"Understanding manufacturing agility from several perspectives"

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Abstract

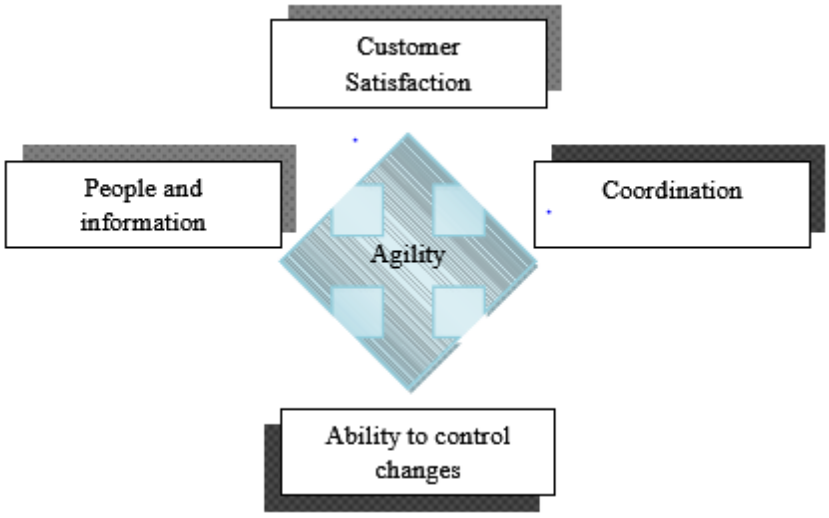
The term manufacturing agility has been the most deliberated paradigm of the manufacturing world in 21ist century. Manufacturing agility can be envisaging as most attractive winning proposition by becoming proactive to changes and turbulence in the firm's external environment. There are evidences worldwide, the manufacturing agility got the potential to bring about dramatic change in overall organizational performance. Therefore, a need is felt to study the various models proposed by the researcher over the years from several perspectives. The extensive literature review was done to get insight into manufacturing agility. The outcome of the research may helpful in modelling agility in Indian automotive SMEs environment.

Keywords: *Agile manufacturing, Automotive Indian SMEs, External environment, Organizational performance.*

Modelling Agility

Different models of organizational agility were proposed over the years by different researchers worldwide

The earliest known preliminary model of agility was proposed by Goldman since inception of word agility in the industrial word in 1990. Model described four key measures of agility namely: Enhancing the customer satisfaction, Co-operation and collaboration to tackle uncertain business environment, enhancing the skills of the people and exploitation of information technology to enhance the competitiveness of the organization, and develop ability to control changes in the external environment [1] (Figure 1).



Sharp and associates proposed a model for manufacturing agility in UK. Model comprise of foundation on the philosophy of world class manufacturing/lean manufacturing, key enablers works as pillars of the model, and finally the roof of the model which represent the final outcome of the agile manufacturing [2] (Figure 2).

Figure 2: Model of agility

Sherifi& Zhang proposed a detailed frame work of agility with the objectives of describing its prime component namely: Agility Drivers, Agility Capabilities, and Agility Providers. Drivers are basically unexpected changes in the business environment. Agility capabilities mean organization capability to respond appropriately and timely to these changes in the environment. Providers are the facilitator which help the organization to achieve agility [3] (Figure 3).

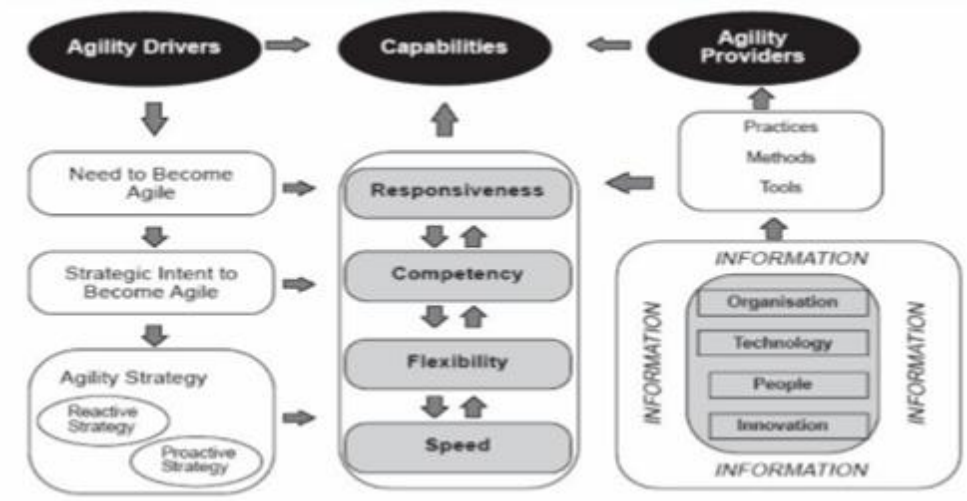


Figure 3: Model of agility

Model comprises of four major components namely: Core Competence Management, knowledge driven Enterprise, Formation of Virtual Enterprises, and Capability of Reconfiguration was proposed [4]. Similar model was proposed by Gunasekaran. Wherein core competence management was described as strategies, a knowledge driven enterprise as people, formation of virtual enterprises as system, and a capability of reconfiguration as technologies [5] (Figure 4).

