

Insight from India Smart City Mission: A Select Study

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CERTIFICATE

This is to certify that the thesis entitled ‘Insight from India Smart City Mission: A Select Study’ being submitted by **Mr. Somnath Mitra**, to the Department of Management Studies, Indian Institute of Technology Delhi for the award of the degree of **Doctor of Philosophy**, is a record bonafied research work carried out by him. He has worked under guidance and supervision and fulfilled the requirements for the submission of the thesis, which has attained the standard required for a PhD degree of the institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

This study brings out some important insights from the smart city mission program currently being pursued in India. This mission program was launched by the Government of India (GoI) in 2015 in response to serious challenges posed by an irreversible trend of urbanization across all cities. While this rapid urbanisation offers India an incredible opportunity for further transforming the economy and put the economy in growth trajectory, it is also likely to aggravate several of the existing woes that urban centres are already witnessing such as overcrowding, increased pollution, and inequity. Solution lies into a collaborative city ecosystem involving people, government, industry, technology experts need deeper collaboration, complex program planning, robust and agile implementation mechanisms and a detailed evaluation and accountable monitoring framework.

The driving question is to understand how a successful smart city is designed and operationalized. This is further delved into three other questions, leading to three studies covering three core parts of smart city landscape. These refers to ‘People living in the city’ should lead, ‘Governance that create enabling environment’ should use avenues of mobile governance effectively and develop a robust ‘Technology Infrastructure’ over which the future city would exist.

As we know city exists for people and grows with time adding several complex challenges. What is interesting today is the advancing technology, particularly those bringing smart features, which offers an extraordinary opportunity to address these challenges as a relief. Hence, smart cities have become part of development agenda of every country. Evidences show success to those cities, where it is designed and lead by people living there. People participation ensures that smart city programs achieve its goals. Barcelona is the most cited example on this. Study-1 is about understanding how people involvement ensures the success. It is found that ease of living (EoL) parameters describes the people need and aspirations in most comprehensive manner. Hence EoL should eventually guide the development of smart city programs.

Good governance ensures serving people as stipulated. Today a mobile phone is seen as a perennial companion and defines identity of an individual to a large extend, hence offers an easy outlet to route and serve people via a

well-crafted agenda on mobile-governance. Governments have realised this as tool to empower peoples and affect the way peoples interact with each other and with society at large. It is found an effective tool in strengthening democracy through better people-government interaction, thus influencing the political decision making process and making government accountable for its activities. M-Governance proves a good tool for carrying out ‘smart’ interventions between people and service providers, including government — for making payments and enrolling for services, etc. Much of the ease of living agenda is possible to realise. Study-2 covers analysis of 20 high ranked cities to ascertain how much these cities have been able to leverage mobile governance in a smart city scenario.

Cities are distinctly found engine of economic growth, which depends upon speed at which innovations are brought out and trigger entrepreneurship. Smart city projects are an opportunity to unleash innovation and entrepreneurship. This is most potent among young graduates which can be catalysed by proving a facilitating ecosystem. Study-3 present an architecture of start-up ecosystem based scanning few existing and successful ones- in Israel, Australia and India. There are few best practices which guarantee such an ecosystem become most productive. These include -run and maintained by an empowered autonomous authority offering single window service under a clear policy on setting and closure.

At the end, the thesis brings out set of recommendations which are helpful in design a smart city program with some element of certainty of success.

