

The present study develops various supply chain performance models and frameworks for identifying, deriving, modelling, analyzing, comparing issues and improving firms' performance considering supply chain organizations' (SCOs) ecosystem.

The supply chain communications and interactions (*SCCI*) model is developed, which is used to identify and derive the strategic issues and issue attributes of a firm and supply chain members.

The weakness-rationality limits-risk-dissatisfaction (*WRRD*) model is developed based on the rationality-riskiness of the issue attributes of supply chain organizations. The *WRRD* model is used for modelling strategic issues of supply chain organizations considering weakness and rationality limits (of operational and strategic approaches of supply chain organizations), risk (of disruption or not meeting customer requirements arising from the internal and external environment), dissatisfaction (of stakeholders). The model uses the proactive and reactive orientations and management approaches of supply chain organizations that influence a firm's performance. The *WRRD* model is tested using pooled confirmatory factor analysis (PCFA) and structural equation modelling (SEM) technique, using data obtained from eastern India's micro, small and medium manufacturing industries.

A process approach continual improvement (*PACI*) structure is formulated for SCOs, integrating the components of the *WRRD* model and ISO 9004:2018 framework to derive a plan-do-check-act (PDCA) method for continual strategic and operational performance improvement.

Composite performance indices are developed in this study to assess and compare the performances of different supply chain organizations. The various indices developed here are composite issue-orientation indices (*CIOI*), composite issue indices (*CII*), proactive-approach orientation indices (*PAOI*) and reactive-approach orientation indices (*RAOI*) that are used to quantify and compare the firms' performance on various aspects.

A risk integrated strategic supply chain management framework is developed for the SCO's ecosystem based on the supply chain communications and interactions model, weakness-rationality limits-risk-dissatisfaction model, process approach continual improvement structure, and composite performance indices. A multiple regression analysis estimates and predicts a firm's performance based on the aforementioned composite performance indices.

**Keywords:** Composite performance indices, MSME, multiple regression analysis, orientation-performance modelling, pooled confirmatory factor analysis, supply chain organization.