Replicating Low Carbon Smart Cities through Knowledge Sharing and Learning across Cities: A New Approach to Urban Governance?

Dr Muhammad Usman Mazhar

Nottingham Business School, Nottingham Trent University, UK

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Outline

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What is the Problem in Cities?

- Cities are complex

- More than half of the population lives in cities
  - Urban population is expected to surpass 6 billion by 2045

- More than half of the economic output is in cities

- Huge energy consumption and generate 75% of carbon emissions

- Opportunities for local authorities, policymakers, businesses

- Key leadership role for local authorities

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What are Smart Cities?

- 'Smart City' is a buzzword and gaining attention

- ICT is used to improve efficiency of infrastructure and public services
  - Traditional networks/services are made efficient with ICT
- Opportunities to redesign cities
  - Increasing examples of smart city transformation
- Smart city sectors; built environment, transport, energy, health care, water, waste, security

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Low Carbon Smart Cities

- 'Low Carbon Smart City' emerged as a new concept in urban governance

- Beyond ICT for better resource use and less carbon emissions
  - 'Low carbon' is at the forefront of 'Smart Cities'

- EU Smart Cities agenda offers new horizons for innovation

- EU has invested heavily in 'Lighthouse Smart Cities'

- No budget to fund all cities for piloting

- Knowledge sharing and learning is paramount for replication

What is Knowledge Management?

- "Process of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to enhance learning and performance in organisations" (Scarbrough et al., 1999).

Knowledge Sharing and Learning

- Knowledge in organisations has become popular

- Recognised as the most important resource for performance

- Explicit and tacit knowledge (Polanyi, 1966)

- Knowledge sharing facilitates learning

- Can it facilitate replication of low carbon Smart Cities?

"Sharing knowledge is not about giving people something, or getting something from them. That is only valid for information sharing. Sharing knowledge occurs when people are genuinely interested in helping one another develop new capacities for action; it is about creating learning processes" (Peter Menge)

Need for the Research

- Innovative smart city initiatives are established in Europe/UK

- Many projects die after the pilot stage and never scale up

- Little or no cooperation between cities

- Cities to share knowledge and use synergies between initiatives

- Studies investigating knowledge sharing/learning are very limited

- New approach to low carbon/green urban governance?

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Research Questions/Aims

- How can cities share knowledge and learn from each other to facilitate replication of low carbon smart cities?

- What are the major drivers and barriers to knowledge sharing and learning in cities?

- To develop a framework for replicating low carbon smart city initiatives for local authorities nationally and internationally.

Research Methodology

Stage 1: Systematic Literature Review
- Systematic review on low carbon smart cities, knowledge management and organisational learning
- Development of a theoretical model

Stage 2: Empirical Research
- Mixed-method approach.
- Qualitative data - Semi-structured interviews with managers in EU/UK 'Lighthouse' and 'Follower' cities
- Quantitative data - an online questionnaire survey

Stage 3: Replication Framework Validation
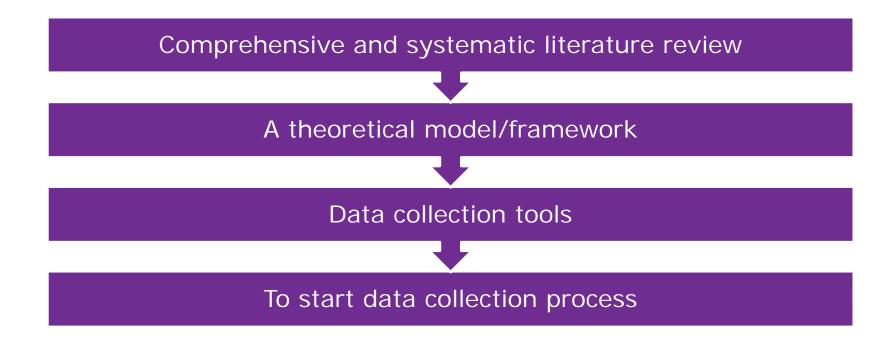- Focus groups with local authorities

REgeneration MOdel for accelerating the smart URBAN transformation (REMOURBAN)

- 25M EU Horizon 2020 project

- Integration of; Energy, Transport, ICT

- Three EU 'Lighthouse' cities;
  - Nottingham (UK)
  - Valladolid (Spain)
  - Eskisehir (Turkey)

- Two 'Follower' cities;
  - Seraing (Belgium)
  - Miskolc (Hungary)

- Other cities may include Limerick, Oxford, Bristol, Leicester, Derby

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Progress Up-to-Date

Comprehensive and systematic literature review

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A theoretical model/framework

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Data collection tools

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To start data collection process

Implications/Chinese Cities

- Useful for local government responsible for Smart City
  - Practitioners and policymakers
  - Replication framework

- Cross-country lessons learning

- China to build Smart Cities - Smart City development programme

- China has highest number of pilot projects (500)

- Started piloting in 2012 to encourage use of technology, such as artificial intelligence and Internet of Things to help;
  - Traffic flow, improve law enforcement, make public buildings energy efficient

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Thank you

Any Questions/Comments?

Email: muhammadusman.mazhar@ntu.ac.uk

Twitter: @u_mazhar   @NBS_Susty

WeChat: u_mazhar

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