Editorial

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1   Introduction

In recent years, a considerable amount of research has taken place to improve productivity in manufacturing, service and healthcare management. A wide array of technologies has been employed to enhance the efficiency and effectiveness of manufacturing, service and healthcare management. The success of many companies critically depends upon the adoption of technology and innovation. In recent years, such adoption has continued at a rapid pace. Firms need to greatly improve their manufacturing, service and healthcare models, their operations to promote productivity and to survive in the current global financial scenario based on technological development and innovation. However, managers face great challenges in planning, integration and implementation in their drive to create competitive advantage from technology and innovation adoption.

In this special issue, we focus on examining how technological development and innovation support and strengthen the manufacturing, services and healthcare industry, spanning the whole product/service life cycle embracing research and development, procurement and supply, production, service, distribution, retailing, disposal and reverse logistics. We seek to publish high quality research papers which may employ a variety of rigorous and pertinent research methodologies including theory-driven conceptual and empirical research, mathematical modelling, optimisation and case studies.

Accordingly, this special issue is aimed at meeting the challenges posed and overcoming the existing gaps. It includes state-of-the-art manufacturing, services and healthcare industries on some critical research issues pertaining to, technological development and innovation. It is intended for practitioners from industry who use techniques from a wide range of fields. The papers of this special issue have real value relevance, be primarily focused on real time implementation and the target audiences of this special issue are researchers, managers, practitioners and consultants.

We are delighted to offer six articles in this issue of the *International Journal of Electronic Transport* to address these matters.

The first article by Saravanan and Noorul Haq proposed a new evolutionary technique scatter search (SS) for scheduling a number of jobs on a single machine against a restrictive common due date. The authors applied SS to this problem, as it is able to provide a wide exploration of the search space through intensification and diversification. In addition, it has a unifying principle for joining solutions and they exploit adaptive memory principle to avoid generating or incorporating duplicate solutions at various stages of the problem. The authors obtained results for numerous benchmark problems. The best results of each of the benchmark problems of the three meta-heuristic techniques, namely evolutionary strategy, simulated annealing and threshold accepting are compared with the results of SS.

The second article by Sezhiyan, Page and Iskanius had examined the relationship among supply effort management, logistics capabilities, and supply chain management strategies on firm performance. A concept model was developed and subsequently five hypotheses were formulated by the authors. The authors had empirically investigated the concept model, a nationwide survey of supply chain professionals within manufacturing firms was undertaken in India and data were collected. The concept model was tested using structural equation modelling (SEM). From the results of SEM analysis, it is found that SCM strategy is positively influenced by supply effort management and logistics capabilities. The overall firm performance is positively impacted by supply effort management, logistics capabilities, and SCM strategy. This study presents valid and reliable metrics that academicians as well as practitioners can use in measuring the supply effort management, logistics capabilities, SCM strategy, and firm performance. The investigated SEM model provides supply chain managers with a useful tool for evaluating and improving efficiency of their current managerial practices.

The third article by Ramkumar, Subramanian, Narendran and Ganesh had addressed an inventory routing problem in vendor managed inventory systems with explicit consideration of buffer stock levels at warehouses. The problem involves a single manufacturer delivering a product to a set of warehouses with available fleet capacity with the objective of minimising transportation and inventory costs. The authors had developed an integer linear programme (ILP) and proposed a hybrid heuristic for the problem. In the proposed heuristic, the authors have allocated inventory using an ILP, vehicles are allotted to customers on the basis of proximity and routes for vehicles are determined using simulated annealing. The proposed heuristic is validated by the authors with different data sets and found to be performing well.

The fourth article by Bhowmick, Maniyan, Saxena and Ducq considered a performance criterion for the flowshop scheduling problem that aims to minimise a complex cost function, i.e., the sum of weighted tardiness and weighted flow-time costs. A heuristic and hybrid genetic algorithms are proposed and experimental results are provided by the authors. The authors addressed this trade-off and proposed solution

techniques that are easy for the shop-floor manager to implement. As scheduling function is an integral part of supply chain, the solution proposed by the authors minimise the opportunity losses and improve cost-based supply chain performance.

The fifth article by Tripathy, Ray and Sahu had explored the barriers and critical success factors that affect the R&D organisational performance in Indian manufacturing scenario. Authors first brought out a number of key factors contributing to the R&D organisational performance. Based on these factors, a questionnaire survey was conducted among the different manufacturing sectors. An analysis of the responses to the questionnaire survey, together with the use of principal component analysis and factor analysis, helped the authors in framing five constructs: R&D productivity, TQM index, roadblocks to R&D, technical competency, and effectiveness of R&D. Using these constructs, seven hypotheses were developed and tested in the framework of structural equation modelling. The results indicate that TQM index, technical competency and R&D productivity encourage the performance of R&D and simultaneously reduce roadblocks to R&D and enhance effectiveness of R&D in manufacturing sectors in Indian scenario.

The sixth article by Sivakumar and Saravanan had calculated overall equipment effectiveness (OEE) by multiplying machine availability, performance and quality. According to authors three major parameters play a critical role of production. The average OEE is calculated by the authors on daily basis production rate for every week in all 12 Jigger machine. Similarly, various improved results are viewed by the authors from various machines. The average performances of these processing machines are illustrated by the authors. The production parameters and sequences of operations have been changed from unstructured frame work by the authors. The total fabric rejection is greatly reduced by implementing maintenance steps for all machineries. Here, the authors observed the result that the OEE before implementing total productive maintenance (TPM) is lesser than present result of OEE.

We hope that our readers are able to benefit as much from the work of these impressive researchers and practitioners as we have. Our team welcomes comments and suggestions from our visitors, and greatly appreciates your feedback. We look forward to building on this special issue with many more issues over the coming years, as we engage in productive dialogue that confronts the dynamic social science challenges faced in today's world.