EXPLORING INFLUENCING FACTORS IN THE INDIAN REAL ESTATE SECTOR FROM A PROCESS STANDARDISATION PERSPECTIVE

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APRIL 2019

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by

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Submitted

in fulfilment of the requirements of the degree of Doctor of Philosophy

to the

INDIAN INSTITUTE OF TECHNOLOGY DELHI

APRIL 2019

CERTIFICATE

This is to certify that the thesis titled "EXPLORING INFLUENCING FACTORS IN THE INDIAN REAL ESTATE SECTOR FROM A PROCESS STANDARDISATION PERSPECTIVE" being submitted by Kamal K Mukherjee to the Indian Institute of Technology, Delhi for the award of a degree of Doctor of Philosophy is a bona fide record of the research work carried out by him under our supervision and guidance. The thesis work, in our opinion, has attained the requisite standard for fulfilling the requirements of the said degree. The results contained in this thesis have not been submitted in part or full to any other University or Institute for award of any degree or diploma.

Kiyer 04/04/2019

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ACKNOWLEDGEMENTS

There is a galaxy of people whose contribution into this piece of research must be acknowledged.

First, my supervisors, Prof K C Iyer and Prof Anil Sawhney, who never let their guidance, support and interest flag, in me or the research, despite my work commitment taking me out of the research for considerable periods of time. I owe an enormous lot to them. Without them, the work could not have been completed.

Next, the stakeholders who made themselves available for interaction during the course of this research. As most of them were new acquaintances, it was extremely helpful, even magnanimous on their part, to have made themselves available for extended periods of time for the research. To nearly 200 stakeholders who gave a compete response to the web-based questionnaire that is known to have taken at least 45 minutes, I owe an extra measure of gratitude.

Among stakeholders I had interacted with are those who served as nuclei, not just for ideas but also for leading me to more people in their network. I count Prof Sunil Agarwal of RICS in Amity University, NOIDA and my cousin Mr Rajiv Banerjee, a graduate in Civil Engineering from IIT-BHU (Varanasi) and currently a faculty in a prominent educational institution, as the foremost among them. At times when I struggled to find more people who could take the web-based survey and pestered them to find me more potential respondents, they were always forthcoming with fresh names of people I could interact with. Mr Mahesh Durgi from DLF also similarly rallied people from his own network.

Though not quite in the same age bracket, my fellow research scholars provided help far beyond what would normally be expected. When, for example, the stakeholder base for responses to the questionnaire threated to have hit a ceiling, they connected me to many from their own networks who related to the Real Estate sector. Very much in the same age class were Dr Partha S Banerjee and Dr Dhruba Purukayastha, both of whom had completed their research efforts in recent times. Nuggets of wisdom they shared have been of immense value. I make a special note of thanks for Dr Banerjee for sharing insights into statistical analysis that helped me break ground.

To the institution of IIT Delhi I owe a special note of gratitude for providing me the opportunity to pursue this research. Having been through the system during my undergraduate days I now become doubly indebted to the IIT system.

Finally, I thank my parents, and my wife and daughter- the former for having taught me to struggle, and the latter for being fellow-participants in that struggle. With this research keeping me unavailable to them for extended periods of time, it is to them that I dedicate this work.

Kamal Kumar Mukherjee
New Delhi, India
4th April 2019

ABSTRACT

A perceived uniqueness of real estate (RE) projects has led to a view among RE practitioners that since no two RE projects are the same, they must all follow their own unique set of processes. Further, local exigencies often result in the very processes agreed at the beginning of every project being changed, thereby making projects unpredictable for delivery within time and budget, or to standards of quality expected. Maintaining the need to follow pre-defined standard processes in RE operations, this research establishes the efficacy of adopting process standardisation while executing RE operations.

in building the case for adopting process standardisation, the current research extends the paradigm shift from function to process unfolding in several industries and explores the potential of standardisation in this process-centric approach using generic process formulations and specific possibilities in the context of RE operations. The research integrally also considers how an operations regime in the RE sector based on processes and their standardisation could be helped by two impactful developments in information and communication technologies (ICTs): rising affordability of ICT devices, and ubiquity of high-bandwidth ICT networks. Further, the research provides justification for adopting a digitally-enabled approach based on process standardisation by relating it to key RE sector objectives, formulated from a sector competitiveness viewpoint.

