



Pharos University in Alexandria

Faculty of Engineering

Department of Architectural Engineering

# **Smart Spatial Planning Impact on Human Psychology “in the Era of Pandemics “**

**A thesis submitted in partial fulfillment of the requirements for the  
degree of Master of Science**

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## Abstract

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The COVID-19 pandemic brought unprecedented challenges to urban life, revealing the limitations of traditional urban planning approaches and underscoring the necessity for more adaptive and resilient city models. This thesis investigates the role of smart cities, which utilize technologies like the Internet of Things (IoT), Artificial Intelligence (AI), and Information and Communication Technology (ICT), in enhancing urban resilience during crises. By integrating data-driven solutions, smart cities offer innovative tools for health monitoring, resource management, and public communication, enabling cities to respond more effectively to emergencies.

The research focuses on case studies of three cities Shanghai, Singapore, and Masdar City that have adopted smart technologies in different ways to navigate the COVID-19 crisis. Using the Analytical Hierarchy Process (AHP) and Simple Additive Weighting (SAW) methods, the study compares their approaches to smart spatial planning, sustainability, and human behavior management. Singapore is a leading example of balanced smart city development, showcasing the effective integration of digital infrastructures, public health initiatives, and resource management strategies to create a highly resilient urban environment. Shanghai demonstrates the potential for large metropolises to rapidly deploy technology for public health measures, while Masdar City highlights the importance of sustainability and eco-friendly practices as foundational elements of urban design.

In addition to examining technological advancements, the thesis investigates the psychological implications of smart city technologies during the pandemic. It assesses how these innovations influenced feelings of safety, anxiety, and control among urban populations. While highlighting the significance of human-centered approaches in smart city planning. The research emphasizes the need to address issues such as underutilization of smart systems, and lack of technology interoperability, which were magnified during the pandemic.

In conclusion, the findings provide extensive recommendations for smart city planning, delivering valuable insights for future urban development, particularly in rapidly urbanizing areas like Egypt. The thesis proposes that smart cities should focus on both technological solutions and the well-being and awareness of their residents. By promoting collaboration, innovation, and sustainable practices, cities can build resilient and adaptable environments capable of thriving in an increasingly complex and unpredictable world.