

HFMEA–FUZZY Application: Similarity of the Eight Lean Wastes in 20 Emergency Care Units

Harvey Ribeiro Cosenza

Fluminense Federal University, Brazil

Nilra do Amaral Mendes Silva

Fluminense Federal University, Brazil

Robisom Damasceno Calado

 <https://orcid.org/0000-0003-3349-0344>

Fluminense Federal University, Brazil

Ana Paula Barbosa Sobral

Fluminense Federal University, Brazil

Thaís Lessa Queiroz

Fluminense Federal University, Brazil

EXECUTIVE SUMMARY

This study aims to demonstrate the importance of waste analysis and similarity of results. For that, the HFMEA-FUZZY was used as a tool. The study used waste results from 20 emergency care units (ECUs) from different regions of Brazil through the HFMEA criteria and complemented with the concepts of logic Fuzzy with the COPPE COSENZA methodology. The use of HFMEA-FUZZY aims to contribute to research in the health area where Lean healthcare will be or is already implemented. For that, it served as a basis for reports prepared after visits carried out in the emergency care units (ECUs).

INTRODUCTION

Healthcare organizations have the challenge of seeking consistent and integrated techniques, methods and projects that can minimize failures in their systems, maximize results and avoid waste of own or governmental resources, often scarce. Besides also being providers of well-being, both to their employees and to patients and users, through a high technical competence, seriousness in procedures and humanization in the relationship (Pucci & Cesar, 2014). After all, institutions that promote health are directly associated with the image of preserving life. The health sector in Brazil faces some obstacles that impair health care in the country, such as the lack of beds, the overload of professionals, the lack of humanized care, the delay in care due to lack of professionals and insufficient resources (Santos, 2015; Alves, 2013). Given this context, the 24-hour Emergency Care Units (ECU) were created with the goal of offering fast patient care services to reduce the queues in hospital emergency rooms. The 24-hour Emergency Care Units are health care facilities installed in several cities in Brazil and are responsible for concentrating medium complexity services to the population's health. They offer a simplified structure with X-ray, electrocardiography, pediatrics, laboratory tests and observation beds. However, just like public hospitals, ECU have also become part of the grievances of public policy planning, suffering the same system failures as large institutions.

According to the Portal Medicina S/A (2021) 53% of healthcare costs in Brazilian hospitals are consumed by waste caused by failures in the delivery of value throughout its production chain, however, the result of this research shows that there are alternatives to increase the quality of health care to the entire population without the need to invest in resources. One of the alternatives is to collect data and analyze the performance of functionality in the desired area and make more assertive decisions from data that is qualitative. In short, it is possible to do even more and better with the available resources.

The present study aims to analyze the similarity of the 8 Lean wastes arising from system failures in 20 Emergency Care Units (EDUs) distributed throughout the regions of Brazil. To do so, the HFMEA-FUZZY was used as a tool. The study used the result of the mapping of the 8 Lean wastes through the HFMEA criteria complemented with the COPPE COSENZA methodology, of Fuzzy logic, which performs a method of crossing supply and demand matrices (Cosenza, 1981). The use of HFMEA-FUZZY aims to contribute to research in the healthcare area where Lean healthcare will be or is already implemented. Thus, internal reports from each hospital were used to analyze the data. Thus, the following objectives of the research are presented:

- Similarity of the 8 wastes in the Emergency Care Units
- Similarity among the Emergency Care Units

THEORETICAL BACKGROUND

Lean Healthcare

The Lean Healthcare approach was originally derived from the Toyota System: a continuous process improvement system comprising structured techniques for inventory management, waste reduction, and quality improvement (Santos, 2017). Lean Healthcare uses a continuous learning cycle, that is, continuous improvement in the activities that make up healthcare processes directly impacting patients, the

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