The research methodology adopted initially focuses on two converging tracks with the first accessing relevant sector competitiveness literature to formulate RE sector objectives. Retaining the process standardisation perspective, the second track synthesises findings from existing literature on process standardisation with a qualitative interpretive analysis of semi-structured interviews with 30 Indian RE sector practitioners working at levels of consequence, to comprehensively identify a clutch of inhibiting (12) and enabling (14) variables that would matter from a standpoint of processes and their standardisation. With a nation-wide survey of adequate sample strength, the research then seeks stakeholder views on how the identified variables relate to each of the sector objectives formulated. A rigorous Principal Components Analysis is then deployed on survey responses to identify, for each of the RE sector objectives, possible combination of factors that would impact

each RE sector objective. In the next step, another round of stakeholder consultation is used to select the most suitable set of factors for every RE objective as understood by a third set of stakeholders with long-standing hands-on experience in the Indian RE sector.

In the final phase of this research, activities to be executed on ground are proposed to realise ideas emerging from this work. This is accomplished by building an equivalence between RE sector, where standardised process-based operations are sought to be implemented in a whole-of-sector approach, to similar efforts in the public sector where, worldwide, whole-of-government initiatives from an operations perspective has acquired momentum and is being pursued by many national governments across the globe. Relating RE sector operations from a process standardisation perspective with the public sector leads to nine intervention directions for the RE sector. Drawing a link between RE sector operations and WoG initiatives in the public sector also leads to associating a relative importance with each of the intervention directions separately for each of the four RE sector objectives formulated, as well as for all the objectives considered together.

Four objectives including growth and profitability, predictability and quality of operations, availability and deployment of skilled human resources, and governance, are identified for the RE sector. The findings clearly show standardisation of processes and associated attributes as an influencing factor for all the sector objectives formulated. They also show that standardisation of attributes associated with processes and availability of digital infrastructure and utilities are key enablers for process standardisation efforts in the RE sector.

This work extends the earlier research to shift from a function to process orientation in RE and bridges research gaps in the formulation of objectives for RE sector and establishing a connection between the synergistic adoption of processes, their standardisation, and technology with RE sector objectives. The research work also proposes broad intervention directions for activities that must be executed on ground to realise ideas emerging from this work.

सार

रियल एस्टेट (RE) परियोजनाओं की कथित विशिष्टता ने RE व्यवसायियों के बीच एक दृष्टिकोण पैदा किया है कि चूंकि कोई दो RE परियोजनाएं समान नहीं हैं, इसलिए उनके सभी प्रक्रियाओं को अपने अद्‌वितीय सेट का पालन करना चाहिए। इसके अलावा, स्थानीय आवश्यकताओं के परिणामस्वरूप अक्सर हर परियोजना के शुरू होने पर सहमत हुई प्रक्रिया भी परिवर्तित की जाती है, जिससे परियोजनाएं समय और बजट के भीतर वितरण के लिए प्रतिकूल हो जाती हैं, या उनसे अपेक्षित गुणवत्ता नहीं मिल पाता है। RE संचालन में पूर्व-निर्धारित मानक प्रक्रियाओं का पालन करने की आवश्यकता को बनाए रखते हुए, यह शोध RE संचालन को निष्पादित करते समय प्रक्रिया मानकीकरण को अपनाने की प्रभावकारिता स्थापित करता है।

