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CAMBRIDGE



A photograph of King's College Chapel in Cambridge, viewed through the branches of a tree. The building features its characteristic fan vaulted ceiling and multiple spires. The sky is blue with some white clouds.

18th International Annual EurOMA Conference

Exploring interfaces

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SPECIAL TRACKS

A number of special session tracks are organised as part of the programme, as listed below.

Capability and the resource-based view in practice and theory: An operations management perspective - John Mills, Mike Lewis, Ran Bamrah

Empirical modelling and simulation - Andreas Größler and Jürgen Strohhecker

Managing global operations: Perspectives from emerging economies - Jagjit Sing Srai

Practice and theory building for managing complex performance - Nigel Caldwell, Jens Roehrich and Mickey Howard

Theory in Operations Management research - Matthias Holweg

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Programme overview

MONDAY 4 JULY

- 08.00 Registration
- 09.00 Opening session
Dr Jag Srai and Dr Matthias Holweg
Conference co-chairmen
University of Cambridge
- Welcome to EurOMA 2011
Professor Raffaella Cagliano
EurOMA President
Politecnico di Milano
- 09.30 Keynote presentation
Dr Ralf Speth
Chief Executive Officer
Jaguar Land Rover
Nick Fell, Director & Head,
Tata Motors European Technical
Centre
- 10.15 Refreshment Break
- 10.45 Parallel sessions
- 12.15 Lunch
- 13.15 Parallel sessions
- 14.45 Refreshment break
- 15.15 Parallel sessions
- 16.50 EurOMA 2011 Annual General
Meeting
- 17.50 Close
- 19.00 EurOMA Gala Evening
King's College, Cambridge

TUESDAY 5 JULY

- 08.45 Parallel sessions
- 10.15 Refreshment break
- 10.45 Parallel sessions
- 12.15 Lunch
- 13.15 Parallel sessions
- 14.45 Refreshment break
- 15.15 Keynote presentation
Professor David Upton
University of Oxford
- Kell Ryan
Co-founder, Ryanair
- 16.30 Closing session
Chaired by Dr Jag Srai and
Dr Matthias Holweg
- Harry Boer Award
- Chris Voss Award
- EurOMA 2012 – an introduction
- 17.00 Close

WEDNESDAY 6 JULY

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ABSTRACTS

Empirical modelling and simulation

EMP1 Automotive crash repair reverse logistics operations: An analysis of the inventory-service trade-off

JAMES AITKEN(1), HARTANTO WONG(2)

(1)University of Surrey, Guildford, UK, (2)Aarhus University, Aarhus, Denmark

Companies have recognised that used products can represent a valuable economic resource as well as an opportunity to reduce the environmental impact of the repair process. Realising the value-add inherent in used products requires the establishment and operation of a reverse logistics (RL) system. RL systems are typically characterised as being the return journey within a closed-loop supply chain from the consumer back to the original product producer. The objective of the research was to develop an evaluation model of introducing an RL system without involving the producer.

EMP2 The assumption of exponential interarrival times in hospital emergency departments: right or wrong?

FRANCISCO AGUADO-CORREA(1), NURIA PADILLA-GARRIDO(1), MARIA ISABEL RENGEL-DOMÍNGUEZ(2), TERESA LEAL-LINARES(1)

(1)University of Huelva, Huelva, Spain, (2)Hospital Juan Ramon Jimenez, Huelva, Spain

In the last year 6 out of 10 people visited the Spanish Hospital Emergency Departments (ED) for cases that could be solved in the Primary Health Care Service, causing congestion, long length of stays and even episodes of violence to health personnel. The aim of this paper is to analyze the probability distributions of time between the arrival of two consecutive patients in order to design realistic scenarios and to demonstrate if the usual hypothesis of exponential distributions in Discrete Event Simulation models (DES) is fulfilled.

EMP3 Airport services to passengers with reduced mobility: a case for adoption of auto ID technologies?

MAURIZIO TOMASELLA, ALAN THORNE, DUNCAN MCFARLANE, GUILLAUME FEBVAY, LAETITIA USSERAU

University of Cambridge, Cambridge, UK

In 2006, the European Parliament and Council adopted a new regulation (No. 1107/2006) that considerably improved the rights of passengers with reduced mobility, when travelling by air. Airport authorities were given the full responsibility to provide this assistance at their premises and in their terminals. A number of operational issues then arose in many airports, particularly regarding the management of the assets involved in such services (e.g. wheelchairs). This paper presents a case study at one major airport in the UK, which was focused on enhancing the current processes, more precisely by using automated identification technologies.

EMP4

Intelligence, personality, and interests – Determinants of Individual Inventory Management Performance?

JÜRGEN STROHHECKER(1), ANDREAS GRÖSSLER(2)

(1)Frankfurt School of Finance & Management, Frankfurt am Main, Germany, (2)Radboud University Nijmegen, Nijmegen, The Netherlands

The purpose of this study is to investigate the influence of four personal traits (intelligence, knowledge, personality and interests) on performance in an inventory management task. We base our model on PPIK theory from cognitive psychology and ground the experiment we conduct on the tradition of dynamic decision making research. Findings are that intelligence and knowledge are good predictors of inventory management performance, while the analysis shows no relation or only partial relations between personality and interests, and performance. The value of this paper lies in the adaptation and the application of psychological theory on inventory management.

EMP5

Operations strategy under environmental uncertainty

BARIS YALABIK(1), MIKE LEWIS(1), GULSUN NAKIBOGLU(2)

(1)University of Bath, Bath, UK, (2)Cukurova University, Adana, Turkey

We utilise a simulation model motivated by the example of the European iron and steel industry to examine the timing and magnitude of process improvements in response to the uncertain nature of carbon prices and the trajectory of best available technology over time. We model these uncertainties to create several future scenarios and to investigate the success of different process improvement strategies in dealing with these scenarios. Our preliminary results suggest that gradual increases in carbon prices induce firms to pursue environmental investment strategies while rapid increases in carbon prices induce firms to pursue production reduction strategies.

Operations and the environment

ENV1 Sustainable supply chains: New challenges, new governance

SAMIR DANI

Loughborough University, Loughborough, UK

The global nature of today's supply chains have been facilitated by new business models within the supply chain and logistics environment and better transportation facilities. Traditionally, inventory management, cost and lead times have been the important variables that have influenced supply chain design and governance. These variables are still important, however sustainability (economic stability), green and ethical purchasing are portrayed to be the important factors affecting next generation supply chains (Vachon and Klassen, 2006). This research conducted qualitatively, provides insight into the research questions and also to identify sustainability criteria which influences operations and subsequently supply chain design and governance.

ENV2 Sustainable supply chain management: Towards a holistic understanding of the triple bottom line?

ALISON ASHBY, MIKE LEAT, MELANIE HUDSON-SMITH

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There is increased focus on sustainability within academia, society and business, the latter evidenced by expectations for firms to be fully responsible for ethical and environmental behaviour along their supply chains. Building on Supply Chain Management (SCM) and sustainability theory this research aims to understand how complex global supply chains can become sustainable, via analysis of the UK clothing industry. A Triple Bottom Line (3BL) framework is used to evaluate the environmental, social and economic components of sustainability within supply chains and examines whether a true balance can be achieved.

ENV3 a study on sustainability common topics in operations management and industrial ecology publication

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The exhaustion of the current paradigm of organizing operation in open chains, or cradle to grave sequence, suggesting that only interventions that adopt the whole operation-consumption system perspective, or the cradle to cradle sequence, are effective to face the challenges of today's major environmental issues. Considering this broader perspective, this paper aims to identify complementarities and interface approaches for the Operations Management and Industrial Ecology on topics related to sustainability. For that, a bibliometric analysis was done for the topics production, supply chains and sustainability with a satisfactory result

ENV4

Environmental sustainability: drivers, practices and performance within the German third-party logistics industry

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Recently, third-party logistics (3PL) providers have reported an increasing amount of interest from their stakeholders regarding their environmental sustainability efforts. However, research on environmental sustainability within the 3PL industry has been scarce, even though 3PL providers constitute the connecting interface within global supply chains and play an important role for their environmental impact. In order to advance research, a questionnaire-based survey resting on institutional theory was conducted within the German 3PL industry. Multivariate analysis was used to measure the effects of external and internal drivers on 3PL providers' environmental practice adoption and the effect on performance outcomes.

ENV5

Logistics strategy, transportation and environmental impacts - a causal systematic approach

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This papers purpose is to describe how logistics strategy, transportation and environmental impacts do interrelate with each other. The definition of a logistics strategy is essential for gaining advantages and being able to differentiate from competitors in the market. The logistics strategy developed by a company has huge effects on the operative logistical level of the company and deeply interrelates with transport decisions as transport mode, frequency, utilization etc. are affected. Therefore a new approach based on a causal loop diagram trying to picture the interrelationships from a systemic point of view with the overall goal of sustainable and environmental friendly movement of goods.

ENV6

Environmental performance in transport contracts

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This study investigates the inclusion of environmental performance in transport contracts, and studies if differences in inclusion can be explained by intra-organizational involvement. Findings from a survey study targeting logistics service providers and shippers suggest that those who include environmental performance in contracts, not necessarily consider how to measure the environmental performance and how to handle non-compliance. A higher degree of intra-organizational involvement is related to larger inclusion of environmental performance in contracts. Findings also indicate that transportation managers play a more important role for inclusion of environmental performance in contracts, as compared to top management and environmental managers.

Operations and the environment

ENV7

green supply chain management in Italy: pressures, practices and performance

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This paper investigates the adoption of green supply chain management practices by Italian manufacturing companies. Relationships between pressures to the adoption, level of adoption, and performance are analysed through survey research. Results show that the level of adoption is still relatively low when compared to previous findings relating to different contexts. Similarly to previous results, regulatory factors have emerged as the most relevant pressure; supply chain-related factors are also important motivators. Greater practice adoption is associated with better environmental performance with some negative and some positive financial outcome. Results have implications for a variety of stakeholders including Italian policy makers and industrial organisations.

ENV8

Improving sustainability performance in the supply chain: drivers and barriers to engaging SME suppliers

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This paper explores sustainability in supply chain management (SCM) from the perspective of the relationships between larger customers and small and medium-sized (SME) suppliers. The paper provides a literature review of sustainable SCM, identifying the role of SME suppliers in enhancing supply chain sustainability and the drivers and barriers that face SMEs when they engage in sustainability initiatives with larger customers. The literature review provides the foundation for an empirical study that will investigate the role of SMEs in improving sustainability performance in supply chains.

ENV9

Understanding sustainable supply chains – locally and globally

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A conceptual framework is introduced in this article, which systematizes five configurations of sustainable supply chains. These result from combinations of actor dominance, relationship characteristics, and operations as well as transactions governance. Aiming to facilitate creating a shared understanding between stakeholders of sustainable supply chains, the framework provides guidance about situation and arising difficulties. As an underlying methodology we propose first a reconceptualization of sustainability by tracing it to its roots of perpetuation of opportunities and resources; then we address the inevitability of incorporating new stakeholders and relationships in sustainable supply chains.

ENV10 challenges and opportunities for reverse logistics initiatives in the automotive industry

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(1)Aston University, Birmingham, UK, (2)The University of Manchester, Manchester, UK

This paper investigates the main strategies automotive companies adopt to address the issue of dealing with end-of-life vehicles and spare parts. Furthermore, it investigates the reasons behind take-back strategies, i.e how and why automotive companies undertake initiatives in reverse logistics. The research findings indicate that companies are trying to respond to the end-of-life legislation based on cost-effective approaches as well as corporate environmental responsibility. Outsourcing is used when expertise is found to extract value from scrap and there is cooperation with suppliers and vendors to facilitate the dismantling of cars and recycling of parts.

ENV11 Reverse logistics systems for waste generated throughout vehicles life-cycle

RUTH CARRASCO-GALLEGO, JOAQUIN DELGADO-HIPOLITO, EVA PONCE-CUETO

Technical University of Madrid (UPM), Madrid, Spain

Waste produced during the service life of automobiles has received much less attention than end-of-life vehicles themselves. In this paper, we deal with the set up of a reverse logistics system for the collection and treatment of use-phase residues. First, the type of waste arising during vehicles' service life is characterized. Data were collected in collaboration with SIGRAUTO, the product stewardship organization in charge of vehicles' recovery in Spain. Next, three organizational models are proposed. The three alternatives are benchmarked and assessed from a double organizational and operational perspective for the particular case of the Madrid region in Spain.

ENV12 Restructuring service areas and vehicle routes in a recyclable waste collection system

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The present work aims to develop a decision supporting tool to help the decision making process related to the planning of waste collection systems. Such systems involve more than one depot and the objective is to define the delimitation of service areas and the vehicles routes. The problem is modelled as a multi-product, multi-depot vehicle routing problem. A hybrid method that combines exact formulations with heuristic procedures is developed and applied to a real recyclable collection system whose managers want to restructure the current service areas as well as the vehicle routes used to collect three types of recyclable materials.

ENV13 Greening the construction industry supply chain using - system dynamics approach

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The rapid growth of construction sector has a significant environmental impact with increase in carbon footprints. This paper analyses the environmental implications of the rapidly growing construction industry in United Arab Emirates (UAE) using system dynamics approach. Quantitative modeling of the construction industry supply chain helps to measure the dynamic interaction between its various factors under multiple realistic scenarios. The potential carbon savings and the impact of each factors are calculated using scenarios development. The paper has addressed in detail the various drivers and inhibitors of carbon emission in the construction industry supply chain and ways to optimize the carbon savings.

ENV14 Supply chain planning with sustainability considerations: an integrative framework

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(1)Technical University of Denmark, Kgs. Lyngby, Denmark, (2)Technische Universität München, Munich, Germany

This paper proposes a modelling framework for combining supply chain planning and sustainability assessment, illustrating how sustainability assessments can be improved by supply chain planning input, and supply chain planning can in turn make use of the results from sustainability assessments. We use mathematical programming for the supply chain planning and life cycle assessment for the modelling and quantification of the environmental impacts. We illustrate the benefits of our integrated framework for a case of production, distribution and storage of food products produced on industrial scale, studying several important planning decisions like temperature treatments and choice of packaging materials.

ENV15 Using Causal Loop Diagrams (CLD) as an organizational learning tool to raise management awareness of the eco-sustainability challenge and to facilitate operational problem solving

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This paper introduces Causal Loop Diagrams (CLD) as an organisational learning tool which should help managers of manufacturing firms to build awareness and understanding of the eco-sustainability challenge. In order to achieve that, the literature and case studies are used to analyse the drivers of the eco-sustainability challenge as well as their impact on innovation in the form of eco-efficiency and eco-effectiveness. Better understanding supports management to deal with this challenge and to sustain competitive advantage. CLD are a useful tool to structure and visualise components of the sustainability challenge and to highlight important cause-effect relations between components.

ENV16 Manufacturer-retailer collaboration on sustainability: An emerging agenda

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The aim of this paper is to present the initial findings from a study exploring how manufacturers and retailers collaborate on sustainability. The study takes a large FMCG manufacturer's perspective on its relationship with five retailers. We examine the factors influencing joint implementation of sustainable practices in the supply chain. Our findings show that sustainability is starting to appear on the agenda of manufacturer-retailer collaboration, mainly associated with cost reduction initiatives. Viewed as a 'young' concept, its implications and measurement systems are not yet well understood. This research seeks to contribute to better understanding sustainability within downstream relationships.

ENV17 Sustainable purchasing through inter and intra-firm collaboration

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Recent years have seen sustainability developing rapidly as a key business issue. The objective of this paper is to study how to integrate sustainability criteria into strategic purchasing practices (focusing on inter-firm and intra-firm collaboration) and which could be the impact of these actions on sustainability and cost performances. Results of a cross-country survey show that a sustainable purchasing strategy is actually followed up by concrete actions in term of long-term collaboration with suppliers and knowledge sharing with other company functions. The former do lead to benefits for the buying firm sustainability and cost performance, the latter not.

ENV18 Assessment or collaboration? An empirical study on Green Supply Chain Management

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Although there is an increasing interest in Green Supply Chain Management (GSCM), researchers continue to struggle with identifying a clear, unified framework. In this paper, we posit the idea that GSCM practices can be combined to form diverse strategies. More specifically, the following research questions are proposed: (1) How do firms combine managerial practices to form GSCM strategies? (2) Which are the variables that affect that decision? (3) Which are the results of the different GSCM strategies? Using cluster analysis, we identified three main GSCM strategies, which were contrasted using environmental drivers, context and performance variables.

Operations and the environment

ENV19 Low carbon emission global supply networks: from measurement to redesign – a case study in ICT industry

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This paper presents a preliminary framework for researching the low carbon emission global supply networks. With external pressures and internal drivers, consumer goods industry faces more obvious pressures than others, for example, ICT (Information, Communication and Technology) industry, food and drinks manufacturing. Although there is an extensive literature on sustainable supply chain, carbon footprint reduction issue in global supply networks (GSN) operation is not adequately addressed. This paper aims to propose a preliminary framework to analyze different aspects in low carbon emission supply network, supporting by a detailed case in carbon emission measurement, improvement and redesign.

ENV20 Sustainability and mass customization: can they be integrated in a new production paradigm? Empirical test of a reference framework.

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In today highly competitive environments firms need to choose a proper strategy that can bring them competitive advantage. Mass customization and sustainability are two paradigms becoming more and more important and being used by companies operating in different sectors to increase their competitiveness. This paper reports results achieved in one research step of a European-funded project, whose aim is the development of a sustainable and mass customized paradigm. Objective of the paper is analyzing the practical applicability of a framework depicting a sustainable mass customized design process developed as a reference tool within the project. Two case studies are investigated.

ENV21 The carbon credits market in Brazil: Supplying CDM project solutions

SILVIA ZILBER

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The objective of this article was identifying the role of intermediary agents in the development of Clean Development Mechanism (CDM) projects in Brazil related to the market for negotiating carbon credits. In this research we used an exploratory strategy, using two case studies. The companies studied are developing CDM projects for third parties. We observed that the companies that hire these projects in Brazil use intermediary companies as outsourced labor for developing them because of their greater expertise in the subject, or they even set up joint ventures when the opportunity for future financial results proves to be advantageous.

ENV22 Sustainability initiatives in fashion firms and their supply chains: a risk/ reward framework

EMMA BRANDON-JONES

University of Bath, Bath, UK

This paper explores environmental and ethical performance in the clothing industry using a risk/ reward framework to analyse the behaviour of firms. Both environmental and ethical initiatives are considered with regards to whether they are driven by risk mitigation or by pursuit of competitive advantage (reward). In relation to this, two theoretical perspectives are used: Institutional Theory which asserts that firms follow similar patterns of behaviour due to coercive, mimetic and normative pressures; and the Resource-Based View, where resources which are scarce, imperfectly mobile, imperfectly imitable and imperfectly substitutable are attributed to differential competitive advantage.

ENV23 Drivers and competitive priorities: implications for environmental strategies

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We draw on contingency and stakeholder theories to explore how plant- and supply chain-related characteristics influence competitive priorities within manufacturing strategy. Drawing from large-scale Canadian survey, plants clustered into three groups: environmental-oriented, balanced set, or cost-oriented competitive priority. A multinomial logit model found that internationally owned plants and an increasingly optimistic production outlook were positively related to plant-level manufacturing strategy that emphasized an environmental/safety priority. Moreover, evidence was found that relying to a greater extent on suppliers located in Asia and Africa was positively related to emphasizing either a balance set or cost-oriented priority, instead of an environmental-oriented priority.

ENV24 Sustainable operations: The impact of environmental and social practices

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ESADE Business School - Universitat Ramon Llull, Barcelona, Spain

Understanding the effects of environmentally-friendly production systems and socially-oriented practices on environmental, social and economic performance is essential, and this is the aim of this study. A structural model explaining environmental, social and economic performance was analysed with SmartPLS 2.0 using data collected among Spanish firms. The results suggest that the implementation of environmental and social practices pays off in terms of impact on the triple bottom line (environmental, social and economic performance).

Operations and the environment

ENV25 conceptualizing climate change: constructed practices in operations networks

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Climate change is an emergent issue for operations networks. By using statistico-organizational theory, I analyze in a two-case study how operations networks can be managed despite uncertain and even unknowable concepts. The results indicate that at managerial level, climate change provides supported but not fully understood business opportunities, whereas at the operational level, the firms are learning to explicitly measure indicators related to climate change.

ENV26 Using multiple case studies to determine company attitudes to carbon emissions reduction in logistics operations

JIMMY CASTRO BOLUARTE(1), YONGMEI BENTLEY(1), JAMES CRABBE(1), MARTIN CHRISTOPHER(2)

(1)University of Bedfordshire, Luton, Bedfordshire, UK, (2)Cranfield University, Cranfield, UK

This paper reports on the initial findings of a case-study approach to identifying and analysing changes in the logistics operations of five large UK-based companies in response to increasing concerns about carbon emissions in business operations. The study sheds light on the current state of UK logistics operations regarding carbon emissions. It also contributes to the understanding of how strategy is formed within logistics operations in response to the increased concern to reduce the carbon emissions from business operations. The study is relevant to practice, as it will assist logistics managers in the adoption of carbon emissions logistics initiatives.

ENV27 national innovation system framework for sustainable development of the Canadian oil sands

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Increased environmental awareness has created challenges for the oil and gas industry while producing unique opportunities for environmental innovation driven by social, administrative and economic forces. As a result there is the potential for strategic partnerships between the oil and gas industry with environmental firms for the sustainable development of Canadian oil sands. This article proposes an integrated framework examining the driving factors in legitimizing environmental innovation and its impact on the industry. The framework will be applied to a small Calgary based environmental services firm.

ENV28 Researching sustainability in OM community

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A high demanding business environment is constantly challenging OM models. A sustainable global agenda is being forged by supranational agencies. In order to understand this scenario through OM lens, a literature review is conducted to identify sustainability issues in OM research. The main goal of this paper is to figure how OM researchers are approaching sustainability themes. The study is fundamentally based in social network diagrams and relationship indicators generated through a bibliometric research involving 472 papers. Based on information generated by the descriptive analysis, it could be stated that sustainability is not a consolidated topic in OM academic community.

ENV29 The impact of carbon emission considerations on manufacturing value chain relocation

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As manufacturers concern more on the carbon emissions, we investigate how the increasing carbon emission cost affects the operations strategy and relocation decisions for a manufacturer. Specifically, we develop a theoretical model which explicitly accounts carbon emission cost and compares total operations costs in different regions under various cost structures and emission structures. The results show that the carbon emission cost has significant influence on the relocation decisions under certain circumstances. As carbon emission cost increases, manufactures may first off-shore and then near-shore. High demand rate could favor production in high cost region as emission cost becomes significant.

ENV30 Sustainability in supply chain relationships: Managing relational risk

SINÉAD CAREY, EMMA BRANDON-JONES

University of Bath, Bath, UK

The establishment of effective relationships has been identified as an important way to mitigate potential risk in supply chains. We argue that the on-going monitoring of supplier relationships is central to ensuring the minimisation of relational risk, and accrual of relational capital. This study is motivated by the lack of attention paid to risk that organisations may be exposed to when developing their ethical and/or environmental practice. We examine how organisations can manage their supplier relationships to address relational risk using outcome and behavioural monitoring.

Operations and the environment

ENV31 The moderating role of operations efficiency on the link between environmental performance and financial performance: Evidence from the UK using three independent datasets

RAMAKRISHNAN RAMANATHAN, ADEWOLE AKANNI

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We investigate the moderating role of operations efficiency on the link between environmental and financial performance in this study. Extant literature has highlighted that operations efficiency is closely associated with the environmental/financial performance of firms, but no empirical study has investigated how operations efficiency affects the link between environmental and financial performance. We have found strong evidence for the moderating impact of operations efficiency using three independent data sets. Our results are useful to managers in that they show that improvements in operations efficiency in a company can also help improve environmental/ financial performance and vice versa.

