Changing the business operations and adopting new operational innovations, have become key factors for a business solution approach. However, there are challenges for renovating business operations due to a lack of the proper decision analysis tools, lack of understanding the impacts transition will have on business operations, and the time limits of the innovation life cycle. The cases of business failure in operational innovation (i.e. Kodak and Borders Group Inc., Company) support the need for an investment decision framework to support the new operational innovation system. This framework (1) must address risk and impacts of competitors and (2) provides a holistic viewpoint of the important factors of the business operations.

This research aims to develop a systematic architecture of operational innovation and a Real Option Dynamic Decision (RODD) framework as a decision support system, to support the decision makers for operational innovations investment. To address the complexity of this environment, this approach first synthesizes the features of operational innovation into the architecture of operational innovation. This development helps business/organization to recognize the need of change in business operations and quickly respond to the market threats or customer needs. The RODD framework is developed by integrating Real Options Analysis (ROA), Matrix of Change, multi-modes Lotka-Volterra, and System Dynamics Modeling to analyze the feasibility of the business operation transition and to assess economic value of new operational innovation during the problem solving phase in that architecture.

Two case studies are used UPS Company and Firefighting Operation to validate the RODD framework. The results show that the benefits of this decision support system are (1) to provide increased flexibility, improved predictions, and more information to decision makers; (2) to assess the value alternative option with regards to uncertainty and competitiveness; (3) to reduce complexity; (4) to gain new understanding of operational innovation; and finally, (5) to support the decision support system as part of business operation development.