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ABSTRACT

A sustainable industrial activity is an emergent requirement of the day. This has created a green revolution in every sphere of industries. Managing technology with a tone to sustainability is a very important aspect of this revolution; hence, there has been a growing interest among firms in the profitable exploitation of their technological assets through implementation of technology management processes. Most developing countries are actively seeking various ways to enhance their economic development and improve the quality of life for their people, and often see technology management as a mechanism to achieve these goals. However, these nations have not yet succeeded in implementing technology management processes because they probably are not aware of the associated critical factors and also they have not yet understood the relationship among these factors. In view of it, there is an urgent need for a framework of important factors associated with technology management to comprehend the relationships among them and take necessary steps accordingly.

Present work has taken a cue from this emerging trend and the research was conducted to model Technology Management Critical Success Factors (CSFs)/enablers by considering Green Practices as one of the most important enablers. Two separate models one without Green Practice and the other with Green Practices has been developed. Seven enablers as critical success factors were skimmed out from a comprehensive literature review. These enablers were modeled for their driving power, power of being driven and being mutually related using a powerful Fuzzy MICMAC integrated Interpretive Structural Modeling (ISM) technique.

To understand the process of technology management with deeper knowhow, one of the phases of technology management i.e. technology transfer has been taken as a particular case out of its' eight phases viz. Forecasting and assessment, planning and strategy, acquisition and development, transfer, adoption and adaptation, diffusion and substitution, utilization and phasing–out. A total of seventeen barriers of technology transfer had been identified by a systematic review of literature and experts' survey. Thirteen levels of hierarchy had been obtained. The model so developed by using Interpretive Structural Modeling was further analysed by using a new approach called Total ISM. The hierarchy of the factors of the model so developed has been discussed in detail.

The results of the modeling of the enablers of the technology management revealed that Technology Innovation is with weak driver and dependence powers. It is an autonomous

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factor. Technology Recipient Characteristics, large and stable demand and the green practices has been classified as dependent factors and has weak driving powers whereas technology supplier characteristics, cross cultural training and relationship characteristics have strong driving and dependence. These factors are called as linkages. Only one factor namely government policies and R&D investment has strong driver and weak dependence powers.

The results of the present study also revealed that with regard to Green Practices being followed in an organization, out of seven CSFs, (i) three CSFs i.e. 'Technology Supplier Characteristics, 'Cross Cultural Training' and 'Relationship Characteristics' have both maximum driving power and dependence on other CSFs, (ii) the sensitivity scores of three important CSFs as driver in decreasing order are 'Relationship Characteristics' (30.6%), 'Large and Stable Demand' (29.8%), and 'Technology Suppliers Characteristics' (17.5%), (iii) the sensitivity scores of three important CSFs as being driven in descending order are 'Technology Innovation' (22.8%), 'Cross Cultural Training' (22.7%), 'Government Policy and Investments' (22.3%), and (iv) the sensitivity scores of three important CSFs as being mutually related in descending order are 'Technology Supplier Characteristics' (19.9%), 'Large and Stable Demand' (19.5%), and 'Technology Innovation' (18.8%). Further, the results also revealed the following: , (i) three important CSFs that get driven by the Green Practices in descending order are 'Technology Innovation', 'Relationship Characteristics' and 'Large and table Demand', (ii) three important CSFs that drive Green Practices in descending order are 'Cross Cultural Training', 'Relationship Characteristics' and 'Large and Stable Demand' and (iii) three important CSFs that are mutually related to Green Practices in descending order are 'Government Policy and Investments', 'Technology Recipient Characteristics' and 'Large and table Demand'.

The research will fail, if it does not address the concerns of the public domain. In the present study, we have tried to address the concerns of the policy makers involved in the process of technology management in general and technology transfer in particular. This research would help the stake holders including industries, government body and decision makers / Niti Ayoge in possible aiding the enablers of technology management and removal of the barriers of technology transfer that are on top in the hierarchy so as to bring the ease to the process of technology management and horizontal and vertical technology transfer respectively. We concluded that the importance of green practices cannot be ignored over the cost-benefit analysis. Also the secondary consumer choice and green practice are also the new areas to work. Technology compliance can be studied further to integrate it with successful technology management process.