

UNIVERSITI TEKNOLOGI MARA

**ORGANISATIONAL ATTRIBUTES
AND ENERGY CONSUMPTION IN
MALAYSIAN PUBLIC HOSPITALS:
MEDIATING ROLE OF
SUSTAINABLE ENERGY
MANAGEMENT**

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ABSTRACT

Governments worldwide have recognised the urgent need to address environmental challenges and promote sustainable development, placing increasing emphasis on energy reduction policies. The building sector, responsible for approximately one-third of total final energy consumption and 15 per cent of direct carbon dioxide (CO²) emissions from end-use sectors, plays a crucial role in this global effort. Due to rising energy prices, decision-makers must consider the long-term energy consumption of hospitals. In 2016, the Ministry of Health (MOH) initiated a Sustainability Program (SP) at all Malaysian public hospitals, aiming to achieve a 3-star EMGS certification and a 10% reduction in energy consumption within five years. This research aims to investigate the impact of sustainable energy management (SEM) on energy consumption performance in Malaysian public hospitals, examine the influence of organisational attributes on energy consumption, and analyse the mediating effect of SEM programs on organisational attributes and energy consumption performance. An extraction Tool Language (ETL) has been used to analyse the energy consumption performance at 118 hospitals. The results show that the hospitals achieved an average of 23% savings in 2019. The study surveyed 203 staff members from Malaysian public hospitals and concessionaires to examine the influence of organisational attributes on energy consumption in Malaysian public hospitals. It also looks at the mediating role of SEM between these organisational attributes and energy consumption across 13 hospitals from four hospital categories located in Eastern, Northern, Central, and Southern Peninsular Malaysia, including Sabah and Sarawak. Using PLS-SEM, the study observed that organisational attributes, such as social behaviours, staff competency, staff communication, and staff recognition, as well as Sustainable Energy Management (SEM), influence energy consumption. However, the study also shows that SEM only mediates the relationship between organisational recognition and energy consumption. Investing in technology was one solution to reducing energy consumption in buildings, hospitals, and commercial spaces. Nevertheless, organisations should also consider non-technological solutions, such as implementing an SEM program to achieve sustainable energy performance and promote improved organisational attributes, including staff behaviours, competencies, communication, and leadership commitment. To enhance the SP program, the MOH plans to obtain Green Building certification for all Malaysian public hospitals by 2025, where energy, water, and waste generation will be measured in terms of CO² reduction. This new initiative could also represent an area for further research.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Sustainability management was comparatively new, as it involved the interaction between business, society, and the environment, which had been a key concern for businesses (Schaltegger et al., 2019). Due to the growing importance of sustainability, hospitals have begun to adopt sustainability management (Rodriguez et al., 2020). Hospital buildings were the main energy users among government facilities, which require substantial energy reduction to save their operational costs. At the same time, the Ministry of Health Malaysia established a policy for all hospitals to achieve green building certification and implement a sustainable energy management (SEM) program, which aligned with its global commitment to environmental conservation (Abd Rahman et al., 2021).

The increasing global energy consumption and its negative environmental impacts have been discussed by academics and practitioners, including in the health sector. Hospitals were significant energy consumers, resulting in increased operating costs, reduced competitiveness, and adverse environmental impacts. Energy management in hospitals must contribute to environmental sustainability and improved competitiveness (Borges de Oliveira et al., 2021). In addition, according to Al Qattan et al. (2018), energy issues have gained space on the agenda of governments and business managers worldwide and have become an essential topic in debates on environmental sustainability due to global warming, the risk of the depletion of non-renewable sources, and the significant growth per capita energy consumption and global reliance on fossil fuels. Meanwhile, the significant growth in energy consumption was attributed to the intensification of technology use, which was highly dependent on energy consumption, and to population growth (Kanneganti et al., 2017).