सार

यह अध्ययन भारत में वर्तमान में चलाए जा रहे स्मार्ट सिटी मिशन कार्यक्रम से कुछ महत्वपूर्ण अंतर्दृष्टि को सामने लाता है। यह मिशन कार्यक्रम भारत सरकार (भारत सरकार) द्वारा 2015 में सभी शहरों में शहरीकरण की अपरिवर्तनीय प्रवृत्ति से उत्पन्न गंभीर चुनौतियों के जवाब में शुरू किया गया था। जबकि यह तेजी से शहरीकरण भारत को अर्थव्यवस्था को आगे बढ़ाने और अर्थव्यवस्था को विकास के पथ पर आगे बढ़ाने का एक अविश्वसनीय अवसर प्रदान करता है, यह मौजूदा विकटों में से कई को बढ़ने की संभावना है कि शहरी केंद्र पहले से ही भीड़भाड़, प्रदूषण और असमानता जैसे बढ़ रहे हैं। समाधान एक सहयोगी शहर के पारिस्थितिकी तंत्र में निहित है जिसमें लोगों, सरकार, उद्योग, प्रौद्योगिकी विशेषज्ञों को गहन सहयोग, जटिल कार्यक्रम योजना, मजबूत और चुस्त कार्यान्वयन तंत्र और एक विस्तृत मूल्यांकन और जवाबदेह निगरानी ढांचे की आवश्यकता है।

प्रश्न यह समझना है कि एक सफल स्मार्ट सिटी को कैसे डिजाइन और संचालन किया जाता है। यह आगे तीन अन्य सवालों में बदल गया है, जिससे तीन अध्ययनों को स्मार्ट सिटी परिदृश्य के तीन मुख्य भागों को कवर किया गया है। इनमें शहर में रहने वाले लोगों के लिए नेतृत्व, प्रशासन को सक्षम करने वाला वातावरण 'बनाने के लिए' शासन को मोबाइल प्रशासन के तरीकों का प्रभावी ढंग से उपयोग और एक मजबूत robust टेक्नोलॉजी इन्फ्रास्ट्रक्चर विकसित करना चाहिए, जिस पर भविष्य का शहर मौजूद होगा।

जैसा कि हम जानते हैं कि शहर लोगों के लिए मौजूद है और कई जटिल चुनौतियों को जोड़ते हुए समय बढ़ता है। आज जो दिलचस्प है वह है अग्रिम प्रौद्योगिकी, विशेष रूप से स्मार्ट सुविधाएँ लाने वाले, जो इन चुनौतियों से राहत के रूप में संबोधित करने का एक असाधारण अवसर प्रदान करते हैं। इसलिए, स्मार्ट शहर हर देश के विकास के एजेंडे का हिस्सा बन गए हैं। सबूत उन शहरों में सफलता दिखाते हैं, जहां इसे डिज़ाइन किया गया है और वहां रहने वाले लोगों द्वारा नेतृत्व किया गया है। लोगों की भागीदारी सुनिश्चित करती है कि स्मार्ट सिटी कार्यक्रम अपने लक्ष्यों को प्राप्त करें। बार्सिलोना इस पर सबसे अधिक उद्धृत उदाहरण है। अध्ययन -1 यह समझने के बारे में है कि लोगों की भागीदारी कैसे सफलता सुनिश्चित करती है। यह

पाया गया है कि जीवन जीने में आसानी (ईओएल) के मापदंडों में लोगों की आवश्यकता और आकांक्षाओं का वर्णन किया गया है। इसलिए ईओएल को अंततः स्मार्ट सिटी कार्यक्रमों के विकास का मार्गदर्शन करना चाहिए।

समय के साथ लोगों की आकांक्षाएं बढ़ती रहती हैं। सुशासन लोगों की सेवा करना सुनिश्चित करता है। आज एक मोबाइल फोन एक बारहमासी साथी के रूप में देखा जाता है और एक बड़े विस्तार के लिए एक व्यक्ति की पहचान को परिभाषित करता है, इसलिए मोबाइल-गवर्नेंस पर एक अच्छी तरह से तैयार किए गए एजेंडे के माध्यम से लोगों को मार्ग और सेवा करने के लिए एक आसान आउटलेट प्रदान करता है। सरकारों ने नागरिकों को सशक्त बनाने और नागरिकों के एक दूसरे के साथ बातचीत करने और बड़े पैमाने पर समाज को प्रभावित करने के लिए इस उपकरण के रूप में महसूस किया है। यह बेहतर नागरिक-सरकार बातचीत के माध्यम से लोकतंत्र को मजबूत करने में एक प्रभावी उपकरण है, इस प्रकार राजनीतिक निर्णय लेने की प्रक्रिया को प्रभावित करता है और सरकार को अपनी गतिविधियों के लिए जिम्मेदार बनाता है। एम-गवर्नेंस लोगों और सेवा प्रदाताओं के बीच inter स्मार्ट 'हस्तक्षेप करने के लिए एक अच्छा उपकरण साबित होता है, जिसमें सरकार भी शामिल है - भुगतान करने और सेवाओं के लिए नामांकन करने आदि के लिए, लिविंग एजेंडे की बहुत आसानी का एहसास करना संभव है। अध्ययन -2 में 20 उच्च रैंक वाले शहरों का विश्लेषण किया गया है ताकि यह पता लगाया जा सके कि ये शहर स्मार्ट सिटी के परिदृश्य में मोबाइल गवर्नेंस का कितना लाभ उठा पाए हैं।

