STRATEGIC CONSTRUCTION MODELING AND DELIVERY
INDUSTRIAL RESEARCH CHAIR

MODELING CONSTRUCTION ORGANIZATIONAL COMPETENCIES AND PERFORMANCE

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ABOUT THE CHAIR

Established in January 2012 under the leadership of Dr. Aminah Robinson Fayek, the Industrial Research Chair in Strategic Construction Modeling and Delivery operates within 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.

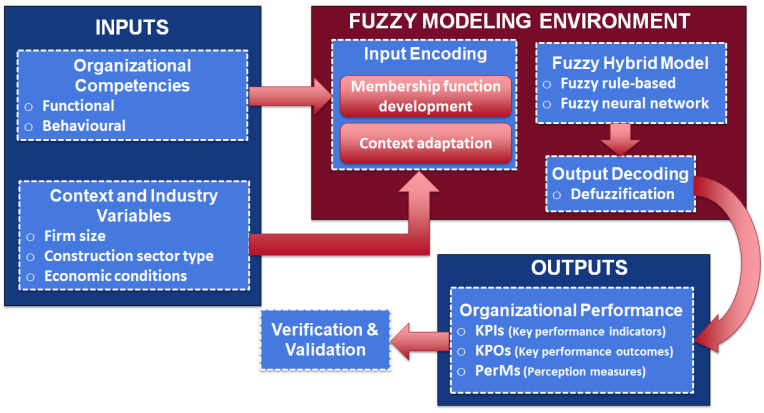
BACKGROUND

- The construction industry is highly uncertain, complex, and dynamic, demanding continuous improvement in quality, productivity, and performance. However, it is often criticized for underperforming compared to other industries due to declining productivity.
- Organizational competencies are combinations of resources, sets of skills, information, and technologies that enable organizations to gain competitive advantages and achieve better performance.
- Therefore, in order to achieve better performance, construction organizations need to explore new approaches to assessing and enhancing their organizational competencies.

OBJECTIVES

- Develop hierarchical categories of organizational competency measures and organizational performance metrics.
- Develop advanced hybrid membership function development approaches.
- Develop a fuzzy hybrid model to analyze organizational competencies and predict performance.
- Develop techniques for adapting both membership functions and the fuzzy hybrid model to different contexts.

FUZZY HYBRID MODEL ARCHITECTURE FOR ORGANIZATIONAL COMPETENCY AND PERFORMANCE



PROJECT PARTNERS

NSERC CRSNG

INDUSTRY APPLICATIONS AND BENEFITS

This study will:

- Identify organizational competencies that lead to improved performance and competitiveness;
- Provide practitioners with a systematic process for measuring and enhancing competencies at organizational and project levels;
- Provide insight on how organizational leaders can improve organizational and project practices to maximize performance and gain competitive advantages; and
- Provide a fuzzy hybrid modeling approach for analyzing competencies and predicting performance.

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