# Engineering Management Journal

Volume 36, 2024 – Issue 3

**Editorial – Editor’s Introduction**

Brian Smith, Jennifer Cross, Simon Philbin

In this issue of the Engineering Management Journal (EMJ), we are delighted to present six new articles that address key areas across the field of engineering management. EMJ provides readers with timely access to the tools, techniques and underpinning knowledge to operate in the increasingly technology-driven world. The journal was founded with a remit to help build the knowledge base associated with the discipline of engineering management and therefore different viewpoints are encouraged so as to strengthen this knowledge base. Furthermore, the journal recognizes that alternative methodologies are available to explore engineering management applications, including theoretical, quantitative, qualitative as well as applied engineering studies. As such, the journal incorporates different perspectives spanning theoretical and academic domains as well as practitioner and industrial domains. The Co-Editors would like to thank all of the reviewers who contributed to the peer-review process for the articles in the issue as well as the Associate Editors, Ona Egbue, Nathaniel D. Bastian, Arnesh Telukdarie, M. Affan Badar, and Sandra L. Furterer, for their contributions to this issue.

The first article in the issue is by Anđelka Stojanović, Isidora Milošević, Sanela Arsić and Ivan Mihajlović, and is called “Cross-Country Study of Corporate Social Responsibility and Sustainable Development in Various Industries.” This article investigates the need to improve managerial decisions associated with implementing and evaluating Sustainability and Corporate Social Responsibility (CSR) for different industrial sectors. Utilizing a survey instrument that was completed in full by 374 participants from Serbia, Russia, and Bulgaria working in various industries, data analysis was underpinned by use of the integrated Entropy-TOPSIS multi-criteria decision analysis method. The findings identified the differences in how CSR strategies are implemented in different countries and industrial sectors, which is useful for industrial companies seeking to realize sustainability focused organizational goals.

The second article is by Ronaldo V. Polancos and Rosemary R. Seva, and is called “A Risk Minimization Model for a Multi-Skilled, Multi-Mode Resource-Constrained Project Scheduling Problem with Discrete Time-Cost-Quality-Risk Trade-Off.” This article develops an integer programming-based model, which is designed to optimize time, cost, quality, and risk toward improving the process of project risk management. The resulting model is evaluated through case study investigation, which allows the model performance to be assessed along with the behavior of certain risk levels for given scenarios. The model can be utilized by engineering managers to help improve the allocation of resources and scheduling of tasks on projects while ensuring that risk minimization is prioritized accordingly.

The third article, “The Mine Emergency Management Capability Based on EWM-CNN Comprehensive Evaluation” by Longqing Shi, Song Fu, Jin Han, Tianhao Liu, Shaowei Zhan Chuanchen Wang, aims to improve emergency management effectiveness, specifically in coal mining operations, by identifying the most critical factors related to emergency management capability, determining their relative importance, and using these findings to develop a model to measure emergency management effectiveness in the industry. The model is tested using a case study of a coal mine in China. The case study validates the usefulness of the model and demonstrates that the case study organization currently shows a good level of maturity in its emergency management capabilities. Engineering managers working in similar operations can potentially directly apply the model to assess and improve the emergency management capability in their organizations. Meanwhile, engineering managers in all types of organizations can use both the resulting model and the research methodology to adapt and test models pertinent to their contexts.

Next, is “Improvement of Manufacturing Process based on Value Stream Mapping: A case study” by Chia-Nan Wang, Tran Thi Bich Chau Vo, Yu-Chi Chung, Yousef Amer, Linh Thi Truc Doan. This article posits that, although Value Stream Mapping (VSM) has long been recognized as a useful tool for organizations to assess and improve production processes of all types, practitioners often lack detailed guidance on how to combine VSM with other Lean and productivity improvement tools, such as Kanban, Pareto chart, SIPOC, and Arena Simulation, to prioritize, evaluate and implement necessary changes. This article proposes an integrated approach including the sequence of application of the various tools, and evaluates the proposed approach through a case study in a furniture manufacturing application in Vietnam. Results include improvements of 90% or more in lead time, inventory measures, and process cycle efficiency (PCE) ratio. Engineering managers can leverage the case study results to communicate the importance of an integrated application approach to stakeholders in their organizations, and to adapt the findings to develop their own roadmaps for integrated application, including potentially using additional Lean and productivity improvement tools.

The fifth article is “Determinants of Front-line Supervisor Effectiveness in Engineering Team-Based Organizations” by Philani N. Zincume, Johannes L. Jooste, and Eileen M. Van Aken. This study answers the question: what are the vital few determinants of front-line supervisor effectiveness in engineering team-based organizations? Using a systematic literature review (SLR) followed by a large-scale, questionnaire-based study of 197 supervisors, the research developed and tested a model of front-line supervisor effectiveness using partial least squares (PLS). The study found that organizational context impacts front-line supervisor effectiveness through skill variety, and, similarly, transformational leadership impacts front-line supervisor effectiveness through adaptive performance. Engineering managers can use the results when assessing their own leadership behaviors and structures, when designing work environments for the teams and supervisors the oversee, and when selecting, mentoring and developing their supervisory and team-lead employees.

In the final article of this issue, “The New PAD: A Method to Implement the Lean Construction Principles,” Marcelo Fabiano Costella, Analice Pinzon Balena, Isaac Brugnera Stefanello, Rubens Postali, and Francieli Dalcanton argue that, although the benefits of Lean Construction (LC) have long been recognized in the research and practitioner literature, organizations and engineering managers often struggle in implementing LC. Thus, the paper proposes a New PAD (Preparation, Application, Deployment) framework, which builds upon initial PAD research efforts, to guide LC implementation, and tests it using a case study in a paver block production process in a Brazilian company. Results include a 17% reduction in flow time and positive evaluation from the company. Engineering managers can adapt the proposed approach to implement LC in their own organizations and use the case study as a success story to build momentum for their change efforts.

EMJ invites participation and articles from academic researchers as well as practitioners from industrial, governmental and other organizations. We welcome all types of research methodologies that are applicable to the engineering management discipline. For questions or inquiries on possible articles, please contact the journal’s Editors: Brian Smith (smith@ise.msstate.edu), Jennifer Cross (jennifer.cross@ttu.edu), and Simon Philbin (philbins@lsbu.ac.uk).