शहर विशिष्ट रूप से आर्थिक विकास के इंजन हैं, जो उस गति पर निर्भर करता है जिस पर नवाचारों को लाया जाता है और उद्यमशीलता को ट्रिगर किया जाता है। स्मार्ट सिटी परियोजनाएं नवाचार और उद्यमशीलता को उजागर करने का एक अवसर हैं। यह युवा स्नातकों के बीच सबसे अधिक शक्तिशाली है, जिन्हें एक सुविधा पारिस्थितिकी तंत्र साबित करके उत्प्रेरित किया जा सकता है। अध्ययन -3 इजरायल, ऑस्ट्रेलिया और भारत में कुछ मौजूदा और सफल लोगों को स्कैन करने वाले इकोसिस्टम आधारित आर्किटेक्चर को प्रस्तुत करता है। कुछ सर्वोत्तम प्रथाएं हैं जो इस तरह के पारिस्थितिकी तंत्र की गारंटी देती हैं जो सबसे अधिक उत्पादक हैं। इनमें शामिल हैं-एक सशक्त स्वायत्त प्राधिकरण द्वारा बनाए रखा और स्थापित और बंद करने की स्पष्ट नीति के तहत एकल खिड़की सेवा प्रदान करना।

अंत में, थीसिस उन सिफारिशों के सेट को सामने लाती है जो सफलता की निश्चितता के कुछ तत्व के साथ एक स्मार्ट सिटी कार्यक्रम को डिजाइन करने में सहायक होते हैं।

Table of Contents

-

| | |
|--|-----|
| CERTIFICATE..... | ii |
| ACKNOWLEDGEMENTS..... | iii |
| ABSTRACT..... | v |
| LSIT OF TABLES..... | xiv |
| 1.1. Background..... | 1 |
| 1.2. What is the status of smart cities mission in India? | 2 |
| 1.3. Motivation for the research..... | 4 |
| 1.4. Outline of the study..... | 5 |
| 1.5. Structure of the thesis..... | 7 |
| 2.1. Background..... | 8 |
| 2.2. Deployment of smart cities transformation solutions | 11 |
| 2.3. Urban governance paradigm | 12 |
| 2.4. Need of smart governance..... | 13 |
| 2.5. Bridging the urban demographic gap in smart cities | 15 |
| 2.6. Research Gap | 17 |
| 2.7. Bridging the Gaps | 20 |
| 2.8. Concluding Remarks..... | 28 |
| 3.1. Introduction..... | 29 |
| 3.2. Research questions..... | 29 |
| 3.3. Research objectives..... | 30 |
| 3.4. Scope of Study | 31 |
| 3.5. Related issues..... | 31 |
| 3.6. Research Framework (People-Governance-Technology Triad) | 32 |
| 3.7. Methodology | 34 |
| 3.8. Concluding remarks | 42 |
| 4.1. Introduction..... | 43 |
| 4.2. Research Design..... | 43 |
| 4.3. Data Analysis..... | 52 |

