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## Editorial

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**Biographical notes:** Emad S. Abouel Nasr is an Assistant Professor in the Mechanical Engineering Department at Helwan University, Faculty of Engineering, Helwan, Cairo, Egypt. He received his PhD in Industrial Engineering from the University of Houston, TX, USA in 2005. His current research focuses on CIM, CAM, rapid prototyping, lean manufacturing, advanced manufacturing systems and collaborative engineering.

Mohammed Hussein is an Associate Professor at the Mechanical Eng. Dept., Helwan University, Egypt. He obtained his PhD from Helwan University and California State Polytechnic University (channel system) in 1991. He is an Associate Professor since 2000. He has many research papers in scientific journals and conferences proceedings. His research work includes quality engineering, material control, and technology transfer.

Abdulrahman Al-Ahmari is the Executive Director of CEREM (Center of Excellence for Research in Engineering Materials) and Supervisor of Princess Fatimah Alnijris's Research Chair for Advanced Manufacturing Technology (FARCAMT). He was the Chairman of Industrial Engineering Department at King Saud University (2004–2008). He received his PhD (Manufacturing Systems Engineering) in 1998 from University of Sheffield, UK. His research interests are in analysis and design of manufacturing systems; computer integrated manufacturing (CIM); optimisation of manufacturing operations; applications of simulation optimisation; FMS and cellular manufacturing systems.

In the current competitive global market, manufacturing firms and industrial companies have to apply the latest technologies and utilise the most recent advances in manufacturing and industrial engineering to be able to compete and flourish in the nowadays competitive world markets. To be a competitive in today's market, manufacturing companies should have the ability to introduce high quality new products and to customise existing products more frequently and more quickly by using new technologies and methods.

Modern manufacturing companies no longer follow to the manufacturing philosophy of capturing market share by producing large volumes of standardised products. Industrial organisations need to compete efficiently and quickly respond to market needs and niches and applying lean manufacturing philosophy is one of the most important concepts that helps the manufacturing companies to compete.

Lean manufacturing is the optimal way of producing goods through the removal of waste and implementing flow, as opposed to batch and queue. It is renowned for its focus on reduction of the original Toyota seven wastes in order to improve overall customer value, but there are varying perspectives on how this is best achieved. Lean can be defined as a set of tools that facilitate the recognition and steady elimination of waste. As result of elimination of wastes, quality will be improved while production time and cost are reduced.

The aim of this special issue is to identify the research issues for applying the concepts of lean manufacturing in both of manufacturing and non-manufacturing environments in light of these global challenges. The goal is to cover a variety of topics and issues related to lean manufacturing concepts and implementation.

The first article, authored by Lyonnet, Pillet and Pralus, describes a methodology developed to evaluate the level of maturity in companies regarding their understanding of lean manufacturing and application. The results of a self-assessment questionnaire are developed for screw-cutting sector companies. A strong application of practices connected to the measurement of performance and to standards was observed. On the other hand, a low level of maturity in practices relating to one piece flow, problem-solving and value stream mapping was demonstrated.

Shaban and Shalaby present, in the second article, an artificial neural network algorithm to detect and identify any of the five basic control chart patterns; namely, natural, upward shift, downward shift, upward trend, and downward trend. The performance of the proposed algorithm was evaluated by measuring the probability of success in identifying the five basic patterns accurately and comparing these results with previous research. The comparison showed that the proposed algorithm is comparable if not superior.

In the third article, Agha, Al qedra, Al Kurd and Mohanna present a methodology to quantify the effects of implementing lean construction using discrete system simulation. A simulation model using Arena was developed and verified for the project. Finally, lean construction criteria were applied using the same simulation model. The results show that using lean construction increased value added time by 14% and the total cycle time of the project decreased by more than 400 hours.

The fourth article by Gadalla introduces the concept of excogitating agile transformation from an initiated lean transformation through finding a pathway between the two. It further extends the concept to a series of suggested transformable steps that forms roadmap for a company to reach agility.

Singh, Garg and Sharma present, in the fifth article, an attempt has been made to identify the scope for lean implementation in Indian industry which forces the Indian industry to adopt lean manufacturing initiatives. A questionnaire is prepared after identifying 26 issues of lean implementation with discussion to industrial personals and sent to 300 Indian industries. The responses of 127 industries were received on a five point scale ranging from very low to very high. By applying factor analysis 26 lean issues were reduced in to five broad categories i.e., customers issues, organisational issues, supplier issues, Market issues, Top management issues. Further descriptive statistics was used to find the importance of lean issues to Indian industry.

In the sixth article, Eskandari, Aliahmadi and Khaleghi introduce a robust optimisation approach to solve the milk run system with time window with inventory uncertainty. This approach yields routes that minimise transportation costs while satisfying all inventory in a given bounded uncertainty set. Since the resulted problem formulation is NP-hard, a novel algorithm entitled robust optimisation has been proposed. The model is applied to solve some numerical examples to show robust solution efficiency versus deterministic.

Stuart So develops, in the seventh article, a methodology which empirically examines the influence of e-supply strategy on lean manufacturing adoption in EMSC aiming to create lean suppliers through waste reduction. The influential factors including information sharing and use of e-business system in supplier integration together with policy-based supplier selection were tested with multiple regression analyses based on survey data. It was found that continued adoption of lean manufacturing is positively influenced by all these factors. Moreover, the results revealed that manufacturers may commit ongoing use of lean principle only if it has been used as regular practice. Lastly, practical implications and future research were discussed to alleviate practical concerns in the execution of e-supply strategy and explore the potential of implementing reverse logistics on this novel platform.

In the eighth article, Hussein and Diab present an efficient online 100% visual inspection approaches. Those approaches are based on digital imaging of products and analysing their data using advanced mathematical approaches to extract the product features. Statistical tools are then applied to compare the extracted features with a master feature for the product. The developed approaches give a good performance in inspecting multi-dimension products at low costs and very little inspection errors.