



EUROPEAN  
DOCTORATE  
IN INDUSTRIAL  
MANAGEMENT



POLITECNICO  
DI MILANO



POLITÉCNICA



Erasmus  
Mundus

# 1<sup>st</sup> ANNUAL EDIM PhD CONFERENCE

## Research Challenges in Contemporary Management Engineering

**Politecnico di Milano**

Department of Management, Economics and Industrial Engineering

11-12 June, 2014



Copyright © Poliscript 2014 - Politecnico di Milano  
Piazza Leonardo da Vinci, 32 - 20133 Milano  
Prima edizione: Maggio 2014  
Stampato da Poliprint - Politecnico di Milano  
via Bonardi, 9 - 20133 Milano  
ISBN 97888-6493-022-0

## Conference Chairs

Mariano Corso, *Politecnico di Milano*  
Mats Engwall, *KTH Royal Institute of Technology*  
Paolo Trucco, *Politecnico di Milano*

## Scientific Committee

Faculty members of the Doctoral Programme in Industrial Management (EDIM)  
Faculty members of the Doctoral Programme in Management, Economics and Industrial Engineering (DRIG)  
Srinivas Talluri, Department Editor (IEEE Transactions on Engineering Management), Associate Editor (Decision Sciences Journal)  
Terrence Brown, Editor-in-Chief (International Journal of Entrepreneurial Venturing)  
Francesco Lissoni, Associate Editor (Industry & Innovation)  
Paul Nightingale, Associate Editor (Research Policy)

## Organizing Committee

Guido J.L. Micheli, *Politecnico di Milano*  
Emanuele Lettieri, *Politecnico di Milano*  
Samuele Murtinu, *Politecnico di Milano*  
Cristina Rossi Lamastra, *Politecnico di Milano*  
Martina Sani, *Politecnico di Milano*  
Gisella Di Tavi, *Politecnico di Milano*

Contact: [edimphdconference@polimi.it](mailto:edimphdconference@polimi.it)

**The Conference is organized with the support of:**

**AIDI** - Associazione Italiana Docenti Impianti Industriali: [www.aidi-impianti-industriali.it](http://www.aidi-impianti-industriali.it)

**AiIG** - Associazione Italiana di Ingegneria Gestionale: [www.ingegneriagestionale.it](http://www.ingegneriagestionale.it)

**SCUOLA INTERPOLITECNICA DI DOTTORATO** – [www.sipd.polito.it](http://www.sipd.polito.it)



## LIST OF ABSTRACTS

### **TRACK: Management and Finance**

**HOW PROFITABLE ARE RECOMMENDATIONS FROM STAR ANALYSTS?.....7**

**KNOWLEDGE BASED DECISION SUPPORT SYSTEM – A SYSTEMATIC LITERATURE REVIEW .....8**

**UNDERSTANDING LIVING LABS IN INNOVATION MANAGEMENT .....9**

**NETWORKS IN ACTION: THE INDIVIDUALS’ CONTRIBUTION AGAINST FUZZY MANAGEMENT PRACTICE.....10**

**CAN OPEN INNOVATION DRIVE MORE SUSTAINABLE SMES? EVIDENCE FROM ENERGY-INTENSIVE SECTORS IN ITALY .....11**

**SUSTAINABLE INNOVATION CAPABILITIES: AN EXPLORATORY STUDY .....12**

**MULTI-ACTOR COLLABORATION IN EMBEDDED OUTSOURCED SERVICES: A PSYCHOLOGICAL CONTRACT PERSPECTIVE .....13**

**HUMAN RELIABILITY ANALYSIS IN SURGERY, A NEGLECTED PRACTICE: A REVIEW OF TECHNIQUES AND APPLICATIONS.....14**

**A REVIEW OF THE TECHNOLOGY ROADMAPPING LITERATURE TARGETING STRATEGIC TRENDS AND PATTERNS IN THE AUTOMOTIVE AND CONSUMER WIRELESS TECHNOLOGIES .....15**

### **TRACK: Entrepreneurship, Finance and Industrial Dynamics**

**INTEGRATING STRATEGIC ASPECTS WITH PROJECT PORTFOLIO MANAGEMENT: EXPLORING DIFFERENT WAYS TO DEAL WITH ORGANIZATIONAL DEPENDENCIES .....16**

**CO-EVOLUTION OF ACTORS AND INSTITUTIONS AS A MARKET DRIVER: AN EXPLORATORY STUDY ON THE CASE OF WIND POWER IN SPAIN .....17**

**FINITE ELEMENT MODEL OF THE INNOVATION DIFFUSION: AN APPLICATION TO PHOTOVOLTAIC SYSTEMS .....18**

<b>RENL: A FRAMEWORK FOR SOCIAL MEDIA MARKETING STRATEGY .....</b>	<b>19</b>
<b>THE EFFECTS OF ENTERPRISE RISK MANAGEMENT ADOPTION ON FIRMS' VALUE AND PERFORMANCES: AN EMPIRICAL ANALYSIS USING STRUCTURAL EQUATION MODELLING .....</b>	<b>20</b>
<b>CHOICE OF GOVERNANCE IN HYBRID ORGANIZATIONS: A LITERATURE REVIEW .....</b>	<b>21</b>
<b>ANTECEDENTS OF TARGET CEO DEPARTURE IN ACQUISITIONS OF SMALL HIGH-TECH FIRMS: THE LEADING ROLE OF FOUNDER .....</b>	<b>22</b>
<b>BUSINESS MODEL CHALLENGE: LEARNINGS FROM A LOCAL SOLAR COMPANY IN GERMANY .....</b>	<b>23</b>
<b>THE SHARING OF RISKS IN ENERGY FROM WASTE PPP: AN ITALIAN CASE STUDY .....</b>	<b>24</b>
<b>A NOTE ON THE IMPLICATIONS OF AIR TRANSPORT AND HIGH SPEED RAIL SUBSTITUTION ON LOCAL AIR POLLUTION AND CLIMATE CHANGE.....</b>	<b>25</b>
 <b>TRACK: Industrial Engineering and Operations Management</b>	
<b>SLOW FASHION AND SUSTAINABILITY IN SPAIN: HOW CAN LOCAL MANUFACTURING IMPROVE SUSTAINABILITY AND HOW DO CONSUMERS RESPOND? .....</b>	<b>26</b>
<b>EFFECTS OF PRODUCT AND SUPPLIER CRITICALITY ON RESILIENCE CAPABILITIES: AN EMPIRICAL ANALYSIS OF A GLOBAL SUPPLY CHAIN....</b>	<b>27</b>
<b>LEAN PRACTICES AND OPERATIONAL PERFORMANCE IN ETO: INFLUENCE OF DYNAMISM AND COMPLEXITY .....</b>	<b>28</b>
<b>EMBEDDING SUSTAINABILITY IN SUPPLY CHAIN STRATEGIC FIT.....</b>	<b>29</b>
<b>INTERNET OF THINGS AS A WAY TO INCREASE ENERGY EFFICIENCY IN MANUFACTURING COMPANIES: STATE OF THE ART AND AN EVALUATION METHODOLOGY .....</b>	<b>30</b>
<b>SUPPLY CHAIN CONFIGURATION, EFFECTIVENESS AND EFFICIENCY: LOOKING FOR THE BEST FIT .....</b>	<b>31</b>
<b>THE DECISION MAKING PROCESS OF YOUR COMPANY IS REALLY INTEGRATED?.....</b>	<b>32</b>

