DEVELOPMENT OF AN OVERALL CONSTRUCTION PRODUCTIVITY ASSESSMENT FRAMEWORK AND AN IMPROVEMENT MODEL

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The construction sector is one of the most vital industries in a nation as it directly assesses the populace's necessities. Globally, the construction industry is among the top five trades, contributing significantly to the national Gross Domestic Product (GDP) yet due to its complexity and high frequency of unanticipated occurrences, the sector relies on labour input more than any other major contributor to the national GDP. Further, the assessments on construction productivity were found to be regionalised, making them inapplicable to local or distinct settings.

In response to the aforementioned factors, the current study has established a unique evaluation of the context of construction productivity based on a global systematic examination of 130 distinct studies, dividing the world into 9 distinguishable regions of, 1. Australia-New Zealand Region; 2. North American Region; and 3. Eastern Asian/Russian Region. 4. Middle East Region, 5. European Region, 6. Southeast Asian Region, 7. South Asian Region, 8. South American Region, and 9. African Region. Consequently, a set of productivity benchmarks has been constructed from the same literature to analyse 915 various characteristics that contribute to a lack of construction productivity in the worldwide context into the 50 most prominent aspects, as determined by the above systematic analysis. The scrutiny was conducted using a framework based on the concepts of Pareto Analysis and Frequency Analysis, where factors were assigned in accordance with the scope of each benchmark, based on Pareto Analysis, and the most prominent characteristics of each factor under the benchmark were enumerated using the frequency approach.

Accordingly, the results have been tailored for the Sri Lankan context through a cross-sectional survey of 117 stakeholders, ranging from executive project managers to labourers, culminating in a ranking of the most prevalent criteria for the Sri Lankan context. Using Pareto and Fuzzy Analysis techniques, the study has successfully mitigated the most crucial component in evaluating construction productivity in a global construction context, namely the subjectivity of evaluation, while also taking into account the interdependence of benchmarks through the utilisation of dedicated Fuzzy Analyses and Interdependence Assessment Frameworks, respectively.

As the study's final deliverable, the 20 most prevalent factors were considered, and a measuring methodology of productivity and improvement model for each was introduced based on case studies and literature available on each aspect (137 Studies), allowing users or practitioners to adapt and improve productivity at the corresponding venues, achieving the study's ultimate goal of developing a globally adaptive, overall construction productivity assessment framework and an improvement model for the Sri Lankan Construction Context.

Keywords: Productivity, Pareto, Fuzzy, Interdependence, Enhancement

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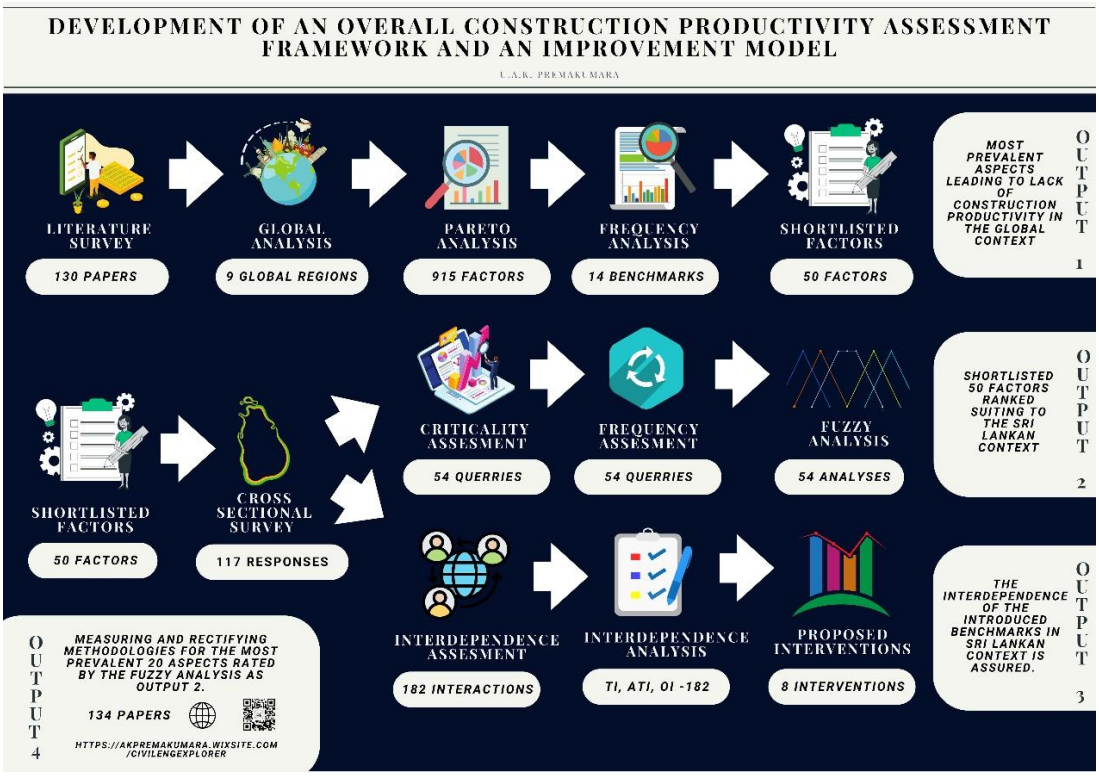
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U.A.K. PREMAKUMARA
LITERATURE SURVEY
130 PAPERS
GLOBAL ANALYSIS
9 GLOBAL REGIONS
PARETO ANALYSIS
915 FACTORS
FREQUENCY ANALYSIS
14 BENCHMARKS
SHORTLISTED FACTORS
50 FACTORS
MOST PREVALENT ASPECTS LEADING TO LACK OF CONSTRUCTION PRODUCTIVITY IN THE GLOBAL CONTEXT
OUTPUT 1
SHORTLISTED FACTORS
50 FACTORS
CROSS SECTIONAL SURVEY
117 RESPONSES
CRITICALITY ASSESMENT
54 QUERRIES
FREQUENCY ASSESMENT
54 QUERRIES
FUZZY ANALYSIS
54 ANALYSES
SHORTLISTED 50 FACTORS RANKED SUITING TO THE SRI LANKAN CONTEXT
OUTPUT 2
INTERDEPENDENCE ASSESMENT
182 INTERACTIONS
INTERDEPENDENCE ANALYSIS
TI, ATI, OI -182
PROPOSED INTERVENTIONS
8 INTERVENTIONS
THE INTERDEPENDENCE OF THE INTRODUCED BENCHMARKS IN SRI LANKAN CONTEXT IS ASSURED.
OUTPUT 3
OUTPUT 4
MEASURING AND RECTIFYING METHODOLOGIES FOR THE MOST PREVALENT 20 ASPECTS RATED BY THE FUZZY ANALYSIS AS OUTPUT 2.
134 PAPERS
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