Pharos University in Alexandria

Faculty of Engineering

Department of Architectural Engineering

Spatial Configuration Of Urban Areas And Its Impact On Human Movement Behaviour

Case study: Downtown of Alexandria

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

IN

Architectural Engineering

Submitted by

Mahmoud Elshawadfy Elsayed Elgdawy

B.Sc. in Architectural Engineering

Faculty of Engineering, Pharos University in Alexandria

2025

Abstract

The orientation and organization of different building uses and spaces in the downtown area are crucial in ensuring the streets are welcoming and friendly to pedestrian movement. Active public spaces and streets with high pedestrian movement patterns are vital to the success of the downtown. High levels of pedestrian activity — shopping, eating, "people watching," exercising, strolling, relaxing, walking from place to place — are valued and encouraged throughout the downtown. These activities create interest, provide a sense of safety in the Street, and add to the community's image and identity. Currently, several downtown areas face problems regarding chaotic pedestrian movement, leading to strong overcrowding that affects human comfort and sense of place. The lack of a separation between pedestrian and car traffic leads to the disorganization of pedestrian traffic. That has forced many people to flee from the overcrowding of the downtown area to the newly constructed cities, leaving their roots and searching for a healthier environment. This research investigates the relationship between spatial configuration in urban areas and its impact on human movement behavior. The downtown area in Alexandria - Raml Station has been chosen as a case study. The area contains several activities (Historical – Commercial – Educational- residential) that affect the pedestrian movement pattern throughout the day. The existence of change in movement behavior patterns in different streets has been noticed. Thus, the research studies different elements of the built environment and the downtown area's spatial configuration, attempting to understand how these aspects can affect the changes in human movement behavior, using several methods, including (GIS) Geographic Information Systems and space Syntax, Observation cameras on different streets will also be used to analyze human movement patterns throughout the day at different times with different age groups, and the extent to which people's movement affects their behavior. The research produces significant findings regarding assessing current urban spaces regarding walkability, sense of place, and urban organization.