**A SYSTEMATIC REVIEW ON INFORMATION TRANSITION APPROACHES OF SUSTAINABLE PRODUCTION AND CONSUMPTION (SPAC).....33**

**IMPROVING FIRST-TIER SUPPLIERS' RESPONSIVENESS: INFORMATION SHARING APPROACH .....34**

# How Profitable are Recommendations from Star Analysts?

*Yury Kucheev (kucheev@kth.se)*

*Department of Industrial Management, Business Administration and Statistics, School of Industrial Engineering, Technical University of Madrid (UPM)/Universidad Politécnica de Madrid, 28006 Madrid, Spain and*

*Department of Industrial Economics and Management, School of Industrial Engineering and Management, KTH-Royal Institute of Technology, SE-100 44 Stockholm, Sweden*

*Felipe Ruiz*

*Department of Industrial Management, Business Administration and Statistics, School of Industrial Engineering, Technical University of Madrid (UPM)/Universidad Politécnica de Madrid, 28006 Madrid, Spain*

*Tomas Sorensson*

*Department of Industrial Economics and Management, School of Industrial Engineering and Management, KTH-Royal Institute of Technology, SE-100 44 Stockholm, Sweden*

## Abstract

Star rankings of sell-side analysts appeal to provide to investors a list of the most accurate forecasters with the highest investment value of recommendations, however academic studies show mixed results on profitability of recommendations and forecast accuracy of Star analysts in comparison with their non-star peers. Previous research has been mostly focused on the survey-based rankings and not comparing them with financial valuation-based ones. In this study we measure how profitable recommendations of star sell-side analysts are in comparison to recommendations of non-stars, as well as comparing different star rankings between themselves. For the time period from 2005 to 2012, we examine two star rankings, one issued by the Wall Street Journal and the other by StarMine, for analysts who cover American companies. Lists of star analysts have been merged with recommendations from IBES and with the market data from CRSP database. We analyze returns of the long-short market-capitalization-weighted portfolio build according to consensus recommendations from different groups of analysts. The results of this study could be of particular interest for practical investors.

**Keywords:** Star Analysts, Analyst recommendations, Profitability measurements, StarMine, Wall Street Journal.

# Knowledge based decision support system – A systematic literature review

*Swarnava Mitra (swarnava.mitra@Indek.kth.se)  
Kungliga Tekniska högskolan and  
Universidad Politécnica de Madrid*

*Niklas Arvidsson  
Kungliga Tekniska högskolan*

*Joaquin Bienvenido Ordieres-Meré  
Universidad Politécnica de Madrid*

## **Abstract**

A knowledge based decision support system (KBDSS) is an evolved version of decision support system (DSS) containing a knowledge management subsystem (Edwards,1996). KBDSS is gaining much importance in the commercial and research fields from automated financial trading systems to Mars Rover. However, there exists no systematic literature review on KBDSS, clear conceptual demarcations between KBDSS, Expert Decision Support System (EDSS), Intelligent Decision Support System (IDSS) and Adaptive Decision Support System (ADSS) even though they are so closely related. We have used a standard systematic literature review method employing a manual search of journals (1970–2013). We have included or excluded journals based on minimum number of citations received and the quality of journal where it was published. Our main conclusions are a) there is a dearth of clear understanding as to what constitutes a KBDSS b) only how machines arrive at a decision is highlighted upon, not the joint decision making by humans and machines c) there is paucity in contribution regarding critical success factor (CSFs) for implementation of KBDSS and reflections on lessons learnt. This work provides an entry point for researchers new to the field of KBDSS for understanding the conceptual differences, prevalent techniques and industrial applications.

**Keywords:** Knowledge based decision support system, Decision support system, Systematic literature review.



# Understanding Living Labs in Innovation Management

*Alice Bush (alice.bush@polimi.it)*

*Politecnico di Milano, Department of Management, Economics and Industrial Engineering*

*Irene Roda (irene.roda@polimi.it)*

*Politecnico di Milano, Department of Management, Economics and Industrial Engineering*

## **Abstract**

The paper examines the Living Lab (LL) concept as an emerging issue within the innovation management field. On one side interest on the topic is recently raising both in academia and in industry, but on the other side different and not well structured perspectives for the same concept can be found. The objective of this work is to categorize what is proposed in the literature in order to facilitate the definition and positioning of future works on LLs. The paper gives a brief introduction on the topic and an outline on the theoretical foundation of Living Labs within the innovation management field. Then, an extensive literature review has been developed for a descriptive analysis of the state of the art. Such analysis guided the identification of categories and patterns for a better understanding of LLs. The result is the proposal of a framework that highlights the current interest trends on LLs and that can be referred to by future research works.