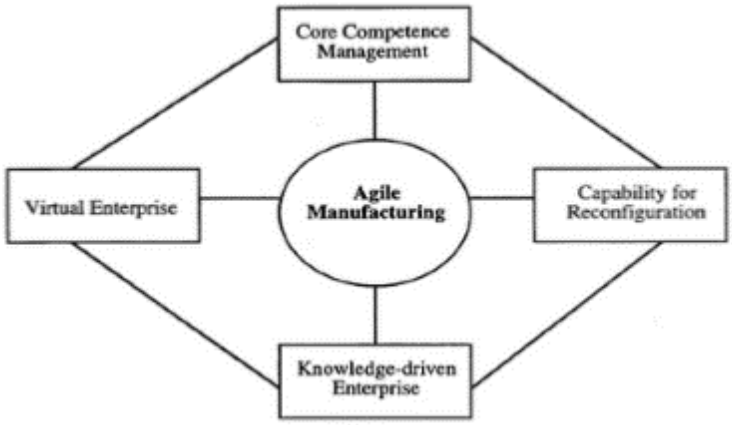


Figure 4: Model of agility

A comprehensive model of agile enterprise was proposed by Lin et al build on the foundation of leveraging the knowledge from people and information technology, exercising proper control by mastering change and uncertainty, and supported by proper strategy through collaborative relationship [6] (Figure 5).

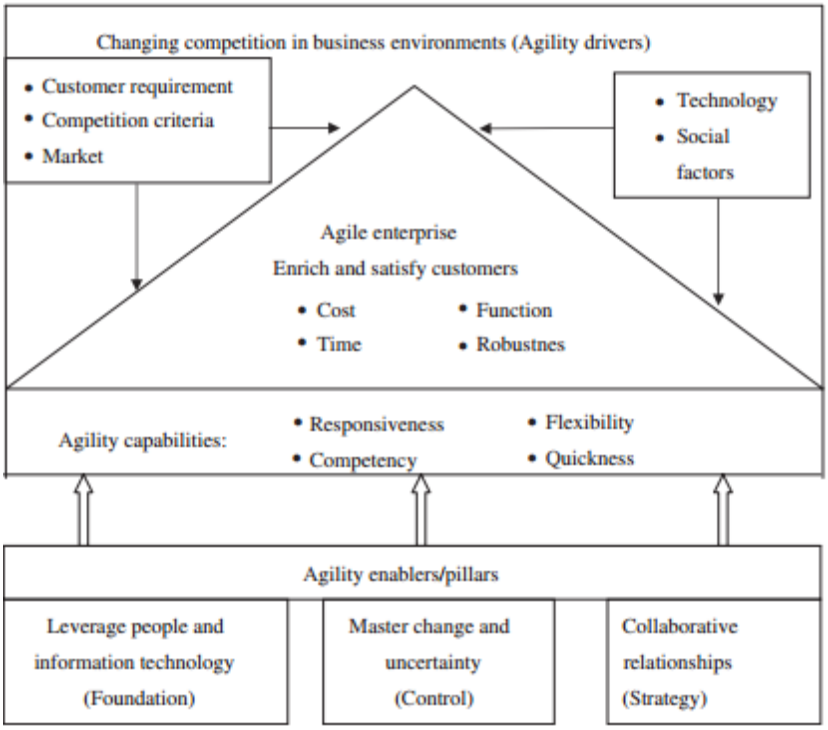


Figure 5: Model of agility

The remaining three models followed different methodology for the development of framework of agility. Agile wheel reference model was proposed, which identify specific strategy in support of agility. According to the model doing business only on pricing strategy is no longer sustainable to beat the competition in increasingly unpredictable and volatile business environment [7]. Other model suggested the need of agile supply chain to impart agility to organization build on the foundation of market, information integration, and planning [8]. Exploratory factor analysis was conducted for organizations within polish environment to build the framework of agility based on relationship with customers, relationship with suppliers, and relationship with competitors, and extent of information technology exploitation [9].

Ability to collaborate with the suppliers and the customers resulted in value chain optimization and significant reduction in the cost of production. The typical activities of ability to collaborate were. Maintaining close relationship with the suppliers, strategic relationship with the suppliers, suppliers managed inventory system, and supplier & customer participation in process & product design resulted in value chain optimization, continuous improvement in the quality, and significant reduction in the cost of production. These activities increase the competitiveness of the organization but also help in knowing customer requirements and impart significant agility to your organization [10,11].

Proper risk identification and management system in place helps in measuring the impending risk and makes proactive by bringing about the necessary changes in the system with the help of cross functional team, flexible people, organization, layout, and machining system. These activities help in identification of change in market place and customers taste and developing appropriate measures to increase your competitiveness and responsiveness [12].

Rapid prototyping, concurrent engineering, single minute exchange of dies, short new product development time, Short lean time to introduce new product to market, total productive maintenance, information integration between all bits and pieces of value chain, and process integration helps in matching up increasing fickle customer demand both in terms of variety & volume [13].

Building knowledge driven enterprise having ability to develop low cast environmental friendly manufacturing technology is essential for sustainable manufacturing which results in strategic competitive edge over others. Ability to identify waste and its elimination is necessary for maximizing the value of the product. This is one of the important drivers of sustainable manufacturing practices. Making people multi skilled is also need of an hour in increasingly fickle and uncertain business environment [15].

A proper vision which well supported by mission is an absolute necessity before venturing into kind of venture. The same is true in quest of making organization agile. Forster conducive organization culture for the change and empowering employees by making them a part of critical decision making such as transition from traditional to agile system may facilitate the whole venture smoothly. Investment in training and development of the employees is necessary to make them skilled, motivated, and aligned with the vision of making organization agile [16].

Conclusion

Though the concept of manufacturing agility is relatively new but various aspects of manufacturing agility in already been in practices. To develop a working model of manufacturing agility for IndiaN automotive SMEs, there is a need to customized the existing models of the agility. The model may not be fundamentally different from the existing model but what is required is to synthesize the methodology to develop customized model. The present study is certainly helpful developing methodology for the intended model.

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