners in understanding and prioritizing

their roles, duties, and contributions to effective healthcare waste management initiatives.

According to studies, to have effective management, top management should foster a culture of contingency planning while prioritizing waste management in their organization.