**Keywords:** Living Labs, Innovation management.

# Networks in Action: the Individuals' Contribution Against Fuzzy Management Practice

*Federica Segato (federica.segato@polimi.it)*  
*Department of Management, Economics and Industrial Engineering*  
*Politecnico di Milano, Italy*

*Cristina Masella*  
*Department of Management, Economics and Industrial Engineering*  
*Politecnico di Milano, Italy*

## Abstract

Public service delivery relies increasingly upon collaborative inter-organizational forms, and public managers often resorted to institutional impositions to foster their creation. Lately, the evidence that command-and-control styles are ineffective in multiorganizational environments is spreading, by increasing the importance of addressing the actors' voluntariness and motivations. This study explores the implications of *bounded voluntariness* (i.e. a condition in which institutional pressure by public managers still endures, although participation and commitment to the network are up to the actors' will) on the network management, at both the strategic ("management *of* networks") and operational level ("management *in* networks"). A multiple case study has been conducted on three inter-organizational networks of healthcare providers, created to provide care to chronic patients. The results show that three levels of managers are present in these networks, neither of whom exerts full control over them. This fuzzy management condition hinders the harmonization of the actors' goals and the efficiency of the activities; surprisingly enough, it does not appear to be detrimental toward the ability of the networks to reach their expected goal, as soon as trust among actors is respected. This study is expected to give empirical insights to the mostly conceptual literature about network management.

**Keywords:** Network management, Public service networks, Chronic care.

# Can open innovation drive more sustainable SMEs? Evidence from energy-intensive sectors in Italy

*Andres Ramírez-Portilla (andres.ramirez-portilla@indek.kth.se)  
KTH Royal Institute of Technology, Lindstedsvägen 30, Stockholm, SE-100 44, Sweden  
Politecnico di Milano, Via Lambruschini 4/B, Milan, 20156, Italy*

*Enrico Cagno  
Politecnico di Milano, Via Lambruschini 4/B, Milan, 20156, Italy*

*Andrea Trianni  
Politecnico di Milano, Via Lambruschini 4/B, Milan, 20156, Italy*

## **Abstract**

In recent years, opening up the innovation process has increasingly gained the attention in theory and practice. Previous studies have focused on studying the influence of open innovation mainly on the firm's economic-financial and innovation performance. Despite all the attention given to open innovation effects, few studies have investigated its role in developing more sustainable organizations in different dimensions. This study aims to fill this gap by studying the sustainability performance operationalized with energy efficiency in the context of energy-intensive sectors such as foundries. Using the information collected from 30 small- and medium-sized firms in Italy, this paper analyses the relationship between Open Innovation practices and three indicators of energy efficiency: specific energy consumption, adoption rate of energy-efficient technologies and barriers to energy efficiency. The study confirms the value of internal R&D and inbound open innovation for firms to be energy efficient, while outbound open innovation is not a common and, therefore, relevant practice. Taken together, the findings suggest that firms in these sectors can and should use open innovation practices to increase their overall sustainable performance while on parallel influencing other performance dimensions. The findings of this exploratory study suggest several courses of action for policy makers and managers.

**Keywords:** Open innovation, Open innovation effects, Sustainable performance, Energy efficiency, Energy-intensive sectors, SMEs.

## **Sustainable innovation capabilities: An exploratory study**

*Sarah Behnam (sarah.behnam@gmail.com)  
Politecnico di Milano, Italy  
Universidad Politecnica de Madrid (UPM), Spain*

*Raffaella Cagliano  
Politecnico di Milano, Italy*

### **Abstract**

**Purpose:** This paper makes an early attempt to extend the capability perspective to the area of sustainability innovation (SI) development by conceptualizing SI capabilities developed by best practice companies.

**Methodology:** A qualitative in-depth multiple case study methodology has been used. SI approaches of five leading companies in developing sustainable innovation projects has been identified and correspondingly, how different approaches develop different capabilities (namely; networking capability, learning capability, innovative capability) are analyzed by detailed case and cross-case analysis.

**Findings:** The results show that although all SI firms develop basic mechanisms for developing each capability, “sustainability-rooted” firms, who embed sustainability in their core strategy, even go beyond traditional “innovation-based” firms by establishing further mechanisms. This leads sustainability-rooted firms to possess higher level of all three capabilities even innovative capability. More specifically, the mechanisms which different approaches use for developing each capability are identified.

**Relevance:** The paper is theoretically relevant by integrating the existing literature to develop a testable framework. From a managerial perspective, a key question that firms, engaging in sustainability, face is how to build and leverage firm's capabilities to enhance sustainability. Our results will help managers to deal with the challenges they face in carrying out this path.

**Keywords:** Sustainability Innovation, Innovative Capability, Learning Capability, Networking Capability.

# Multi-actor collaboration in Embedded Outsourced Services: A psychological contract perspective

*Simon Okwir (okwir@kth.se)*

*KTH Royal Institute of Technology, 100 44 Stockholm, Sweden*

*UPM Universidad Politécnica de Madrid, Spain*

*Matti Kaulio*

*KTH Royal Institute of Technology, 100 44 Stockholm, Sweden*

*Pernilla Ulfvengren*

*KTH Royal Institute of Technology, 100 44 Stockholm, Sweden*

## Abstract

The aim of this paper is to investigate collaborations between multiple partners in Embedded Outsourced Services (EOS). EOS includes co-production of value by clients and service providers. As a consequence, mutual exchanges between client participation and supplier organization are expected and vital. This builds an outsourcing relationship where service delivery is sustained through formal contracts. Although contractual agreements regulate the division of labour, informal agreements still exist. In this paper, a single case study in the context of airport service operations of four organizations was conducted. A Critical Incident Technique was used to examine shared collaborations and obligations through the lens of psychological contracting. Subjects were asked to recall any event that was salient to contribute to breach or violation. Using coding software NVivo for the analysis. The paper contributes to: (1) Network Service Operation by providing empirical evidence highlighting a unit of analysis that has been asked for, but not common in literature (2) Psychological contracts theory, with new insights on how collaborations cause contract breach as a result of multi-actors compared to traditional social exchanges within the individuals' own organization (3) Industry for improved operations and negotiation of contracts to avoid violation and breach within networks.

**Keywords:** Collaboration, Psychological Contracts, Embedded Outsourced Services, Complex systems.

# Human Reliability Analysis in surgery, a neglected practice: A review of techniques and applications

*Rossella Onofrio (rossella.onofrio@polimi.it)  
Politecnico di Milano, Milano, Italy*

*Paolo Trucco  
Politecnico di Milano, Milano, Italy*

## **Abstract**

The aim of the paper is to create an evidence based synthesis of theoretical and practical knowledge about Human Reliability Analysis (HRA) in healthcare, in surgery in particular. As such, the research falls at the intersection between medical and industrial scientific literature, since HRA discipline was firstly developed in the industrial sector and only in recent years it has been transferred and applied in healthcare settings. The findings showed a growing interest of HRA discipline in healthcare, with an increasing number of applications, largely focused on the operating room. It also emerged that: i) the primary objective of adopting HRA in surgery is the evaluation of surgeons' technical skills; ii) the systematic analysis of the influence of personal and organisational factors on surgeon's performance is still limited. Consequently the potential for future research at the intersection between HRA and Non-Technical Skills assessment clearly emerges.

