Constructing the Hierarchical Corporate Sustainability Transition Practices within Port and Shipping Industry under Qualitative Information and Complex Interrelationship

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Abstract. The port and shipping industry recognized as an essential sector that enormously contribute for worldwide economy. Port and maritime shipping are crucial for international logistics chains which also benefitted countries' economic growth. Although, port and shipping industry are fundamental for logistics chain; industrial; and economic, the tremendous environmental impact produced by immense port and maritime shipping is not negligible. The development and rapid upsurge of maritime trade caused significant increase of environmental impact including air and water pollution, biodiversity loss, noise and light pollution, and traffic congestion which also negatively influence the public health and safety. Therefore, the port and shipping industry practices are required to be transformed from the traditional shipping perspectives into sustainable shipping operations. A corporate sustainability transition plays an essential role to balance the triple bottom line of social, economic, and environmental dimensions, added with the technological adoption to guide companies in shifting the conventional corporates' activities into sustainable practices. However, numerous criteria included in CST practices and the holistic valid criteria are unknown. This study aims to determine the valid CST attributes from qualitative information and construct a theoretical and hierarchical framework under uncertainties. This study applies the fuzzy Delphi method to validate the reliability of port and shipping industry measures and eliminates invalid and less necessary CST criteria. Moreover, the fuzzy decision-making trial and evaluation laboratory method was used to remove the professional's subjectivity preferences on qualitative information, determine valid attributes, and establish a hierarchical model from the attributes' causal relationship. This study is expected to provides theoretical contributions for CST literature and practical contributions to port and shipping industry's decision makers.

Keywords: Corporate sustainability transition, Port and shipping industry sustainability transition, Fuzzy Delphi method, Fuzzy decision-making trial and evaluation laboratory