| | | |
|----------|--|-----|
| 4.3.1. | Research Results | 61 |
| 4.3.1.1. | Response by the people..... | 61 |
| 4.3.1.2. | Respondents' demographic profile | 63 |
| 4.3.1.3. | Construct reliability test..... | 64 |
| 4.3.1.4. | Test of multicollinearity..... | 65 |
| 4.3.1.5. | Computations of LF, AVE, CR and MSV | 68 |
| 4.3.1.6. | Discriminant validity test..... | 71 |
| 4.3.1.7. | Structural equation modelling..... | 73 |
| 4.4. | Discussion..... | 82 |
| 4.4.1. | Explaining the results..... | 82 |
| 4.4.1.1. | Summary | 83 |
| 4.4.1.2. | People Participation | 85 |
| 4.4.1.3. | Technology infrastructure | 87 |
| 4.4.1.4. | Institutional robustness | 88 |
| 4.5. | Revisit research question | 90 |
| 4.6. | Revisit research objective | 90 |
| 4.7. | Insight | 91 |
| 4.8. | Concluding remarks | 93 |
| 5.1 | Introduction..... | 95 |
| 5.2 | Research Design..... | 95 |
| 5.3 | Focus Group Discussion | 97 |
| 5.4 | Framework of start-up ecosystem in smart cities..... | 103 |
| 5.5 | Key Performance Indicators (KPIs) for Start-up ecosystem in smart cities | 115 |
| 5.6 | Insights..... | 116 |
| 5.7 | Concluding remarks | 117 |
| 6.1 | Introduction..... | 119 |
| 6.2 | Research Design..... | 119 |
| 6.3 | Data Analysis..... | 123 |
| 4.8.1. | Analysis..... | 129 |
| 6.4 | Key insights | 141 |
| 6.5 | Concluding remarks | 142 |
| 7.1 | Summary of the research..... | 143 |

| | | |
|------|---------------------------------|-----|
| 7.2 | Major Findings..... | 145 |
| 7.3 | Synthesis | 145 |
| 7.4 | Limitations | 154 |
| 7.5 | Major Recommendations | 154 |
| 7.6 | Major contribution | 157 |
| 7.7 | Implication of the study | 157 |
| 7.8 | Scope for future research | 159 |
| 7.9 | Concluding remarks | 159 |
| 8 | References..... | 161 |
| 1 | Appendix..... | 195 |
| 1.1 | Appendix 1..... | 195 |
| 1.2 | Appendix 2..... | 198 |
| 1.3 | Appendix 3..... | 200 |
| 1.4 | Appendix 4..... | 203 |
| 1.5 | Appendix 5..... | 207 |
| 1.6 | Appendix 6..... | 212 |
| 1.7 | Appendix 7..... | 217 |
| 1.8 | Appendix 8..... | 236 |
| 1.9 | Appendix 9..... | 237 |
| 1.10 | Appendix 10..... | 238 |
| 1.11 | Appendix 1..... | 246 |
| | About the Author | 247 |

Table of Figures

| | |
|--|-----|
| Figure 1 People-Citizen-Technology Triad | 5 |
| Figure 2 Smart City with Dimensions of Technology, People, and Institutions..... | 21 |
| Figure 3 Relationship of State and service to peoples | 22 |
| Figure 4 People-Governance-Technology triad | 22 |
| Figure 5 People-Governance-Technology triad mapping with research study | 34 |
| Figure 6 Flowchart for the research | 36 |
| Figure 7 Types of Structure Equation Modelling | 38 |
| Figure 8 Flow chart of the steps of the focus group discussion technique..... | 41 |
| Figure 9 Smart city programs influencing Ease of Living | 44 |
| Figure 10 Smart City Core Dimensions | 46 |
| Figure 11 Ease of Living and Smart City Relationship | 49 |
| Figure 12 Independent Variables and Dependent Variables | 54 |
| Figure 13 Average Importance Level for Smart City Maturity | 61 |
| Figure 14 SEM Path Analysis (people participation) | 80 |
| Figure 15 SEM Path Analysis (technology infrastructure) | 81 |
| Figure 16 SEM Path Analysis (institutional robustness) | 82 |
| Figure 17 Smart City Conceptual Framework | 84 |
| Figure 18 Ease of Living Pivot | 84 |
| Figure 19 Research flow | 96 |
| Figure 20 Framework of start-up ecosystem in smart cities | 105 |
| Figure 21 Pillar-2 of the framework for startup ecosystem | 108 |
| Figure 22 Urban development clusters & spatial development | 109 |
| Figure 23 Atal Innovation Mission | 113 |
| Figure 24 Subsistence economy (SB) to Knowledge driven economy (KD) | 114 |
| Figure 25 Role of Mobile Governance in Smart Cities..... | 120 |
| Figure 26 Mobile App Stakeholders in Smart Cities | 121 |