**Keywords:** Human reliability analysis in healthcare, Patient safety in surgery, Human factors in surgery.

# **A review of the technology roadmapping literature targeting strategic trends and patterns in the automotive and consumer wireless technologies**

*Daniel Zamberlan (dzamberlan@calearo.com)*

*Calearo Antenne S.p.A., Via Bacchiglione 49, 36033 Isola Vicentina (VI), Italy  
and University of Padova, Department of Management and Engineering, Vicenza, Italy*

## **Abstract**

In our fast changing times, Technology Roadmapping (TRM) is considered a flexible management tool of growing relevance for academics and practitioners, particularly suitable to align future technologies and products with business strategy. This paper describes a systematic review of the literature, published between 1997 and 2013, in field of TRM. The purpose of this review is twofold: on one hand, the results provide a comprehensive understanding of the phases, characteristics and evolution of such strategic technique. The 105 included publications illustrate a wide range of approaches and organizations where TRM was applied, and various general aspects and characteristics are analysed. On the other hand, a specific clustering, carried out crossing possible types of technology roadmaps with evolution patterns, is proposed and discussed. This study has as well a practical interest, namely to support a leading firm involved in particular in automotive and wireless converging fields. In this or other similar emerging trends, the literature review seemed beneficial by itself, as it was critical to assess whether the TRM process has already been, or can be, the right choice to help detect future opportunities and potential threats, especially when incremental, disruptive or architectural innovations become apparent and require urgent action.

Keywords: Roadmapping, Automotive, Wireless, Architecture, Literature Review.

# Integrating strategic aspects with project portfolio management: Exploring different ways to deal with organizational dependencies

*Anna Jerbrant*

*KTH Royal Institute of Technology, Stockholm, Sweden*

*Maksim Miterev (miterev@kth.se)*

*KTH Royal Institute of Technology, Stockholm, Sweden*

*Politecnico di Milano, Milan, Italy*

*Mats Engwall*

*KTH Royal Institute of Technology, Stockholm, Sweden*

## **Abstract**

The dominant part of project portfolio management literature is focused on standardized project management methods for planning, prioritizing, and resource allocation. Comprehensively addressing the resource dependency challenge, the mainstream literature overlooks other types of project dependencies, namely, technological and organizational dependencies. Arguing that a more comprehensive understanding of the dependencies is necessary, we explore how they can be dealt with when integrating the strategic aspects in the project portfolio management. The comparative case study of two different multi-project settings reveals that in both contexts a combination of vertical and horizontal communication mechanisms was used in order to enhance the strategic alignment. At the same time, principal mechanisms in the combinations were different. In the first case, a departmental head ensured the vertical connection to strategy and a PMO head enhanced the horizontal connections. In the second case, program steering groups both communicated the strategy and represented arenas for political negotiation. In turn, program managers further contributed to resolving organizational dependencies. The aim of this paper is to contribute to an improved understanding of different ways in which strategic aspects can be integrated with portfolio management, by exploring different ways to deal with the organizational dependencies.

**Keywords:** Project portfolio, Multi-project setting, Strategic alignment, Organizational dependencies, Communication mechanisms, Contingency perspective.



# Co-evolution of Actors and Institutions as a Market Driver: An exploratory study on the case of wind power in Spain

*Anna Darmani (anna.darmani@inek.kth.se)*

*Department of Industrial Dynamic, School of Industrial Engineering and Management, Royal Institute of Technology, 100 44 Stockholm, Sweden  
Department of Business Administration, Universidad Politécnica de Madrid, 28006 Madrid, Spain*

*Antonio Hidalgo*

*b Department of Business Administration, Universidad Politécnica de Madrid, 28006 Madrid, Spain*

*Niklas Arvidsson*

*a Department of Industrial Dynamic, School of Industrial Engineering and Management, Royal Institute of Technology, 100 44 Stockholm, Sweden*

## Abstract

Due to the threat rising from the climate challenges, targets are set and governmental driving forces are introduced into the energy market to promote generation of electricity from renewable energy sources (RES-E). However, the governmental driving forces are not the absolute drivers for development of RES-E. Also, the influence of governmental decisions is not likewise on different groups of RES-E investors. In reality, investors' internal capabilities and incentives play an influential role not only on their own investment behavior, but also on the status of RES-E in the electricity market. The significance of these incentives might be to the extent that they impose changes into the prospective governmental decisions regarding the electricity market, and eventually reinforce the status of an emerging technology. This study aims to shed light on this topic by assessing the co-evolution of institutions and investors, in which investors are distinguished to two groups of new entrants and incumbents. To do so, the case of wind power in Spain is assessed, as a successful case of RES-E development. This knowledge comes to use to provide several lessons and recommendations for policy makers when developing policies for the future of the electricity market, dealing with different groups of investor.

**Keywords:** Co-evolution, Institution, Investors, Incumbents, New entrants, Electricity generation.

# Finite Element Model of the Innovation Diffusion: An Application to Photovoltaic Systems

*Emrah Karakaya (emrahka@kth.se)*

*Department of Industrial Engineering, Business Administration and Statistics, Universidad Politecnica de Madrid, Spain*

*Department of Industrial Economics and Management, KTH Royal Institute of Technology, Sweden*

## **Abstract**

This paper presents a Finite Element Model, which has been used for forecasting the diffusion of innovations in time and space. Unlike conventional models used in diffusion literature, the model considers the spatial heterogeneity. The implementation steps of the model are explained by applying it to the case of diffusion of photovoltaic systems in a local region in southern Germany. The applied model is based on a parabolic partial differential equation that describes the diffusion ratio of photovoltaic systems in a given region over time. The results of the application show that the Finite Element Model constitutes a powerful tool to better understand the diffusion of an innovation as a simultaneous space-time process. For future research, model limitations and possible extensions are also discussed.

