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## Introduction

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**Biographical notes:** Bradley T. Ewing, PhD, is the Rawls Professor in Operations Management in the Rawls College of Business at Texas Tech University. He received his PhD from Purdue University's Krannert School of Management. He regularly teaches courses in operations management and statistics. He has published over 100 articles and is the recipient of several research grants. He is currently working on projects related to life cycle cost analysis, the modelling of wind characteristics for energy use and risk management and energy.

Mark A. Thompson, PhD, is the Cree-Walker Chair in the Hull College of Business at Augusta State University. He received his PhD from Texas Tech University and is an expert in forecasting, time series analysis and non-linear modelling. His articles have appeared in a number of academic journals. Some of his current research focuses on asymmetric measures of forecasting performance, regional input-output modelling and wind energy.

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Today's competitive business environment has led to a greater appreciation of multi-disciplinary approaches to executive education and management training. In fact, such executive education and life-long learning can make the difference between success and failure. For example, engineers are often faced with situations in which their decision-making skills are enhanced by utilising knowledge gained from several disciplines. In particular, elements of economics, leadership and management come into play when designing an optimal course of action.

The aim of this special issue is to draw together the innovative approaches, best practices and pedagogical methods that have led to successful outcomes. The papers will inform readers of ways to implement continuous improvement, increase individual and corporate benefits, and to achieve long-term success in a competitive and constantly changing executive education and life-long learning marketplace.

Submissions fell into one of the following executive education and life-long learning topic areas such as engineering, operations research and management, leadership, communication, and economics and decision sciences. This special issue consists of

papers with a common theme highlighting the interactions and/or applications among engineering, management and economics in a business or governmental environment.

In their study, Mario Beruvides and Ean-Harn Ng seek to develop a better understanding of what is, and will be required to meet the educational and developmental needs of tomorrow's engineers. They examine the type of engineers industry, government and society will need in the future, the practical demands on engineers for their educational development and the demands on their future knowledge base for competence in successfully doing their job. In addition, this paper discusses the gaps and pitfalls of what future engineers will need and the current trends in the education of engineers.

Alessandro Margherita and co-authors illustrate the challenges faced by agribusiness companies. In doing so, they indicate the need for improved engineering and management skills for agribusiness leaders. In their paper, they present a framework for competencies building for agribusiness managers via a multi-disciplinary approach for curriculum design of executive education programs.

In the paper by Santos and Jabbour, they describe the recent developments of undergraduate and graduate production engineering programmes in Brazil. Traditionally, a knowledge-based approach to design production engineering programmes made them rigid. However, this has changed recently to a competence-based approach that considers skills and attitudes, as well as knowledge, to design programmes. This paper aims at analysing the various elements of these changes like flexibility and innovation in curricula of undergraduate and graduate production engineering programmes.

In the Yasin and co-authors paper, they examine the desired performance-related characteristic of entry-level managers via a survey of Portuguese executives. The results indicate that technical skills may not be as important as leadership and entrepreneurship skills. However, the authors indicate that the current educational system may not be preparing its graduates for the desired skill set. The implications of such educational gaps are discussed.

A multi-disciplinary plan for executive education programmes in the area of wind science and engineering is the topic of the paper by Ewing and co-authors. They outline how one such approach might be accomplished. In particular, the authors describe the approach of the only PhD programme in wind science and engineering in the US. The Texas Tech University PhD programme is research-based and trains individuals to become scientists, both of the academic and practitioner variety. However, they describe how executive style programmes in wind science and engineering would, ideally, 'take cutting-edge research into practice' by targeting an audience that consist of personnel from emergency management, disaster recovery and response, risk management and insurance, and economic development and planning areas.

John Paxton has put together a paper that documents the two advances, catalysed by the Model T, that gave the US a mature high-volume mass production system when the rest of the world was still lacking such a mature system. This increased productivity from the high-volume mass production system was due to the interactive mix of engineering, management and economics.

The paper by Mark Yanochik examines a fundamental determinant of interest rates, and therefore investment risk. Understanding monetary policy is especially important for managers of firms that are highly capital-intensive due to the relatively long planning horizon. This paper explains the potential impact that monetary policy has on long-run investment decisions.

As guest editors of this issue, we would like to thank the contributors for their hard work on this project. In addition, this could not have been done without the help of colleagues reviewing the manuscripts and providing feedback to the authors. The compilation of papers for this issue was accomplished with the help of Janet Marr. We are indebted to her, our colleagues and authors for their dedication to this issue. We hope that readers will gain knowledge and understanding of processes, techniques, models and frameworks that can be used to enhance the value of their firms, organisations, students and/or research goals.