

A STUDY ON DECISION CRITERIA FOR
ASSESSING CONSTRUCTION READINESS OF
HIGHWAY PROJECTS

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SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and, in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Master of Science.

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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ABSTRAK

Kesan kegagalan menyiapkan projek pembinaan lebuh raya mengikut masa yang ditetapkan tidak terhad kepada industri pembinaan tetapi juga mempengaruhi keadaan ekonomi dan sosial sesebuah negara. Di samping itu, kegagalan menyiapkan projek pembinaan lebuh raya mengikut masa yang ditetapkan di seluruh negara telah mengurangkan keyakinan pelabur asing serta keyakinan komuniti perniagaan tempatan. Salah satu faktor yang menyebabkan projek gagal disiapkan mengikut masa yang ditetapkan ialah pasukan projek cenderung untuk memulakan pembinaan tanpa menilai tahap kesediaan projek tersebut. Penilaian terhadap tahap kesediaan projek dapat mengelakkan berlakunya kegagalan menyiapkan projek pembinaan mengikut masa. Oleh itu, kajian ini bertujuan untuk mengenal pasti kriteria-kriteria utama (KDC) khusus untuk menilai tahap kesediaan pembinaan projek lebuh raya. Untuk mencapai tujuan tersebut, objektif kajian ini adalah untuk: (1) mengenal pasti kriteria-kriteria untuk menilai tahap kesediaan projek pembinaan lebuh raya; (2) menentukan kriteria-kriteria utama untuk penilaian tahap kesediaan projek pembinaan lebuh raya; dan (3) menilai hubungan antara kriteria-kriteria utama. Skop kajian ini adalah industri pembinaan dengan fokus utama adalah projek pembinaan lebuh raya di Malaysia. Pada fasa I kajian, temubual dengan lima belas orang pemain industri yang mempunyai pengalaman dalam projek pembinaan lebuh raya telah dilakukan dan dianalisis. Kemudian, pada fasa II, data dari 109 soal selidik dianalisis menggunakan analisis purata, teknik normalisasi, ujian perbezaan ketara, dan analisis perbezaan pendapat. Pada fasa III, hubungan antara kriteria-kriteria utama dikaji dengan menggunakan analisis faktor. Sebanyak lapan belas KDC untuk menilai tahap kesediaan projek pembinaan lebuh raya dikenal pasti. Kriteria-kriteria utama tersebut dikategorikan kepada empat kategori; mengurangkan ketidakpastian, ketersediaan sumber, kelulusan dan izin, dan rancangan pengurusan lalu lintas yang mencukupi. Kesimpulannya, kesediaan pembinaan tidak hanya dapat dinilai semasa fasa pelaksanaan, tetapi juga dapat dinilai semasa fasa permulaan. Kriteria-kriteria utama yang dikenal pasti dapat membantu pihak industri untuk menilai projek mereka sebelum memulakan projek pembinaan lebuh raya. Oleh itu, impak dari permulaan pembinaan tanpa persediaan yang mencukupi seperti produktiviti pekerja yang rendah, dan kelewatan pengeluaran dapat dielakkan. Di samping itu, senarai KDC ini dapat membantu penggubal polisi untuk mengambil langkah-langkah yang sesuai untuk mencegah projek pembinaan dimulakan tanpa cukup persediaan serta dapat mengurangkan kelewatan pembinaan. Kesan negatif terhadap pertumbuhan ekonomi dan sosial juga dapat dielakkan. Selain itu, penyelidik dapat menggunakan senarai KDC yang dikenal pasti dan hubungan antara KDC untuk membina alat sokongan keputusan bagi menilai tahap kesediaan pembinaan dalam projek pembinaan lebuh raya.

ABSTRACT

The impact of highway construction delays is not limited to the construction industry but also affects the nation's overall economic and social conditions. In addition, delays in highway projects across the country have seriously eroded the confidence of foreign investors and the local business community. One of the factors that cause delay to highway projects is that project teams tend to rush into construction without assessing the readiness of the project. Adequately assessing the readiness of a project may prevent delay. Therefore, this study aims to identify the key decision criteria (KDC) specifically for assessing the construction readiness of highway projects. To achieve that aim, the objectives are to: (1) identify decision criteria specifically for assessing the construction readiness of highway projects; (2) determine the key decision criteria for construction readiness assessment; and (3) evaluate the relationship between the key decision criteria. The scope of this research is the construction industry with the primary focus being the highway construction projects in Malaysia. In phase I of the study, interviews with fifteen industry practitioners working on highway construction projects are being conducted and analysed. Then, in phase II, data from 109 responses are analysed using the mean ranking technique, normalization, Least Significant Difference (LSD) test, and agreement analysis. In phase III, using factor analysis, the relationships between the key decision criteria are examined. A total of eighteen KDCs to assess the readiness of highway projects are identified. The key decision criteria are grouped into four categories reduced uncertainties, availability of resources, approvals and permits, and adequate traffic management plan. In conclusion, construction readiness not only can be assessed during the execution phase, but it can be assessed during the start-up phase. These identified key decision criteria can help industry practitioners to assess their projects before mobilizing their highway construction project. Hence, avoiding impacts from premature starts such as schedule slippage, poor worker productivity, and production delay. In addition, these KDC can help policymakers to take suitable measures to prevent premature starts and mitigate delays, thus avoiding negative impacts to economic and social growth. Also, researchers can use the identified KDCs and their relationship to develop decision support tool for assessing construction readiness in highway construction projects.

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