**Keywords:** Innovation, Adoption, Spatiotemporal, Prediction, Solar photovoltaics.

# RENL: A Framework for Social Media Marketing Strategy

*Artha Sejati Ananda (aananda@tigr.ior.etsit.upm.es, arthasejati.ananda@polimi.it)*  
*Universidad Politécnica de Madrid*  
*Politecnico di Milano*

*Ángel Hernández-García*  
*Universidad Politécnica de Madrid*

*Lucio Lamberti*  
*Politecnico di Milano*

## **Abstract**

As practitioners and industries become more comfortable with the use of social media applications as a marketing tool, social media is becoming ubiquitous. However, social media must be managed just like the rest of media that organizations use to deploy their content and marketing strategy as part of their overall marketing strategy. Nevertheless, scholar research on social media marketing strategy is scant, and as a consequence current use of social media marketing is generally more intuitive than planned. This paper aims to create a comprehensive framework by identifying and classifying strategic actions for social media marketing, and mapping them to different social media marketing strategies. The framework has been developed from a synthesis of theories from social media marketing and general marketing strategy, and features two top-level categories of social media marketing strategic actions: content-specific and platform-level strategic actions, each of them consisting of two subcategories: representation and engagement actions, and networking and listening actions, respectively. The proposed framework is expected to serve as a basis for further research on the effect of social media marketing strategies on consumer behavior, both from general and sector-specific perspectives.

**Keywords:** Social media, Social media marketing, Social media marketing strategy, Social media strategic actions, Consumer behavior.

# **The effects of Enterprise Risk Management adoption on firms' value and performances: an empirical analysis using structural equation modelling**

*Barbara Monda (barbara.monda@polimi.it)  
Politecnico di Milano*

## **Abstract**

In this paper we use structural equation modelling to investigate the complex relationships among the level of adoption of Enterprise Risk Management, its determinants and its effects on firms' value for a sample of 258 listed firms in Europe, North America and Japan. ERM is increasingly considered an essential component for firms' success, growth and value creation. However, empirical results on the value of ERM are still mixed. Moreover, empirical research on the benefits of ERM is still scarce and suffers from some major limitations, including the lack of a robust measure for ERM maturity and the failure to address endogeneity between ERM and value. This paper is innovative in both respects, using a continuous measure for ERM maturity, the ERM Index© (ERMi©), and modelling simultaneously the relationship between ERM and market value (performances) and those between ERM and its determinants. The results confirm in part the findings of previous works concerning ERM determinants and seem to indicate that firms implement ERM mostly for compliance reasons and that the market is not incorporating premiums in the prices of ERM adopters, regardless of the significant reduction of stock price volatility associated with ERM implementation, confirmed by this study.

**Keywords:** Enterprise Risk Management, ERM, Listed firms, Value, Determinants.

# Choice of governance in hybrid organizations: A literature review

*Frano Barbic (frano.barbic@polimi.it)*

*Universidad Politecnica de Madrid, Jose Gutierrez Abascal 2, 28006, Madrid, Spain*

*Politecnico di Milano, Via Lambruschini 4/B, 20156, Milano, Italy*

*Javier Tafur*

*Universidad Politecnica de Madrid, Jose Gutierrez Abascal 2, 28006, Madrid, Spain*

*Raffaella Cagliano*

*Politecnico di Milano, Via Lambruschini 4/B, 20156, Milano, Italy*

## **Abstract**

The literature on hybrid or inter-firm modes of governance have been studied from different theoretical perspectives and has grown extensively in last few decades. Hybrid modes of governance present a broad array of collaborative relationships, such as joint ventures, strategic alliances, buyer-supplier agreements, networks, trade associations and consortia. The aim of this paper is to describe main characteristics of different hybrid modes, the main variables that influence formulation and functioning of particular hybrid mode, and to provide practical implications for practitioners when choosing governance mode for hybrid collaborations. Purpose of this paper has been accomplished through review of relevant literature on governance modes from different theoretical perspectives.

**Keywords:** Hybrid governance modes, Inter-firm relationships, Strategic alliances, Joint ventures, Networks, Consortia.

# **Antecedents of target CEO departure in acquisitions of small high-tech firms: The leading role of founder**

*Keivan Aghasi (keivan.aghasi@polimi.it)*

*Politecnico di Milano, Department of Economics, Management, and Industrial Engineering,*

*Via Lambruschini 4/b, Milan, Italy*

*Royal Institute of Technology (KTH), Department of Industrial Economics and management,*

*Lindstedtsvägen 30, Stockholm, Sweden*

*Massimo Colombo*

*Politecnico di Milano, Department of Economics, Management, and Industrial Engineering,*

*Via Lambruschini 4/b, Milan, Italy*

*Cristina Rossi-Lamastra*

*Politecnico di Milano, Department of Economics, Management, and Industrial Engineering,*

*Via Lambruschini 4/b, Milan, Italy*

## **Abstract**

Acquisitions of small high-tech firms are commonly practiced for technology and human capital sourcing. These firms' CEOs can be considered as a source of human capital for the acquirer. In this respect, in small high-tech firms we expect that all else being equal if the CEO is also founder, the human capital embedded in CEO such as social capital and technological know-how is valuable for the acquirer. Therefore the acquirers prefer to keep them in post-acquisition. The sample of this study consists of acquisitions of small high-tech firms between 2001 and 2005. The result indicates that being founder decreases the probability of CEO departure in post-acquisition. This effect is so strong that acquirers keep founder-CEOs at expense of redundancies when target is structurally integrated or product relatedness is high.

**Keywords:** Founder-CEO, CEO Turnover, Top Management Team, M&A, Post-acquisition Integration.

# **Business Model Challenge: Learnings from a Local Solar Company in Germany**

*Emrah Karakaya (emrahka@kth.se)*

*Department of Industrial Engineering, Business Administration and Statistics, Universidad Politecnica de Madrid, Spain*

*Department of Industrial Economics and Management, KTH Royal Institute of Technology, Sweden*

*Cali Nuur*

*Department of Industrial Economics and Management, KTH Royal Institute of Technology, Sweden*

*Antonio Hidalgo*

*Department of Industrial Engineering, Business Administration and Statistics, Universidad Politecnica de Madrid, Spain*

## **Abstract**

Solar photovoltaic systems are considered as vital renewable energy sources to mitigate climate change and reduce dependency on fossil fuels. However in some countries, declining political support has resulted in decreasing diffusion of the photovoltaic systems. A case in point is Germany, the country with the highest installed capacity of photovoltaic systems. Given the new conditions in the German market, the diffusion rate declined continuously both in 2012 and 2013. Whether the diffusion rate will again take off is not known. While the recent literature has pointed out that the local solar companies have a vital driving role on diffusion, not many studies have yet discussed the business models and challenges such local companies may have. Through an extensive case study, this paper explores the business model of a local solar company in a town of 43000 habitants in southern Germany. The case of this company tells about an important business model challenge. Overcoming such challenge may not only let the company survive but also drive the diffusion of solar photovoltaic systems in the region. The results include implications for both industrial actors and policymakers.

