

Volume 5 – Number 2 – 2008 – ISSN 1679-8171

BRAZILIAN JOURNAL OF

ISSN 1679-8171

Operations & Production Management

Published by



Editor: Paulo Augusto Cauchick Miguel

Associate Editors: Marcelo Márcio Soares, and Sérgio E. Gouvêa da Costa

ISSN 1679-8171

Brazilian Journal of Operations & Production Management

Volume 5 – Number 2 – 2008

Editor

Paulo Augusto Cauchick Miguel

Associate Editors

Marcelo Márcio Soares
 Sérgio E. Gouvêa da Costa

Editorial Advisory Board

Afonso C.C. Fleury, Universidade de São Paulo - USP, Brazil
 Alceu Alves Filho, Universidade Federal de São Carlos - UFSCar, Brazil
 Adiel Teixeira de Almeida, Universidade Federal de Pernambuco - UFPE, Brazil
 Antônio Galvão Novaes, Universidade Federal de Santa Catarina - UFSC, Brazil
 Barbara Flynn, Indiana University, USA
 David Bennett, Aston University, UK
 Henrique Corrêa, Rollins College, USA
 Horácio Hideki Yanase, Instituto Nacional de Pesquisas Espaciais - INPE, Brazil
 Jatinder N.D. Gupta, The University of Alabama in Huntsville, USA
 John Mills, University of Cambridge, UK
 José L.D. Ribeiro, Universidade Federal do Rio Grande do Sul - UFRGS, Brazil
 Juliana Hsuan Mikkola, Copenhagen Business School, Denmark
 Kim Hua Tam, Nottingham University Business School, UK
 Lin C. Cheng, Universidade Federal de Minas Gerais - UFMG, Brazil
 Luis E. Carretero Diaz, Universidad Complutense de Madrid, Spain
 Leonardo J. Lustosa, Pontifícia Universidade Católica do Rio de Janeiro - PUC-RJ, Brazil
 Marcius F.H. Carvalho, Centro de Pesquisa Renato Archer - CenPRA, Brazil
 Nivaldo Lemos Coppini, Uninove, Brazil
 Osiris Canciglieri Júnior, Pontifícia Universidade Católica do Paraná - PUC-PR, Brazil
 Robert A. Hunt, Macquaire University, Australia
 Robert Collins, IMD, Switzerland
 Robert E. Young, North Carolina State University, USA
 Silvio R.I. Pires, UNIMEP, Brazil

Editorial Review Board

Afonso C.C. Fleury, USP, Brazil
 Adiel Teixeira de Almeida, UFPE, Brazil
 Alceu Gomes Alves Filho, UFSCar, Brazil
 Alessandra Rachid, UFSCar, Brazil
 Antonio Batocchio, UNICAMP, Brazil
 Antonio Fernando Branco Costa, UNESP, Brazil
 Catherine Killen, University of Technology Sydney, Australia
 Daniel Capaldo Amaral, USP, Brazil
 Dario Miyake, USP, Brazil
 David Bennett, Aston University, UK
 Edgar Silveira Campos, UNICAMP, Brazil
 Edson Pinheiro de Lima, PUC-PR, Brazil
 Enrique Lopez Drogett, UFPE, Brazil
 Eugenio Epprecht, PUC-Rio, Brazil
 Fábio Henrique Pereira, Uninove, Brazil
 Felipe Calarge, Uninove, Brazil
 Fernando Almada, USP, Brazil
 Fernando Antonio Forcelini, UFSC, Brazil
 Fernando Bernardi, UNESP, Brazil
 Fernando Menezes Campello de Souza, UFPE, Brazil
 Fernando J. Barbin Laurindo, USP, Brazil
 Flávio César Faria Fernandes, UFSCar, Brazil
 Frascisco Luiz Gumes Lopes, CEFET-BA, Brazil

Henrique Corrêa, Rollins College, USA
 Hugo T. Yoshida Yoshizaki, USP, Brazil
 João Amato Neto, USP, Brazil
 José Alberto Quintanilha, USP, Brazil
 José Antônio Salles, Uninove, Brazil
 José Carlos Curvelo Santana, Uninove, Brazil
 José Carlos de Toledo, UFSCar, Brazil
 José Luis Duarte Ribeiro, UFRGS, Brazil
 Ken Platts, University of Cambridge, UK
 Linda Lee Ho, USP, Brazil
 Luiz César R. Carpinetti, USP, Brazil
 Luiz Felipe Scavarda, PUC-RJ, Brazil
 Márcia Terra da Silva, USP, Brazil
 Marcius Fabius Carvalho, CenPRA, Brazil
 Marco Aurélio de Mesquita, USP, Brazil
 Mário S. Salerno, USP, Brazil
 Maysa S. de Magalhães, IBGE, Brazil
 Mike Bourne, University of Cranfield, UK
 Nivaldo Lemos Coppini, Uninove, Brazil
 Osvaldo Luiz Gonçalves Quelhas, UFF, Brazil
 Roberto Martins, UFSCar, Brazil
 Roberto Marx, USP, Brazil
 Robert Hunt, MacQuaire University, Australia
 Sérgio Luis da Silva, UFSCar, Brazil

Editorial Introduction

Paulo A. Cauchick Miguel and
 Sérgio E. Gouvêa da Costa 03

An Approach for Reconfigurable Automated Processes in Agile Manufacturing

Marco Antonio Busetti de Paula and
 Eduardo Alves Portela Santos 07

An Integrated Supply Chain Perspective Evaluation for Biodiesel Production in Brazil