ENV32 Achieving competitive advantage by addressing the dimensions of eco-sustainability and innovation in manufacturing processes

ANDREAS HINZ, MAIKE SCHERRER-RATHJE, MICHÈLE NEUMANN

University of St Gallen, St Gallen, Switzerland

This paper explores how firms can generate competitive advantage by simultaneously addressing the dimensions of eco-sustainability and innovation in manufacturing processes. The eco-sustainability dimension is divided into eco-efficiency and eco-effectiveness while the innovation dimension is divided into incremental and radical innovation. These two dimensions are combined in an eco-sustainability & innovation matrix which allows to build clusters of studied firms. In order to shed more light into the connectedness of these two dimensions and the impact on competitive advantage, case studies are conducted with firms that are actively engaged in eco-sustainability and innovation initiatives.

ENV33 Perceived environmental uncertainty, environmental management and firm performance in the hotel sector

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University of Alicante, Alicante, Spain

This paper evaluates the impact of environmental uncertainty on managerial perceptions and the development of more proactive environmental management, and examines the two-way relationship between environmental practices and firm performance. Empirical research on this topic is inconclusive. This paper addresses some of these limitations. Structural equation modelling is used, and reveals significant influences of size, environmental uncertainty and managerial perceptions of practice on more aggressive environmental goals. Moreover, investment in proactive environmental management contributes to increasing the competitiveness of a firm, which has a positive impact on financial performance. Finally, financial performance also influences proactive environmental management.

ENV34 Social Indicators for supply chain analysis

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Recently, the society has been recognizing that the world economy cannot be based only in economical goals. Environmental and social aspects need also to be included into the companies' strategy. This paper explores these concerns and presents an analysis of possible social indicators that can be used to evaluate the social responsibility performance in global supply chains. A methodology for the selection of the possible most representative social indicators is presented. An analysis of sustainability reports of several companies was performed. The indicators utilization is illustrated through the identification of the social performance of two food supply chains.

ENV35 Sustainable services: A conceptual framework

EMMA BRANDON-JONES(1), ALISTAIR BRANDON-JONES(1), HELEN WALKER(2)

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This paper provides a conceptual exploration of sustainable services. The burgeoning interest in sustainability in OM and sustainable SCM has to date been focused on the manufacture and supply of sustainable products, and services have been under-researched. We develop a conceptual framework and propositions, drawing on the unified service theory of services (Sampson & Froehle, 2006) and the triple bottom line perspective of sustainability (Elkington, 1998). We outline different types of services that are either goods, information or person-dominated, and consider the social, environmental and economic sustainability aspects that may be appropriate for them.

ENV36 Environmental management programmes in the UK information technology (IT) industry

KATE THIRLAWAY

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Environmental management programmes (EMP) can significantly improve organisational environmental performance through encouraging environmental activities, facilitating knowledge sharing and collaboration. However, improvement is contingent on employee adoption of the programme. Thus, understanding what influences employees' environmental behaviour adoption is an issue of significant concern to management and academic researchers. This paper theoretically combines two distinct perspectives: environmental management and social psychology to develop a model that offers an integrative view capturing both high-level organisational and individual/employee issues of EMP adoption. This model has found support from an in-depth case study of an EMP at a leading information technology company.

Operations and the environment

ENV37 Product carbon footprint - A case of measuring in a food supply chain

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A case study was performed modelling the environmental performance of a food supply chain producing rye bread on an industrial scale. The purpose was to estimate the global warming potential and illuminate impacts from different stages in the supply chain. The bakery was found as the main contributor, but with agriculture as second and nearly equal impact. Production of one kg of rye bread emits 714 g CO₂ equivalent and is highly dependent upon fossil fuel sources. As a result this paper provides insight of the environmental performance of a food supply chain.

ENV38 The potential of inter-organisational product tracking systems in a “sustainable” supply chain - observations from the wild seafood supply network

OLA BØ

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For industries using common pool natural resources, sustainable sourcing is crucial for long time viability. Fisheries constitute a case in point as world catch peaked in the early nineties. Currently we can observe a change in behaviour in the seafood industry in large parts of the western world, as the industry is implementing various sustainable supply chain management strategies. This paper discusses the potential and limitation of electronic inter-organisational product tracking systems to support these changes. The discussion builds upon case research in the supply network for wild caught seafood in Northern Europe.

ENV39 ISO14001 certification in an emerging economy: a taxonomy proposal

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This study proposes a taxonomy of environmental management with regards to the motivations for adopting ISO 14001 certification of their environmental management system and describing the differences for each strategic group for a set of key variables. For this purpose, we conducted a survey of ISO 14001-certified manufacturing plants in Brazil, in three industries: chemical, manufactured metal products, and electronics. A sample of 99 plants was analyzed using multivariate data analysis techniques. We have identified three clusters: internal orientation, external orientation, and holistic. Companies in the third group present high performance in variables regardless if they are internal or external.

FIN1

Implications of e-purchasing systems for managing the operations-finance interface: a survey of finance and accounting managers

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This study investigates how top finance and accounting managers perceive the performance implications of e-Purchasing. Based on a large-sample (454) survey, we employ multivariate data analysis techniques to provide insights into how e-Purchasing impacts organizational performance. We model a theoretical construct of e-Purchasing and empirically confirm our literature-based hypotheses that e-Purchasing strongly and positively correlates with the integration between the finance and purchasing departments, improves the operational performance within these departments, and positively affects the confidence of managers in future organizational performance. We discuss implications for operations researchers and practitioners as well as areas for further research.

FIN2

An approach to evaluate a portfolio of technologies for licensing out

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In this paper, we investigate how to assess technologies to be licensed out. To this end, we propose an approach that enables large corporations to scrutinize their portfolio of technologies in order to establish values ranges to support a negotiation process. In addition, we offer a rationale for negotiating licensing agreements which relies upon market data and/or economic assessment to couch the valuation. We conclude by highlighting pros and cons of our approach, its potential generalization to other companies, and how it can be used to indicate value drivers to gear the R&D strategy.

FIN3

Challenges of implementing lean principles in product development – the case of visual planning

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The methods proposed by Lean product development are considered to dramatically improve companies' competitive position. However, few studies have been made on the implementation of these methods. This paper explores the factors that influence the implementation of the Lean method Visual planning in four product development organisations. This method promises improved communication and coordination in product development teams, and is often a first step of a Lean implementation. The results show that the role of management, team characteristics and team culture are three important factors that can make or break a successful implementation of this method.

Managing the operations-finance interface

FIN4

Managing the operations-risks interface: a proposal for protocol analysis of the operational risk management

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EAESP - Fundação Getúlio Vargas - FGV, São Paulo / SP, Brazil

This work aims at contributing to operating risk evaluation methodology by introducing an analyses instrument that combines the benefits of risk management with organizational transformation. The protocol consists of an analysis of the implementation process, current stage, facilitating and complicating factors and impact of risk management. We have analyzed internal documentation from three world-class companies that won the Brazilian Quality Award Prize (PNQ) and examined the results of interviews conducted with their risk managers. This study's main contributions are the systematization of concepts and the organization of a risk analysis protocol based on the experiences of these companies.

FIN5

Servitization of manufacturing: An event study to examine how public announcements of different types of offerings affect shareholder value

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There has been a lot of discussion around the beneficial financial implications of servitization but a paucity of relevant empirical inquiry. We suggest that one way to evaluate the financial impact of service-based manufacturing strategies is by determining the short-term effect of public announcements of service and integrated product-service offerings on shareholder value, a key firm performance indicator. Although a work in progress, an event study confirms our hypotheses that due to the risk inherent in such deals, shareholder value is positively and significantly affected only when pure product sales are announced.

GO1

The internationalization process of foreign automotive part suppliers in China: Toward an adaptive capability evolution model

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This study examines the internationalization process of foreign manufacturing subsidiaries in China from the perspective of capabilities evolution. This study conducted analysis of capability at the functional level (manufacturing, purchasing, marketing, and R&D). By synthesizing the existing stage theory and dynamic capability view, we suggest a three-stage model of capabilities evolution in the internationalization of automotive part manufacturers: the capabilities-transfer stage, the capabilities-development stage, and the capabilities-exploitation stage. Using this three-stage model, we find that subsidiaries evolve in the course of interactions with internal and external network actors, the roles and contributions of which change with the stage of development.

GO2

Exploring the interface between foreign invested manufacturing and R&D in emerging markets

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The paper investigates what makes it more or less relevant to co-locate manufacturing activities and R&D activities in emerging markets within multinational companies. A framework to this end is developed and illustrated in relation to four cases from multinational companies, which have established R&D and manufacturing in China or India. The findings point to the importance of contingencies such as clockspeed, technological complexity, as well as the extent to which local adaptation is needed.

GO3

Effects from implementing advanced planning and scheduling systems for supply chain planning

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The purpose is to analyze the effects from Advanced Planning and Scheduling (APS) systems for supply chain planning, both in terms of experienced benefits and problems, and the impact of the planning context and implementation approach. The research is based on a multiple case study of five manufacturing firms. It is concluded that the APS implementation focus and APS use impact three effect types differently if applying a process or system focus and more positively if applying an APS lead, compared to lag, approach. It also shows that the organisation, individuals, technology impact the effects, no matter APS implementation focus.

GO4

Internationalization among emerging economies: insights from Brazilian-Russian beef network

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This paper describes the internationalization of operations from Brazilian firms towards the Russian market. The paper begins with a short review of International Operations Management and the recent literature on Internationalization and Emerging Economies. The data was obtained through in-depth interviews, annual reports and direct observation with the Brazilian beef processors in the Russian beef market. Our findings suggest that the configuration of the international operations is determined by the business network of the host country (or market). Institutions can be used as barriers and/or facilitators of operation management decisions among emerging economies.

GO5

Adjusting process implementation activities to context-specific requirements in low-cost countries

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International operating manufacturing firms struggle to decide whether to apply universally-standardized or location-specific manufacturing concepts. This study reveals how and why Quality Management Practices, often referred to as world-class manufacturing practices, are adapted due to specific influences associated with economic and social development of a country. Focusing on differences in process implementation, this study summarises insights from six in-depth case studies of production plants at a global automotive supplier. Applying the concept of contingency theory, this paper shows how country-development dependent factors influence process implementation activities on the shop-floor while maintaining a similar product quality performance.

GO6

Outsourcing in the global pharmaceutical industry: Collaborative value delivery

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In the pharmaceutical industry, many companies seek the transition to a collaborative business model through outsourcing operations to emerging low wage and high skill locations. However, research on outsourcing has largely overlooked how to manage knowledge suppliers for value co-creation. We argue that the big pharmaceutical companies will manage outsourcing relationships according to their partners' dynamic capabilities. A qualitative comparative case analysis is conducted to empirically investigate the causal conditions for collaborative value delivery. The results show that knowledge suppliers' past experience, resources, market capability, and communication are the key factors for developing an integrative relationship in outsourcing.

GOV1 Improved collaboration to link manufacturing strategies with order winners in Thai industries

PONGPAK BANCHUEN, IAN SADLER, HIMANSHU SHEE

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Examines the effect of order-winning strategy on collaboration type and business outcomes. Previous research on supply chain collaboration is based on either the Transaction Cost Theory or the Resource Based View. In contrast, this work studies the influence of strategic decisions on type of manufacturer-supplier collaboration. Questionnaire Data from manufacturing firms in Thailand was assessed by structural equation modelling. Four order winners are significantly linked to either strategic or operational collaboration. Model shows that firms focused on flexibility, quality and delivery will develop strategic collaboration with suppliers leading to long term development of relationships, hence, market and innovation improvement.

GOV2 Configure the service network managing inter-firm relationships

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Manufacturing companies that pursue a servitization strategy through the implementation of product-service system (PSS) business models need to face different challenges. Among others, changes of inter-organisational relationships are required in order to create, capture and deliver new value. In such a context, this paper investigates how the servitization level of a PSS offering impacts on the value-creation network of a company. A theoretical conceptual model, derived from a literature analysis, linking different value propositions and the main PSS network features, is refined through a case study. Evidence from the empirical investigation are then discussed and summarised into two final propositions.

GSCN1 Processes of global sourcing decision-making practices

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Global sourcing decision-making had not yet been analyzed from a decision process perspective, although the decision is characterized by multi-functionality, multi-dimensionality and frequently high strategic importance to firms, so that the global sourcing decision process is clearly extraordinary. This research gap can be addressed by means of a multiple case study approach. The paper depicts a suitable research framework and a methodology to close this gap.

GSCN2 Offshoring and nearshoring success: the importance of strategic reasons

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Moving the production abroad has become a common practice for companies willing to take the opportunity of localization advantages in other countries. However, the business performance may not always be positive and it can depend on the target country and the underlying strategic reasons. By means of a sample of 227 Western European companies we analyze the relationship between the strategic reasons to move production abroad and the performance achieved, separately for offshoring and nearshoring contexts. Results show that strategic reasons are actually associated to higher or lower business performance, but the relationships change in nearshoring or offshoring contexts.

GSCN3 Strategic outsourcing? The Philips' case in the LCD TV market

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This work seeks to assess the outsourcing process adopted by Philips for producing LCD televisions. The authors used the Resource-based Theory and the Transaction Cost Theory for analyzing the case. Based on industry data and interviews with ten of the company's senior executives, this study pointed out that the LCD panel is an important resource and that its supply by third parties represented a high transaction cost. The results illustrate the complementarity that exists between the RBT and TCT theories in a competitive environment that has few players.

GSCN4 **Plant roles in high cost countries: A survey analysis of manufacturing networks in the Northern Europe**

VIRPI TURKULAINEN, MARJA BLOMQVIST

Aalto University, Espoo, Finland

This paper discusses manufacturing competitiveness through the analysis of the roles of manufacturing plants located in Finland. We build on Ferdows' framework (1989, 1997) for plant roles. We analyze survey data collected in roughly hundred Finnish plants. The results show significant variance in plant roles, giving support to Ferdows' model especially in terms of plant competence. However, the reasons for plant location are found to be more complex. Enhancements are suggested to the model.

GSCN5 **Factors affecting the execution of supply chain management - an international view**

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This paper discusses factors affecting the execution of supply chain management and presents a conceptual model and six hypotheses based on such factors identified in the literature. The model was tested in two European country-specific cases using structural equation modelling. Findings in both cases confirm the hypothesized hierarchical order of three proposed antecedents: 'internal SCM conditions' affect 'joint SCM conditions' which in turn influences collaborative 'SCM-related processes'. Managerial implications are that firms in both countries should adopt these hierarchical steps to ensure a rigorous and appropriate approach to achieving full and integrative SCM.

GSCN6 **capability requirements in evolving manufacturing networks**

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(1)University of Southern Denmark, Kolding, Denmark, (2)Aalto University, Espoo, Finland, (3)RWTH Aachen University, Aachen, Germany

The objective of this paper is to report on exploratory research conducted in Danish and Finnish companies based on four case studies. A capability perspective is introduced to the discourse of production networks with the intention of providing a basis for analysis of changing requirements in different operational models. The paper develops different configurations of capability requirements for different setups of manufacturing networks.

GSCN7 Advances in augmented reality for operating global manufacturing value chains

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Michael Porter's [1985] Value chain encompasses all activities of the chain through which the product gains some value. Production value chains are consist of tangible and intangible activities required to produce and market a product. These value chains utilize flow of material, flow of energy and flow of information linked with the particular value chain. Automation based on augmented reality provides micro to macro level control over these value chains and a manager has higher level of control of the decision parameters. This paper demonstrate use of augmented reality complementing decision making processes in operating global value chains.

GSCN8 Governance and transformation of clusters: theoretical models and the case of the maritime cluster in mid-west Norway

LISE LILLEBRYGFJELD HALSE

Molde University College, Molde, Norway

Building on a global supply chain perspective the paper seeks to develop a conceptual model which describes and explains the transformation of industrial clusters over time under the duress of globalization with particular emphasis on changing governance dynamics. The model incorporates the cluster 'macroculture' which links the macro and transaction levels in the cluster, in order to explain cluster changes and transformations. The maritime cluster in Mid-West Norway is used to demonstrate the applicability of the model.

GSCN9 Managing global manufacturing networks: Uncovered plant roles of global manufacturing companies

MARJA BLOMQVIST, VIRPI TURKULAINEN

Aalto University, Espoo, Finland

Our aim is to increase the understanding about plant roles in global manufacturing networks. The paper builds on two established plant role frameworks: Ferdows (1989, 1997) and Johansen and Riis (2005, 2007). The paper engages in assessing of these frameworks as well as in elaborating them with case studies of four global manufacturing networks. Our analysis indicates that the previous frameworks are partly overlapping but complementary. Furthermore, our findings indicate that the plants may have several strategic reasons for their location thus implicating a need to revise the frameworks. We also suggest three new roles.

GSCN10 The configuration of the outbound supply chain for the international growth of Italian fashion companies

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Politecnico di Milano, Milan, Italy

Fashion companies have been facing the necessity of competing in new markets to remain competitive. In these markets the final part of the supply chain is crucial for the company success, being the contact point with the final market. This paper aims at understanding the configuration of the outbound supply to adopt in foreign markets considering on the one hand the characteristics of the firm and of the market, on the other hand the characteristics of the foreign country. The goal is to identify common patterns among countries able to explain the successful configuration choice.

GSCN11 Competing in the global aerospace supply chain: The case of the Canadian aerospace industry

ISABELLE DOSTALER

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In light of this vertical disintegration of the global aerospace industry, this paper reports a study that was commissioned by Industry Canada to evaluate whether Canadian aerospace firms have been able to develop the new set of manufacturing and managerial capabilities required to compete in the global aerospace supply chain. A strategic management framework was used to assess the fit between the key success factors of the external environment and the resources and capabilities possessed by the firms studied.

GSCN12 Global supply networks and responsiveness in the international clothing industry: Differences across different retailer types

BART MACCARTHY, AMILA JAYARATHNE

University of Nottingham, Nottingham, UK

Clothing supply networks are both retailer-driven and international in character. Here the supply networks of three different types of clothing retailer - 'established leading brands', 'value brands', and 'supermarket brands' are described and analysed. Typical network configurations for each retailer type are presented. Differences are noted in the relationships between retailers and prime manufacturers, in the levels of network integration, and in the functional authority for fabric sourcing and quality assurance. Responsiveness characteristics also show differences, particularly in postponement in planning. Leading brand retailers commit later in the planning cycle than value brand or supermarket retailers, enhancing their responsiveness.

GSCN13 Interactions between R&D and production in globalisation: The implications for the operations management community

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(1)Aalborg University, Aalborg, Denmark, (2)University of Cambridge, Cambridge, UK

This paper attempts to explore how R&D and production interact with each other in their globalisation. Based on two case studies, this paper identifies two approaches for the globalisation of R&D and production. Furthermore, this paper suggests that the interfaces between R&D and production are significant with regard to understanding the selection of these two globalisation approaches. Additionally, this paper indicates that research and development may need to be treated separately with regard to their globalisation processes. We conclude this paper with suggestions for the management and possible directions for future research.

GSCN14 Changing patterns of R&D relocation activities in the course of the global economic crisis

STEFFEN KINKEL

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Offshoring of R&D activities to low-wage countries in Asia and Eastern Europe has become more and more important. Recently, the global search for highly-qualified workers and lower-cost personnel in developing countries emerged as the major drivers for the relocation of knowledge-intensive activities. Our paper focuses on the change of patterns of R&D relocation activities in the course of the global economic crisis, comparing evidence of firms which have been active before 2007 with companies being active in the period from 2007 to mid 2009, using data of 1,484 German manufacturing companies.

GSCN15 Confidence issue on network companies managing: an empirical study

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Collaborative networks arise with the establishment of links between companies, resulting in business groups identified under a sort of taxonomies and characterized by transactions of products, services and information. The members of a network of cooperation have heterogeneity of knowledge and size, demanding interacted management processes to maximize the business value of their transactions, increasing their earnings. Establishing cooperation, the companies set ways of synergy, leveling or reverse negative impacts. However, the absence of confidence or fear of opportunistic behavior, despite inherent in all networks companies, may impair the proper functioning of the processes management.

GSCN16 Improvement programs in multinational manufacturing enterprises: A proposed theoretical framework and literature review

TORBJORN NETLAND

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The purpose of the research is to review the emerging literature on multi-plant improvement programs. To increase competitiveness, companies leverage production know-how in their intra-firm production networks by developing and deploying global improvement programs. Despite the indisputable trend and importance in industry, there is no coherent stream of research that addresses multi-plant improvement programs. We reviewed 15 journals within operations management, general management, and international business, from 1998 to 2010, and identified 21 core empirical articles. This paper synthesizes and categorizes the empirical research on improvement programs in multinational enterprises. A theoretical framework is proposed, and a research agenda suggested.

GSCN17 Adoption of global spare parts management practices within a network of local autonomous units

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This paper studies the adoption of a central spare parts management body as a supplier and supply chain management service provider within a network of local autonomous business units of a multinational capital goods manufacturer. In particular, the paper investigates reasons and benefits of the use of a central service within high and low adopter local units. We find evidence on global and local benefits, observe that while perceived benefits are mainly shared by both low and high adopters, utilization of an administrative local unit enforcing process discipline makes a difference. Central unit/local unit relationships play also an important role.

GSCN18 Enhancing supplier performance in buyer-supplier relationships: The roles of supplier assessment, buyer assistance, and supplier involvement in product development

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Drawing on the interorganizational network perspective and supply chain management literature, this paper investigates the relationships between supplier assessment, buyer assistance, supplier involvement in product development, and supplier performance. The data come from 189 parts and components manufacturers (suppliers) in Turkey; the authors analyze them using structural equation modeling. The findings indicate that supplier assessment and buyer assistance contribute significantly to supplier involvement in product development. Supplier involvement in return helps suppliers enhance the operational and economic performance. We also found that supplier involvement mediates the relationships between antecedent variables (supplier assessment and buyer assistance) and supplier performance.

GSCN19 An empirical study on the container terminals integration in supply chains: insights from the Italian scenario

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This paper investigates how the container terminals can reach a high degree of integration in supply chains. The results of our analysis suggest that a container terminal achieves a high degree of integration in supply chains when its investments are driven by integration aim are combined with a high degree of openness to the integration. Reaching a high level of integration for a container terminal is complex because of two main factors. The former is linked to the port governance model. The latter is due to the difficulty in establishing close and cooperative relationships between the terminal and its users.

GSCN20 Socially responsible supplier development and organizational performance

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Hong Kong Polytechnic University, Hong Kong, Hong Kong

Some recent product safety scandals such as melamine-tainted milk have revealed that suppliers' unethical behaviours not only badly affect their own businesses but also damage their buyers' organizational performance and reputation. Although the literature of business ethics suggests that the adoption of corporate social responsibility (CSR) enhances ethical performance in organizations, how to develop CSR adoption capabilities through practices related to inter-organizational learning has been scarcely addressed. Based on the literature of supplier development and CSR, this study proposes a new and proactive approach to manage suppliers' ethical performance by improving their CSR adoption capabilities.

GSCN21 Evaluation of logistic performance indicators of Brazil in the international trade

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This research aims to assess Brazil logistics performance in relation to its major competitors in international market. It has been used international trade database from SECEX, COMTRADE and World Bank. In order to analyse the data, it has been applied cluster analysis and multiple comparison tests of means. The results indicate the bureaucracies as major obstacles to the logistic performance of the country. Timeliness of Brazil is close to the High Logistics Performance Group while Customs is close to Low Logistics Performance Group. Despite Brazil has failed in their customs operations there seems to be more credibility in Brazilian dealings.

HRM1 Evaluating the relation between worker-oriented lean practices and operational performance using meta-analysis and path-analysis

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Lean emphasizes both worker-oriented and operational practices. This paper focuses on the performance contribution of these practices and their relation to each other. Previous studies provide alternative explanations for the relation between worker-oriented practices and operational performance. Some suggest worker-oriented practices directly relate to operational performance, others argue that the relation is indirect. We evaluate both alternatives using meta-analysis and path-analysis with a sample of 67 studies. We found greater support for the indirect relation. However, the data also suggest that whether worker-oriented practices are directly or indirectly related depends on the operational practice involved.

HRM2 Fit of technical and socio subsystems in lean context, and its impact on operational performance indicators

DÁVID LOSONCI

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This study following socio-technical approach of lean production seeks to clarify (1) how the use of lean production practices influences socio subsystem, and (2) how different matches of work organization and production organization (i.e., production systems) influence operational performances. According to the results, implementation of lean production practices enhances the extension of HRM best practices. However, this association is quite weak. Considering (2) the study presents clear evidences that 'lean' production organization and 'formalized'/empowered' work organization lead to superior performance. However, their excellence is not unique: same work organizations integrated with process-focus production organization leads to the same operational outcomes.