**Keywords:** Diffusion, Innovation, Solar Photovoltaics, Business Model, Renewable Energy.

# The Sharing of Risks in Energy from Waste PPP: An Italian Case Study

*Laura d'Alessandro (laura.dalessandro@polimi.it)  
Politecnico di Milano*

*Stephen J. Bailey  
Glasgow Caledonian University*

*Marco Giorgino  
Politecnico di Milano*

## **Abstract**

This study aims to investigate the risk sharing between public and private sectors in Public-Private Partnerships (PPPs) by adopting a holistic approach based on a proactive and dynamic risk governance framework. The literature review reveals both that the understanding of fundamental elements of risk sharing is not comprehensive enough since the allocation of risks between public and private partners is based solely on transferring risk and that the current approach to risk governance is based on the consideration of only operational-level risks. These two main aspects, risk sharing and risk governance, have been identified as the main weaknesses of the current approach to risk allocation in PPPs that seems to be not holistic enough to accommodate the dynamism of PPP contracts over-time. The research questions arising from the literature review are better investigated by conducting qualitative research, specifically a case study methodology. It is necessary to address the efficient allocation of risks by focusing the research on both a specific context – Italy - and a specific sector - energy from waste (EfW) PPPs. This study is relevant for both the academic community, which lacks analysis of risk sharing in Italian EfW PPP, and decision makers responsible for PPP agreements.

**Keywords:** PPPs, Risk sharing, Risk Governance, Incomplete Contracts, EfW.



# **A note on the implications of air transport and high speed rail substitution on local air pollution and climate change**

*Tiziana D'Alfonso*

*Department of Computer, Control and Management Engineering, Sapienza Università di Roma, Via Ariosto 25, Roma*

*Changmin Jiang*

*Sauder School of Business, University of British Columbia, 2053 Main Mall, Vancouver, BC, V6T 1Z2, Canada.*

*Valentina Bracaglia (bracaglia@dis.uniroma1.it)*

*Department of Computer, Control and Management Engineering, Sapienza Università di Roma, Via Ariosto 25, Roma*

## **Abstract**

We investigate the impact of air passenger transport and high speed rail competition on local air pollution, climate change and social welfare. This investigation is relevant since the debate around rail versus air transport, which has been typified with claims of the *greenness* of rail, may have led to a bias amongst policy makers when considering future transport policies. Indeed the environmental impact of competition between the two modes depends on the balance between the *substitution effect* (how many passengers using the high speed train are shifted from the aircraft) and the *traffic generation effect* (how much new demand is generated by the high speed rail). We find that the introduction of high speed rail (i) leads to market expansion; (ii) may lead to higher level of local air pollution and greenhouse gases emissions; (iii) is detrimental for social welfare if the airlines are sufficiently low pollutant.

**Keywords:** Airlines, High Speed Rail, Competition, Environment.

# **Slow fashion and sustainability in Spain: How can local manufacturing improve sustainability and how do consumers respond?**

*Hakan Karaosman (hakan.karaosman@upm.es)*

*Department of Industrial Management, Business Administration and Statistics; School of Industrial Engineering; Universidad Politécnica de Madrid (UPM); Spain*

*Gustavo Morales-Alonso*

*Department of Industrial Management, Business Administration and Statistics; School of Industrial Engineering; Universidad Politécnica de Madrid (UPM); Spain*

*Alessandro Brun*

*Management, Economics, and Industrial Engineering, Politecnico di Milano, Milano, Italy*

## **Abstract**

"Slow Fashion" attempts to offset the demand for fast fashion and mass production (Fletcher, 2007). Consumers' response to sustainability-based practices is a limited discourse and studies for slow fashion concept are scarce. This study thus aims to enlighten the subject of how slow fashion concept could improve local economies and how Spanish consumers respond to such initiatives. This paper is based on an exploratory qualitative research for which focus group interviews including three group discussions with Spanish consumers were held. The data was examined by constant comparison analysis to present consumer insights. Moreover, a case study was conducted with a Spanish apparel brand. Saint Brissant was chosen since it manufactures in Spain to (i) ensure its products' high quality and (ii) to empower Spanish economy. This paper provides empirical insights. Even though local manufacturing was perceived to have a higher quality, Spanish consumers' behavioural intentions of using local brands were not high. Self-interest, mainly price and design, was recorded as the most influential purchase criteria. Furthermore, Saint Brissant case demonstrated that local manufacturing could boost local economies by creating workforce. However, governmental subsidies should be rearranged and consumers' perceptions should be improved to support local manufacturers in Spain.

**Keywords:** Slow fashion, Sustainability, Consumer behaviour, Qualitative study, Spain.

# Effects of product and supplier criticality on resilience capabilities: An empirical analysis of a global supply chain

*Sudipa Sarker (sudipa@kth.se)*

*KTH Royal Institute of Technology, 10044 Stockholm, Sweden*

*Politecnico di Milano, 20133 Milan, Italy*

*Mats Engwall*

*Department of Industrial Economics and Management*

*KTH Royal Institute of Technology, 10044 Stockholm, Sweden*

*Paolo Trucco*

*Department of Management, Economics and Industrial Engineering Politecnico di Milano,*

*20133 Milan, Italy*

*Andreas Feldmann*

*Department of Industrial Economics and Management*

*KTH Royal Institute of Technology, 10044 Stockholm, Sweden*

## **Abstract**

From resilience perspective, it is important for supply chains to have multiple suppliers in order to maintain a high level of operational performance, in case of supply disruptions. On the contrary, keeping multiple suppliers are expensive from purchasing perspective, because, large amount of internal resources are required to maintain several suppliers. Moreover, some products are very critical and may only have sole sources, thus, making alternative sources of supply impossible. Against the backdrop, it is important for supply chains to understand, how, different product and supplier compositions affect different resilience capabilities. Hence, drawing from the literature of supply chain resilience, first, conceptual linkages among product criticality, supplier criticality and resilience capabilities are derived. Second, data from four plants of a global manufacturing organization with different supplier and product compositions are collected. Finally, hypothesized relationships are tested by using parametric statistical tests. The empirical data indicate that product and supplier criticality affect different capabilities of supply chain resilience distinctively. Theoretical contribution of this research is the conceptual model that is derived from synthesizing the existing literature of supply chain resilience. Practical contribution is the enhanced understanding of the effects of product and supply criticality on different resilience capabilities.

