management 07:

How will the increasing **sustainability pressures** shape the Architecture, Engineering, and Construction **(AEC) sector** and its **business models**?

This topic may include consideration of **initiatives** that can **accelerate digital sustainability** in the sector and reach sustainability goals.

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project title

_digital _Sustainability

in the AEC Sector

Macro
(Cities, Built Enviroment)
Environmental

Potential Research

Meso
(Urban Block, Community)
Social

Micro
(Building, Business Model)
Economical

Information System Design Perspective

PROBLEM

The Architecture, Engineering and Construction (AEC) sector is under increasing pressure to integrate sustainability due to environmental concerns and stricter regulations.

While digital sustainability is well-established in Business and Information Systems literature, the AEC sector has yet to fully utilize these frameworks, particularly in urban design and planning.

The need for strategic digital transformation in the sector is critical for addressing sustainability goals and shaping future business models.

GAP

There is a significant gap in both practical and theoretical applications of digital sustainability within the The Architecture, Engineering and Construction (AEC) sector.

Practically, industry lacks tailored digital tools to address real-world sustainability challenges. Theoretically, the literature on digital sustainability in the AEC sector, especially in urban design and planning, is sparse.

This research provides an opportunity to bridge these gaps by developing AI-driven tools and a comprehensive digital sustainability framework specific to the AEC industry.

PROGRESS

- Collaboration with Architectus: Designing and building a system on an urban scale (Macro) including an AI tool to measure canopy coverage targets and mitigating heat islands over time based on increased tree planting and normal growth.
- Literature Review: Started reviewing and summarizing digital sustainability literature from Information Systems and scoping down to the AEC sector.
- Framework Developed: Created a thesis framework in collaboration with supervisors, breaking down the research into macro, meso, and micro studies.

FUTURE

- Research Needs: Secure datasets for AI tool development and finalize ethics approval.
- Future Research Plan and Partner Opportunities: Continue collaboration with industry partners to implement and refine real-world solutions while aligning with UN Sustainable Development Goals:

1. Meso Levels: Action Design Research to develop AI-driven, data-centric tools for urban design and community sustainability.
2. Micro Level: Case study with industry partners on the impact of digital tools on business models with focus on Digital Sustainability in the industry.

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