HRM3 Analysis and validation of HRM and TQM scales in a multiple informant international sample

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Two major improvement programmes in the OM field are Total Quality Management (TQM) and Human Resources Management (HRM). A variety of measures have been proposed in the literature for their measurement. Some that are especially interesting are those used in the High Performance Manufacturing (HPM) project. Starting with a multiple informant international sample of 266 plants across ten countries, the present paper aims to validate the HRM and TQM scales proposed in the third round of the HPM project by means of confirmatory factor analysis with calibration and validation samples.

Human resource management aspects in operations

HRM4 Human resource issues in the New Zealand pipfruit industry: some findings from a quality management study

NIGEL GRIGG, HANS DOEVENDANS

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This paper presents findings from a research project that investigated Quality Management (QM) in the New Zealand pipfruit industry. The paper focuses on the human resource (HR) management aspects from the wider project. A number of industry stakeholders were interviewed to understand what QM aspects they use in the running of their organisations. An additional survey of a wider group of stakeholders added to understanding of the HR approach applied in the industry. Results indicate that organisations typically have short-term results focus rather than strategic QM positions. The seasonality of the industry hinders investment into employees, particularly seasonal employees.

HRM5 Team results and team members' competence development in virtual and face-to-face teams

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Jaume I University, Castellon, Spain

The objective of this research is to study the influence of the communication channel in team's results by comparing the results and the team member's competences development in two different work environments: traditional teams which work face-to-face and virtual teams. In doing so, we carry out our research in an educational setting as teams can be an important tool in achieving part of the required competences associated to operations management education. In addition, the educational sector provides significant opportunities to study virtual team processes.

HRM6 Over-confidence in inventory management: insights from a human experiment

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Overconfident individuals tend to believe that their information or their estimates are more accurate than they actually are or that they hold superior skills. Overconfidence has been shown to be a significant explanation of traders' behaviour in stock markets and in diverse managerial settings. We aim at contributing to the study of overconfidence in SCM by running a series of human experiments that explore the role and determinants of overconfidence in inventory management. Such experiments are run within the framework of the classic Beer Game. Results show that overconfidence affects behaviour especially when the uncertainty related to performance is high.

HRM7 "Organisational agility" – a critical success factor in the introduction of high performance work systems?

MARTIN MENRAD, THOMAS WALLNER

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This paper aims to contribute to the on-going discussion on factors that enable companies to achieve a sustained competitive advantage. Preliminary research indicates a connection between innovative approaches on the topic of work policies (e.g. high performance work systems) and the agility of an organisation. These approaches promise not only increases in economic efficiency and sustainable competitiveness, but are also able to improve working and workers conditions – they are based on mutual gains.

HRM8 Developing a causal model of factors affecting labor productivity of construction operations: the case of Iran

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Since construction operations are mostly labor based, labor productivity gets a double significance in construction industry. This paper attempts to identify and analyze a set factors affecting labor productivity for Iran's construction projects. Using a DEMATEL methodology the causal relationships between factors are explored and a causal model is developed, which classifies factors into two groups of driver and dependent factors. The results indicate that "top management commitment", "strategic planning" and "training" are driver factors, which support the others. Therefore, these are the critical factors required for any labor productivity improvement program.

HRM9 Teamworking and flexibility. Two cases from the Australian automotive industry

RICHARD COONEY

Monash University, Victoria, Australia

This paper compares work teams at Toyota Motor Corporation Australia (TMCA) and Ford Motor Company of Australia (FoA). The paper examines the diversity in the use of teams by studying management preferences for flexibility in the organization of work, allied to management preferences for flexibility in the organization of production. The paper finds that not all forms of team work are functionally equivalent and that diversity in the use of teams can be explained by management's approach to flexibility.

Human resource management aspects in operations

HRM10 Behavioural dynamics in high-performing continuous improvement teams

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We have explored from an Organisational-Behavioural perspective, why a Continuous Improvement (CI) team performs well. We report on the first part of a longitudinal study on intra-team behaviour of five, carefully selected, high-performing CI teams in five major Dutch organizations. Not only did we conduct a survey among team members and leaders, we also conducted informal interviews and analysed extensively the field notes. Preliminary results show the importance of five dynamics, such as 'social talk' within those teams. Team results were validated during subsequent team feedback sessions. A follow-up study will illuminate how these and related behaviours evolve over time.

HRM11 The joint effect of HRM and TQM practices on business competitive advantage

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There is mounting interest in both theory and practice regarding the relationship between HRM/TQM, as well as the relationship between HRM/TQM and organisational performance. This paper focuses on the empirical explanation of the role of commitment as a form of mediation between the HRM/TQM practices and the company's competitiveness (competitive advantage and customer satisfaction). Light is also shed on the interrelationship between HRM/TQM practices by providing a weighted classification of those that provide a greater contribution to competitive advantage, as well as checking the scope of influence of each HRM practice on TQM implementation, including the effect of HRM on individual TQM practices.

HRM12 Re-constructing organisational cultures of continuous improvement: Findings from international case studies

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Despite substantial research, the understanding of organisational cultures conducive to continuous improvement (CI) is still limited. Prevalent research practice is characterised by reductionist, decontextualising methods and pre-defined models. To address these shortcomings, we developed a research design that explores group cultures of CI in terms of the meanings shared by the workforce. We found that – consistent with cultural theory – practices of CI were experienced as meaningful if they contributed to the individual's sense efficacy, enhancement or consistency. Four distinct mechanisms were identified through which meanings become shared in a group; namely self-selection, staff selection, behavioural embedding and socialisation.

HRM13 Relationship between safety climate and safety compliance in hospitals

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We validate a questionnaire for the measurement of Safety Climate (SC) inside hospitals using the ward as the decision making unit. Next, we study the relationships between validated scales of SC and employees' safety compliance by means of a hierarchical structural equation model. The model separates the effect of first level variables concerning employees' characteristics (role, age, gender, and seniority) on safety compliance from that of organizational or second level variables (SC). Results show that seniority is negatively and significantly related to safety compliance. SC is positively and significantly related to one measure of compliance.

HRM14 Recognition and reward parties in employee participation systems. An empirical study in Spanish companies

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This article presents the results of an empirical study in which 40 Spanish companies have taken part, all being committed to implementing continuous improvement applying structured employee participation systems (SEPS), regarding recognition and/or reward systems (R&R) established by the companies for participants (individuals or groups) in said systems, for their participation and achievement of improvements.

HRM15 Building capability for employee-driven Innovation

BOZENA POKSINKA, DAG SWARTLING

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Employee-Driven Innovation (EDI) is a companywide approach where ideas are generated and implemented by a single employee or by the joint efforts of two or more employees who have not been deliberately assigned to carry out innovative work. This paper aims to contribute to knowledge about the underlying mechanisms necessary for building EDI capability in an organisation. Two types of organisational structures supporting EDI were identified: participation through suggesting improvements, and participation through teams. The key managerial approaches for enabling EDI are: creating motivation, empowerment and autonomy; collaboration and teamwork; open climate and communication; management support; and organisational learning.

Innovation in inter-firm relationships

INN1 An empirical investigation of business model innovation on inter- and intra- organisational relationships

MEHMET CAKKOL, MARK JOHNSON

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To date, the link between business model innovation and organisational relationships has been neglected in the literature. This paper contributes to the literature by empirically investigating the implementation process of a business model innovation, through the network of a manufacturing firm using a multi-organisational perspective. The case study reported, reveals the reasons and conditions under which extant relationships are affected by the new business model as well as how these relationships have evolved over time.

Keywords: relationships, business model innovation, servitization

INN2 Managing inter-firm relationships in open service innovation

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In addition to the many advantages of open innovation, challenges also have been identified in the collaborative exploration and exploitation of innovations. Literature offers only partial explanations on how to overcome these challenges in daily practice, especially in service context. Our case research on open service innovation shows that three practices, being the synthesis approach in innovation creation, maximization of value generation, and playing the launching role, enable innovation partners to overcome open innovation challenges. Thereby, this research contributes to both theory and practice in the upcoming field of open service innovation.

INN3 Leveraging supplier innovativeness through knowledge integration

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Competitive innovation processes are increasingly based on networks of suppliers providing unique competencies to the focal firm. The main purpose of this study is to analyse how supplier innovativeness may be leveraged through internal knowledge integration capabilities in involving suppliers. The analysis is based on a survey of 675 firms in Europe and North America. The study confirms that innovative suppliers contribute to a firm's innovation performance in terms of time-to-market and level of innovation in products/services. The main result is that purchasing proficiency and cross-functional decisions in involving suppliers boosts innovation performance, specifically when technological uncertainty is high.

INN4

The effect of product complexity and modularity on new product development and supply chain management integration

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The purpose of this paper is to explore whether product complexity and product modularity influence the integration of objectives and procedures in new product development and supply chain management. Results are based on statistical analyses of data collected from an international sample of manufacturing firms through the last edition of the International Manufacturing Strategy Survey (IMSS 5). The main findings are that with an increase of the complexity of products, activities to integrate product development and supply chains are more likely to happen. Practical implications concern the necessity to integrate the two functional areas, in case of high product complexity.

INN5

The effects of supplier-buyer integration on collaborations in sustainable environmental innovations: the case of automobile industry

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This paper examines whether supply chain integration affects buyer-supplier collaboration in sustainable environmental innovations. By combining the Natural Resource Based View and Transaction Cost Theory, I suggest that logistics and product integrations can be critical to understand whether buyers collaborate with some of their suppliers in sustainable environmental innovations. Following an inter-firm perspective, I argue that logistics and product integrations reduce transaction costs, favouring collaborations in projects that are characterized by high technological uncertainty such as projects in sustainable environmental innovations. I meet support to my hypotheses analysing 111 buyer-supplier relationships in the automobile industry during the period 2003-2008.

INN6

A network configuration framework for the transition of nascent technologies into emerging industries

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The sustainable translation of scientific ideas and innovation into global products and services is critical to capturing value from emerging industries. For practitioners, choosing an entry mode appropriate to the level of industrial maturity will often determine their ability to capture value. It has been shown that the configuration of the supply network plays a pivotal role in this process. In this study network descriptors are used as a means of assessing the maturity of an emerging industry, and that the appropriate configuration adopted is a function of the stage of industrial emergence.

Managing inter-firm relationships

INTER1 Classification of retailer-supplier partnerships with different levels of partnership performance

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Retailers may wish to classify their numerous suppliers with a view to upgrade some of the partnerships. We propose a way using cluster analysis to classify these partnerships in terms of five partnership factors: (1) IT systems and information exchange; (2) trust; (3) joint partnership management system; (4) relationship specific assets, and (5) partner asymmetry. We obtain four classes and find that these have statistically different levels of partnership performance (as perceived by the two partners). Moreover, adjacent levels are significantly different for different partnership factors, thus suggesting that improving partnership performance depends on the current level.

INTER2 The relationship between trust and supply chain partnership with operational performance: a cross-regional analysis

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This paper investigates if the level of trust existent on supply chain partnerships relates to operational performance in two different groups of countries (Western and Asia). It presents the results of a survey of 317 processing plants analyzed using a structural equation modeling. Findings suggest that Western Countries develop supply chain partnerships searching for more integrated supply chain, while Asian countries develop more trust based relationships to improve performance. Results show that different institutional contexts affect the way SCP are built. The main aspect is the differences levels of trust bringing implications for managers dealing with international supply chains.

INTER3 Electronic purchasing tools and purchasing absorptive capacity as antecedents of purchasing category performance

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This paper examines the moderating role of a purchasing function's absorptive capacity on the relationship between the use of e-purchasing tools and category performance. We argue that the implementation of an e-purchasing tool may not in itself positively influence performance unless combined with other distinctive capabilities like absorptive capacity. Based on a survey of 298 procurement executives in ten countries, findings demonstrate that absorptive capacity seems essential in increasing performance from the use of e-purchasing tools. In many cases, absorptive capacity itself appears to increase performance, suggesting that the human elements in purchasing are crucial to improve performance.

INTER4 Supply chain rationality in engineering-to-order companies: Similarities and differences in two cases

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Supply Chain Integration and Contingency Theory appear to be complementary approaches to the problem of uncertainty reduction. Whereas SCI has little regard for contingency factors but provides detailed guidelines for the structuring of a supply chain, CT is quite the opposite in that this approach regards supply chain integration as one of many ways to achieve fit within the environment but insists that integration of the supply chain be dependent on the contingency factors of the supply chain. The question that is addressed in the research is whether contingency factors matter to SCI.

INTER5 The impact of information visibility on the bullwhip effect

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Previous research on the Bullwhip Effect shows that information visibility (supply chain partners' inventory information or Point-Of-Sale (POS) data) can reduce the amplification of orders in a supply chain. Our research compiles and analyzes the data on previous experiments to get insight on the specific mechanisms that decrease order amplification. By structuring the data as a panel and using a Poisson fixed-effect model we find that forecasting power progressively increases with additional information (Point-Of-Sale data and supply chain partners' inventory information). In addition, the aggressiveness of the response to own inventory decreases when members have access to more information.

INTER6 A case study of management control in a large back-office BPO arrangement

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The aim was to evaluate the influence of formal and informal control in a large BPO arrangement. A case study methodology collected data from both the client and supplier on the use of outcome metrics, coordination, communication, conflict resolution and trust. Findings indicate that; (1) behavioural control appears to play as important a role as outcome control, thus challenging the use of contracts as a proxy for formal control; (2) informal control appears to be relatively unimportant suggesting that relational exchange theory has perhaps less to contribute than previous quantitative studies have posited.

INTER7 The role of scenario planning in developing supply network configuration options: A case study of the pharmaceutical value chain

LEILA ALINAGHIAN, JAGJIT SINGH SRAI

Intitute for Manufacturing, University of Cambridge, Cambridge, UK

While technology road mapping has been successfully used to capture future product development scenarios, within operations management supply network configuration approaches are applied to analyse potential future state network configurations. This paper seeks to explore the role of the scenario planning technique in designing the potential evolution paths using a supply network configuration perspective. The pharmaceutical value chain is chosen to exhibit the key features of an industry undergoing fast and complex changes. The research involves exploring different stakeholders in the value chain, and mapping current and potential configurations that might better address the challenges faced by the industry.

INTER8 From transaction cost economics to food webs: A multi-disciplinary discussion on the length of supply chains

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We use a map of the interconnections between Toyota's extended supply base to review the concept of 'length' in supply chains, and show that the chain is significantly shorter than expected. To explore why, we draw on ideas from network science and develop an alternative theoretical frame to the conventional 'transaction cost economics' approach. Using particular inspiration from the domain of food webs we discuss whether additional explanations such as supplier selection bias, product complexity, size and dynamical constraints, and a common lean culture can help explain the dimensions of the Toyota chain.

INTER9 Fresh food supply chains; characteristics and supply chain requirements

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This paper provides a description of the key characteristics of fresh food supply chains' products, markets, and manufacturing system and investigates the impact these have on supply chain requirements. The study shows that while the sector's product and market characteristics currently push for more responsive and flexible supply chains, the manufacturing system is mainly designed for efficiency, limiting the chain's ability to adapt to changes in the marketplace. The paper goes beyond the dyadic level by considering multiple supply chain stages and includes aspects related to logistics, SCM, production and marketing.

INV1

A theoretical and empirical investigation of inventory practices

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While most academic literature on inventories focuses on modeling issues, managerial inventory practices have received much less attention. In this paper we address this gap in the literature by exploring these practices using survey data that was collected to measure logistics and supply chain competitiveness in Spain. Using a theory based categorization we extract several constructs that operationalize the various aspects of inventory practices. We envision that the results of our analysis are used in further research on the relation between managing inventory practices, supply chain integration and overall business performance.

INV2

Inventory management in closed loop supply chains: a heuristic approach with safety stock on demand

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Inventory management is one of the most important aspect in Closed Loop Supply Chain. This paper introduces a strategy for managing the return flow in order to increase service level in a stochastic scenario. We analyse a single-product hybrid system where inventory level is under continuous review and remanufacturing is used as a recovery option to protect from stockout. The aim is to exploit the opportunity of relocating safety stocks from a serviceable inventory to a remanufacturable inventory, in order to reduce stockholding costs.

INV3

Influence of joint decisions and cognitive dissonance on newsvendor results

JAIME CASTAÑEDA, PAULO GONÇALVES

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Prepositioning of emergency supplies is a critical task for the success of relief responses. However, little is known about how individuals actually preposition emergency supplies. Related laboratory experiments in newsvendor settings have shown that inventory decisions differ from the prescribed optimum. In an experimental design based on joint decisions and cognitive dissonance theory, we argue that the perceived importance of emergency items in joint decisions may influence prepositioning decisions. Analyses show that consonant and dissonant prepositioning decisions partially de-bias and worsen results respectively. Our results suggest that stressing cognitive dissonance on joint prepositioning decisions may influence such decisions.

Inventory management, planning and scheduling

INV4 The volatility of the airline industry and its effects on an aircraft manufacturer's purchasing function

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The purchasing function is gaining a strategic role in manufacturing companies. This article is an account of a study carried out with the purpose of trying to ascertain, based on the information gathered through an exploratory case study about Embraer, how the economic volatility in airline industry affects the aircraft manufacturer's purchasing function. That volatility passes uncertainties to the purchasing function and the supply chain. As a response, the supply chain has to be flexible. Particularly important is the development of flexibility dimensions related to production operations.

INV5 Investigating the applicability and impact of enterprise resource planning (ERP) systems: The effect of production strategy

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The effect of production strategy on the applicability and impact of ERP systems is investigated through a mixed method study. Survey results indicate, for example, that system selection is more difficult for Make-To-Order (MTO) than for Make-To-Stock (MTS) companies and that MTO companies utilise ERP planning tools less than MTS companies. Thus, production strategy is an important contextual factor which does affect both applicability and impact. Follow-up case studies with three MTO respondents developed a deeper understanding of the survey results. In one case, a system was rented to minimise the consequences of making a poor system selection decision.

INV6 A new algorithm for product mix problems for job shop systems based on theory of constraints

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Several algorithms have been developed based on the Theory of Constraints (TOC) approach to determine an optimized Master Production Schedule (MPS). In this study, we investigate inefficiency of the recent algorithms, and demonstrate some of the fundamental factors that have not been considered in current algorithms. We develop an algorithm under TOC approach to create MPS. In this unique method, identification of constraints is explicitly different from the current procedure within all algorithms. We demonstrate that constraints are not just those resources that do not have adequate capacity to meet the demand.

LEAN1 Kaizen implementation: A “best case” analysis

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This study adds insights to the concept on kaizen and its implementation process based upon an in-depth case study at OMN, a Japanese manufacturer in the Netherlands which has successfully adopted kaizen concepts. It was found that employee discipline and personal-initiatives are the two critical organisational capabilities for kaizen. Additionally, this study provides an insight that kaizen implementation process can be abstracted to two cycles which gives a different perspective to the existing models. Furthermore, this study suggests that a new area of improvement (e.g. quality, cost, and delivery-time) can be a regenerative input to keep kaizen life cycle alive.

LEAN2 Lean implementation within SMEs: a literature review

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This paper reports on a literature review which examines lean implementation in Small and Medium-sized enterprises (SMEs). The results identify trends related to lean approaches and concepts employed by SMEs. Other key discussion points from this review include definitions of lean, geographic coverage, sectors and research methods. The paper concludes with potential areas of further research.

LEAN3 The ‘formula of Lean’: Notes on the Kingman equation

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Despite its prominence, conceptualising Lean Thinking remains a challenge: commonly the 5 Lean Principles and/or The 7 Wastes are used, but these largely fail to provide any deeper insights into the role of the different types of variation on the process, nor do these offer any guidance into managing the interaction between Lean Production, Six Sigma and Service System Thinking when attempting to improve a process. In this note we will be revisiting Sir John Kingman’s equation of 1966 on single-server queues, and argue that many additional insights on Lean, its application across manufacturing and service operations, as well as its relation to Six Sigma can be learnt from this one equation. The note concludes with a set of key lessons to be learnt from Kingman’s equation how to improve waiting times in a general process.

Practice and theory building for managing complex performance

MCP1

Complex service systems - identifying drivers, characteristics and success factors

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Many manufacturing firms are shifting towards services (Davies et al 2006; Neely, 2009; Vandermerwe and Rada, 1988). While the shift to services is not a new competitive strategy for manufacturing, there appears to be a new context for this shift. And increasingly the shift to services encompasses the design and delivery of complex services. Loosely, this involves services oriented around the provision of complex systems. However complexity in the context of services is rarely characterised. The aim of this paper is hence to examine drivers for complex services and identify important characteristics of these services, as part of a long term activity examining the multiple perspectives that can be taken when considering complexity of services.

MCP2

Patient safety and operational complexity: a systemic approach

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Complexity in healthcare processes stems from the diversity of the components of the service in terms of activities, people, resources, organizational practices, diseases, complications and types of services. Complexity however is not tackled adequately, allowing for unacceptable levels of error leading to patient harm. Our study analyses 5 healthcare processes from the surgical ward of a UK hospital as complex adaptive systems by using the Healthcare Error Proliferation Model. We use FMEAs, Root Cause Analysis and expert interviews, we identify and map the problematic interfaces between the processes and we raise ideas about reconfiguring the processes.

MCP3

A sales and operations planning configuration framework

PATRIK JONSSON

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A multiple case study of six manufacturing firms is used to identify the main design dimensions of an S&OP process and to generate a framework for the characterization of S&OP configurations. An S&OP configuration framework of six variables and 17 configuration dimensions is generated. Configuration dimensions, which are important no matter aim and scope, and of specific importance when ambitious aims and wider scope, are identified. Nine propositions of how configuration variables are facilitating and hurdling S&OP transition are generated.

MCP4

Procurement of complex performance in public infrastructure: A process perspective

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The paper analyzes the process of transitioning from procuring single products and services to procuring complex performance in public infrastructure. The aim is to examine the change in the interactions between buyer and supplier, the emergence of value co-creation and the capability development during the transition process. Based on a multiple, longitudinal case study the paper proposes three generic transition stages towards increased performance and infrastructural complexity. These stages may help managers of public agencies to identify the current procurement level and the contractual and relational challenges they need to master when moving towards the procurement of complex performance.

MCP5

Delivering integrated solutions: the unbundling paradox

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The paper analyzes changes in suppliers' organizational structures to deliver integrated solutions by examining the bundling across different project phases with a focus of realizing risk transfer and through-life innovation. The study deploys rich data sets by combining 108 government reports with a multiple, longitudinal case study method is used to examine changes in integrated solution provision in Public Private Partnerships over a 15-year period. Findings suggest that as a response to the need to be competitive the solutions provider 'unbundles' the bundle of integrated solutions by creating sub-units to handle distinct phases.

MCP6

Materials flow mapping: a tool for describing and assessing performance of material flows in supply chains

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Value stream mapping is a standard methodology for describing and assessing value streams, but has to be adapted in order to be effective in the analysis if the materials supply systems. The purpose of this paper is to develop a tool aiming at describing and assessing performance of material flows in supply chains, as part of a comprehensive design and improvement methodology. A case study in the Swedish automotive industry proved the usefulness of the tool in describing the material flow to the assembly line. Great cost and time reduction potentials were revealed and quantified by means of the methodology.

Practice and theory building for managing complex performance

MCP7 Seeing the forest and the trees: Managing ramp-ups in complex, IT-enabled service supply chains

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In IT-enabled service supply chains, offering services through a mix of manual and automated activities, volume ramp-ups are notoriously difficult. This paper presents finding from a longitudinal case study of a service supply chain at a European telecom operator. The research suggests typical dysfunctional ramp-up behavior of IT-enabled service supply chains, plausible root causes for this dysfunctional behavior, and managerial policies to improve performance, both apparently ineffective policies and potentially effective ones.

MCP8 Project management methodologies in SMEs: Are they relevant?

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Project management as a tool in business has gained widespread use among large companies. Over time, project management theory has been collated into methodologies such as PMBOK and PRINCE2. This paper identifies the relevance of these methodologies in project based SMEs, highlighting the barriers that stop them from implementing such techniques. We conclude that to make project management more relevant for SMEs it is necessary to consider many project management processes in their strategic, tactical and operational context and assign a timeframe according to the company specifics.