**Keywords:** Supply Chain Resilience, Supply Disruption, Business Impact, Time to Recovery, Empirical Study.

# Lean practices and operational performance in ETO: Influence of dynamism and complexity

*Seyoum Eshetu Birkie (seyoumeshetu.birkie@polimi.it)*  
*Politecnico di Milano, Milan, Italy*  
*KTH Royal Institute of Technology, Stockholm, Sweden*

*Paolo Trucco*  
*Politecnico di Milano, Milan, Italy*

*Matti Kaulio*  
*KTH Royal Institute of Technology, Stockholm, Sweden*

## **Abstract**

The study investigates how dynamism and complexity factors influence the implementation and sustenance of lean practices for better operational performance in Engineer-to-order (ETO) context. A single case company operating in capital goods manufacturing sector is studied. Data is collected using interviews with managers, field observation, participation in cross-functional meetings, refereeing reports and extracts from company database. The findings suggest that lean implementation in ETO environments is influenced by dynamism (reflected as uncertainties) related to internal processes and external influences, as well as complexity (reflected as heterogeneities in firms activities) factors that also inform differences of lean practice bundles in ETO compared to repetitive manufacturing. This paper extends the limited consideration of lean practices in ETO environments by analysing and confirming how dynamism and complexity factors influence lean transformation journey. In short, we discuss which lean practices are relevant in ETO, and discuss their relationship with operational performance. Complexity and dynamism in ETO provide opportunity to highly benefit from lean practice bundles. However, the same factors appear to be empirical challenges in achieving and measuring benefits from lean implementation. Further investigation is required to analyse magnitude of individual and combined influence of the context factors on lean in ETO environment.

**Keywords:** Lean production, Engineer-to-order, Uncertainty, Dynamism, Complexity, Practice bundles.

# Embedding sustainability in supply chain strategic fit

*Maria Caridi*

*Department of Management, Economics and Industrial Engineering,  
Politecnico di Milano  
Via Lambruschini 4/b, 20156, Milan (Italy)*

*Federica Ciccullo (federica.ciccullo@polimi.it)*

*Department of Management, Economics and Industrial Engineering,  
Politecnico di Milano  
Via Lambruschini 4/b, 20156, Milan (Italy)*

*Margherita Pero*

*Department of Management, Economics and Industrial Engineering,  
Politecnico di Milano  
Via Lambruschini 4/b, 20156, Milan (Italy)*

*Andrea Sianesi*

*Department of Management, Economics and Industrial Engineering,  
Politecnico di Milano  
Via Lambruschini 4/b, 20156, Milan (Italy)*

## **Abstract**

Supply chain management (SCM) literature (e.g.: Christopher and Towill, 2000) looks at how supply chain strategy conceptualisation and implementation is related with order winners and market qualifiers. These authors studied how the relative importance of order winners and market qualifiers determines, on a supply chain-wide perspective, different supply chain types that gradually adapt, in order to reach the so-called “strategic fit”. Moreover, researchers as well as companies have started to realise that their supply chains cannot be measured just against traditional performance, but they need to consider societal and environmental impact as well (Naim and Gosling, 2011). In this regard, extant literature is falling short in analysing the inclusion of sustainability in the list of the competitive priorities and in adopting a broader perspective on supply chain strategy and configuration when addressing the strategic fit issue. The goal of this work is thus to bridge this gap. Exploratory case studies are presented in order to gain insights on sustainability supply chain profiles and how they match with established supply chain strategy and configuration. We would like to suggest managers specific actions to be first movers in a changed competitive scenario, adapting the supply chain to the new dominant competitive priority, which can ultimately be sustainability.

**Keywords:** Supply chain strategy, Competitive priorities, Sustainability, Strategic fit.

# **Internet of Things as a way to increase energy efficiency in manufacturing companies: State of the art and an evaluation methodology**

*Fadi Shrouf (fadi.shrouf@polimi.it)*

*Department of Management, Economics and Industrial Engineering,  
Politecnico di Milano (POLIMI), Italy*

*Department of Industrial Engineering, Business Administration and Statistics, ETSII,  
Universidad Politécnica de Madrid (UPM), Spain*

**Giovanni Miragliotta**

*Department of Management, Economics and Industrial Engineering,  
Politecnico di Milano (POLIMI), Italy*

**Joaquin Ordieres-Meré,**

*Department of Industrial Engineering, Business Administration and Statistics, ETSII,  
Universidad Politécnica de Madrid (UPM), Spain*

## **Abstract**

Increasing energy costs, “greener” consumer behavior and environmental legislation are driving efforts toward sustainable manufacturing. In this scenario, the enhanced awareness of actual energy consumption represents an essential step to support energy-efficient decision-making in production management. The Internet of Things (IoT) technology appears to be a powerful enabler for better visibility and awareness, thanks to smart sensors and smart meters at the machine level which can collect energy consumption data from production systems almost in real time. This paper aims to provide a short review of the current State-of-the art in adopting IoT for collecting energy consumption data. Then it presents a methodology to help managers to implement IoT: the proposed methodology includes an analysis of the current energy management system existing in the company, so as to understand the present situation, defines the expected benefits, recommends procedures for implementing IoT to collect energy data and eventually suggests how to integrate the collected data in production management decisions at operational level. In order to test the methodology a pilot study was started, and energy KPIs will be used to evaluate the achieved improvement in energy efficiency, and hence the effectiveness of the proposed methodology.

**Keywords:** Internet of Things, Methodology, Energy consumption awareness, Energy management, Production management decisions.