Adriana Leiras, Silvio Hamacher and Luiz Felipe Scavarda 29

Electronic Government: a Multi-Criterion Approach to Prioritizing Projects by Integrating Balanced Scorecard Methodology Indicators

Mônica Maria Leal Canedo and Adiel Teixeira de Almeida 49

Identification of Dispersion Effects in 2^k Factorial Design

Viviane Leite Dias de Mattos, Pedro Alberto Barbeta,
 Dalton Francisco de Andrade and Robert Wayne Samoryl 73

The Contribution of Modularity to Green Operations Practice

Breno Nunes and David Bennett 93

ABEPRO Executive Board 109

About ABEPRO – Brazilian Association of Production Engineering 109

ABEPRO Editorial Board 109

Manuscript Guidelines 110

Editorial Introduction

On behalf of the Editorial Board and ABEPRO, we are happy to deliver the second issue of volume 5 (2008) of the Brazilian Journal of Operations & Production Management. We appreciate all professionals who have supported and contributed to the editorship. The accomplishment of this issue would not be possible without the work of our editorial review board. We would like to take this opportunity to acknowledge their contribution to the journal referral process.

We hope the readers find the articles in this issue a useful source within the scope of production engineering and operations management.

Editorial Farewell

It is time for changes. The present issue of the BJOPM is the last one for which we take editorial responsibility. I (Paulo Cauchick Miguel) have been at this job for half dozen years. My fellow editors, and particularly Sérgio Gouvêa da Costa, as well as members of the Editorial Advisory Board, helped as much as they could. Nevertheless, considerations of deadline pressures, distance, and other factors dictated that I be the person in charge of the journal's day-to-day operations.

Of course, there are a number of persons we would like to thank. First of all, the previous and current board of ABEPROS's Executive Directors, namely the previous ABEPROS's president: Nivaldo Coppini, Paulo Selig, and Osvaldo Quelhas. They have always supported the journal, even when navigating in turbulent waters in which this publication almost sunk. Believe us, there is much 'friendly fire'¹, i.e. people who do not want to see the journal to take off.

But we would not like to talk about the negative experience. It is time to move on, for the next phase of the journal. For revigorating the process of journal editing a new editor is coming after a selection process conducted by ABEPRO Editorial Board (see p. 109). Dr. Helder Gomes da Costa assumes the editorship. Naturally, we have complete confidence in this new editor and wish him success.

¹ It is an expression meaning fire from one's own side or allied forces, as opposed to fire coming from enemy forces, and was originally adopted by the United States military.

In this Issue

The present issue has five up-to-date papers from some researchers from Brazil and the United Kingdom. Investigations of theoretical nature, simulation and case studies were used as research methodology approach by the authors.

The first paper by Marco A. Buseti and Eduardo Portela presents a design methodology applied to reconfigurable processes in the context of agile manufacturing systems. It presents the cyclic three stages of the methodology – modeling, synthesis and implementation – followed by a correspondent mathematical formalism. They conclude the paper presenting an experiment carried out with a manufacturing system prototype.

Trying to fill the lack of research focused on the biofuel in Brazil, Adriana Leira, Silvio Hamacher and Luiz Felipe Scavarda analyse the biodiesel supply chain developed from oil plants in Brazil. The authors conducted fact-finding field trips to companies that are part of the biodiesel productive chain in the State of Bahia, in Brazil, by interviewing 42 participants of those companies. An economic evaluation model was developed to evaluate the integrated chain of biodiesel production technically and economically. They generated and analysed 204 scenarios.

Making use of a Balanced Scorecard (BSC) in the context of Multiple Criteria Decision-aid (MCDA), Mônica M. Leal Canedo and Adiel Teixeira de Almeida propose a multi-criterion model so as to prioritize Electronic Government projects, the scope of which is to provide electronic services from Government to Citizen - G2C (initiatives on behalf of citizens and companies). The work shows that in the context of the governance model proposed, some conditions should be taken into account in order to integrate the use of BSC and MCDA.

In the forth paper by Viviane L. Dias de Mattos, Pedro Alberto Barbeta, Dalton Franciso de Andrade and Robert Wayne Samoryl, the authors considered generalizations of methods which use 2K or 2K-p unreplicated factorial designs. Box-Meyer, Harvey, Brenemann-Nair and Bergman-Hynén methods were considered and compared by Monte Carlo simulations, analysing sensitivity and specificity indicators. They also included joint generalised linear models (joint GLMs) in the comparison. From the achieved results, the authors indicate the applicability of the analysed methods, in terms of efficiency and simplicity.

The last paper is presented by Breno Nunes and David Bennet, from Aston Business School in the UK. Based on the theoretical analysis of the contribution of the modular production system characteristics used in the automotive industry for Green Operations Practices (GOP), the authors discusses the possible contributions from modularity and industrial condominiums towards enhancing environmental performance in the automotive industry.

The journal expects to count on the research community by considering the journal as the outlet for publication of their research work mostly related but not limited to the research areas defined by ABEPRO.²

This issue closes with ABEPRO's executive and ABEPRO's Editorial Board (NEA).

Paulo A. Cauchick Miguel and Sergio E. Gouvêa da Costa

² Production Management; Quality Operations; Economic Management; Ergonomics and Work Safety; Product Development; Operational Research; Strategy and Organizations; Technology Management; Information Systems; Environmental Management; Education issues in Operations Management.