प्रक्रिया मानकीकरण को अपनाने के मामले में, वर्तमान शोध कई उद्‌योगों में सामने आने वाली फ़ंक्शन (function) से प्रक्रिया (process) की ओर बदलाव को विस्तृत करता है और RE प्रक्रिया के संदर्भ में सामान्य प्रक्रिया योगों और विशिष्ट संभावनाओं का उपयोग करते हुए इस प्रक्रिया-केंद्रित दृष्टिकोण में मानकीकरण की क्षमता का पता लगाता है। यह अनुसंधान अभिन्न रूप से यह भी मानता है कि प्रक्रियाओं और उनके मानकीकरण के आधार पर RE क्षेत्र में एक संचालन शासन कैसे सूचना और संचार प्रौद्‌योगिकी (ICT) में दो प्रभावशाली घटनाक्रमों से मदद प्राप्त कर सकता है: ICT उपकरणों की घटती कीमतों, और उच्च बैंडविड्‌थ ICT नेटवर्क की सर्वव्यापकता। इसके अलावा, अनुसंधान एक प्रतिस्पर्धात्मक दृष्टिकोण से तैयार किए गए प्रमुख RE क्षेत्र के उद्‌देश्यों से संबंधित होकर, मानकीकरण-सक्षम दृष्टिकोण को अपनाने का औचित्य प्रदान करता है।

शुरू में अपनाई गई अनुसंधान पद्‌धति दो अभिसरण पटरियों पर केंद्रित है, जिसमे से पहला प्रासंगिक क्षेत्र प्रतिस्पर्धात्मक के दृष्टि से RE सेक्टर के उद्‌देश्यों को परिभाषित करता है। प्रक्रिया मानकीकरण के दृष्टिकोण को बनाए रखते हुए दूसरी पटरी प्रक्रिया मानकीकरण पर मौजूदा साहित्य से अर्द्‌ध-संरचित साक्षात्कार के गुणात्मक व्याख्यात्मक विश्लेषण के साथ निष्कर्षों का संश्लेषण करता है, जिसके अंतर्गत प्रभावशाली स्तरों पर काम करने वाले 30 भारतीय RE क्षेत्र के व्यवसायियों से अवरोध (12) और सक्षम (14) बनाने वाले चर की पहचान करता है जो प्रक्रियाओं और उनके मानकीकरण के दृष्टिकोण से मायने रखते हैं। पर्याप्त नमूना शक्ति के एक राष्ट्रव्यापी सर्वेक्षण के साथ, अनुसंधान तब stakeholders से विचार करता है कि कैसे पहचाने गए चर सेक्टर के प्रत्येक उद्‌देश्यों से संबंधित हैं। एक व्यापक प्रिंसिपल कंपोनेंट एनालिसिस के सहारे RE सेक्टर के उद्‌देश्यों के लिए, प्रत्येक RE सेक्टर के उद्‌देश्य को प्रभावित करने वाले

कारकों (factors) के संभावित समूहों की पहचान की जाती है। अगले चरण में, प्रत्येक RE सेक्टर उद्देश्य के लिए कारकों के सबसे उपयुक्त सेट का चयन करने के लिए stakeholder परामर्श का एक और दौर उपयोग किया जाता है, जिसके अंतर्गत भारतीय RE sector में लंबे समय से कार्यरत stakeholders द्वारा समझा जाता है।