# Supply chain configuration, effectiveness and efficiency: Looking for the best fit

*Yasmine Sabri (ysara@kth.se)*

*Department of Management, Economics and Industrial Engineering,*

*Politecnico di Milano, Milan, Italy*

*Department of Industrial Economics and Management,*

*Royal Institute of Technology, Stockholm, Sweden*

*Guido J.L. Micheli*

*Department of Management, Economics and Industrial Engineering,*

*Politecnico di Milano, Milan, Italy*

*Cali Nuur*

*Department of Industrial Economics and Management,*

*Royal Institute of Technology, Stockholm, Sweden*

## **Abstract**

Companies struggle to properly react to customer demand, while maintaining efficient operations. For the sake of surviving market competition, they extended collaboration to external entities both globally and locally, since competition has over time moved from a company level to a supply chain level. This dependence on outsourcing, as well as increasing demand volatility, has elevated the complexity in managing a supply chain. Furthermore, companies are challenged by the trade-offs between service level and customer satisfaction (effectiveness) on the one hand, and cost reductions (efficiency) on the other hand. In an effort to overcome these challenges, companies should continuously take decisions on how to adjust their supply chain configuration. The (re-)Configuration of a supply chain is a decisive factor in supply chain costs, complexity and performance control. This paper is an attempt to provide literature-grounded analysis for alternative supply chain configuration scenarios, by comparing configuration settings within four different industry sectors, and supply chain different perspectives (global vs. local, and for-profit vs. not-for-profit). The study depicts relationships among supply chain configuration settings, effectiveness, and efficiency indicators. It contributes to researchers and practitioners in having a better understanding on how to achieve the most proper fit between configuration, efficiency and/or effectiveness.

**Keywords:** Supply Chain Configuration, Efficiency, Effectiveness, Supply Chain Performance, Supply Chain Management.

# The decision making process of your company is really integrated?

*Raul Pulido (raul.pulido@polimi.it)  
Politecnico di Milano*

*Alessandro Brun  
Politecnico di Milano*

*Álvaro García-Sánchez  
Universidad Politecnica de Madrid (UPM)*

## **Abstract**

The paper describes the development of a study of production planning decision-making process. The internal and the external integration of the supply chain have become essential for many industries. However, according to a global survey of the supply chain: companies have put so much attention about supply chain integration that they have forgotten about the internal integration. The literature about internal integration defines it as a key element in the performance of the company and the entire supply chain. Besides there is a problem of misconception of their own level of internal integration. Companies could trust to be integrated based in misconceptions or incomplete information. This could lead to miss valuable synergies that could reduce the overall cost. Using a survey among production planning practitioners, we investigate the decision-making process of the internal planning, operation scheduling and inventory control at the shop level. The degree of integration is analysed using the decision-making process and other drivers suggested in other studies. We conclude that many companies have a misalignment in the implementation of their philosophies. Consequently, the possibility of enhance is lost by silo decisions and managers should implement the internal integration practices in the different areas of the production planning.

**Keywords:** Production planning, Silo view, Decision making.



# **A Systematic Review on Information Transition Approaches of Sustainable Production and Consumption (SPaC)**

*Jing Shao (jing.shao@polimi.it)*

*Dept. of Management, Economics and Industrial Engineering, Politecnico di Milano, Milan, Italy, and*

*Dept. of Industrial Engineering, Business Administration and Statistics, Universidad Politécnica de Madrid, Madrid, Spain*

*Marco Taisch*

*Dept. of Management, Economics and Industrial Engineering, Politecnico di Milano, Milan, Italy*

*Miguel Ortega Mierb*

*Dept. of Industrial Engineering, Business Administration and Statistics, Universidad Politécnica de Madrid, Madrid, Spain*

## **Abstract**

Sustainability becomes the key towards success of manufacturing industries now. Besides increasing efficiency of sustainable industrial processes, sustainable consumption becomes an important complementary strategy for making economies more sustainable gradually. Hence, the research topics in sustainable production and consumption (SPaC) have emerged in the recent decade. In order to promote sustainable consumption, effective approach is needed to make information transition from sustainable production to sustainable consumption. Unfortunately, presently, even green consumers could not get sufficient information that enable them making greener buying decisions. Even though eco-labels promoted green marketing in the last decade, information provided in eco-labels is discussed to be polar and weak comparable among others. Indeed, besides eco-labels, many kinds of approaches in industrial engineering area have the potential to provide sustainability information for consumers. The objective of this study was to make an evaluation on available information transition approaches regarding their feasibility of providing sustainability information of a product for consumers. Through systematic review, the results showed that, in both industrial engineering and marketing science, available approaches or instruments could hardly be directly applied for consumers. It is found that there is a notable need for generating proper approach or strengthening available approaches in order to get the goal of providing sustainable information of a product for consumers. This study is an important fundamental study in the research domain of SPaC with sufficient insights on analysis of characteristics of each type of approach. Both academic researchers and decision-makers could benefit from this in-depth analysis. In the end, further research directions regarding further development on conceptualized framework and its application are offered.

**Keywords:** Sustainable Production and Consumption, SPaC, Indicator, Eco-labels, Consumers, Buying behavior.

# Improving first-tier suppliers' responsiveness: Information sharing approach

*Nidal Y. Dwaikat (nidal.dwaikat@indek.kth.se)*

*Department of Industrial Economic and Management, Royal Institute of Technology KTH,  
10044 Stockholm, Sweden*

*Department of Industrial Engineering & Management, Technical University of Madrid UPM,  
28006, Madrid, Spain*

## **Abstract**

While pervious research uses the agility theory to theoretically derive the benefits of information sharing in supply chain, it has so far overlooked how these theoretical underpinnings must be used to assess the supplier ability to respond to the fluctuating volumes. This research investigates the relationship between suppliers' responsiveness and information sharing between original equipment manufacturers OEMs and first-tier suppliers. Based on an online-survey questionnaire, data from a representative sample of 203 auto-parts manufacturing plants in Sweden is subjected to regressions analysis.

**Keywords:** First-tier supplier, Volume flexibility, Delivery flexibility, Information sharing, Demand forecasts, Inventory data.

Copyright © Poliscript 2014 - Politecnico di Milano  
Piazza Leonardo da Vinci, 32 - 20133 Milano  
Prima edizione: Maggio 2014  
Stampato da Poliprint - Politecnico di Milano  
via Bonardi, 9 - 20133 Milano  
ISBN 97888-6493-022-0