

ASEAN Skills Demand for Smart Cities: Aligning Workforce Competencies with Higher Institution Courses

Prof. Dr. Ling Siew Eng

Professor, College of Computing, Informatics and Mathematics, Universiti Teknologi MARA, Shah Alam, Malaysia

Assoc. Prof. Dr. Chan Kit Yok

Associate Professor, Universiti Teknologi MARA, Shah Alam, Malaysia

Dr. Ahmad Faiz Abd Rashid

Universiti Teknologi MARA, Shah Alam, Malaysia

Dr. Ishak Annuar

Universiti Teknologi MARA, Shah Alam, Malaysia

Dr. Yong Yueh Tiam

Universiti Teknologi MARA, Shah Alam, Malaysia

Abstract

The transition toward smart and sustainable cities (SSCs) has intensified the demand for a workforce equipped with interdisciplinary skills spanning digital technologies, governance, sustainability, and social engagement. In ASEAN countries, rapid urbanization and ambitious smart city initiatives have outpaced the capacity of existing education and training systems to supply appropriately skilled professionals. This study examines the skills required for smart city development in ASEAN through a qualitative approach, utilizing interviews and focus group discussions conducted in Cambodia, Malaysia, and Thailand. The findings identify seven key skill domains essential for effective smart city implementation: civil and social skills; health and well-being; safety and security; environmental sustainability; built infrastructure; industrial and innovation skills; and digital infrastructure, data, and smart technologies. These domains highlight the interdisciplinary competencies required to support integrated urban development. The results suggest that addressing these skills gaps is critical for countries to design relevant education and training programmes that respond to emerging workforce demands. The result shows that smart city development is fundamentally a human capital challenge rather than a purely technological one. The paper concludes by proposing role-based and competency-driven workforce development strategies to support inclusive, resilient, and sustainable smart cities across ASEAN.

Keywords

Smart cities, workforce development, digital skills, ASEAN, urban governance, sustainable urbanization.