इस शोध के अंतिम चरण में, इस कार्य से उभरने वाले विचारों को कार्यान्वित करने के लिए जमीन पर निष्पादित होने वाली गतिविधियों का प्रस्ताव है। यह RE क्षेत्र एवं सार्वजनिक क्षेत्र के बीच एक समानता का निर्माण करके पूरा किया जाता है। जहाँ एक ओर RE क्षेत्र में मानकीकृत प्रक्रिया-आधारित संचालन को पूरे क्षेत्र के दृष्टिकोण में लागू करने की मांग की जा रही है, वहीँ सार्वजनिक क्षेत्र में समान प्रयासों के अंतर्गत दुनिया भर में सरकार की ओर से संपूर्ण पहल संचालन (Whole-of-Government अथवा WoG) के दृष्टिकोण ने गति प्राप्त कर ली है और कई राष्ट्रीय सरकारों द्वारा इसका अनुसरण किया जा रहा है। सार्वजनिक क्षेत्र के साथ तुलना के परिणामस्वरूप प्रक्रिया मानकीकरण के दृष्टिकोण से RE क्षेत्र के संचालन से संबंधित RE क्षेत्र के लिए नौ(9) हस्तक्षेप निर्देश सुझाएँ गएँ हैं । RE में पूरे क्षेत्र के दृष्टिकोण और सार्वजनिक क्षेत्र में WoG के बीच एक कड़ी आकर्षित करने से प्रत्येक RE सेक्टर उद्देश्य के लिए, और संपूर्ण सेक्टर के लिए, अलग-अलग हस्तक्षेप दिशाओं के बीच तुलनात्मक महत्व का भी अनुमान लगाया गया है।

RE सेक्टर के लिए (a) विकास और लाभप्रदता, (b) पूर्वानुमान एवं उपलब्धता, (c) कुशल मानव संसाधनों की उपलब्धता और तैनाती, और (d) प्रभावी शासन पद्यति सहित चार उद्देश्यों की पहचान की जाती है। निष्कर्ष स्पष्ट रूप से तैयार किए गए सभी क्षेत्रों के उद्देश्यों के लिए एक कारक के रूप में प्रक्रियाओं और संबंधित विशेषताओं के मानकीकरण को दिखाते हैं। वे यह भी बताते हैं कि RE क्षेत्र में प्रक्रिया मानकीकरण प्रयासों के लिए डिजिटल बुनियादी ढांचे और डिजिटल उपयोगिताओं की उपलब्धता प्रमुख प्रवर्तक हैं।

यह शोध RE क्षेत्र में फ़ंक्शन-उन्मुख से प्रक्रिया-आधारित कार्य प्रणाली हेतु पहले के शोध का विस्तार करता है एवं RE क्षेत्र के उद्देश्यों के साथ प्रक्रियाओं, उनके मानकीकरण, और प्रौद्योगिकी के तालमेल को अपनाने के बीच संबंध हेतु शोध में त्रुटियों को भी आंशिक रूप से भरता है। यह शोध भविष्य की गतिविधियों के लिए व्यापक हस्तक्षेप दिशाओं का प्रस्ताव रखता है जिन्हें इस कार्य से उभरने वाले विचारों को कार्यान्वित करने के लिए जमीन पर निष्पादित किया जाना चाहिए।

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ABBREVIATIONS

AGIMO	Australian Government Information Management Office
ASSOCHAM	Associated Chambers of Commerce of India
BIM	Building Information Modelling
BPR	Business Process Re-engineering
BPS	Business Process Standardisation
CIO	Chief Information Officer
CMM	Capability Maturity Model
CRC	Cooperative Research Centre for Construction Innovation
GDP	Gross Domestic Product
GoAU	Government of Australia
IBEF	India Brand Equity Foundation
ICT	Information and Communication Technology
IMF	International Monetary Fund
IMSC	Information Management Strategy Committee
ISO	International Standards Organisation
JIT	Just-in-Time
KMO	Kaiser-Meyer-Olkin
NatBACC	National Building and Construction Committee
OECD	Organization of Economic Cooperation and Development
PCA	Principal Component Analysis
RE	Real Estate
RE-OB	Real Estate Sector Objective
RERA	Real Estate Regulation Act 2016
RICS	Royal Institute of Chartered Surveyors
SAAS	Software-as-a-Service
SEI-CMM	Software Engineering Institute's Capability Maturity Model
SIC	Standard Industry Classification
SME	Small and Medium Enterprises
SPICE	Structured Process Improvement in Construction Enterprises
TQM	Total Quality Management
UN	United Nations
UNPAN	United Nations Public Administration Network
WoG	Whole-of-Government