MCP9 How to audit a Business Process Excellence Implementation ?

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Adopting Business Process Excellence (BPEX) practices successfully might appear straight forward, but studies report that few firms achieve the desired objectives. They produce islands of improvements, but fail to sustain the more long term effort and reap the full benefits of their investments. To address the gap, this paper presents a new, integrative BPEX audit method which organizations can use to benchmark their ongoing implementation efforts and results, evaluate progress, and identify specific actions to be done with the aim of developing not only a short term impact, but also long term sustainability of results and improvements.

MCP10

Lean: insights into SMEs ability to sustain improvement

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The New Zealand Government requires manufacturers to boost productivity and growth. New Zealand Trade and Enterprise (NZTE) are driving a national scheme to implement lean to improve productivity. This research investigates how effectively organisations implemented and sustained their lean transformations. This study extracted qualitative data from nine manufacturers involved in NZTE lean programme. All organisations faced some level of difficulty in sustaining lean. Insufficient leadership was the single biggest problem. Greater work needs to be done by the Government, the education sector and manufacturers in ensuring that leadership capability is developed to ensure sustained growth in the economy.

MCP11

Visualisation of service performance information: insights for management decisions

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A critical dimension of PMSs is the visualisation of performance information. In this paper, we propose an interpretative framework for information visualisation and address three fundamental managerial functions. A case example of a major European apparel retailer is presented in order to illustrate how the visualisation of performance information represents a communication medium, a knowledge management means, and a decision-support instrument. We find that, depending on the way performance information is shaped, communicated, and made interactive, it not only helps decision-making, but also offers a means of knowledge creation, and a route to influence behaviour through appropriate communication.

Managing the operations-marketing interface

MKT1 **The application and evaluation of a framework for the sustainable alignment of operations strategy: exploring the marketing interface**

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The aim of this paper is to assess the results of a framework application developed to improve the strategic alignment of operations. Considering the importance of interface processes for alignment, we seek to identify factors related to the application of the framework that affect the strategic alignment of operations interfacing with marketing. The balance between cross-functional trade-offs, joint research on the competitive context, reflections on the understanding of customer needs and operational performance, and understanding of cross-functional trade-offs were the main factors verified.

MKT2 **Inter-functional integration between Marketing and Logistics: case study insights**

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Inter-functional integration dynamics between Marketing and Logistics are not well understood in terms of: contact points, integration factors, formality/formality, integration level and integration impacts. The purpose of this research is to characterize the Marketing-Logistics integration dynamics in two different companies, based on the results of in-depth case studies. The results demonstrate that integration between Marketing and Logistics can help companies to reach its main goals and also to bridge the great divide between forecasting demand and operational execution. At the same time it can make employees feel themselves as part of the whole process.

MKT3 **The supply chain management – marketing interface in dynamic contexts: an exploratory study**

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The paper explores the marketing-supply chain management (SCM) interface in New Product Development (NPD) processes according to some contextual factors drawn by literature. NPD processes of two divisions of the Italian branch of a MNC operating in the electric devices industry have been studied. Different configurations of the Marketing-Research & Development (R&D)-SCM integration have been observed. Results suggest that supply- and demand-side uncertainty, product innovativeness, market orientation, trust and absorptive capacity influence the way through which Marketing, R&D and SCM departments interact. These outcomes suggested implications for both managers and academicians.

MKT4

External product variety, mass customization and order fulfilment in the automotive industry: A comparison between German and Japanese cases

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Mass customization as a strategy to cope up with increasing product proliferation has been viewed as desirable but difficult to achieve in the automotive sector. We focus our study on the distribution side to investigate how and to what extent German and Japanese OEMs offer product variety to the market and how such activities are linked to order-f fulfilment and manufacturing operations. In Germany, fewer models are assembled on one production line, but the option content and variability for a single model is about six times higher than in Japan. Further mass customization in Japan is achieved through option bundling.

MKT5

Product Diversity Management within a supply chain perspective: lessons from an empirical study

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Product Diversity Management (PDM) has become relevant for both academics and practitioners and marks a key trade-off at the operations-marketing interface. Thus, PDM becomes a challenge for industries with a high level of diversity such as cosmetics. This paper conducts an empirical study in Brazil to analyze the PDM in the cosmetic industry. The findings highlight the need for integration, both internally, within the company's internal corporate areas, and externally with the company's main suppliers and customers. This integration is associated to Supply Chain Management (SCM), mainly in the downstream links, with intense use of Efficient Consumer Response (ECR).

MKT6

Changing patterns of leanness: Stock turns in the Japanese and western auto industries 1975-2008

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In the 1980 and 1990s the Japanese auto industry was feted, but since then Japan has suffered two decades of stagnation and interest in Japan has waned. Meanwhile, Western auto firms have undergone two decades of manufacturing reform. Has the West caught up, or even overtaken Japan? This paper examines the stock turn ratios (STRs) of Japanese and Western auto assemblers and suppliers between 1975-2008. Japanese auto assemblers show consistently higher average STRs than their Western counterparts until 1997 after which the pattern is reversed. Western suppliers also show higher STRs from 1997 onwards

Managing the operations-marketing interface

MKT7 **The strategic alignment of operations: case studies in the interface with marketing**

CELESTE ZANON, ALCEU ALVES FILHO

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The objective of this article is to understand how a strategy of operations is established in the interface with marketing in three multinational companies located in Brazil. The strategic processes of interfacing involve managerial attributes that are subject to the influence of human aspects and, therefore, the case study method used a qualitative approach. It was shown that the strategic alignment of operations is established from the analysis of the problems of introducing new products and of meeting demand. The choice of technology demands a particular alignment, especially in relation to the role of operations managers.

MKT8 **Market orientation, performance management and strategic integration of purchasing and supply management – an embedded multiple case study**

MATTHIAS GOELLNER, CONSTANTIN BLOME, MICHAEL HENKE

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This research contributes to the body of knowledge at the interface between purchasing and supply management (PSM), marketing, and management accounting. First, we extend the understanding of an organization's market orientation (MO) by relating MO to the actual management and control of organizational performance. In particular, we investigate within the context of PSM how and why companies employ approaches in performance management systems that reflect the companies' MO. Building on that, we widen the understanding of PSM strategic integration. In particular, we explore how and why market-oriented performance management systems in PSM have an impact on PSM strategic integration.

MKT9 **Product modularity, supplier integration and operational performance: evidence from the high performance manufacturing project**

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In the literature, several studies empirically investigate product modularity effect on some dimensions of performance, such as quality, efficiency, flexibility, manufacturing cycle time and customer service. This study intends to contribute to this research stream, by investigating the mechanisms by which modularity affects these performance dimensions, and thus how companies can obtain a better performance by developing modular products. Basing on a sample of 266 manufacturing firms, this research empirically proves that the effect of product modularity on operational performance is positive and significant, and that this effect is mediated by the integration with suppliers.

MKT10 Collaborative supply chain pricing: insights from a case study

MARCO FORMENTINI, PIETRO ROMANO, THOMAS BORTOLOTTI

University of Udine, Udine, Italy

Recently scholars started to investigate the development across supply chains of new collaborative approaches which involve the pricing process. These contributions underline a new perspective on price definition, as a result of the interaction between several supply chain members through the adoption of cost transparency and information sharing. On the basis of extant research on the evolution of the pricing process and the analysis of retrospective case studies, we propose a conceptual framework to analyze collaborative pricing and its implementation mechanisms in supply chains. This framework is then applied to interpret a case study of a high-quality agri-food supply chain.

MKT11 E-quality, service recovery and loyalty relationship: the e-banking case

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(1)Universitat International de Catalunya, Barcelona, Spain, (2)University of Girona, Girona, Spain

The paper examines the impact of electronic service quality and service recovery on loyalty in the setting of e-banking services. This is the first attempt to gauge relative importance of both constructs on loyalty. It's important for practitioners in order to establish their priorities (investing on recovery or in e-quality). The results provide definitive empirical evidence of the presumed link between: (i) the e-quality and e-recovery dimensions proposed in the E-S-QUAL and E-RecS-QUAL scales; and (ii) the construct of loyalty. Furthermore, it provides empirical evidence that efficiency of a website and responsiveness to complaints have a positive influence on e-loyalty.

MKT12 Service delivery across multiple direct channels: Is more better?

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(1)Catholic University of Portugal, Porto, Portugal, (2)University of Aveiro/IESE Business School, Aveiro/Barcelona, Portugal, (3)Arizona State University, Arizona, USA

Direct channels exhibit different capabilities in delivering services. Phone-based channels, for instance, provide customers with a more personal level of contact with service providers, relative to the level of contact available through Internet-based channels. When relying on phone-based or Internet-based channels, service providers need to decide which interactive activities will be offered in each channel and whether for each activity a single or a multichannel strategy will be adopted. We develop and discuss several hypotheses about the conditions supporting the convergence of customer preferences for one direct channel over another and the implementation of a single-channel strategy.

Managing the operations-marketing interface

MKT13 Models on interval lead time quotation: analysis and insights

BANU YUKSEL-OZKAYA

Hacettepe University, Ankara, Turkey

the lead times are usually quoted in singletons in theory, many firms may prefer to quote the lead time as an interval since it obviously gives them higher flexibility. The goal in this study is to investigate the performance and the behavior of the interval lead time quotation strategies in different settings. In particular, the impact of interval lead time quotations is examined in a multi-period, dynamic and stochastic environment for both make-to-order and make-to-stock systems. The systems are analyzed under different customer responses to interval lead time and price quotes made by production and marketing departments.

MKT14 Optimizing the services and lifetime of complex capital equipment

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(1)Strathclyde University, Glasgow, UK, (2)ABB AG, Ladenberg, Germany

Every member of an industrial network marked by complex product and service delivery has their own “co-development history” associated with an innovation. A balanced individual “relationship scorecard” reflects the need for relationship and success justice among industrial partners. Non-chargeable innovation services simplify the “calculation” of such a justice by leaving out monetary buying costs. Strategic research and development initiatives where the cost is covered by other than the directly cooperating departments help mitigate the potential failure of innovation and foster readiness for co-creation. “Success” in terms of the supplier’s development and the customer’s perception may be considerably different.

MKT15 Linking master production scheduling performance to planning methods

LINEA KJELLDOTTER IVERT, PATRIK JONSSON

Chalmers University of Technology, Gothenburg, Sweden

The purpose is to explain how the planning environment, process maturity and data quality affect the capability of the planning method to provide high MPS performance. The analysis conducted with survey data from a sample of Swedish manufacturing companies shows that the process maturity and data quality are very important for successfully using planning methods. The data quality is shown especially important for simple planning methods whereas the MPS process maturity was particular important when using advanced planning methods. The complexity in the planning environment did not seem to influence the successful use of planning methods and MPS performance.

NETSTR1 Networking strategy as a strategic management tool

FRANCESCA RICCOPONO, MANFREDI BRUCCOLERI, GIOVANNI PERRONE

University of Palermo, Palermo, Italy

Many research studies in operations management have investigated how different kinds of decisions regarding business relationships can positively affect firm's operations performance, resources endowment, and competitive position. Very few studies exist trying to illuminate the actual behavior of managers when making strategic decisions concerning their company relationships with other companies as opposed to normative theory. By collecting data from 13 business agreements from 3 firms, the purpose of this paper is explore linkages between the "set" of strategic objectives that managers are willing to pursue and the "set" of networking decisions that they actually consider when signing a business agreement.

NETSTR2 Integrating interfaces with logistics service providers: a literature review and future research

CHEE YEW WONG, RAN CAO

University of Hull Business School, Hull, UK

This paper systematically reviews literature from logistics, purchasing, supply chain, operations and production management to evaluate the state of research on the importance and integration roles of logistics service providers (LSPs), configuration theory of shipper-LSP integration, and approaches to integrate with LSPs. The literature identifies five factors affecting the roles of LSPs and levels of shipper-LSP integration. LSPs may act as a tool for achieving cost-saving or a strategic partner for SCI. Theories for a configuration theory of shipper-LSPs integration is proposed but need more research. This paper further provides direction for future research.

NETSTR3 The identification of critical supply network segments in theory and practice

THOMAS WALLNER, MARKUS GERSCHBERGER

Upper Austrian University of Applied Sciences, Steyr, Upper Austria, Austria

Due to the tremendous increase in complexity and uncertainty in highly dynamic supply networks the identification of critical supply chain partners becomes a key topic. Existing models to solve this problem are highly quantitative, have a static and far too narrow focus - and they are not applied in day-to-day practice. This paper discusses new approaches of network segmentation but also investigates in a series of expert interviews how "real" supply chain professionals handle this task. It turns out, that this is done in a continuous process including all kinds of information such as soft facts and implicit knowledge.

NEWOP1 The future of supply chain security - a Delphi consensus

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Recent incidents like parcel bombs from Yemen or piracy attacks in Somalia have drawn government's and management's attention to the necessity to increase supply chain security. Supply chains have to be secured against various types of attacks in order to guarantee the stability and reliability of global supply chains and economies. Therefore, we conducted a global real-time Delphi survey with security experts from business, politics and academia from 25 countries to discuss future developments and challenges in the field of supply chain security until 2030. We noticed different experts' attitudes to particular topics while other topics received high consensus.

NEWOP2 Managing production ramp-up: the impact of co-operation

MAREK SZWEJCZEWSKI(1), ALAN COUSENS(2)

(1)Cranfield School of Management, Cranfield, UK, (2)IfM Education and Consultancy Services, Cambridge, UK

To maximise the return on their investment in new product development, companies strive to reduce the time taken to bring a new idea to the market. A critical stage in the development process is production ramp-up - when the product design is handed over to production to start the process of manufacture. During ramp-up the rate of production gradually increases as production problems are resolved and the factory personnel become confident in their ability to produce the product in ever greater volumes. Time can be lost through problem solving, resulting in the company missing early market entry opportunities.

NPD1**Managing internal interactions in new product development operations****BURCU FELEKOGLU, JAMES MOULTRIE**

Institute for Manufacturing, University of Cambridge, Cambridge, UK

New product development (NPD) is an inherently multi-functional and multi-stakeholder activity. This multidisciplinary nature of NPD operations requires interaction of many people from different functions as well as hierarchies within the firm. This study takes a step towards understanding the operational dynamics behind these internal interactions through case studies of four technology-driven manufacturing companies differing in size (medium vs large) and NPD process structure (highly-structured vs loosely-structured). Findings indicated that different NPD process structures required different interaction mechanisms to be used and different key people to be involved. Theoretical and practical implications of these findings are discussed.

NPD2**Relationships between supplier involvement, absorptive capacity and product innovation; a study of manufacturing industry in the UK****SAEED NAJAFI TAVANI, HOSSEIN SHARIFI, HOSSAM ISMAIL**

University of Liverpool, Liverpool, UK

New product innovation (NPI) in the increasingly uncertain business environment requires agile capabilities, well managed relationship with suppliers, and capabilities for absorbing external knowledge, absorptive capacity. This research is investigating the relationship between product innovation, supplier involvement and absorptive capacity of the firm in the light of agile supply chain strategy, where firm's agility is entered as one aspect of the firm's performance. The results shed light on the issues and the emerging landscape of innovation and suppliers' involvement. Absorptive capacity is found not only to influence company's performance but moderates the impact from supplier involvement in product innovation.

NPD3**The antecedents and consequences of glitches when suppliers are involved in new product development: the moderating effect of environmental turbulence****ANTONY POTTER(1), BENN LAWSON(2), DANIEL KRAUSE(3)**

(1)Queen's University, Belfast, UK, (2)University of Cambridge, Cambridge, UK, (3)Colorado State University, Fort Collins, USA

Research in operations management has identified that glitches adversely affect operating performance, especially when they originate during New Product Development (NPD). Our model investigates the relationships among causal ambiguity, glitches, environmental turbulence, and project performance. A sample of 153 inter-organizational NPD projects is used to test the model. We find that causal ambiguity increases the prevalence of glitches during the later stages of the NPD cycle. Environmental turbulence, such as input uncertainty and market competition, positively moderate the relationship between causal ambiguity and glitches. Glitches also diminish project performance and mediate the relationship between causal ambiguity and performance.

OMT1 Theory borrowing in Operations Management: are scholars aligning theory and measures?

PINAR MARTIN, MARK JOHNSON, JANET GODSELL

Cranfield School of Management, Cranfield, UK

In an attempt to increase the legitimacy of Operations Management as an academic discipline researchers have sought to develop and test theory. This has led to academics in the domain developing their own mid-level theories in addition to 'borrowing' theory from the broader management domain. In this research we examine whether this theory has been 'borrowed' correctly. We find that in many cases the theory has been used correctly in the research. Additional analysis indicates that we are using a limited number of theories suggesting that there is scope for more theory driven research in the Operations Management field.

OMT2 Unpacking operations activities; process, practice and routine perspectives.

STEPHEN KELLY(1), MARTIN SPRING(2)

(1)Staffordshire University, Stoke-on-Trent, UK, (2)Lancaster University Management School, Lancaster, UK

The task of the operations manager is to create and operate an effective system and this has influenced Operations Management analysis taking a transformation process perspective on sequences of activities to create results. Different, yet complementary, perspectives on purposeful organizational activity would treat these same activities as practices or routines. The three perspectives of process, practice, routine are similar, but have potentially interesting differences of emphasis. Using an illustrative empirical example, this paper considers what insight can be generated if we adopt a practice or routine perspective, in addition to - or instead of - the more normal process perspective.

OMT3 A knowledge-based view of process improvement: Examining the role of networks and knowledge acquisition

PETER MARZEC, KIM TAN

Nottingham University Business School, Nottingham, UK

This paper seeks to understand how networks and knowledge acquisition effect process improvement activities. Using absorptive capacity to underpin the intersection between knowledge acquisition and networks, this study addresses two research questions: (1) what role do networks play in solving process improvement problems?; and (2) can networking ultimately lead to enhanced process improvement? Results from seven exploratory case studies were analysed using a triple coding framework. The findings suggests networking may assist in problem definition and solution development, however an expansion of network size may not directly correspond to greater problem solving ability.

PERF1

Virtuality of organizations and performance: a quantitative study in Brazilian manufacturing firms

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The aim of this research consist in analyzing the virtuality as a measurable construct along dimensions (internal integration, customer and suppliers) and studying the relationship between virtuality degree and the perception of performance by managers, through a quantitative study performed in Brazilian manufacturing companies

PERF2

The giant's dilemma: to dance or wrestle? Interdependence between large organisations and the effect on relationship performance

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(1)University College Dublin, Dublin, Ireland, (2)National University of Singapore, Singapore, Singapore, (3)Dalhousie University, Nova Scotia, Canada

This paper attempts to build theory on dependence in buyer-supplier relationships. It brings together previous theory and research on dependence and its effect on supplier relationships. Ten global case studies are used to understand the effect of dependence on strategic relationship success. Our findings suggest that not only the structure of dependence affects the relationship but also the relationship mechanisms used in the relationship and we find three new dependence relationships: reciprocal, competitor and subordinate as well as two new relationship mechanisms: personnel change and humility.

PERF3

Supply chain collaboration, inter-firm trust and logistics performance: Evidence from the tourism sector

PAIRACH PIBOONRUNGROJ(1),(2), STEPHEN DISNEY(1),(3)

(1)Cardiff Business School, Cardiff University, Cardiff, UK, (2)Chiang Mai University, Chiang Mai, Thailand, (3)Metropolitan College, Boston University, Boston, USA

Whether supply chain collaboration and inter-firm trust has a positive impact on logistics performance is still a subject of debate in the literature. This ambiguity has raised concerns among academics and practitioners. Therefore, we empirically examine the impact of supply chain collaboration and inter-firm trust on logistics performance. We first explore a real tourism supply chain to specify main factors and propose hypotheses. We then statistically test the hypotheses using data from six cases and a survey of 109 firms. The results show that, by establishing joint activities with their partners, firms could significantly improve their logistics performance.

PI1

A systematic approach for prioritizing lean practices using AHP

MAGDY KHALAF, MOHAMED EL MOKADEM

Arab Academy for Science and Technology, Alexandria, Egypt

This paper explores some criteria for selecting the appropriate lean implementation approach. In addition, it proposes using analytic hierarchy process (AHP) methodology to prioritize and select the appropriate lean program to be implemented. A case study is used to tryout the AHP model. The research findings identified that the main selection criteria are cost, productivity, quality and lead time. In addition, it revealed that AHP can play an important role in reaching a consensus about the ranking of lean bundles of practices in accordance to the selection criteria.

PI2

Financial performance indicators used in the analysis of the TQM, TPM, and JIT/Lean Manufacturing advanced productions practices: literature review and proposal

BERNABÉ ESCOBAR PEREZ, JOSE ANTONIO DOMÍNGUEZ MACHUCA, DARKYS EDITH LUJAN GARCIA

Universidad de Sevilla, Seville, Spain

The aim of this paper is to contribute with a study on financial indicators with a view to improving the performance measurement system used in empirical studies that take the manufacturing plant, and not the company, as their unit of analysis. Such is the case of the International High Performance Manufacturing Project which is currently about to begin the launch of its 4th Round. Basically focusing on publications in high impact journals in Operations Management and Management Accounting, an in-depth bibliographical review has been done of financial indicators used to assess performance in organisations where Advanced Production Practices have been implemented, particularly the practices of TQM, JIT/LM and TPM, given the major role that they play in organisations' value chains. The findings have been used as the basis for differentiated financial indicators being proposed depending on the characteristics of the unit of analysis to be studied.

PI3

Value streams, effectiveness and the achievement of balance

CHRISTINE WELCH, TAMMI SINHA

University of Portsmouth, Portsmouth, UK

This paper considers the interconnected nature of business processes and the high incidence of failure in change projects, including those based in Lean principles. The need for teams to adopt a systemic philosophy is emphasised, rather than naively applying tactical 'toolkits'. The need to balance internal and external complexities is recognised, taking into account particular difficulties this poses for service industries. The authors suggest that the Viable Systems Model (Beer, 1985) may be a useful approach. This model attempts to balance variety between organizations and their environments, and between operational units and management, through recursive levels of autonomy.

PI4

Randomness in processing times and its impact on a serial production process performance

YAGHOUB KHOJASTEH-GHAMARI

Temple University, Japan Campus, Tokyo, Japan

In this paper, we consider a serial production line consists of four workstations controlled by pull production control systems, Kanban, CONWIP and Base-stock. Through simulation experiments, we study the effect of randomness in processing times on the system performance. The system performance under each control mechanism is evaluated with respect to the average work-in-process (WIP) and the system throughput. The theory of token transaction systems is employed to calculate the performance measures.

PI5

A matrix for identification and selection of appropriate quality improvement techniques for food SMEs: findings from empirical research

MANOJ DORA(1), MANEESH KUMAR(2), DIRK VAN GOBERGEN(1), ADRIENN MOLNAR(1), XAVIER GELLYNCK(1)

(1)Ghent University, Ghent, Belgium, (2)Edinburgh Napier University, Edinburgh, UK

This study provides an insight into the quality improvement (QI) tools and techniques used in Belgian food SMEs. The originality of this study is the identification and selection of appropriate quality improvement techniques for food SMEs based on their strategy, need, resources and competencies. This paper also proposes a matrix that will facilitate managers in organizations to embark on a QI journey based on their quality maturity level, resource availability and statistical knowledge. Future research will be conducted to test the proposed matrix within food SMEs across the European Continent.

PI6

Organizational learning mechanisms in Six Sigma Projects: An empirical study

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(1)University of Strathclyde, Glasgow, UK, (2)Edinburgh Napier University, Edinburgh, UK

This study empirically investigates the impact of two organizational antecedents (resources and team psychological safety) on learning behaviour and in turn performance of Six Sigma process improvement teams. Drawing on both Team Learning and Operations Management research, the paper proposes an integrated model to explain process improvement implementation success through two types of specific learning activities undertaken by Six Sigma project teams (Knowing-what and Knowing-how). Three hypotheses were proposed and tested with the data collected from 52 Six Sigma project teams and the results of regression analysis supported all. Finally, theoretical contributions and practical implications are discussed.

