

Project Title: Measuring and Management of Complexity in Supply Chain: Perspective from Omani industries
Supervisor's Name: Dr. Sujan Piya
Co-Supervisor(s): (if already known) 1.
Sources of Fund: (if any)

Research Field(s): Supply Chain Management
<p>Increased globalization, shorter product life cycle and rapid technological advancement in the manufacturing as well as service companies necessitates the company to have multiple supply chain partners. The partnership may be physical or virtual, thus making the chain more challenging and complex to manage. Therefore, the present supply chain network is characterized by its complexity, which requires proper management and strategy for its mitigation. To manage the overall supply chain complexity and to make an efficient decision it is important that the manager understand the associated complex interactions within a supply chain, as well as, correct solution method or strategy to mitigate them.</p> <p>This research work will identify generic drivers of supply chain complexity, their interactions and propose solutions methods to manage complexity. In this avenue, mathematical model will be developed to prioritize and measure complexity level of supply chain. Finally, a conceptual framework will be proposed, within the scope of this research that can be used as a guideline by the company to identify drivers responsible for supply chain complexity and provide possible solution method to overcome it.</p>
Keywords: Supply Chain management, Supply chain complexity, Complexity driver, Multi-criteria decision approach
Objectives:
<p>This research work will focus on achieving following objectives:</p> <ul style="list-style-type: none"> - Understand supply chain complexity, especially from the perspective of Omani industry - Identify various complexity drivers based on literature review and expert opinion - Develop mathematical model to prioritize and measure the impact of complexity drivers on supply chain. - Construct a framework to analyse and manage complexity drivers within supply chain network, especially based on the supply chain issues related to Omani industry.
Tentative Methods of Approach:
<ul style="list-style-type: none"> - Questionnaire design, data collection and statistical analysis - Fuzzy method - Multi-criteria decision approach

Required backgrounds and skills
Backgrounds: Supply chain management, Fuzzy method, Multi-criteria decision approach
Computing Skills: Specialized statistical software
Other requirements:

References:
<ul style="list-style-type: none"> • Piya, S., Shamsuzzoha, A., & Khadem, M. (2020). An approach for analysing supply chain complexity drivers through interpretive structural modelling. <i>International Journal of Logistics Research and Applications</i>, 23(4), 311-336. • Bozarth, C.C., Warsing, D.P., Flynn, B.B. and Flynn, E.J. (2009). The impact of supply chain complexity on manufacturing plant performance. <i>Journal of Operations Management</i>, 27 (1), 78–93. • Isik, F. (2010). An entropy-based approach for measuring complexity in supply chains, <i>International Journal of Production Research</i>, 48 (12), 3681-3696.