

INVESTIGATING ORGANIZATIONAL CAPABILITY VIS-À-VIS HUMAN ACTION TO MINIMIZE POST-CONTRACT TRANSACTION COSTS IN D&B PROJECTS

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1 RESEARCH RATIONALE

- Traditional construction management practice is found wanting when it comes to addressing the issue of *managing benefits realization* on a project.
- The traditional *requirements capture task* that is linked to the client's brief is still dominant - all too often undertaken mainly as a phase-static pre-construction output. Lacking systems integration and value-based denominators to underline it as a whole lifecycle *benefits realization process*.
- Benefits realization is a context-specific and emergent concept, and the premise for this work is that benefits can be enhanced based on adopting the generic Integrative Dynamic Benefits Realization Framework (IDBRF) as proposed by Gomez and Raji (2015) for the construction industry.
- The generic IDBRF is to be developed into a definitive Integrative Dynamic Benefits Realization Model (IDBRM) based on specific targeted benefits that have been prioritised. The functioning of the IDBRM is based on Structuration Theory (initially proposed by Kagioglou and Tzortzopoulos, 2016), wherein focused action (agency) to maximize benefits is sustained through the dynamic project team structure and vice-versa.

2 DEVELOPMENT OF THE SPECIFIC IDBRM FOR MINIMIZING PTC

- This work examines the construction project team's capability to minimize post-contract transaction costs (PTCs) arising within specifically that of D&B projects, focusing on the human factors aspect of the project team - particularly that of team commitment and team competency; and proposes a specific benefits realization model with respect to minimizing PTCs.
- The epistemological basis for this work is embedded within Lean Production Theory (Koskela, 2000), wherein knowledge or action in production is to be premised on principles related to minimizing waste and maximizing value.
- PTCs are the costs incurred after the contract has been signed but before the entire transaction has been completed. PTCs such as conflict and disputes in the construction industries of many countries inflict a high cost to the industry.
- It is evident that the "innovative" D&B organizational structures have a tendency to "degenerate" into hybrid forms apparently to take advantage of markets and avoid hierarchies, aiming to minimize costs. This can compromise process efficiencies (ignoring 'value' considerations) and "trigger" additional TCs.

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- PTCs for Design-Build (D&B) in most developed countries range between 3.4% and 14.3% of the total project costs. In Malaysia, it is an average of 9% of the total project costs.

3 RESEARCH AIM AND METHODOLOGY

- This work specifically examines the relationship between D&B contractors’ team-competency (CPT), team-commitment (CMT), and PTCs in the Malaysian construction industry (see Figure 1). The final specific IDBRM is validated based on mediating effect of Benefits Realization Management (BRM) to enhance minimization of PTCs.
- The observable constructs of the dependent and independent variables were identified from extant literature and finalized through a Delphi survey with D&B experts, and the research conceptual framework was framed as in Figure 1.
- The data for analysis was collated from a survey conducted with 231 G7 (highest grade of registered contractors) D&B contractors in Malaysia and analysed using SmartPLS 3 with respect to the relevant hypotheses that were formulated.

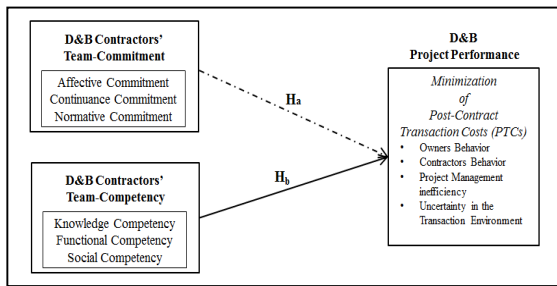


Figure 1: Conceptual framework

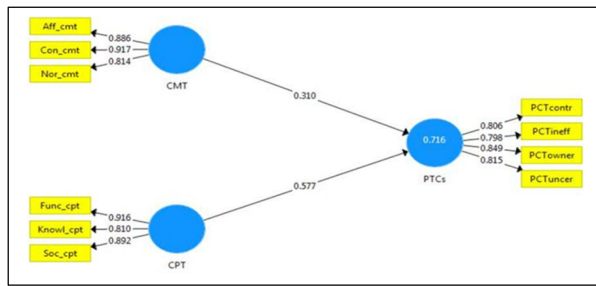


Figure 2: Final measurement model

4 RESEARCH FINDINGS AND CONCLUSION

- The findings indicate that D&B contractor team-commitment overall has a positive and significant relationship with PTCs (see Figure 2), path coefficient shows ($\beta= 0.310$, t-value (4.220)>1.96). Whilst D&B contractor team-competency indicates a strong positive and significant relationship with PTCs ($\beta= 0.577$, t-value (8.258) >1.96). The path coefficient (β) and the significance values in testing the hypotheses are shown in Table 1.
- The findings confirm that *affective* commitment of D&B contractors' team to be the most significant factor towards minimizing PTCs, indicating the extent to which the behavioural component impacts on construction project performance.

Table 1: Results of Hypothesis Testing

Hypothesis	Relationships	Path Coefficient	T Statistics	P-value	Decision
H1	A_CMT -> PTCs	0.596	9.614	0.000	Supported
H2	C_CMT -> PTCs	0.014	0.211	0.833	Not supported
H3	N_CMT -> PTCs	0.333	5.282	0.000	Supported
H4	K_CPT -> PTCs	0.375	7.207	0.000	Supported
H5	F_CPT -> PTCs	0.268	6.706	0.000	Supported
H6	S_CPT -> PTCs	0.354	6.256	0.000	Supported

Level of significance: * p<0.10 **p<0.05 ***p<0.01

- The finding of this research also affirms the role of human agency in the BR process. Further work confirms the *mediating* effect of BRM validating the specific IDBRM.