Partnership development

PTNR1 Mutual dependence and supplier innovation, the moderating role of power asymmetry: An empirical study from the Arabian Gulf Countries

ZAINAB AL-BALUSHI, DAMIEN POWER

The University of Melbourne, Melbourne/Victoria, Australia

This paper examines mutual dependence between firms and their key suppliers and the subsequent effects on the supplier's innovation. Resource dependence theory lens (Pfeffer & Salancik, 1978) was used to develop the framework that examines the effect of focal firm's and supplier's dependence on supplier innovation and how power asymmetry moderates this relationship. Structural equation modeling was used to test the model on a sample of 400 firms from the Arabian Gulf Countries. Results provide a broad support for our model.

PTNR2 Opposites attract: Organisational culture influences on high and low performing supply chains

TREVOR CADDEN(1), DONNA MARSHALL(2)

(1)University of Ulster, Jordanstown, UK, (2)University College Dublin, Dublin, Ireland

This paper explores the effect of organisational culture on buyer-supplier relationship performance. Current theory proposes that cultural fit is essential to high performing supply chains. Using a mixed methodology, a structured survey and semi-structured interviews, the researchers examined two supply chains in the fast moving consumer goods (FMCG) industry: One high performing and the other low performing. We find that cultural differences are significant in the high performing supply chain and there are no significant differences in the low-performing supply chain. We propose that cultural fit leading to high performing supply chains does not mean cultural similarity but cultural compatibility.

PUB1 Adapting to the future: The application of new approaches to business process improvement -initial findings from a study of five UK police forces.

HARRY BARTON

Nottingham Business School, Nottingham, UK

This paper outlines the usefulness of adopting an interdisciplinary and yet operations centred approach to policing. Specifically the impact of budgetary constraints and the need to reform the police service are identified as precursors for change and the utility of introducing new business process methodologies is introduced as a mechanism to facilitate aspects of this change agenda. In order to inform the current position initial observations from five police forces are used to illustrate the variety and diversity of approaches to the implementation of such new ways of working.

PUB2 The implications of maturity of improvement methodologies in UK public services: A pilot study

ANN ESAIN, SARAH LETHBRIDGE, SIMON ELIAS, BARRY EVANS, CERI DAVIES

Cardiff University, Cardiff, UK

The implementation of improvement methodologies in not for profit public services are increasing to combat the pressure for better customer service and lower costs. Implementations are often portrayed as successful or not successful through performance analysis alone yet there is increasing evidence that implementation and performance gains are time dependent. Maturity of implementation is the subject of analysis in this paper through the piloting of an evaluation framework with fourteen public organisations and an in depth review of healthcare. Results show the importance of staff involvement alongside four factors identified from literature in achieving whole organisational improvement.

PUB3 Process capability – towards an empirical basis for support of lean operations

PAUL COUGHLAN(1), BRIAN FYNES(2), FRANK WIENGARTEN(3), BASTIAN FRÄNKEN(1)

(1)Trinity College Dublin, Dublin, Ireland, (2)UCD Dublin, Dublin, Ireland, (3)ESADE, Barcelona, Spain

Improving process capability means that the proportion of the sample population within tighter performance limits has increased. The purpose of this paper is to explore the empirical fit between process capability and operations practice and performance - particularly in the areas of lean and quality. The research question is: to what extent does a company's process capability impact upon lean and quality practices and performance? The paper presents an empirical analysis, leading to a model which may assist in supporting lean operations. The paper draws upon a multi-country dataset based upon the Microscope instrument.

PUB4 **What is lean culture - and how to measure it?**

NOÉMI IMRE, ISTVÁN JENEI, DÁVID LOSONCI

Corvinus University of Budapest, Budapest, Hungary

The use of lean management in healthcare sector is extensively spreading just like the academic interest toward the topic. Although many authors emphasize cultural receptiveness as a prerequisite to successful lean transformation in healthcare, there has been little effort taken to understand what the “ideal lean culture” is like, and to provide a tool to measure the “leanness” of existing cultures. In our work we provide deeper understanding of how the intended “lean culture” can be captured and the existing culture measured. Through the case of an outpatient clinic the elaborated measurement system is tested.

PUB5 **The impact of EMR capability on hospital performance.**

BOGDAN BICHESCU(1), RANDY BRADLEY(1), WEI WU(1), TERRY BYRD(2)

(1)The University of Tennessee, Knoxville, TN, USA, (2)Auburn University, Auburn, AL, USA

Driven by intense pressure to control costs, improve patient care quality, and a governmental mandate (i.e., the HITECH act), numerous hospitals have recently embarked on a journey to adopt electronic medical records (EMR) systems, which enable the paperless recording of a patient's encounter with a care delivery organization. Using a sample of 80 hospitals that are in advanced stages of their EMR implementation, we perform an event study to determine the impact of EMR on several clinical and operational measures of hospital performance. EMR capability is associated with higher throughput and labor productivity but, surprisingly, with higher adjusted mortality rates.

PUB6 **Readiness for lean in healthcare: Views from the executive**

ZOE RADNOR(3), AMRIK SOHAL(2), NICOLA BURGESS(2), PETER O'NEILL(1)

(1)Warwick Business School, Coventry, UK, (2)Monash University, Victoria, Australia, (3)Cardiff Business School, Cardiff, UK

This paper aims to reflect the degree to which success factors and organisational readiness are recognised by Executive Board members of healthcare organisations both in the UK and Australia. Based on evaluative research which considered how Lean is being implemented within four healthcare organisations - two in the UK and two in Australia, we assessed Lean implementation using a framework comprising of four dimensions: (1) the definition of Lean, (2) the activities undertaken, (3) the organisational readiness, and (4), the sustainability of process improvements.

**PUB7 Collaborative sourcing of complex technologies in healthcare system:
implications for strategies**

CHIARA GOBBI, JULIANA HSUAN

CBS, Copenhagen, Denmark

The paper represents an exploratory study aimed at developing a theoretical framework that supports the elaboration of efficient collaborative purchasing (CP) strategies in the healthcare system. We identify prerequisites for developing an efficient CP approach in the healthcare system and we address how to pursue alignment between vendors and customers in the sourcing process. A case study of Danish National Healthcare system is presented. The case indicates that trust, stakeholders' commitment and motivation are key elements for successful CP initiatives. Moreover, achieving alignment between vendors offering set and customers' needs is crucial in sourcing of complex medical equipment.

**PUB8 Performance measurement utilisation in public organizations: the influence of
political, cultural and rational factors**

FRANCESCO SOLE, DANIELA CARLUCCI, GIOVANNI SCHIUMA

Università degli studi della Basilicata, Potenza, Italy

The paper investigates the factors affecting the adoption and implementation of performance measures in public organizations. For this purpose, based on survey data, the study tests a model, drawn upon the framework proposed by De Lancer Julnes (2009), within a panel of Italian public organizations. The model is tested using structural equation modelling and empirical data from executive heads of Italian public organization's departments. The empirical results show that the adoption of performance measures is influenced mainly by the rational factors while the role of external stakeholders, such as citizens, is important to achieve an effective use of performance information.

PUB9 The content and process of a successful whole system improvement programme

PAUL WALLEY

Warwick University, Coventry, UK

Whole system redesign projects are frequently attempted in healthcare, but they experience mixed levels of success. A key challenge is to truly achieve change across the whole system rather than in isolated pockets. This paper shows how a capacity and demand-based methodology is able to identify redesign opportunities across the entire system and balance work flow. This had advantages over other redesign methods as it focused attention where it was needed most. The programme also developed an improvement capability within the workforce, avoiding a multiplicity of methods. The paper discusses these and other critical success factors.

Operations in the public sector

PUB10 Trajectory of lean implementation: the case of English hospitals

NICOLA BURGESS(1), ZOE RADNOR(2)

(1)University of Warwick, Coventry, UK, (2)University of Cardiff, Cardiff, UK

This paper presents evidence of a shifting trend towards a systemic approach to Lean implementation in English hospitals. Preliminary data analysis finds that whilst 52% of hospital Trusts in England articulate the use of Lean methods in their Annual Reports for the operating year 2007/08, most of these hospital Trusts were doing so from a pragmatic standpoint. This paper presents a second content analysis of annual relating to the operating year 2009/10 and finds evidence of a change in approach along a trajectory of a 'few projects' towards an organisation wide systemic approach.

PUB11 Lessons from using the A3 structure in a multi-site lean healthcare experiment

NORMAN FAULL(1),(2), CHIPO MUPURE(2),(1), ANTON GRUTTER(3),(2), TONY BOOYSEN(4), ZAMEER BREY(1), RUFIZIO CHIGWEDERE(2), ROSE HEATHCOTE(5)

(1)University of Cape Town, Cape Town, South Africa, (2)Lean Institute Africa, Cape Town, South Africa, (3)University of the Western Cape, Bellville, South Africa, (4)Lean Sigma Consulting, Cape Town, South Africa, (5)ThinkingPeople, Johannesburg, South Africa

The A3 management tool of the Toyota Production System (TPS) embraces the P-D-C-A (Plan-Do-Check-Act) process at the heart of TPS. Furthermore, the P-D-C-A process is very similar to that of the action research methodology. This paper describes lessons learnt in an action research project in which the A3 structure was used for the overall project, 19 five-day workshops, and the 56 projects within the workshops as an improvement approach taught to practicing healthcare managers in 18 needy health districts.

PUB12 Lean and safety in healthcare: Methodologies for practice and research

STEVE NEW(1), SIMON KRECKLER(2), KEN CATHPOLE(2), PETER McCULLOCH(2)

(1)University of Oxford, Oxford, UK, (2)University of Oxford, Oxford, UK

This paper presents a discussion of an intervention, before-and-after study on the impact of introducing some elements of lean into the surgical emergency unit of a major UK hospital. It shows how the intervention yielded some significant improvements in specific processes, but did not yield measurable improvements in patient safety. The paper examines some of the reasons which might explain this, and we consider issues of evidence, participation and the constitution of lean interventions. It concludes by presenting proposals for future research.

PUB13 **Lean business schools - A case study of lean implementation in higher education**

TAMMI SINHA, JACKIE SEYMOUR, ERIC DE GREEF

University of Portsmouth, Portsmouth, UK

Following the recent UK spending review (20/10/10), public sector funding is coming under immense pressure, and all public services have been targeted for cuts. The sense of urgency for evaluating and developing appropriate models for improvement in public services has reached all of the sector. The efficiency agenda will need new applications of operations management models, concepts and theories, and for them to be made more accessible to the culture and language of the public sector. The transfer of best practice in the guise of 'knowledge transfer' and benchmarking have been successful in developing and assisting in the transition of these models, concepts and theories from the private to public sector. This paper aims to develop a framework for the implementation of lean concepts in Higher Education, and asks 'What are the key enablers and challenges for implementing lean in Higher Education Institutions? This will be explored using empirical studies in a large HE institution.

PUB14 **Total quality management in developing countries: a model for Pakistani universities**

MUHAMMAD USMAN AWAN(1), MUHAMMAD KHALID KHAN(1), NIAZ AHMAD(2)

(1)University of the Punjab, Lahore, Pakistan, (2)National Textile University, Faisalabad, Pakistan

Critical success factors of TQM have been well researched. However, most TQM studies have focused on developed countries. This study seeks to identify the factors contributing successfully to the implementation of TQM in Pakistani Universities. 6 critical success factors are identified. Questionnaire was distributed in 547 faculty members of 10 Universities in Pakistan. The respondents were asked to rate the importance of each item on 5 point Likert scale. Factors identified are Leadership, Vision, program design and resources, Measurement and Evaluation, process control & improvement and Other stakeholders.

PUB15 **Assessing the impact of lean implementation within a UK university business school : A case study in action**

HARRY BARTON, BABACK YAZDANI, COLIN TIVEY

Nottingham Business School, Nottingham, UK

This paper seeks to evidence the impact that the implementation of a 'lean thinking' approach to managing a UK Business School has had on internal operations both in terms of output measures and staff satisfaction. The rationale for its introduction is discussed and the logic behind this would appear timely given the challenges facing HE Institutions as highlighted in the Browne Review (2010) and announcements made in the UK Government's Comprehensive Spending Review in October 2010.

PUB16 Innovating operations in healthcare: the (un)solved quest for making telemedicine-based services work

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Healthcare is facing changes in structure, organization, operations, according to the need for delivering more with less resources. Telemedicine offers hospital operations managers the opportunity to perform these changes, by innovating the current paradigm of healthcare delivery, overcoming spatial constraints. Despite its potential, little is understood about how to make telemedicine-based innovations work and therefore few telemedicine-based services achieve wide scale adoption. Our research, based on 9 case studies settled within the Italian Healthcare scenario, tries to clarify factors - springing from interfaces among different knowledge backgrounds - that hospital operations managers should concentrate on to make telemedicine services work.

PUB17 The development and evaluation of an Innovation Engine for empowerment and change in healthcare

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This article describes how an Innovation Engine was developed and used at Sahlgrenska University Hospital to stimulate change and what experience and results it generated. The principles behind the methodology were incremental change, self-assessment, everyone's involvement and learning. The data were collected in interviews and analyzed using a content analysis approach. The strengths, weaknesses, opportunities and threats were analyzed and mapped to context, content, process and output. The evaluation shows that the methodology has advantages concerning involvement and dialogue but needs improvement in terms of information about the project. Examples of how the Innovation Engine can be applied are discussed.

PUB18 The role of individual and group innovativeness to support the diffusion of a new operations practice in healthcare

GIOVANNI RADAELLI, EMANUELE LETTIERI, CRISTINA MASELLA

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This study investigates the factors that explain the different diffusion of a new telesurveillance system in 10 hospitals. Results from case studies indicate two major causes: (i) different structural constraints in the workgroup design and (ii) different workgroup innovative behaviours in the form of idea promotion to administrators and external units.

PUB19 Developing operational understanding of multi-channel service delivery systems through computer simulation.

ISABELLA PORCELLI, MARIO RAPACCINI, FILIPPO VISINTIN

Florence University, FIRENZE, Italy

The paper aims to investigate the effects of different queue management policies in service delivery through computer simulation. The effects are evaluated both on objective performance (i.e. throughput time) as well on performance perceived by customers (i.e. customers' satisfaction and perceived waiting times). The importance of establishing an integrated approach to take into account not only the management logics, but also how people interact with these systems according to their individual behaviours and attitudes, is then emphasized.

PUB20 Long-Term Care services: A simulation model to predict future demand and utilization

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Developing a network of Long-Term Care (LTC) services is currently a health policy priority in many countries. This development requires proper planning, which demands for information regarding future LTC demand. Unfortunately, this information is often not available and the development of methods to predict demand and utilization is mandatory. This study proposes a simulation model based on a Markov cycle tree to predict yearly the number of individuals requiring different types of LTC services (domiciliary, inpatient and outpatient) and the resources to be provided for these individuals. Results from applying the model at the Lisbon civil parish level are presented.

PUB21 Task division and coordination in multi-channel healthcare system designs

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The increasing complexity of service companies' channel systems raises new design issues. This paper provides a coherent overview of the complexities and uncertainties inherent in a multi-channel delivery system within services, and more specifically in healthcare. These complexities and uncertainties need to be answered in the design. A framework is provided, focusing on the design choices in two interrelated service system parts; the 'multi-channel' and the 'service delivery process', i.e. task structure and coordination practices. Based on this framework, two experimental multi-channel projects in healthcare are described and analyzed. The results throw light on the intriguing trade offs involved.

Operations in the public sector

PUB22 **The role of physicians in the implementation of process flow solutions in healthcare**

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This paper identifies physician-related factors that influence the implementation of process flow solutions in healthcare. Based on qualitative research at four A&E departments, we identify three factors that negatively influenced the implementation. First, standardized process flow solutions are perceived to limit physician's traditionally high level of autonomy. Second, there were also perceived difficulties when combining the medical responsibility and process flow solutions. Finally, physicians were more interested in developing their medical skills, rather than skills in improving the process of care production.

PUB23 **Decision support by process-oriented cost accounting for the healthcare industry, PFC - patient flow costing**

MALIN WIGER, HÅKAN ARONSSON

Dept. of Management and Engineering, Linköping, Sweden

This paper presents a cost accounting model with the aim to facilitate process owners in decision-making and to keep track of the patient flow by combining Total cost analysis, Activity based costing and systemic approach. The patient flow costing (PFC) model has been developed through an iterative process with a Swedish hospital. Costs not tied to the patient flows are by the model collected to a residual, which makes them visible and therefore approachable. Furthermore, the PFC-model is a tool to help analyze the cost of logistic decisions as a means to increase the efficiency in the flow of patients.

PUB24 **Leveraging boundary objects to enable knowledge management: a case study on operating and hosting planning centralisation in health care**

AGNÈS LANCINI, NATHALIE SAMPIERI TEISSIER

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The contribution of this paper is to build up a framework that spans across the literature about boundary objects (BO), coordination and knowledge management (KM). It aims at identifying the different BO the actors can create, and to observe what specific knowledge emerges from boundaries. The framework is confronted to a case study that has been set in a medium-sized French hospital, about a changing process in operating block scheduling. Through an in-depth case study, we put forward the following proposal: there is a link between the type of chosen BO and the type of coordination or knowledge activities.

PUB25 **Process orientation in healthcare services: tracking the patient's journey through the healthcare system**

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The purpose of this paper is to present and discuss the potential benefits of a process oriented model for identification and description of the various activities and decision points made as a patient undertakes a process for a single healthcare problem. The results from the present study are based on a multiple case study design and the work of an expert group, teams of healthcare practitioners, and researchers. The developed process oriented model identifies important steps from the first contact between the patient and the healthcare system to the closing of the case.

PUB26 **Front/back office considerations in improving patient orientation: Empirical findings on the operational access to long-term care**

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The present paper aims to advance theory on front/back office design for operational access to care and related service provision to independently living elderly. Based on literature on front/back office configurations and access to care we developed a theoretical framework. The empirical research comprised a multiple case study based on this framework. The cases provide insight in the particularities of front/back office considerations in operational access to long-term care. The case study suggests how deliberate front/back office design may help providers arrange their entrance unit to receive, clarify and fulfill the requirements of their clients effectively and efficiently.

PUB27 **Organisation level drivers that promote innovative work behaviour in healthcare delivery: a micro-level perspective**

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(1)Politecnico di Milano, Milan, Italy, (2)Università di Bologna, Bologna, Italy

This paper investigates organisational factors that might promote or inhibit knowledge sharing and innovative work behaviours among healthcare professionals. The study has been set in hospice and palliative care organisations. Results indicate that seeking feedbacks, sharing best practices and psychological safety are major enablers of idea promotion, while idea generation is affected by sharing best practices. Results also indicate that knowledge assets are relevant for knowledge sharing, with social capital affecting sharing mistakes and seeking feedbacks, with the mediation of psychological safety, while organizational capital affects sharing best practices.

Operations in the public sector

PUB28 Identification of key operational factors and barriers in supply chain integration for New Zealand public hospitals

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A review of the literature found little is known of how Supply Chain Integration (SCI) influences or impacts on supplier commercial relationships (SCR) and order fulfilment in public hospitals. Furthermore in the context of New Zealand there is little research on SCI and in particular none apparent on SCI factors and the impact on supplier commercial relationships and order fulfilment. This paper addresses this gap through empirical research to identify critical SCI operational factors, and their impact on SCR and order fulfilment in New Zealand public hospitals. A process-based management approach as proposed by Lambert (2004) was used.

PUB29 The English patient experience: Does healthcare quality matter?

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Understanding the interaction between performance measurement, quality of care and patient satisfaction is important in managing healthcare. The family doctor is typically the first point of contact for patients and the gatekeeper for most treatments. Doctor's surgeries are extensively measured but little researched, however. A measurement framework which aims to improve quality of care has been adopted by most English surgeries, with patient satisfaction measured independently. This paper aims to determine whether achievement in the measurement system can predict patient satisfaction. Although literature suggests that quality care positively impacts on patient satisfaction, the results of this study do not support this.

PUB30 Organising a maternity care network

JULIA VENESMAA, PAUL LILLRANK

Aalto University, Helsinki, Finland

This paper studies the organizing of maternity care as an equity-efficiency trade-off problem. Using data from Finland equity of access is studied as average travel distances. Efficiency is defined as cost-efficiency, the minimising of healthcare spending while maintaining (or improving) the required service level. Organizing maternity care is difficult, as it contains elements, such as antenatal care, where geographic access is important, and emergencies, where centralized and specialized assets are necessary. A location algorithm is used to find out the maximum reasonable number of birth hospitals and after that a trade-off model is used to evaluate the regional hospital network.

PUB31 Examining the applicability of demand and capacity management strategies to an NHS Urology department

JANE GUINERY, EMRAH KOK

University of Nottingham, Nottingham, UK

The National Health Service is under increasing pressure to achieve efficiency gains while maintaining quality services. Demand and capacity management strategies provide an opportunity to deliver a service efficiently by managing variations in demand and capacity more effectively. The research analyses existing literature, and issues identified in a Urology department, to identify improvement opportunities and develop an approach to help practitioners select and employ appropriate initiatives. Findings suggest that an holistic perspective needs to be taken. Representations of the influence of different factors and how they are addressed have been developed to support the visualisation of issues and initiative selection.

PUB32 A Universal appointment rule for different patient-types, no-shows and walk-ins

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This study addresses appointment system design at three decision levels: appointment rules, use of patient classification, and adjustments for no-shows and walk-ins. A universal dome appointment rule is tested in combination with alternative patient classification schemes. The resulting appointment systems consistently perform better than the traditional appointment systems in terms of the total system cost calculated as a weighted sum of the patients' waiting time, doctor's idle time and doctor's overtime. Simulation results indicate that the final choice depends primarily on the mean and variability of service times of different patient classes.

PUB33 Integrative practices in hospitals and their impact on patient flow

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University of Groningen, Groningen, The Netherlands

A discontinuous patient flow negatively affects both hospital productivity and patient satisfaction. Internal supply chain integration concerning planning and control seems promising in improving patient flow. In a multi-case study - consisting out of three hospitals with each three patient groups - we investigate integrative practices concerning planning and control in an orthopedic supply chain. Contrary to most studies we assess the effects on a patient's total throughput time performance, rather than performance for a single stage. Our results indicate positive effects on patient flow due to information sharing, capacity commitment and integrative planning, both within and between care stages.

Operations in the public sector

PUB34 Is organisational culture the answer to performance improvement in healthcare? A case study of New Zealand's District Health Boards (DHBs)

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University of Otago, Dunedin, New Zealand

Organisational culture is considered a fundamental element within organisational performance improvement. Therefore, this paper aimed at examining the role and impact of organisational culture on the performance of New Zealand's DHBs. A representative sample of seven DHBs participated in semi-structured interviews. This research suggests that whilst organisational culture is an important element in performance improvement, the ability of a DHB to influence organisational culture is limited to working through the CEO and DHB Chair relationship. A critical aspect of this relationship is therefore the Key Performance Indicators (KPIs) established and agreed with the CEO.

PUB35 Transforming a healthcare organization so that it is capable of continual improvement - the integration of improvement knowledge

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The purpose of this article is to describe the transformation that takes place when a healthcare organization integrates improvement knowledge in order to strengthen the organization's improvement capabilities. We present the experiences from a Swedish hospital, and analyze it by using Donabedian's (2003) structure-process-outcome (SPO) model. The case highlights e.g. the importance of focusing on the organization's own knowledge development.

PURCH1 Aligning operations strategy and purchasing strategy

JOAKIM WIKNER, JENNY BÄCKSTRAND

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The possible advantages gained by outsourcing non-core competences and utilizing the globalization of the market will be diminished if inter-firm relationships are not designed and managed properly. Hence, extended support for purchasing decisions based on market requirements in terms of order winners and delivery lead times is needed. We provide a framework that combines the strategic implications from a well-known purchasing framework (Kraljic, 1983) with a decoupling based framework that emphasizes the balance between efficiency and responsiveness, and the level of controllability in the supply chain.

