STRATEGIC CONSTRUCTION MODELING AND DELIVERY
INDUSTRIAL RESEARCH CHAIR

COMPREHENSIVE STUDY ON TOTAL PRODUCTIVITY MEASUREMENT ON CONSTRUCTION PROJECTS

Selam Ayele, MEng. Student
Dr. Aminah Robinson Fayek, Supervisor

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.

PROJECT PARTNERS

NSERC CRSNG

COAA Construction Owners Association of Alberta

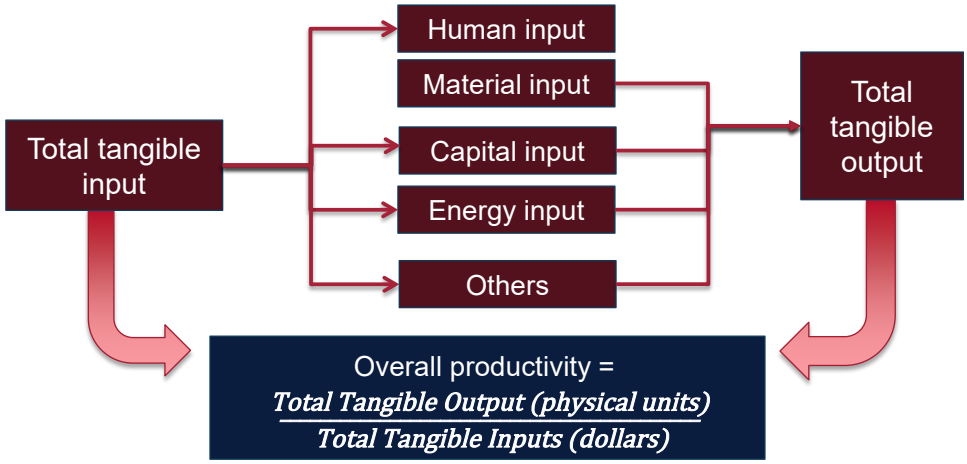
BACKGROUND

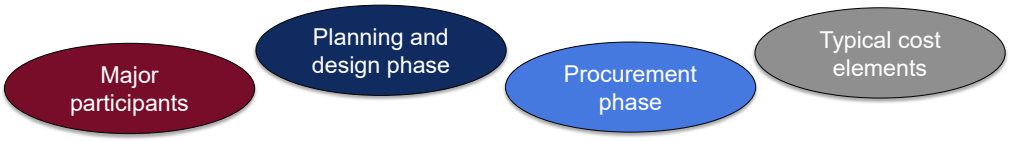
- Past construction productivity studies have focused on single-factor productivity (i.e., labour productivity).
- Single-factor productivity measures have various drawbacks (i.e., an inability to consider the impact of technological and price changes).
- Limitations can be overcome by considering total productivity (takes into account all major inputs in the production process).
- Meaningful measures for overall project success and for effectiveness in utilization of resources can be attained by considering all quantifiable productivity measurement inputs.

OBJECTIVES

- Perform a comprehensive review of existing productivity measurement studies that investigate overall productivity in construction projects.
- Propose measurement metrics that can be used to measure the overall productivity of construction projects by considering the joint impact of all input resources.
- Prepare a practical and detailed framework for measuring productivity at the project level.
- Investigate the applicability of the developed metrics to the construction industry.

DEVELOPMENT OF MEASUREMENT FRAMEWORK





INDUSTRY APPLICATIONS AND BENEFITS

- Provides a framework for overall productivity measurement.
- Highlights overall efficiency in the use of all key input resources.
- Provides a meaningful measure of project performance.

Tel: 780.492.1205 | aminah.robinson@ualberta.ca | uab.ca/stratcon | Twitter: @UAlberta_SCMD
7-203 Donadeo Innovation Centre for Engineering | 9211-116 St. NW | University of Alberta, Edmonton, Alberta, Canada | T6G 1H9