ABOUT THE CHAIR

Established in January 2012 under the leadership of Dr. Aminah Robinson Fayek, the IRC in Strategic Construction Modeling and Delivery operates within the Hole School of Construction Engineering in the Department of Civil and Environmental Engineering at the University of Alberta.

The Chair brings together construction industry owners, contractors, and labour groups working in Alberta and across Canada to develop comprehensive, research-based solutions to key industry problems. Giving particular attention to Canada’s oil and gas, utilities, industrial, and commercial construction sectors, the Chair focuses on strategic concerns related to construction management—such as construction industry productivity, project delivery, and performance. Research undertaken includes improvements to labour productivity, structuring projects and teams, assessing owner and contractor competencies, and reducing project execution risk.

The Chair’s research program takes advantage of fuzzy logic’s ability to capture and quantify the many subjective uncertainties that challenge construction projects. Researchers combine fuzzy logic with other forms of uncertainty modeling, artificial intelligence, and simulation techniques to develop advanced decision-support tools and approaches.

PROJECT PARTNERS

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Background

• Construction project performance criteria are uncertain and subjective in nature.
• In the construction industry, competencies can impact the project performance of construction companies.
• The ability to identify and measure competencies is necessary for successful execution of work and leads to enhanced performance of construction projects.

Objectives

• Compile comprehensive list of construction project competencies/performance indicators
• Develop measurable criteria for competencies and performance indicators
• Establish framework to define relationship between competencies and performance
• Develop model to analyze competencies and predict performance

Methodology

- Identify Project Competencies and Performance
  • Review previous research on competencies and performance
  • Identify different competencies and performance indicators
  • Define evaluation criteria and measurement for competencies and performance

- Develop Data Collection Forms
  • Develop appropriate surveys, questionnaires, and data collection forms for measuring project competencies and performance

- Conduct Focus Group Review of Competencies and Performance
  • Set up focus groups to review and verify different competencies and performance indicators in surveys, questionnaires, and data collection forms

- Collect Project Competencies and Performance Data
  • Start data collection from different construction projects

- Test and Analyze Data
  • Aggregate and process data collected from projects to identify relationships between competencies and performance

- Develop and Validate Model
  • Develop a model to predict performance based on current competencies
  • Validate model

Model Capabilities

• Able to measure different competencies and performance indicators for construction projects
• Can identify relationships between competencies and performance indicators

Industry Applications

Applicable outcomes of this study include:
• A process for identifying and measuring construction project competencies and for predicting construction project performance
• A model that construction experts can use to quantify competencies and forecast different performance indicators