Construction productivity is a key factor in the successful delivery of construction projects, which makes it an ideal subject for modeling. Fuzzy system dynamics (FSD) is a hybrid modeling technique suited to the needs of construction productivity modeling:

- The fuzzy logic element of the modeling technique can capture the subjectivity of construction variables.
- The system dynamics element of the modeling technique has the capacity to capture the dynamism of construction projects (i.e., constantly changing construction variables) and the cause and effect relationships between the factors influencing construction productivity.
- The project-level FSD model of construction productivity will include the different resources of the project (i.e., labour, material, and equipment) to help predict the productivity of construction projects more accurately.

OBJECTIVES

- Identify the factors influencing construction productivity at activity and project levels.
- Develop a hierarchical FSD model of construction productivity at activity and project levels that includes the different resources of construction projects (i.e., labour, material, and equipment).
- Develop activity-level FSD models of construction productivity for two types of the construction activities (i.e., labour-intensive activities and equipment-intensive activities).

METHODOLOGY

Research methodology
INDUSTRY APPLICATIONS

- The model facilitates the management process by allowing managers to track changes in productivity over time throughout the project life cycle (i.e., planning to execution).
- The model facilitates the planning process by allowing planners to predict resource consumption and the productivity of construction projects for different execution plans; as a result, planners can optimize the use of resources by selecting the best execution plan.
- The model contributes to project productivity improvements by allowing managers to test potential productivity improvement strategies during project execution.