

Analysis of Barriers to Healthcare Waste Management: A Case of an Indian City



**Thesis submitted towards the partial fulfillment
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by

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CHAPTER 8

CONCLUSION AND FUTURE SCOPE

8.1 Introduction:

The current study focuses on hospital requirements, resource use, and cost reduction in handling healthcare waste. Based on hospitals' feedback, perceived values must be evaluated and measured. The study conducts a questionnaire survey. A proposal for a tool to measure customers' perceived values has been made., an approach to prioritizing the need based on existing hospital requirements is developed

With the help of the literature and experts' recommendations, 15 barriers to healthcare waste management were found and categorized into organizational, waste handling, technical, and human resource barriers. The barriers are further divided into cause-and-effect groups to aid managers and decision-makers in implementing the strategy. The study's findings were summarized in part after that.

8.2 Summary of Findings:

The essential findings of this thesis are summarized as follows:

Chapter 4 discusses the first study goal mentioned in the chapter: "Identify barriers and find the relationship among them for the healthcare waste management sector." A few barriers were discovered here with the TISM-based positioning approach model for competitive success. The most crucial elements that require attention are management. The Govt support and policy is the most significant and influencing component and lies at the bottom of the TISM hierarchy. The Chapter also discusses how the barriers are analyzed using the DEMATEL approach to determine their cause-and-effect relationships. With little information, this approach offers decision-makers the best support (Tseng, 2009). The outcome demonstrates that the barriers are Lack of awareness, lack of training, lack of

government support and policies, lack of handling tools and precautions, reluctance to change and adoption, and lack of Coordination between the municipality, pollution control boards, and hospital authorities belong to a cause group. The remaining obstacles include Insufficient staff working in HCWM, Unavailability of segregation bins, Lack of Top Authority's dedication towards HCWM, No Segregation and Collection center, No Strict implementation of disinfectant techniques, No adequate information regarding the waste quantity and compositions, Lack of Recycling Centers are among the influential factors that will be eliminated for proper implementation of healthcare waste management. Cause group barriers directly impact the strategy's implementation process and are given utmost importance. Therefore, it is crucial to focus on influencing barriers that can be altered. Experts' opinions undoubtedly support this study and are compatible with the knowledge body.

Chapter 5 discusses the second research goal: "Finding customers' Requirements and selecting important activities for their fulfillment." After the identification of customer requirements and design requirements, the integrated approach is used to find the priority of design requirements. The integrated strategy is employed to identify the order of design specifications. These specifications for the design are ranked through QFD. These criteria assist in identifying the most critical design improvements and high standards for customer satisfaction. Head Priorities are listed in the following order Government support and policies, Awareness, Training and workshops, High priority to waste management issues, and Support of top authorities.

In Chapter 6, the very reliable method known as AHP is used in the following problem to calculate the priority weights of the barriers. Decision-makers must be aware of this to evaluate the barriers. What criteria must a decision be made? This foundation, AHP, offers decision variables' local and global weights. In the finding, fifteen barriers are identified. Organizational barriers are the most crucial, followed by waste handling, human resource,

and technical at third and fourth positions. These barriers have significant implications for society; Strategy recommendations have been proposed with the help of fuzzy TOPSIS for successfully adopting healthcare waste management procedures. The appropriate measures must be taken to enhance the effectiveness and decrease the harmfulness of healthcare waste management treatment. In Chapter 7 a case study was performed in the Varanasi. The current scenario of healthcare waste management was studied, and further improvement was proposed with the help of mathematical modeling by considering the concept of Collection centers. A large amount of traveling cost and the waste handling cost reduces.

8.3 Managerial Implications:

To properly implement healthcare waste management, a company's management must comprehend the traits and relationships among barriers. The interaction between barriers can help managers better understand how the barriers interact with one another and which components should receive more attention. This study helps Managers and Healthcare practitioners to identify factors. The factors are grouped into four types with MICMAC analysis. These barriers must be helpful for the policymakers and the hospital authorities to make policies that benefit society. This study clarifies that good coordination of hospitals with other sources is necessary to implement healthcare waste management services properly. Government support will also play a vital role, and the Involvement of top management of hospitals is required to organize everything properly. Continuous improvement in the healthcare sector is necessary because it improves internal and external factors. Health and Education are two essential parts of society that require continuous improvement for a better community (Jani *et al.*, 2018).

This study's findings have some managerial-level ramifications. Due to its impact on the effect (dependent) barriers, managers should concentrate on the causal (driving) obstacles.

This research examined the fundamental nature of barriers and categorized them. Using this result, managers can identify their weak areas in the strategy's successful implementation. This study will assist managers and decision-makers in making the most use of their resources while minimizing costs.

8.4 Limitation of Present Work:

The fifteen barriers discovered through the literature study and expert opinion are all needed to complete the current work. There may be other issue and barriers. However, the issue's complexity could rise as the number of issue barriers rises. As a result, only the most significant and pertinent barriers have been considered for this dissertation, and those with the most negligible impact on the problem have been included. In Chapter 6, a linguistic scale and the accompanying fuzzy numbers are selected from earlier studies to gather expert assessment (human judgment). Triangular fuzzy numbers are employed in the suggested fuzzy-based decision support systems to evaluate the responses from the experts. Triangular fuzzy numbers, trapezoidal fuzzy numbers, and interval-valued fuzzy numbers are only a few examples of the many fuzzy numbers that may be found in the literature. The current dissertation's author needs help determining which fuzzy numbers are best suited to producing the most accurate prediction outcomes. It is an area of potential future work.

Expert opinions are taken from case organizations in the current dissertation to examine the relationships between the barriers (Chapter 4), assess the customers' requirements (Chapter 5), and rank the proposed strategies (Chapter 6). The answers are always based on the specialists' knowledge, expertise, and acquaintance with variables. Due to the respondent's subjective bias, the responses could be impacted

8.5 Scope for Future Work:

The dissertation's study considers the most crucial elements from the literature and professional judgment; however, additional elements that should have been considered here may still be essential depending on the circumstances.

In Chapter 4, the TISM model was created, and the MICMAC analysis was carried out using the collective wisdom of professionals and academics. It is a subjective assessment, and only some specialists have taken part. The outcome may be impacted if bias in experts' reviews is discovered. The efforts to get more expert opinions need to be revised. One way to gather information on barriers from more professionals is through a quick questionnaire survey with lots of data. Future studies can employ structural equation modeling to verify the fictitious model. The validity and reliability of design specifications relating to client value perception must be established in Chapter 5.

There aren't many restrictions for study in Chapter 6 that could be opportunities for future work. The same analysis may be considered with additional barriers for future research. This methodology is based on ratings from experts. However, these experts' assessments are merely their judgments. This model can be verified in subsequent research using statistical techniques like structural equation modeling.