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Industrial Engineering and Management: Increasing Integration and Convergence

RRK Sharma*

Department of Industrial and Management Engineering, IIT, Kanpur 208 016, India

If we looked back in the early 1900s, customer wanted the cheapest model of car; and Ford made the model T by using the techniques of mass production. Industrial engineers determined that the colour of car had to be black as it had the highest production rate (as it dried up faster). Industrial engineers were busy conducting time and motion study that treated workers with little or no respect. Theory X of management was in vogue. As a result the management function complained that industrial engineering methods created militant labor and lot of productive time was lost in strikes and confrontation.

As time progressed, Miles et al. [1] came up with the typology of organizations, the Defenders, Prospectors and Analyzers; which was further extended by Miller and Roth [2] as Caretakers, Marketers and Innovators. In the 21st century it is increasingly felt that INNOVATORS will remain most profitable. In an era of worldwide recession, APPLE (an innovator) has broken all the records of profitability.

The organizations of the early 1900s were monolithic in structure with much higher level of vertical integration. Then came the era of offering variety to customers (need for prospector organization); and industrial engineers were busy managing factories based on job shop and FMS (Flexible Manufacturing System). Industrial engineers, in their new avatar as IT (Information Technology) professionals, were occupied with managing the production function with software/hardware like MRP (Material Requirements Planning), MRP II (Manufacturing Resources Planning), CIMS (Computer Integrated Manufacturing Systems) and distributed computing systems. Issues like computers and software made factories inflexible and consumed a lot of management time. Organizations became more decentralized and more flat and vertical integration came down. Theory Y of management was advocated; and participative management was practiced. Level of divergence between industrial engineering and management was reduced.

In the 21st century, it is the INNOVATORS that are leading the way. They bring cutting edge technology to customers. Network model of innovation and outsourcing are the key ideas. It led to fragmentation of the organization. Organizations are encouraged to have flexible and impermanent structures to facilitate innovation. Need of the hour is to co-ordinate with vendors and customers. Industrial engineers co-operated with IT professionals to manage the ERPs (Enterprise Resources Planning), CRMs (Customer Relationship Management) and DRPs (Distribution Resources Planning) to improve co-ordination across different management functions. Hub architectures with software and standards available in public domain are increasingly being used to cut co-ordination costs. Theory Z of management is being practiced to empower the work force to accelerate innovation. OD (Organizational Development) interventions like flexible work hours and talent management are increasingly being used to promote innovation [3]. Industrial engineers are increasingly deployed to integrate and align systems, structures and strategies of clusters composed of customer's organizations, core companies and its vendors. Finally it is the convergence of industrial engineering and management; and its integration is prized the most.

In this perspective I see this OMICS journal, "The Industrial Engineering and Management Journal" devoted to the theory and practice of industrial engineering and management as these fields are converging. Changing technology has brought open access/online journals to centre stage. I am sure readers will benefit immensely with this initiative from OMICS Group.

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***Corresponding author:** RRK Sharma, Department of Industrial and Management Engineering, IIT, Kanpur 208 016, India, E-mail: rrks@iitk.ac.in

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