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

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

by

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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.

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Kamal Kumar Mukherjee
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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.
रियल एस्टेट (RE) परियोजनाओं की कठिन विशिष्टता ने RE व्यवसायियों के बीच एक इल्युक्तिक नेटवर्क बनाया है कि चूंकि कोई भी RE परियोजना समान नहीं है, इसलिए उनके सभी प्रक्रियाओं को अपने अद्वितीय सेट का पालन करना चाहिए। इसके अलावा, स्थानीय आवश्यकताओं के परिणामस्वरूप अक्षर 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 शौच RE संचालन को निपटाने दर्ज करते समय प्रक्रिया मानकीकरण को अपनाने की प्रभावकारिता स्थापित करता है।

प्रक्रिया मानकीकरण को अपनाने के मामले में, वर्तमान शोध कई उद्योगों में समाने आने वाली फंकशन (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 इल्युक्तिक में मानकीकरण की क्षमता का पता लगाता है। यह अनुसंधान में सामान्य रूप से यह भी मानता है कि प्रक्रियाओं और उनके मानकीकरण के आधार पर RE क्षेत्र में एक संचालन शासन कैसे सृजित और संचार प्रौद्योगिकी (ICT) में दो भावनात्मक घटनाक्रमों से मदद प्राप्त कर सकता है: ICT उपकरणों की घटनी कीमतों, और उच्च बैंडविड्ड ICT नेटवर्क की सर्वव्यापकता। इसके अलावा, अनुसंधान एक प्रतिस्पर्धी मानकीकरण इल्युक्तिक से तैयार किए गए प्रमुख RE क्षेत्र के उद्देश्यों से संबंधित होकर, मानकीकरण-सक्षम इल्युक्तिक को अपनाने का औपचारिक आधार करता है।

शुरू में अपनाई गई अनुसंधान पद्धति दो अभिसरण पटरीयों पर केंद्रित है, जिसमें से पहला प्रारंभिक क्षेत्र प्रतिस्पर्धात्मक के हिस्से से RE सेक्टर के उद्देश्यों को परिभाषित करता है। प्रक्रिया मानकीकरण के इल्युक्तिकों को बनाए रखते हुए दूसरी पटरी प्रक्रिया मानकीकरण पर मौजूद साहित्य और प्रबंधकों से संबंधित साक्षात्कार के गुणात्मक व्याख्यात्मक विश्लेषण के साथ निष्कर्षों का संशोधन करता है, जिसके अंतर्गत प्रभावशाली स्तरों पर काम करने वाले 30 भारतीय RE क्षेत्र के व्यवसायियों से अवस्थान (12) और सक्षम (14) बनाए रखने वाले चर की पहचान करता है। पर्याप्त नमूना शक्ति के एक राष्ट्रीय परिवर्तन के साथ, अनुसंधान तब stakeholders से विचार करता है कि कैसे पहचाने गए चर सेक्टर के प्रत्येक उद्देश्यों से संबंधित हैं। एक व्यापक प्रिसिपल कंपनी 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 परिणाम करके पूरा किया जाता है। जहाँ एक और RE क्षेत्र में मानकीकृत प्रक्रिया-आधारित संचालन को पूरे क्षेत्र के रूप में लागू करने की मांग की जा रही है, वहीं सार्वजनिक क्षेत्र में समान प्रयासों के अंतर्गत दुनिया भर में सरकार की ओर से संपूर्ण पहल संचालन (Whole-of-Government अथवा WoG) के स्थितियों में 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 रूप में संचालन से संबंधित RE क्षेत्र के लिए नौ(9) हस्तक्षेप निर्देश जुड़ाए गए हैं। RE में पूरे क्षेत्र के रूप 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) केंद्र कारक संसाधनों की उपलब्धता और तैनाती, और (d) प्रभावी शासन पद्धति सहित चार उद्देश्यों की पहचान की जाती है। निष्पादन स्पष्ट रूप से तैयार किए गए सभी क्षेत्रों के उद्देश्यों के लिए एक कार्य के रूप में प्रक्रियाओं और संबंधित विशेषताओं के मानकीकरण का दिखाई देता है। यह भी बताते हैं कि RE क्षेत्र में प्रक्रिया मानकीकरण प्रयासों के लिए डिजिटल बुनियादी ढांचे और डिजिटल उपयोगिताओं की उपलब्धता प्रमुख प्रार्थक है।

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