LSIT OF TABLES

| | |
|---|-----|
| Table 1 Indian specific city governance in smart city..... | 25 |
| Table 2 Indian specific technology in smart city | 27 |
| Table 3 Research problem, research questions, research objectives and methodology mapping | 35 |
| Table 4 Standard Fitness Indices | 37 |
| Table 5 Salient feature of Focus Group Discussion..... | 39 |
| Table 6 Mapping between Smart city mission and Ease of Living..... | 46 |
| Table 7 Smart City Rank and Ease of Living (2018) Rank | 48 |
| Table 8 Dependent Variables and Independent Variables | 52 |
| Table 9 Dependent Variables - People Participation, Technology Infrastructure and Institutional Robustness .. | 55 |
| Table 10 Qualitative responses | 62 |
| Table 11 Demographic profile of respondents..... | 63 |
| Table 12 Estimation of Cronbach’s alpha..... | 64 |
| Table 13 Estimation of VIF | 65 |
| Table 14 Estimation of LF, AVE, CR, and MSV | 68 |
| Table 15 Discriminant validity test..... | 71 |
| Table 16 Fit Index for People Participation | 73 |
| Table 17 Fit Index for Technology Infrastructure..... | 74 |
| Table 18 Fit Index for Institutional Robustness..... | 75 |
| Table 19 Detailed results | 75 |
| Table 20 Summary of Dependent and Independent Variable | 83 |
| Table 21 Smart City Rank and Ease of Living Rank..... | 123 |
| Table 22 Qualitative Analysis of Top 10 Indian Smart Cities with respect to Ease of Living 2018 | 129 |
| Table 23 Qualitative Analysis of Top 11-20 Indian Smart Cities with respect to Ease of Living 2018..... | 133 |
| Table 24 Mobile Governance in Smart Cities for Ease of Living..... | 138 |
| Table 25 Summary of Insights and Recommendations..... | 147 |
| Table 26 SWOT Analysis | 151 |

LIST OF ABBREVIATIONS

| | |
|-----------|--|
| AHP | Analytical Hierarchy Processing |
| AMRUT | Atal Mission for Rejuvenation and Urban Transformation |
| API | Application Programs Interface |
| CBO | Community Based Organizations |
| e-service | Electronic services |
| FDI | Foreign Direct Indicator |
| G2B | Government To Business |
| G2C | Government To People |
| G2G | Government To Government |
| GDP | Gross Domestic Product |
| GLCI | Global Liveable Cities Index |
| GPS | Global Positioning System |
| ICT | Information Communication Technology |
| IOC | Intelligent Operations Center |
| IoT | Internet of Things |
| IPO | Initial Public Officer |
| IT | Information Technology |
| ITS | Intelligent Transport System |
| JAM | Jandhan Aadhar Mobile |
| JNNURM | Jawaharlal Nehru National Urban Renewal Mission |
| KPI | Key Performance Indicators |
| M&A | Merger & Acquisition |
| MCDA | Multi Criteria Decision Analysis |
| MoHUA | Ministry of Housing and Urban Affairs |

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| OPGRS | Online Public Grievance Redressal System |
| RFID | Radio Frequency Identification |
| SCM | Smart City Mission |
| SCP | Smart City Proposal |
| SDG | Sustainable Development Goal |
| SEM | Structural Equation Modelling |
| SIDS | Small Island Developing States |
| SME | Subject Matter Expert |
| TMF | Tele Management Forum |
| ULB | Urban Local Body |
| UN | United Nations |