PURCH2 Outsourcing practices in Canadian organizations: The experience of purchasing professionals

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(1)Saint Mary's University, Halifax, Nova Scotia, Canada, (2)University of Trinidad and Tobago, Arima, Trinidad and Tobago

This study reports on the experience of purchasing managers with outsourcing practices in Canadian organizations. The objective is to explore the role that purchasing professionals have played in outsourcing, and how that role needs to be improved in order for purchasing professional to add greater value to their company's outsourcing arrangements. While purchasing professionals have played a role in outsourcing initiatives, their impact appears to have been somewhat limited. Consequently, a major challenge facing the purchasing and supply management profession is to develop an effective strategy for increasing the perceived value of purchasing professionals in planning and executing outsourcing initiatives.

PURCH3 Institutional decoupling across the supply chain: The case of Information Technology implementation

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(1)University of Melbourne, Melbourne, Australia, (2)Arizona State University, Arizona, USA

This study seeks to address the existing theoretical tension in the literature whether information technology decisions are guided by their technical rationale or institutional factors. We employ a theory building approach using ten case studies of organizations embedded within the health care supply chain. Results illustrate how a differential mix of internal and institutional pressures lead to mixed organizational responses across the different tiers of the supply chain. We develop working propositions that articulate contributions to neo institutional theory.

Capability and the resource-based view in practice and theory

RBV1

Capabilities and competencies in humanitarian operations

ARUNA APTE, KEENAN YOHO

Naval Postgraduate School, Monterey, California, USA

This research will explore the core capabilities of the U.S. military as well as non-military organizations through the lens of the disaster response life cycle. Both the U.S. military and non-military organizations bring assets, skills and capabilities to a humanitarian crisis however the competencies and capacities of each are far from homogeneous. Identification of the specific competencies and capabilities that are core to the types of organizations bringing logistics and support to a crisis can enable better planning by both military and non-military organizations such that greater effectiveness and efficiency in the humanitarian response is achieved.

RBV2

The roles of resource coordination in the development of manufacturing competence: an exploratory case study

YUE ZHAO, JOHN MILLS, KEN PLATTS

University of Cambridge, Cambridge, UK

This paper aims to draw attentions from both OM researcher and practitioner towards a better understanding of coordination in the management of continuous improvement process. Theoretically our research addresses the development process of manufacturing competence in the resource-based view of the firm and in particular how coordination study can be applied to understand the detailed micro-foundations of dynamic capabilities through continuous improvement. This paper presents a participant observation based case study carried out at a world-leading manufacturing company of baby feeding product. We also discuss the research findings and limitations through the case study.

RBV3

Performance improvement and resource co-ordination

JOHN MILLS, KEN PLATTS

Institute for Manufacturing, University of Cambridge, Cambridge, UK

This conceptual paper explores the under-researched area of resource co-ordination by developing and testing literature-based frameworks for factors that motivate co-ordination, and categories of co-ordination action. The paper focuses on performance improvement in operations management and analyses the co-ordination actions and types used in the improvement of the Toyota production system using the wide literature on Toyota and the TPS. The findings are preliminary but show the width and richness of co-ordination action in Toyota and suggest that these developing frameworks may provide a useful perspective for organizations seeking performance improvement through alternative methods of co-ordination.

RBV4 Configuring competitive advantages: Resources and capabilities in operations networks

JOHANNA K. JASKARI(1),(2)

(1)Aalto University School of Science and Technology, Espoo, Finland, (2)BIT Research Centre, Espoo, Finland

In this two-case explorative study, I analyze resources and capabilities as configurations in operations networks. By using a set-theory approach and Bayesian logic, this study empirically contextualizes the resource based view and the dynamic capabilities theory. The explicit characteristics of resources and capabilities, and their implications on competitive advantages, as specified by managers, are analyzed. The results show that resource bundles are more contextualized (or firm-specific), whereas competitive advantages (in relation to superior performance) are more global (between firms).

RBV5 Dynamic capabilities in sustainable supply chain management - a conceptual framework and insights from the literature

PHILIP BESKE, STEFAN SEURING, MATTHIAS FREISE

University of Kassel, Kassel, Germany

In this paper we develop a conceptual framework linking Sustainable Supply Chain Management and related practices with the DCs Concept. The framework is grounded in relevant literature and based on three existing conceptualizations, two for SSCM and one for DC in SCM. It merges these three inputs and adds new criteria. This framework is currently pre-tested by means of a literature review, taking up publications in the field of Corporate Social Responsibility and Organic Cotton in the textile industry. First results from this review are presented in the extant paper as well.

RBV6 Developing a process for identifying “make competences” in small and medium manufacturers

MOHAMED KHATER, KEN PLATTS

University of Cambridge, Cambridge, UK

The concept of competence is one of importance for companies seeking a competitive edge. For companies to leverage their competences an essential step is to identify these competences and understand their structure, strengths, weaknesses, and sustainability. This paper describes the development of a process for identifying “make competences” in small and medium-sized manufacturers. The identification process discussed adopts a business process approach to the problem of competence identification, and employs visual tools for expressing findings. A process that traces competence from order winning criteria to activities, resources, and coordination mechanisms is delivered by the research, and its application discussed.

RISK1

Managing risk in Complex and Business Critical Outsourcing of Services

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Over the past two decades the phenomenon of outsourcing of resources and activities has emerged as an important trend in a range of organizations and many companies are today outsourcing complex and business critical resources and activities. This increase in business criticality also increases the risk of substantial and negative impact on the financial and strategic performance. The proposition is that business critical outsourcing is approached with a joint risk perspective and that an understanding of the decision process is essential for success. Further, it is important to view outsourcing as an ongoing process with a number of stages.

RISK2

Risk Management Parity in Energy Industry Service Relationships

ROSS RITCHIE, JANNIS ANGELIS

Warwick Business School, Coventry, UK

This paper exposes the disparity of risk perception and prioritization in an operation between client and supplier. It identifies the commonly used risk classifications as a basis to this analysis. An inductive study based on three supply relationships with increasing levels of process and knowledge integration. The research indicates that clients in the relationship have greater breadth of awareness of risks and prioritize safety risks more than their suppliers in the same operation. It shows that practitioner classification of risks does not reflect the conceptual models in literature.

RISK3

Managing Risk in Individual Supply Relationships and in the Complete Supply Network -A case study from the maritime industry

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(1)Aalesund University College, Aalesund, Norway, (2)Admit AS, Aalesund, Norway

This study provides a detailed case narrative of a small Norwegian machine parts supplier's focal supply network and how this network is embedded in a wider maritime industrial network. Based on these empirical findings conceptions of risk are discussed in relation to this case narrative evoking empirically founded perceptions regarding risk management of a relatively simple product supplied through a complex global industrial network.

RISK4 **The importance of risk for the success of outsourcing contracts: Identifying the complementary role of enforcement practices**

FRANK WIENGARTEN(1), MARK PAGELL(2), BRIAN FYNES(3)

(1)ESADE School of Business, Ramon Llull University, Barcelona, Spain, (2) Schulich School of Business, York University, Toronto, Canada, (3)Smurfit Graduate School of Business, University College Dublin, Dublin, Ireland

Although outsourcing has emerged as a key business practice in global supply chain management it has not always been successfully implemented. Reasons for the success and failure of outsourcing initiatives are still underexplored. This research tries to further analyse what makes outsourcing initiatives successful by investigating the effectiveness of outsourcing contract completeness and complementary enforcement practices under varying contextual environments. Specifically, this research assesses the effectiveness of the completeness of outsourcing contracts and complementary practices such as cooperation and legal enforcement in low and high-risk environments, using data from a large-scale multinational survey.

RISK5 **Supply chain integration under uncertainty: The role of asset specific investment with suppliers**

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This study uses data from the 2009 round of the International Manufacturing Strategy Survey (IMSS-V). Transaction Cost Economics (TCE) is the theoretical framework. The results show that under low uncertainty managers have a wider set of options in pursuing integration. Specifically they are free to use multiple contractors and to be more aggressive in their pursuit of outsourcing. Under high uncertainty integration takes the form of a higher level of asset specific investment with fewer trading partners. Results indicate that the effectiveness of combinations of asset specific investment, outsourcing and control mechanisms will change significantly contingent on specific environmental conditions.

SCD1 Company types between flexibility and stability strategies and their impact on innovativeness and performance - Evidence from a large-scale survey in German manufacturing industry

STEFFEN KINKEL

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With the onset of the global economic crisis it became clear that flexibility can be a decisive competitive advantage. But also stability is necessary to maintain the employees' motivation and creativity. However, flexibility and stability do not have to be contradictory, but can also be complementary. Appropriate routines can support continuous learning in the company and stimulate its adaptability. Based on data from 1,484 German manufacturing companies we employ a cluster analysis to identify five company types ranging from flexibility to stability. Two company types with flexibility focus, two with a stability focus and one diffuse type can be identified.

SCD2 Logistics as a framework for examining historical phenomena: The case of triangular trade

GILLES PACHE(1), FRANÇOIS FULCONIS(3), NATHALIE MERMINOD(2), THIERRY GODBILLE(1)

(1)Aix-Marseille University, Aix-en-Provence, France, (2)Grenoble University, Grenoble, France, (3)Avignon University, Avignon, France

Trans-Atlantic slave trading is an example of triangular trade that linked the economies of Europe, Africa and the Americas. It dramatically expanded between the XVI and XIX centuries and involved a large number of stakeholders, particularly for flows management. This paper draws on studies conducted by specialists in economic history that stress the key roles played by different actors, but without explicit reference to the logistical process. Thus, we propose an analysis of the case of triangular trade from a supply chain perspective, focusing on those links established between the three principle actors: the European continent, West Africa, and the Americas.

SCD3 The strategic management of demand uncertainty - a longitudinal study

ROY STRATTON

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The need for focused and aligned supply chain strategies is widely acknowledged, however, in changing business environments realignment tends to be reactive and slow. The purpose of this paper is to use a longitudinal case study to better understand the strategic management issues in such situations before exploring means of proactively supporting the process. The study highlights the importance of the trade-off concept in acknowledging and addressing management conflicts that block strategic realignment. The paper focuses on Fisher's (1997) conceptual model and proposes modifications to Fisher's coordinated strategies, identifying how they can be practically developed using hybrid conflict resolution diagrams.

SCD4

Supply chain agility and supply chain adaptability: Antecedents, moderators and performance effects

DOMINIK ECKSTEIN, CONSTANTIN BLOME, MICHAEL HENKE

EBS Business School, Wiesbaden, Germany

As the environment is becoming increasingly unstable, firms have to react faster and anticipate future trends better than their competitors in order to defend their sustainable competitive advantage. This study examines the effect of a firm's boundary spanning capabilities on supply chain agility and supply chain adaptability. Furthermore, the study will examine the moderating capability of internal integration influencing firm performance. Currently, we are in the data collection phase, a split survey has been sent out to 2,500 cross industry sample addressing one VP in SCM, logistics or procurement and another VP from marketing or finance.

SCD5

Key factors for implementing postponement: case studies from the Brazilian food industry

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Postponement strategy has been increasingly used by companies concerned with managing the growing complexity and variety of products, currently required by the market. In this context, this article aims to answer the research questions: what types of postponement are implemented by Brazilian food processing companies? and what are the key factors that promote/facilitate the implementation of postponement in these companies? The results show that the companies have implemented form postponement and time postponement. Also, the key factors that promoted its adoption were grouped in seven dimensions: market, product, process, logistics, supply chain management, leadership and technology.

SCD6

An integrated model for enhancing supply chain visibility: an extended resource-based view

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Visibility is the crux of supply chain performance and competitiveness. Visibility under supply chain complexity requires collaboration and integration between partners. Information technology is the mechanism for information sharing and visibility is its outcome. Our study is interested in visibility of physical assets (e.g. boxes, containers) that flow through supply chains but do no exit them. Taking an extended resource-based perspective, our study develops an integrated model for capabilities associated with asset visibility that considers technological and non-technological dimensions. In particular, we examine the significant impact of asset visibility on supply chain visibility that may lead to better performance.

Supply chain design

SCD7 A supply chain resilience assessment model

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This paper aims to propose a supply chain resilience assessment framework. An inductive research approach was used being performed an exploratory case study in the Portuguese automotive supply chain. The study investigates the main effects of supply chain disturbance and how companies can increase supply chain resilience. Empirical findings were used to develop a resilience assessment model with two perspectives, an “ex post” analysis, where it measures the performance loss after a disturbance occurrence, and in an “ex ante” analysis, measuring the characteristics that confer resilience properties to the supply chain.

SCD8 Escaping the inescapable: inevitable disruptions and risk mitigation in supply networks

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Theories describing systemic supply chain risk (SSCR) are notoriously difficult to support empirically. Data is often commercially sensitive and access to all the supply chain participants is difficult to secure. This problem is compounded when the level of analysis is extended from the supply chain to the supply network (incorporating adjacent and connected supply chains). This paper describes a methodological framework for the building of theories concerned with SSCR using computer simulation and specifically agent-based modelling. Initial results are presented which support the notion that disruptions are an inevitable consequence of normal operations in complex tightly coupled supply networks.

SCD9 Modelling and managing systemic risks in supply chains

KANOOGKAN LEEROJANAPRAPA, LESLEY WALLS, ROBERT VAN DER MEER

University of Strathclyde, Glasgow, UK

A structured review of the supply chain and risk management literature supports an analysis of the sources and types of risks anticipated in supply chains and networks. We discuss alternative modelling approaches, such as Bayesian Belief Nets (BBN), System Dynamics, Fault and Event Trees, which are evaluated against the criteria characterizing systemic risks that emerge from the literature review. Finally, we briefly present an empirical pilot case study is conducted with a public sector organization in charge of a pharmaceutical distribution network to explore the feasibility of a BBN modelling approach.

SCD10 Low cost country sourcing complexities and supply chain strategies

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This paper analyses Low Cost Country Sourcing (LCCS) complexities and examines how firms manage to overcome these complexities through supply chain strategies. The purpose of this research is to suggest appropriate supply chain strategies based on material flow and contractual relationships, to align product and process complexities. The findings of this research are useful to supply chain practitioners for leveraging product and process complexities into competitive advantage.

SCD11 The role of functional interdependencies in global operations networks: From delinking to organizing interfaces

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The existing studies do not adequately address the complex interplay between co-evolving production, innovation and service networks. The widening geographical and cognitive gap between these networks means that managing their interfaces in global operations context is becoming strategically important. Therefore, the purpose of this paper is to develop a number of propositions about organization and management of these interfaces. The propositions are developed by employing the design science approach based on a literature study and industrial co-development workshops with twelve Danish industrial companies. The paper closes with suggestions for how the tentative results of this work can be unraveled further.

SCD12 Managing the interface between physical and financial supply chains: implications for banks' payment services

RHIAN SILVESTRO(1), PAOLA LISTRATO(2)

(1)University of Warwick, Coventry, UK, (2)IBM Financial Services, Turin, Italy

The challenge of physical and financial supply chain (P/FSC) integration is recognised in the financial service industry and heightened by the recession; yet it is largely overlooked in the OM literature. This paper delineates the competitive pressures and opportunities for banks to facilitate corporate clients' requirements for P/FSC integration. The paper presents a case study based on a European bank which has responded to this challenge with a mass customisation strategy. The study demonstrates that responding to the challenge of P/FSC integration has implications not only for service design but also organisational infrastructures and individual roles and responsibilities throughout the company.

SCD13 A meta-model for choosing a supplier selection technique within an EPC company

DONATO MASI, GUIDO J L MICHELI, ENRICO CAGNO

Politecnico di Milano, Milano, Italy

A description of the link between the buying situation and the most appropriate selection technique is missing in literature. The proposed meta-model allows for the choice of the most appropriate supplier selection technique in relation to a specific buying situation within an Engineering, Procurement & Construction (EPC) environment. In order to develop the meta-model, the various buying situations have been classified on the basis of the degree of difficulty in managing the purchase and the impact of the purchase on the project. Based on the analysis of the main features of each situation, the optimum selection technique has been identified.

SCD14 Modelling supply networks: a structural analysis of the Toyota supply chain

TOMOMI KITO, ALEXANDRA BRINTRUP, STEVE NEW, FELIX REED-TSOCHAS

University of Oxford, Oxford, UK

This paper presents new data that characterizes Toyota's supply chain, exploring in particular questions relating to the nature of the tiers in the structure of the supply base, and the links of Toyota's suppliers to other manufacturers. We discuss the way in which the accepted model of Toyota's approach to supply chain management is largely based on rather dated empirical sources. The findings presented here are the first stage of a more detailed analysis which we hope will throw light on important questions for supply chain management practice and theory.

SCD15 A simulation based approach to evaluate customer-specific volume flexibility of a manufacturing company

GUNTHER REINHART, HENDRIK SCHELLMANN

Technische Universität München, Munich, Germany

Volume flexibility is a crucial factor to keep up performance in modern supply chains. In order to align volume flexibility requirements along the supply chains, contracts defining flexibility ranges are set up increasingly in customer-supplier-relationships. However, numerous suppliers lack suitable methods to evaluate the limits of volume flexibility that they can guarantee, especially if they are members of several cross-linked supply chains. Hence, this paper presents an approach to evaluate customer-specific volume flexibility. Therefore, factors influencing volume flexibility are identified and modelled mathematically. Subsequently, a dedicated simulation system is introduced and the interpretation of simulation results is demonstrated.

SCD16 The contribution of supply chain management to face the world crisis in the fashion luxury industry

FEDERICO CANIATO, MARIA CARIDI, ANTONELLA MORETTO

Politecnico di Milano, Milano, Italy

The Fashion Luxury industry has attracted the attention of researchers mainly with a sociological, marketing and branding aspects. Some authors have addressed the importance of supply chain management for fashion luxury companies, but with a tactical and operational perspective. But the world crisis has completely shocked the traditional mechanisms and fashion luxury companies assisted to a strong decrease of their turnover, contrarily to what happened in the previous years. This paper aims at understanding if and how supply chain redesign could become a strategic factor in determining the success or failure of fashion luxury companies in a period of crisis.

SCD17 The impact of experience on total cycle time reduction in supply chains

JONATHAN GOSLING(1), MOHAMED NAIM(1), DENIS TOWILL(1), BRIAN MOONE(2)

(1)Cardiff University, Cardiff, UK, (2)Mace Group, London, UK

Total Cycle Time (TCT) compression has been proposed as an effective way of gaining a competitive edge. The purpose of this paper is to empirically investigate collaborative working and total cycle time reduction in construction supply chains. A mixed methods approach is adopted to analyse data from archival records. Results show that aggregate TCT has decreased over an 8 year period for the 16 suppliers in the study, which are further analysed by relationship type. A force field analysis identifies 7 forces that increase TCT and 7 that decrease TCT. It contributes to knowledge in the field of TCT in project based production.

SCD18 Relationship exploration between products and outsourcings in mobile handset industry

KAREN LI(1), YONGJIANG SHI(2)

(1)Centrica, Slough, UK, (2)University of Cambridge, Cambridge, UK

The vertical disintegration of the industrial value chain in mobile handset industry has challenged many companies how to manage supply chain effectively and efficiently. This research proposes to classify and define the different outsourcing arrangements through the product related outsourcing scopes. The product architectural levels (PAL) and the product life cycle (PLC) stages are identified as two main characteristics of the product, which lead to three types of outsourcing arrangements: Manufacturing Task Outsourcing, Package Outsourcing, and Full Outsourcing.

SERV1 New service development in capital goods manufacturers: empirical evidence from an Italian sample and proposal of a conceptual framework

SYLVIE ROSCIO, DONATELLA CORTI

Politecnico di Milano, Milano, Italy

The aim of the research is to evaluate the state-of-the-art of the development of the New Service Development (NSD) process in the capital goods sector, both through a literature review and trough the analysis of qualitative case studies of a sample of 23 Italian companies.

Starting from this analysis, a conceptual framework has been developed to support practitioners to improve the effectiveness and the efficiency of the innovation process taking into consideration the peculiarities of the reference sector. The research is still at its first steps, so further work is called for.

SERV2 Organizing servitization: A contingency perspective

TAIJA TURUNEN

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Servitization is a concept describing a phenomenon where manufacturers transform their business towards greater service provision. Previous literature suggests that a strategy that supports service infusion serves as a mean to differentiate and therefore gives a competitive edge for manufacturers in global, highly competitive markets. This case study conducted in a manufacturing organization performing in both- product and service businesses- focuses on identifying the organizational design characteristics that explains some of the concerns associated with the problematic nature of combining product and service businesses within one organization.

SERV3 The servitization of manufacturing: Further evidence

ANDY NEELY, ORNELLA BENEDETTINI, IVANKA VISNJIC

University of Cambridge, Cambridge, UK

There is clear evidence that manufacturing firms are servitizing – either adding services to or integrating services in their core products (Davies et al 2006; Neely, 2009; Vandermerwe and Rada, 1988). This paper provides an update to an earlier study (Neely, 2009) covering the global trends in the servitization of manufacturing. Using longitudinal data collected at three separate time periods - 2007, 2009 and 2011 - the paper explores the changing nature of servitization in manufacturing industries. In particular the paper looks at the issue of whether the growth of servitization in China, witnessed between 2007 and 2009, has continued.

SERV4

Change Drivers for Transformation towards Product-Service Systems

DOROTEYA VLADIMIROVA, STEPHEN EVANS, VERONICA MARTINEZ

Cranfield University, Cranfield, UK

This paper presents a set of change drivers for the transformation of a traditional manufacturer into a servitized organisation. Multiple concepts from organisational change and transformation theory, and servitization and product-service systems literature are combined to inform an in-depth case study. The change drivers derived from the case study are categorised as triggers, conditions and facilitators for transformation towards product-service systems. The paper forms part of the development of a transformation model for servitization and advances prior conceptual research. Industry practitioners can use the set of change drivers to assess and develop their plans for servitization.

SERV5

Organising for Servitization across Multiple Operating Environments: the constraining and enabling effects of path dependency

JAWWAD RAJA(1), AHMAD BELTAGUI(2), MEHMET CAKKOL(1)

(1)Cranfield University, Cranfield, UK, (2)Nottingham University, Nottingham, UK

This paper investigates the organisational implications of servitization in different environments. We present a quasi-longitudinal study of three divisions of a large engineering firm in order to explore how they differ in the way they organise for servitization. In particular, we highlight how a firm's internal and external environment and path dependency shape the way a servitization strategy is enacted, challenging simplistic prescriptions described in the extant literature. In so doing, we describe how the case firm continuously attempts to configure itself to deliver integrated offerings in complex and dynamic environments.

SERV6

Successfully Implementing Service Business Model in a Manufacturing Firm

IVANKA VISNJIC(2),(3), BART VAN LOOY(1)

(1)Katholieke Universiteit Leuven, Leuven, Belgium, (2)ESADE Business School, Barcelona, Spain, (3)University of Cambridge, Cambridge, UK

Expected economic benefits of servitization have been recently. Research of 10 sales-and-service subsidiaries of a successfully servitized manufacturer suggests that success is a function of three capabilities. First, a manufacturer has to possess a skill set necessary to extend the relationships with its clients towards services. At the same time, the capabilities to extend service offering is needed to grow. This turns out to be a challenging balance, as skills for the former may hamper the latter. Finally, to enact synchronised development to both businesses, manufacturer has to employ solution-oriented managers, proportional incentive schemes and integrative mechanisms.

The manufacturing-service interface

SERV7 **New Industrial Product-Service Systems Development: The interface between innovation and operations**

JULIANA SANTOS, MARTIN SPRING

Lancaster University Management School, Lancaster, UK

This research focuses on how operations resources and capabilities shape and are shaped by, the development of new offerings. A single case study of the development of an industrial product-service system was used to answer what points of the process of reconfiguration of resources and capabilities are important for the development of the new offering? and how does the operations resources and capabilities influence the new offering? Our results show the role of operations in supporting and fomenting innovation and growth. They also offer insights on the importance of managers' cognition and on the challenges of developing capabilities.

SERV8 **Untangling the emerging concept of service platforms: what are they? what do they consist of?**

MARTIN SKOLD, MALIN SCHMIDT

Stockholm School of Economics, Centre for Innovation and Operations Management, Stockholm, Sweden

Literature on platforms emanates from products as the unit of analysis, therefore are several questions unclear: What constitutes service platforms? What does service platforms consist of? Can we use dichotomies from product platform research? Using data from a pre-study in a global B2B Service Company, the concept of platforms is explored and discussed. Findings suggest service platforms varying whether services are repetitive in its nature, versus services that requires various degrees of tailoring or customization. Repetitive service platforms entail a higher degree of process components whereas for customized services the degree of product components is proposed to be higher.

