

ABSTRACT

During the past few decades, all organisations worldwide have been facing intense competition in a globalised environment. The entrepreneurs who can imbibe the competitive strategies and practices in their organisations are able to thrive in this environment. However, many small and medium scale manufacturing sectors are yet to move in this direction. One among them is the steel manufacturing organisation. Small and Medium Enterprises (SMEs) are contributing largely for the development of economy. They can create more employment with relatively small investments. They are more flexible than their large sized counterparts. But there are certain limitations for SME sector. The technological advancement is relatively low for SMEs. In the globalisation era, SMEs and large sized enterprises are advancing together so that both of them are benefited. However, SMEs have to compete with the large sized organisations in some situations. Hence there should be a focus of acquiring competitive strength.

Researchers and practicing managers have been deriving many new manufacturing techniques and models to attain the competitiveness. Developing a culture of innovation is one of the main techniques in this direction. Many researches indicating the benefits of innovation were reported in the literature. The doctoral work reported in this thesis was begun by conducting a literature survey. During this literature review, the definitions of innovation as reported by various researchers were studied. Innovation studies were reported for various SMEs. The enablers of innovation and the benefits of creating innovative practices were studied during this stage. In spite of the wide acceptance among researchers, the small sized manufacturing organisations belong to steel manufacturing sector need to acquire innovations and innovation practices. The review indicated the absence of a generalized model that would develop the culture of innovation in steel manufacturing SMEs. In order to investigate in

this direction, a model was proposed which would develop an innovation culture in the organisation. The model was named as Innovation Capacity Enhancement System (ICES). The doctoral work reported in this thesis examined the implementation of a model that can create a culture of innovation in steel manufacturing SMEs.

Two reasons favour for concentrating this investigation on steel manufacturing SMEs. Even though technology had improved a lot from industrial revolution, a convincing alternative for the steel wire in construction industry is yet to be popular. The second reason is that, India has secured the 3rd position for largest producer of steel in 2015 and is now planning to improve its position. As the first step of the ICES model, different factors that enable the innovation were identified from the literature. These factors were prioritized by using fuzzy logic approach. During the second step, the inter-relationship of these factors was identified by Interpretive Structural Modeling (ISM). Various strategies were identified for developing the innovation culture in SMEs. These strategies were evaluated by Fuzzy Analytical Network Process (F-ANP) to identify the best strategy for the enhancement of innovation capabilities of steel manufacturing SMEs. After designing the model, its five stages were subjected to implementation studies in three different steel manufacturing SMEs. One organisation was a micro sized organisation, the second organisation was a small sized organisation and the third organisation was of medium sized. The practical feasibility of the ICES model was studied from these organisations. On the whole, the results of the implementation studies indicated that technological innovation is more important for manufacturing SMEs. In addition to this, cooperation is the best strategy that can be followed by the organisations for develop an innovation culture.

On the whole, the doctoral work reported in this thesis has resulted in the development of the ICES model that would guide the steel manufacturing SMEs to develop a culture of innovation in the organisation. In the context of the

observations by the implementation studies, ICES is a practically compatible model. The potential of the model can be further strengthened by the future researchers by conducting investigations in more number of organisations.