SERV9 **Process modularity in service offerings - Conceptual analysis**

SAARA BRAX, MAIJA ISOTALUS

Aalto University, Espoo, Finland

The core aspect of the exchange in a service offering is essentially a process provided for the customer. Interest in service modularity has increased, but modularity in the process level has been discussed from the perspective of modular production of physical goods. We develop a perspective of modular service offerings and identify themes that need to be further developed. Product modularity definitions are based on the relationship between form and function, and as such do not apply to processes that lack physical form.

SERV10 A location model proposal for collecting used batteries in Spain

EVA PONCE-CUETO, JOSÉ A. GONZÁLEZ-MANTECA, RUTH CARRASCO-GALLEG

Technical University of Madrid, Madrid, Spain

The main objective of this paper is to propose a model for helping logistics managers to choose the appropriate location points in order to situate the collection points for used portable batteries. The proposed model has two parts: a static part and a dynamic part. We can conclude that this model helps managers in the decision of locating/modifying collection points in two ways: to add new collection points to a reverse logistics network that needs more points or to delete collection points from a network that has more points than those recommended.

SERV11 The importance of dynamic assembly for the management of operations in service supply chains

FREDERIC PELLEGRIN-ROMEGGIO(1), DIEGO VEGA(1), ELODIE KACIOUI-MAURIN(1),(2)

(1)Université de la Méditerranée, Aix-en-Provence, France, (2)Université Jean Monnet, St-Etienne, France

Many service activities can be overall comparable with the operation of a supply chain, mobilizing a number of actors and requiring the management of a multitude of interfaces at different moments and on different levels. The literature qualifies them as Service Supply Chains. The management of these supply chains can be considered as complex, as most SSC are temporary arrangements of resources built to respond to a specific need. This study highlights the importance of the pivot organization in SSC and proposes the 'dynamic assembly' as a key competence for the management of SSC.

SERV12 An exploration of vertical integrations and facilities practices within servitized operations

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(1)Aston Business School, Birmingham, UK, (2)Cranfield University, Cranfield, UK

The debate about services-led competitive strategies continues with much interest emerging around the differences between leading production and servitized operations. This paper contributes to this discussion by presenting the vertical integration and facilities practices that are common to four leading manufacturers. Furthermore, we present the rationale that is emerging as to why these practices are being adopted, and so why they differ to those of production-centric manufacturers. Hence, in this paper we seek to both contribute to the debate within the research community and make practitioners better aware of the consequences of servitization.

SERV13 A process model for developing integrated product-service offerings

RICHARD CLAYTON(1),(2), CHRIS BACKHOUSE(1), SAMIR DANI(1), JEREMY LOVELL(2)

(1)Loughborough University, Loughborough, UK, (2)RailCo, UK, UK

Manufacturers are increasingly seeing the benefits of adopting a servitization strategy, however, literature reports that they face challenges developing new product-service offerings. Although a number of approaches have been proposed, they fail to distinguish the characteristics of products and service, they are typically sequential and exhibit variations in the level of detail proposed. Overcoming these knowledge gaps, a new development process model is proposed, consisting of 19 distinct processes. The process model was tested and recommendations for improvements are reported.

SERV14 Service Transition: A Path Dependence Approach

MAX FINNE, MARI HEIKKILÄ

Aalto University, Helsinki, Finland

This paper focuses on the service transition process through a comparative case study of an investment good manufacturer and a financial solutions provider. The empirical research on the companies' historical paths revealed challenges that the current service transition literature could not explain. Our findings show a clear resemblance between the development paths. In lock-in, however, different factors hinder adopting alternatives. Our conclusion is that early success and little competitive pressures can impede service-oriented culture and hinder adding services to broaden the offering. Thus, we argue that the ability of companies to undergo the transition depends on their historical paths.

SERV15 Applying the Ferdows's model 'the strategic role of plant' in service environment

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The purpose of this paper is to apply the Ferdows's 'the strategic role of the plant' model in service/solutions environment. The findings show, that the model is easy to use in service context but some changes and interpretations have to be made to make the application more understandable. This is the first attempt to apply the Ferdows's model in service environment. The results are promising which gives courage and reason to continue. This paper gives guidance how and why services should be categorized in order to make best use of the resources and money spent.

SERV16 Manufacturers becoming service providers - developing service business in an industrial context

PASI RAIKISTO(2), JAAKKO KIUUKONEN(2), AMEER SHAH(1), JAN HOLMSTRÖM(1)

(1)Aalto University, Espoo, Finland, (2)Management Systems, Savonlinna, Finland

The paper describes the concrete management actions needed and the mechanisms through which management achieves its intended outcome of transitioning from product business to profitable service business. The method is a multiple case study involving five OEMs. The research was conducted by interviewing senior management with in-depth experience of the actions taken to develop the service operations. The results suggest a sequence of managerial interventions to obtain desirable subgoals and reveal further challenges that more advanced service oriented manufacturers must resolve before proceeding.

SERV17 Services in Manufacturing - A Study of Product Orientation in the Product-service systems

VERIDIANA ROTONDARO PEREIRA, MARLY MONTEIRO DE CARVALHO, ROBERTO GILIOLI ROTONDARO

University of São Paulo, São Paulo, Brazil

The purpose of this paper is to evaluate the different product use orientations in the product-service system. The approach is to summarize the existing product-service transition propositions available in the literature, and to suggest a model tested in a case study conducted in two business units of multinational companies from different industries, classified according to their product use orientation. The paper finds that product use orientation can be different for companies according to the solution provided. The proposed model showed to be an initial analysis tool, but it requires the establishment of metrics.

SERV18 Servitization as a strategy for survival: evidence from a small European country

JASNA PRESTER

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It has been shown in the literature that manufacturers offer more services. One reason is to stay competitive. Even though returns from services amount to 10% of revenues, while margins in manufacturing are decreasing and are now around 1%, returns from product related services are low. Neeley (2008) argues that unlike manufacturing, product related services need a skilled workforce which is no longer cheap. In this work we want to investigate what is the current state of product related services in a small European country, which mostly manufactures components and does not enjoy cheap labor force.

The manufacturing-service interface

SERV19 Quality of service and operating efficiency in service industries: an analysis of Korean service driving industry

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This paper examines the compatibility of operating efficiency and service quality.

Specifically, our research focuses on: (1) Do operating efficiency and service quality have to be traded-off, or can they exist in unison (are they compatible)? and (2) What aspects of service quality have a stronger association with operating efficiency? In disentangling these important issues, we utilize a combination of Data Envelopment Analysis (DEA) and survey based empirical research methods. Specifically, we consider the South Korean service driving industry, which has experienced a rapid growth in recent years.

SERV20 A holistic approach for building productivity metrics in services: two reports of using the adapted “house-of-quality metrics matrix”

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UFMG, Belo Horizonte/MG, Brazil

Given the complexity of measuring the productivity of services and considering the literature on performance measurement in services and the “House-of-Quality Metrics Matrix” proposed by Hauser and Katz (1998) this paper presents a holistic approach to measuring productivity in services. This approach takes into account the main processes of the organization and the different needs of their stakeholders involved. It was implemented by two organizations of health services. These organizations are evaluated in this study. On view of their managers, the main difficulties and advantages of the proposed approach are reported.

SERV21 Understanding System Uncertainty in Healthcare Supplies

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Managing healthcare supply chains is claimed to be complex due to the imperative of assuring accurate medical supply for patient wellbeing. The fieldwork described herein involves investigation of a variety of supply value streams in eight Australasian hospitals using a rigorous, multi-method audit methodology. In the majority of cases poor management practice is evidenced by high levels of system uncertainty (often self-induced). Particularly noted is that the root cause of many supply chain performance issues is failure by senior management to recognise the strategic value of supplies management. Healthcare supply chain performance enablers and best management practices are also described.

SERV22 A framework for understanding governance and location distance choice in the services outsourcing decision

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Services outsourcing has gained increasing importance in today's global economy. However, services outsourcing has received little attention in the operations management field. This paper focuses on the factors influencing governance and location distance choice in services outsourcing. Governance choice refers to the level of ownership in an outsourcing arrangement (i.e. outsourcing to an independent vendor; captive). Location distance choice refers to the distance between the customer's home nation and location of the outsourced operation (i.e. local, nearshore, offshore). Based upon a study of German companies, this paper presents a framework that outlines key influences on governance and location distance choice.

SERV23 An operations strategy formulation methodology for manufacturing organisations seeking adopt informed product servitized solutions

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Manufacturing organisations seek innovative operation strategies when aiming to maintain and improve their competitive position. The tool is offered as an operations strategy formulation methodology to manufacturing organisations seeking to adopt servitized solutions. It considers solutions driven by informed products whilst responding to needs identified in a recent survey of UK based practitioners, and gaps discovered in a review of the literature relating to informed products and operational strategy. This paper introduces the ServiceStrat tool and its proposed pilot evaluation.

SERV24 Defining Engineering Service Network Location Roles in Global Operations

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Many manufacturing firms have developed a service dimension to their product portfolio. A key challenge for such organisations is how to 'redistribute' and optimise the service operation of increasingly dispersed global networks, in response to changes in industrial context e.g. growth of (new) export markets serving an increasing diversity of customers. Drawing on parallel concepts in 'production' networks, the idea of 'location role' now becomes increasingly complex, in terms of service delivery. The purpose of this paper is to advance understanding of how best to design such complex multi-organisational service networks, through extension of the 'production' network location role concept.

SERV25 An Indicator-based Management Model for Service Levels in Shared Services Centers

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The focus on frameworks for service design and management still requires considerable further development, in a special way to service operations. This study has tried to assist in rectifying this omission, developing a management model for Shared Services Centers (SSC). The case study method was adopted using non-probability sampling according to accessibility. Data collection was carried out by means of interviews using a semi-structured questionnaire. In order to select indicators which were relevant from the customer's point of view, the interviewees were presented with 21 indicators related to three categories which had some degree of significance for them.

SERV26 Analysis of the interface among Knowledge, Competence and Leadership for improving organizations

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An application is made of the proposed model to support activities the f Production offered by Materials Management and Logistics, evaluating its importance to the industrial sector of medium and large, establishing a comparison between the performance levels (low, medium and high) of these companies and the benefits of this application. With the results, it is expected to contribute to a better understanding of the processes of Knowledge Management, Competence and Leadership and its interfaces and use that information to organizations, as well as offering subsidies for further discussion and analysis on the subject and the model by other researchers.

SERV27 The influence of quality and frequency of use on e-services performance. An analysis of the information service in a university.

MARIA J. OLTRA, M. LUISA FLOR, MARIOLA BELLOSO

Jaume I University, Castellón, Spain

In this work we identify main dimensions of information e-services quality and analyse their influence on service performance. The moderating effect of frequency of use on the above relationship is studied. e-Service quality dimensions are expressed in terms of efficiency, system availability, fulfilment and privacy. The empirical research was conducted at an on-line university service. The sample was formed by 420 evaluations. Results show the positive effect of fulfilment and, more specifically, of the quality information subdimension, on service results. Also, information quality effect on service result is lower in high frequent users than in medium- and low- frequent users.

SERV28 Servitisation and Value Co-production in the UK Music Industry

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(1)UWE, Bristol, UK, (2)University of Granada, Granada, Spain

As the music industry has moved from a product to a service business model, has the loss of sales meant they have not taken their customers with them? This paper provides a description of different music consumers based upon quantitative analysis of consumer characteristics. The paper then undertakes an exploration of the relationship between the consumer groups and their purchasing preference in relation to intangible 'service' purchase such as downloaded music and the purchase of a tangible physical product such as CDs or vinyl. We find a significant population who would engage with a contracted monthly music subscription service.

SERV29 Servitization in action: findings from a study of the extended Caterpillar enterprise

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There is much to be learnt from the practices of those manufacturers that have demonstrated sustained success through services. This paper therefore presents insights gained from an in-depth study of the extended Caterpillar enterprise. Nine case studies have been conducted spanning the Original Equipment Manufacturer (Caterpillar Inc), through six strategically important dealerships, to two large and substantial customers. Through this study we establish key dimensions and categorisation of service offerings, relationships between risks and revenue, and associated motivations and enablers.

The manufacturing-service interface

SERV30 The importance of loyalty on online airplane tickets' purchase

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The aim of this paper is twofold. On one hand, developing and assessing a scale to measure e-quality and, on the other hand, assessing its impact on loyalty, through perceived value. For this purpose, e-quality is divided in two dimensions: functional and hedonic quality. The sample is composed by 617 travellers that have purchased at least one airplane ticket via airplane website in Spain. The results show that the functional and hedonic quality are positive significant for perceived value. Another important result is the validation of the chain: service e-quality - perceived value - loyalty.

SERV31 E-business Service in the UK Telecommunication industry

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Due to the complex features of business service and the applications of information and communication technologies (ICTs), business organisations are facing significant challenges to provide e-business service (EBS) effectively or maintain long-term relationships. In this paper, we attempt to investigate buyers' different EBS requirements and the impact of these requirements on business relationship development. A survey was sent to 500 UK Telecommunication manufacturers and various data analysis methods have been applied. Our findings from the survey not only help the supplier to understand buyers' EBS requirements, also help the buyer to develop their supplier selection criteria.

SSC

The seven customer roles in service supply chains

SCOTT SAMPSON

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Although the study of product supply chains is well developed, the study of service supply chains is embryonic. This article defines service supply chains and shows how service supply chains have unique operating characteristics. We establish how seven traditional roles in manufacturing supply chains are assumed by customers in service settings. Those service customer roles include supplier, labor, design engineer, production manager, product quality assurance, and inventory. We show how these seven customer roles are particular to services and define the fundamental managerial issues of service supply chains.

Managing the operations-strategy interface

STR1 Make to Order Manufacturing and Operational Management Strategies - A Case Study at Priorclave Ltd.

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Accurate due date setting and lead time management are difficult tasks for Make to Order (MTO) manufacturing firms and require effective capacity management. To remain competitive accurate due date prediction and shorter lead times are key. Within a backdrop of a Small and Medium Enterprise (SME) the development of a Prototype Planning and Scheduling System (PPSS) and the subsequent implementation of an Enterprise Resource Planning (ERP) System are explained. Proposed work and trials to integrate the ERP system to the PPSS is detailed. Thus PPSS becomes a secondary level of control, with its inputs from the ERP system.

STR2 Integration themes in mergers and acquisitions in the Medical Technology Industry from a resource-based view

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Institute for Manufacturing, University of Cambridge, Cambridge, UK

This paper explores the integration themes in mergers and acquisitions (M&As) in the Medical Technology (MT) industry. Integration has been accepted as one of the primary sources of failures in capturing value for the acquirers. The research approach is essentially exploratory and six case studies were conducted in the research. After cross-case analysis, four integration themes are identified: Capacity building, Capacity maintaining, R&D focus, and Product focus. The conclusions include a novel presentation of how the acquirers choose from these themes in integration to obtain sustainable capabilities and restructure their business to maintain and improve their competitive advantages.

STR3 Exploring the influence of contractual and relational governance on the relationship between capability and collaboration

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This study aims to investigate the relationship between supplier capability, inter-firm governance and buyer supplier collaboration. Three types of functional capabilities: R&D, Production and Support services capability; and two forms of governance: contractual and relational are considered in this study. The buyer supplier collaboration is measured in terms of the extent of collaboratively solving the problems related to cost, quality, delivery schedule and uncertain demand pattern. A survey based research methodology is adopted in this study to empirically examine the hypotheses related to the multiple mediation effect of contractual and relational governance on the relation between supplier capabilities and collaboration.

STR4

Network configuration of global R&D networks: Extending OM configuration concepts

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Companies are increasingly globalising their R&D activities, both within the firms and with external partners, with consequent implications for their interaction with manufacturing operations. Previous research in R&D networks has focused on coordination, governance and support elements. However, network configuration of global R&D has tended to focus on strategic elements with limited attention given operational effectiveness, or to interfaces with downstream manufacturing operations. Within OM literature, the drivers of configuration of global networks within, engineering, production, supply, and services have been extensively developed in recent years. This paper extends these OM configuration concepts to the configuration of R&D networks, to provide a more comprehensive strategic and operational analysis for this domain, and to also consider potential interfaces with manufacturing operations. The methodology involved developing a framework for R&D network configuration drawing on the approaches used in OM, followed by multiple case-studies to map R&D configuration elements.

STR5

Managing the Operations-Strategy Interface through Programme Management

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This paper explores how one company with globally distributed operations, strive to manage the operations-strategy interface through programme management. The paper focuses on how the organizational context affects the programme configuration and raises a number of propositions as to how programmes can be configured depending on organizational context. The propositions are meant as objects for further research and tentative managerial recommendations.

STR6

Risk Management in Global Manufacturing Investment: Dimensions and Process

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Investment risk management is a growing concern as companies seek to reassure investors about the robustness of their strategies. Little attention has been paid however to the systematic evaluation of manufacturing investment risks. Operational risk assessment is a relatively unexplored area which has been thrown into sharp relief by recent tragic events in Japan. This paper explores risk management practices in global manufacturing investment decisions. It identifies key dimensions of manufacturing investment risk and proposes an initial framework and process by which these dimensions might be evaluated more systematically.

Managing the operations-strategy interface

STR7

Cumulative capabilities of three industries in a developing economy

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This paper contributes to the ongoing research which examines and explains differences of cumulative capability models among different industries. Based on regression analyses of the relationships between four manufacturing capabilities (quality, delivery, cost, and flexibility) from three industries in Thailand, the paper concludes that all three industries operated with different patterns of cumulative capabilities. The foundation for cumulative capability was cost for automotive industry and quality/flexibility for food industry; no apparent foundation for cumulative capability for electronics industry was found. These results indicate study of cumulative capabilities should consider industrial differences and avoid using cross-sectional data.

STR8

The capabilities trade-off debate in operations strategy: An initial assessment of the airline industry in Australia

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A major stream of research in the operations management area relates to how firms develop and treat their operations capabilities. Two models have been presented: 'trade-off' and 'cumulative capabilities'. Despite numerous studies, it is unclear as to which is more effective for achieving superior firm performance. In this paper, we propose an integrated theoretical perspective involving the dynamic capabilities view and the performance frontiers theory. Longitudinal secondary data from the Australian airline industry show that firms that are some distance away from their performance frontier accumulate capabilities, and those that are close to the frontier trade these off.

STR9

Sustainability strategies: the impact on manufacturing capabilities trade-offs

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Sustainability is considered a new strategic capability in OM. Some authors suggested that environmental and social sustainability capabilities may be in trade-off with the traditional strategic capabilities (cost, delivery, quality and flexibility). Other authors, instead, denied this trade-off effect and suggested the existence of a positive link. This paper aims to understand if high level of commitment to sustainability can mitigate possible trade-offs between sustainability and traditional capabilities. Evidences supporting this hypothesis are provided using data from the fifth edition of the International Manufacturing Strategy Survey, an international database of companies belonging to the assembly industry.

STR10 Reflections on operations strategy development and execution

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This paper reflects on how organisations should develop and implement an operations strategy. It concludes that the standard set of 'competitive priorities' proposed by many authors are misleading. Markets are more complex than this and often all these priorities are not important while other factors are more significant. Therefore, the first step in strategy development is to identify the order-winners and qualifiers for each type of customer order. These initial executive opinions need to be tested with data to give more accurate insights and markets must be continually reviewed as their requirements will change over time.

STR11 Supply chain integration under resource dependence; How powerful buyers and suppliers shape integration as the value of the relationship rises

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This paper investigates how the two central tenets of resource dependence theory (Pfeffer and Salancik, 1978) influence supply chain integration. While literature is clear that total dependence acts as a driver for integration, the effects of power imbalance are less straightforward. Our study explains when power imbalance acts as a driver or a barrier to integrative actions by the supplier and buyer respectively. Results strongly indicate that firms exhibit integration patterns that can be predicted from their resource dependence setting. Our paper thus contributes to the understanding of practitioners and researchers under which conditions integration is appropriate.

STR12 Utilizing constraints to identify opportunities for innovation: Findings from Indian industries and future research directions

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Companies operating in emerging markets face multiple external constraints like lack of quality power supply and infrastructural bottlenecks while customers suffer from lack of access to products and services at the right place and at the desired price points. The objective of this paper is to suggest an approach for researching the phenomena of constraint driven innovation. We develop a preliminary framework to explain how companies have attempted to innovate while facing constraints identify capabilities and competencies required to excel in constraint driven innovation and provide directions for future research.

Managing the operations-strategy interface

STR13 Developing a framework for servitization decision

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This paper describes the development of a servitization decision framework to assist companies' decision making.

First, case studies in Thailand were conducted to investigate servitization status. The possibility, necessity, benefits, and difficulties of servitization in Thailand are presented. Second, factors that influenced the servitization decision based on dynamic capability theory and multiple case studies are explained. Finally, a framework consisting of factors involved in the servitization decision is proposed from two perspectives: servitization concern and servitization readiness.

STR14 An exploratory study of the dynamic manufacturing strategy in start-up companies

SIRIRAT LIM, KEN PLATTS, TIM MINSHALL

University of Cambridge, Cambridge, UK

This paper reports the findings of an exploratory study involving six UK manufacturing start-up companies. A novel manufacturing strategy content framework is proposed. The paper also examines the business orientation (technology-push or market-pull) adopted by the case companies, and investigates how business orientations influenced the development of manufacturing strategies. This leads to two business orientation mobility models. This paper concludes by discussing the use of the frameworks and suggesting how they might be put into practice to provide assistance to operational managers in start-up companies.

STR15 Lost in Translation: bridging the gap between strategic management and operations strategy

JILL MACBRYDE, STEVE PATON, GEORGE BURT

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This paper considers the evolution, development and current thinking in strategic management and operations strategy, with a view to "exploring the interfaces". The authors put forward the propositions that: in practice there is no longer a significant gap between operations and business strategy; but in the context of academic research there is a widening gap between the fields of strategic management and operations strategy.

STR16

Business models in fashion industry: an empirical analysis

LAURA MACCHION, PAMELA DANESE, ANDREA VINELLI, ROMANO CAPPELLARI

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Nowadays fashion companies have to face the challenges posed by demand unpredictability and economic crisis.

Competition from low-wage countries is increasing and consumers' behaviours are radically changed, being more price sensitive. This research aims at studying Italian fashion companies to evaluate managerial and organizational models that can support business development. 16 in-depth case studies have been conducted and then a survey has been run to assess case study findings. Research provides fresh knowledge on fashion industry "successful" business models, by revealing the existence of different clusters of firms that have found alternative ways to compete in the new global context.

STR17

Configuration of a global manufacturing system - a longitudinal case study.

RENÉ TAUDAL POULSEN(3), ANDERS PAARUP NIELSEN(1), BRIAN VEJRUM WAEHRENS(2)

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This paper tracks the trajectories of globalization of the manufacturing function within a Danish company for more than 50 years. Based on a historical archival methodology, the case illustrates the challenges faced by the case company through five phases characterized by diverse strategic trajectories. In each of the phases the company has struggled with adapting the configuration of its global manufacturing network to the changing industrial context and strategic goals. The paper then analyzes the development path taken by the case company along three dimensions. The paper concludes by a discussion of the effect of historical trajectories on corporate adaptation

STR18

Supplier selection criteria and techniques: a case research on the automotive supply chain

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Supplier selection is an important issue in the context of supply chain. Literature on this subject explores mainly selection criteria and techniques but does not present studies on the application of these techniques, particularly in the automotive industry. It presents the results of multiple case research in the process of supply selection in the automotive industry in Brazil and India. Its main purpose is to investigate whether the criteria and techniques proposed in the literature are adopted in practice. Although it is not possible to generalize, the study indicates that analytical techniques are still not used for supplier selection.

Managing the operations-strategy interface

STR19 Market Made: Manufacturing Capabilities and Export Markets for Developing Country Firms

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University of Bedfordshire, Luton, UK

Empirical work examining the international activities of developing-country firms has concentrated on the contribution of export marketing activities to their international performance. However, despite the significant volume of company resources dedicated to manufacturing activities in some firms, little research to-date has examined the relationship between manufacturing strategy and export market served in such organizations. Using case studies of 11 firms from Trinidad and Tobago (TT), market/production configurations in exporters were identified: Natural Resource, Production Capability and Experience Based. They suggest particular development trajectories that may support both firm and export sector growth.

STR20 The Causal Relationships between Manufacturing Strategy Process, Manufacturing- Marketing Integration and Plant Performance

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Through the development of a framework treating manufacturing strategy process and manufacturing-marketing integration simultaneously, this study has found that enhanced manufacturing strategy formulation positively influences plant performance through vitalized manufacturing-marketing integration and manufacturing strategy implementation. In addition, this research identified that manufacturing-marketing integration and manufacturing strategy implementation can affect plant performance directly. Consequently, in order to improve plant performance, manufacturing firms need to institute a well-structured, formalized manufacturing strategic planning and implementing system; enhance manufacturing-marketing collaboration on strategy formulation and implementation; and make it obligatory for managers at manufacturing and marketing departments to participate in the corporate strategic planning process.

STR21 Dynamics of SKU classification: the production strategy in a dairy company

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Classifications of SKUs are often snapshots at a moment in time where it is unclear how often these classification should be revised and which factors influence the timing of the revision. In this paper we combine a case study approach with data analysis. We show that while time passes reclassification is needed to increase the competitive strength of the company or to reduce risks. However, customer wishes, operational decisions and commercial motives cause that the classification and reclassification process is less strict than initially expected.

STR22 Dynamic abilities in performance measurement system: a case study on practice and strategies

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This paper analyse the key factors for creating a dynamic ability in the performance measurement system, in order to manage the operations/strategy interface. A case study was conducted at a heavy vehicle manufacturing site with two data collection components: archival data and an interview study. The study details five factors that need to be fulfilled in order to realise dynamic abilities in a PMS: review process, IT system, management, culture and employee involvement. Moreover, in order to realise the factors in practice the PMS design and context need to be considered.

STR23 The role of continuous improvement programmes beyond operational excellence

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Continuous improvement (CI) has become the norm for organisations in their drive to remain competitive. Many of the CI approaches have their roots in the doctrine of manufacturing/operations management. This paper explores if CI portfolios are constrained to an operational excellence (OE) remit and whether emerging internal capabilities are being leveraged to determine strategic trajectory. The research adopts a case study approach, where the nature of the CI programme of two distinct organisations is explored. The findings demonstrate that CI has spread beyond the boundaries of OE and has the potential to impact how internal resources are configured for advantage.

STR24 The influence of single lean principles on lean bundles

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A number of publications exists which investigate the influence from the lean bundles TPM, TQM, JIT and EMS on manufacturing performance on an abstract level. This paper examines the relations between these lean bundles on a single element level to support the decision which lean principles to focus on. The result is that different lean principles have a diverging degree of interlinkage and thus influence other single principles directly or indirectly. Eight single principles could be identified which are likely to have the biggest influence on the overall manufacturing performance.

Managing the operations-strategy interface

STR25 Investigating the Effects of New Product Development Techniques on Mass Customisation Capability

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This paper investigates the effect of contemporary NPD techniques on the improvement of mass customisation capability. Analysis of data collected from manufacturing companies across Europe revealed a significant relationship between the manufacturing NPD techniques and improved capability of mass customisation. It also revealed a much weaker relationship between designing NPD techniques and the mass customisation capability as well as between information NPD techniques and mass customisation capability. These results indicate the importance of manufacturing NPD techniques over design and information techniques in improving the company's mass customisation capability.

STR26 Organisational antecedents of mass customisation capability

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The need to transform the organisation for mass customisation has long been recognized in literature, but the discussion has largely relied on anecdotal evidence or case studies and has limitedly taken advantage of insights from organisation theory. We draw on organisational information-processing theory to relate mass customisation capability (MCC) to four organisation-design strategies aimed at either increasing the organisation's information-processing capacity or decreasing its information-processing need. We test the hypothesized relationships using a sample of 238 manufacturing plants from three industries and eight countries and find that MCC is positively related to task self-containment, environmental management, and lateral relations use.

STR27 Decision-making on manufacturing flexibility for the management of operational risks in the productive process of Brazilian automotive industries

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Many authors recommend the use of manufacturing flexibility to minimize the harmful effects that risks cause to manufacturing companies. However, its multidimensional characteristic makes the task of adjusting the flexibility degree to be adopted very difficult. Therefore, it becomes crucial to provide operations management with results that allow the selection of different types of flexibility according to the company needs. An empirical research in four automotive plants in Brazil provided information on which are the worst problems for this industrial sector, suggested new uses of some types of manufacturing flexibility, and offered useful information for decision-making about flexibility.

STR28 Viewing engineering offshoring in a network perspective: Challenges and key patterns

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Companies are increasingly engaging with global engineering networks through offshoring of product development activities. This presents companies with many new challenges. The global engineering network (GEN) framework has been created to address the increasing dispersion of engineering activities across geographical and ownership boundaries. By using the GEN framework in studying engineering offshoring issues, the challenges faced by companies can be explained as a mismatch between the required capabilities and the companies' ability to deliver these capabilities. This paper provides new theoretical insight into both engineering offshoring and global engineering networks theories by extending the GEN framework.

STR29 Developing a SWOT roadmapping technique for managing strategy, operations, and technology interfaces

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This paper reports a research on developing a SWOT roadmapping technique for managing strategy, operations, and technology of a firm. The technique has incorporated the concepts of technology roadmapping, strategic charting, and SWOT to help managers in developing strategic plans and capabilities that support business requirement. In order to operationalise the technique, it was tested in two laboratory experiments and four companies. The results show mixed opinions of positive and negative feedbacks from the respondents. The findings of this research are of interest of many academics and managers. The implications of the findings to both theory and practice are discussed.

STR30 Engineering Strategies: An analytical framework and implementation guidance

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A strategic view of engineering operations is missing in theory and in practice. This has led to visibility, clarity and contingency problems across sectors. This paper develops an analytical framework to address the above problems through case studies of over 30 UK-based engineering organizations. The framework suggests three essential elements of engineering strategies as (i) a coherent vision of how to compete through engineering, (ii) a consistent pattern of decision making, and (iii) a contingent fit with the contextual environment. The findings can help managers to analyse their current engineering strategies or formulate new engineering strategies in a systematic manner.

Managing the operations-strategy interface

STR31 Manufacturing supporting strategies in SMME

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Small and medium sized manufacturing enterprises (SMMEs) constitute the backbone of European industry, employing several times the number of people compared with larger companies. It is necessary that these smaller companies continuously work actively in developing their understanding about how they can compete on the market and how they in the best possible way can develop and utilize their major investments in manufacturing resources. Manufacturing strategies describe companies' roadmaps in doing that. The manufacturing strategy maturity among Swedish SMMEs varies but there is a strong will to learn and to develop. There are however some obstacles on the way.

STR32 Sustaining local manufacturing: A longitudinal study of Swedish companies

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This paper reports an investigation of local sustainable production in Sweden aimed at exploring the factors contributing to survival and competitiveness of manufacturing. Eight companies were studied on two occasions 30 years apart; in 1980 and 2010. To provide a valid longitudinal, perspective a common format for data collection was used. As a framework for data collection and analysis the DRAMA methodology was employed (Bennett and Forrester, 1990). There are a number of results reported in detail concerning long term competitiveness and sustainability of manufacturing companies.

STR33 Enabling Factors of Adaptive Capability in Small and Medium Enterprises

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This paper aims to define organisational adaptability and explain the conditions and factors affecting SMEs' (Small and Medium Enterprises) ability to adapt to the environment rather than fire fighting. The results are based on an ongoing R&D work as part of a European FP7 project called 'FutureSME'. We identified that a combination of factors contributes to adaptability that encompasses interfaces between resilience, agile operations and strategy. This paper contributes to theory and practice by taking vastly diverse literature into a single framework to explain the organisational adaptability concept as demonstrating its use in understanding adaptive behaviour in manufacturing SMEs.

STR34 Linking supplier relationship with postponement: an empirical analysis

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The main purpose of this paper is to focus on the impact of external factors on postponement, and relate various aspects of supplier relationship to different types of postponement. Three constructs for supplier relationship and three constructs for postponement, each with multiple measured items are identified and validated. Based on the links between the constructs, the research hypotheses are formalised. The hypotheses are tested through a structural model using empirical data of a sample of 219 manufacturing firms. This research enhances the postponement knowledge by providing a precise, specific analysis (rather than a general review) of the external impacts on postponement.

STR35 Using manufacturing focus portfolios to assess product mix complexity in manufacturing footprint design

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This paper presents a methodology that supports manufacturing footprint design considering the complexity of a product portfolio stemming from market requirements. The required manufacturing capabilities are identified and linked to plant roles that build on the concept of focused factories.

STR36 Manufacturing competitive priorities and business performance - an importance-performance analysis approach

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A key area of operations management research has always been to determine how manufacturing strategy and practice can contribute to the firm's operational and business performance. After reviewing relevant literature we argue that in improving manufacturing performance both the importance for the customer of a particular manufacturing capability and the current performance against competitors has to be taken into the consideration. Consequently, our research builds upon an importance-performance analysis approach, adopting Slack's (1994) importance-performance matrix. Using an international sample of manufacturing companies we investigate if improvement decisions that follow the importance-performance logic can contribute to company-level business performance.

Managing the operations-strategy interface

STR37 The interface between “strategy-as-practice” theory in strategy and operations management: Towards a “practice-as-strategy” theory

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This paper examines the interface between strategy and operations management (OM) using the “strategy-as-practice” view from strategic management. Various practice-based views have become influential in organisational studies, in particular the strategy-as-practice perspective in strategic management, yet they have had hardly any impact on operations strategy, despite the potential to illuminate the enigmatic relationship between operational practices and performance. We argue that the strategy-as-practice perspective could illuminate three problems of the practice-performance link. Furthermore, we highlight a theoretical gap in strategic management that operations management could fill as a “practice-as-strategy” view.

STR38 Visual management and shopfloor teams - linking action to strategy

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This paper examines the use of Visual Management at shopfloor level, particularly looking at a specific design of communication board across cells. The use of graphs and performance measures on the boards is examined and how Team Leaders use the board for Continuous Improvement is examined. Results indicate that most Team Leaders use the boards for Continuous Improvement and the board design is supported by Team Leaders, however not all the Team Leaders use the board fully. In addition problems with communicating strategy at cell level mean the link from operations strategy to shopfloor action is not fully made.

STR39 Distribution of Manufacturing Strategy Decision-Making in Manufacturing Networks

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This paper is concerned with manufacturing strategy decision-making. In particular, we study how strategic decisions are distributed between the network level and manufacturing plants in manufacturing networks. We use data from 107 manufacturing plants. This research shows that manufacturing strategy decision-making (in terms of decision categories and policy areas) can be divided into three difference types: centralized at the network level, decentralized at the plant level, and integrated between central headquarter and local plants. All decision categories follow the same structure, i.e. one of the three types is applied to all decision areas.

STR40 The ‘Reduction-Retention conundrum’: Managing organisational capabilities at times of large-scale economic crises

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Large-scale crises, such as the global financial crisis or ‘credit crunch’ that unfolded during 2008 pose major challenge for any firm; empirical evidence suggests that durable goods manufacturers in particular suffer sooner and deeper depressions in demand during downturns, as purchases for these products can generally be postponed. Such crises pose a major, and at times existential, challenge to all functions of the firm, including operations. The key managerial challenge that develops is essentially a conflict between the need to reduce cost on the one hand, and the need to identify and retain organisational capabilities on the other, which we refer to as the ‘reduction-retention conundrum’. In this paper we are reporting on an exploratory case study of a vehicle manufacturer, and discuss how this particular company managed this conundrum, to what degree proactively capabilities were identified and protected, as opposed to reactively cutting cost in response to financial pressures. The paper concludes with initial observations and preliminary findings, as well as a course of action for future research currently underway.

STR41 The effect of contingencies on manufacturing strategy and operations performance

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There is a lot of space for contingency research in operations management (OM). Most papers did not investigate contingencies on a system-level either and there is a long list of contingencies considered by different authors and an inconsistent operationalization of these contingencies. After identifying the most important contingencies we propose a theoretical model to test their effects on manufacturing strategy and on the relationship between manufacturing strategy and operations performance. We also hypothesize that there are different contingency-strategy configurations that can lead to better operations performance. For the empirical validation of the model we use IMSS-V survey data.

STR42 Manpower planning strategies in times of financial crisis: evidence from logistics service providers and retailers in the Netherlands.

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In this research we focus on understanding manpower planning measures that companies take in warehouses during a financial crisis and their expected effects on performance. We report a survey in two labour-intensive sectors: retail and Logistics Service Providers (LSPs). Our results provide insight into the effect of four types of manpower planning strategies and their application during times of crisis. We find that a decrease in turnover has led to a variety of strategies in manpower planning both among retailers and LSPs. However, the effect of these strategies on key warehouse performance indicators differed between the two sectors.

STR43 The Effect of Culture, Process and Structure on Exploration and Exploitation in Traditional Manufacturing Networks versus Lead Factory Networks

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Based on an empirical analysis of 52 manufacturing companies from the German-speaking part of Europe, we show that exploration and exploitation can be achieved independently and simultaneously in traditional and lead factory networks. Although in both networks culture influences exploitation, the effects of process and structure on exploration and exploitation are network specific. The results show that the underlying influencing factors differ in both networks, which makes specific investments necessary to achieve exploration and exploitation.

STR44 Coordination in intra-company manufacturing networks - a multidimensional perspective

ANDREAS MUNDT

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Research on coordination in manufacturing networks is mostly focused on single aspects lacking an integral understanding of its underlying decisions and their linkages. This paper proposes a holistic framework modeling intra-network coordination as multidimensional decision space setting the basis to study coordination from a network manager's perspective. We further demonstrate the application of our framework by exemplarily linking its distinct elements to derive propositions on two selected, idiosyncratic network phenomena, i.e. (1) autonomy and (2) coopetition.

STR45 Establishing a Lead Factory - when can an intra-firm network benefit the most?

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The lead factory acts as a knowledge incubator for an intra-firm manufacturing network. In order to understand the benefits of a lead factory network, research has to move on from the solely description of the concept to the analysis if a manufacturing network can benefit from the existence of a lead factory per se or if the lead factory is only preferable in certain circumstances. The study at hand derives five dimensions which support, depending on their characteristics, higher performance achievements when having a lead factory integrated in the manufacturing network.

STR46 A Risk Management Approach to Improving Information Quality for Operational and Strategic Management

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Information has long been recognized as a key resource for every organisation. As it influences organisational success on every level of an organisation, its effects on objectives in operations and strategy need to be assessed and mitigated following a best-practice risk management approach. This paper extends a process for Total Information Risk Management (TIRM) for managing risk that arises from poor quality information resources by incorporating a Ten Step approach for improving information quality. This approach guides managers through an effective information quality improvement programme that integrates best practices from the risk management and the information quality disciplines.

STR47 Multiple stakeholder Performance Measurement and Management in third sector organisations:An exploratory study of the implementation of an IT system

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This paper reports on the results of an exploratory study of a third sector organisation with respect to the specification, selection and implementation of an IT system in support of its performance measurement and management in a multiple stakeholder context. The implementation of such systems in the third sector is comparatively rare. An ethnographic research methodology is utilised to study of 'Foundation', a medium sized UK charity that provides housing-related support services to a range of customers. Initial results list the perceived benefits of implementation and indicate some of the key challenges which may be encountered during the implementation process.

STR48 Contextual Ambidexterity and Just-in-Time as nurtures of Continuous Improvement and Innovation

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This paper sheds some light on the relationship between continuous improvement and innovation in lean manufacturing settings. Drawing on the literature on organizational ambidexterity and lean management, we propose a model where contextual ambidexterity and JIT simultaneously balance innovation and continuous improvement within the same plant. We test the model on an international database using structural equation modeling. Results show that continuous improvement and innovation can coexist within those plants that simultaneously nurture organizational ambidexterity and implement JIT techniques. We also show the positive performance implications of such a strategy.

Supplier relationships: developing a country's perspective

SUPPLY1 Buyer-supplier relationships in a Sustainable Supply Chain: the Organic chain in Brazil

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This study investigates the relationship between a large retail and small organic producers in a dedicated supply chain in Brazil. It also address on how Brazilian consumers perceive organic products. Qualitative (case study) and quantitative (survey) techniques were used. Results suggest that the retail strategically associates organic products to its Corporate Social Responsibility (CSR), but the operation is very complex and there are difficulties to select organic suppliers. Yet, consumers present very positive attitude towards organic food. Those interested in sustainability issues can use the results to support managerial strategies to deal with the growing demand for organic food.

SUPPLY2 A process for the prequalification of suppliers for a service organisation in a developing economy

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This paper presents findings of a study of the prequalification of suppliers for a major service industry organisation in a developing country. The aim of the exercise was to centralise the purchasing activities of the organisation and consequently leverage its purchasing power. The analysis focuses on one item and it indicates a significant difference in capabilities between the high performing and low performing suppliers. The significance of the study is the ability of organisations to impact the corporate behaviour of other organisations in their supply chain.

SUPPLY3 Supply chain management relationship structures: Chinese evidence compared to traditional frameworks

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The world's second largest economy and third largest trader motivates this research. It analyses Chinese functional supply chains through a relational capital lens. It is a qualitative study with interviews from informants across three tiers of the functional supply chains in each of four manufacturing industries; clothing, automobile, electronic, and food. Compared to Western models of functional supply chains, the findings suggest that in China, relational capital is not only manifest in buyer dominated, adversarial, close partnerships, but can also be supplier dominated, adversarial and arm's length, depending on the focal industry, and nature of upstream or downstream relational dependency.

SUPPLY4 Patterns of supply chain integration: cluster analyses of three Thai industries

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Based on three dimensions of supply chain integration (SCI), i.e., internal integration (II), supplier integration (SI) and customer integration (CI), this paper develops a typology of SCI patterns and a theory of SCI configuration. Cluster analyses of survey data from three industries (automotive, electronics, and food) in Thailand found clusters of firms with low-uniform and high-uniform SCI, each with distinctive II-SI-CI profiles, leading to enhanced understanding of SCI profiles for each industry. The operational performance dimensions in terms of delivery, quality, cost, flexibility, and innovation are found to significantly different between the two clusters by further ANOVA analyses.

SUPPLY5 Exploring the Client-Vendor Interface in Offshore Outsourcing: A Longitudinal Study of a Project's Transition to India

CHRISTOPHER WILLIAMS

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This study tracks activity in a software development team of an Indian offshore outsourcing vendor during the time period in which project work was transitioned from one of its clients based in Europe. Using longitudinal analysis of team composition and project status data, the study provides insight into how offshore team learning and performance change during the transition period. The findings indicate: (1) four distinct phases of the transition: offshore penetration, offshore embedment, offshore ramp-up and end-state stabilization, (2) the rate of learning varies considerably across these phases, (3) performance of the team also varies considerably across these phases.

**TOM1 Assessing the Service Quality of Higher Education in Operations Management:
Two Servqual Gap Analyses.**

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Based on two Servqual gap analyses, this paper aims at assessing the service quality of higher education programs focusing on operations management (OM). Firstly, at the low end of the higher education spectrum, we assess the service quality of an undergraduate program in OM. Secondly, at the highest end of this spectrum, we assess the service quality of an executive education program in OM. Finally, both Servqual gap analyses deepen our understanding of key service quality dimensions along the spectrum of higher education in OM.

TOM2 The design of a research methods module for a course in Major Programme Management

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This paper describes the design of a research methods module for a master's degree in Major Programme Management, an emerging scholarly and practitioner discipline that draws not only on project management but a wide range of other topics related to the temporary organisation. A major programme, sometimes called mega-project, comprises multiple, high-cost, high-involvement interrelated projects. The students studied research methods to prepare for their dissertations, entailing an introduction to key research ideas and practices such as quantitative and qualitative approaches, research ethics, project reporting, and research project management as well as critical thinking and teamwork.

TOM3 Thirty Years of OM Research Published in IJOPM: Insights Using Latent Semantic Analysis

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In this paper we use Latent Semantic Analysis, an emerging quantitative method for content analysis, to examine the trends in Operations Management (OM) research as reflected in three decades of articles published in IJOPM. Our findings are indicative of trends in research methodology and perhaps more important, of significant trends of topical emphasis and emerging research areas. Overall, we believe that our work aids OM scholars in examining OM research at varying levels of granularity and thereby lends itself to their scrutiny, critique, and action.

TOM4 International operations management: a bibliometric analysis of published research 1998 to 2008

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The paper analyses all research articles on the subject of international operations management (IOM) published in the three most important operations management (OM) journals from 1998 to 2008. It does so using the quantitative bibliometric techniques of citation and co-citation analysis; the first time that these techniques have been applied to this literature. As such, it provides a much overdue review of this rapidly growing subject area within OM. The study identifies some major themes and foundations of the subject area that have emerged over the last decade and compares these to the last published IOM literature review.

TOM5 System Dynamics Course at University Level: Review of Student Simulation Models

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Systems Dynamics (SD) simulation is a mature discipline. However, still very rarely entire course is being devoted in Europe for this topic (M.Sc. and/or Ph.D.). The purpose of this research is to report experiences of giving system dynamics course in the wider area of industrial engineering/management; course which is tailored for both M.Sc. and Ph.D. students. We review the most innovative and interesting student works from last five years. Typically SD approach fits well on company level logistics problems, among some macro level experiences. Also innovation and technology management, and even environmental management, show their potential in student projects.

Understanding inter-firm relationships

UIFR1 Understanding inter-organizational relationships in programme management: a social network analysis study

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The paper explores inter-organisational relationships during a multi-project, multi-organisation programme run by a regional utility company. Social network analysis is adopted to analyze the relationships between the utility company and eight contractor companies. The preliminary findings indicate that programme tenure is positively related with network centrality. Degree centrality measures and sociograms are provided to support the findings.

UIFR2 Reconceptualising inter-organisational supply chain behaviours

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Inter-organizational exchange archetypes represent groupings of exchange behaviours, often the unidimensionality of the behaviours is assumed. We suggest two major thematic domains can be found in supply chain literature, relational with socio-political motivations and rational with economic self interest, that give rise to two dominant behaviours: collaboration and opportunism. However, little research has examined the operation of these behaviours within different exchange archetypes. Based on observations of 189 manufacturer/supplier dyads, we discriminate two common exchange relationship archetypes based on these behaviours.

UIFR3 Domains and contextual factors of e-business systems utilization in inter-firm relationships: a case study

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We study the uses of e-business systems in inter-firm context through a case study of 6 manufacturing companies in Finland. In particular, we investigate the purposes for e-business system use and related contextual factors from a focal buyer company point of view. As a result we find that e-business systems are mainly used for operative supply chain and purchasing transactions and less for collaboration purposes. Contrary to previous suggestions, we find no explicit relationship between e-business system use and supplier categorization. Instead, a set of buyer company internal and external factors are found.

UIFR4

Assessing the influence of information sharing and information quality on customer integration

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Information sharing has been treated as one component of the overall supply chain integration strategy, with most of the research overlooking its individual impact. Furthermore, studies investigating the value of information sharing practices have produced mixed results, which may be associated to contingency factors. Finally, few papers have analysed these information mechanisms from the supplier's view. This paper contributes to the supply chain management literature by testing the individual impact of information sharing practices on customer integration using the supplier's perspective, and by developing the contingency view in the area. The relationships between the constructs are analysed through regression analysis.

UIFR5

How strategic needs influence alliance formation and their governance modes: An empirical study in the Italian biopharmaceutical industry

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The large literature on strategic alliances has highlighted how alliances answer to a strategic need to improve competitive strength through collaboration agreements. In this paper, we question what kind of competitive strengths firms aim at acquiring through inter-firm relationships. We argue that alliances respond to three principal strategic needs: Efficiency/effectiveness, Knowledge and learning, and Global market access need. We hypothesize that these needs represent a motivation to enter alliances and, furthermore, they influence the governance mode of the agreement. In order to empirically test the theoretical framework a survey investigating the Italian biopharmaceutical industry is carried out.

UIFR6

Antecedents and impacts of social capital in buyer supplier relationship: A study of Australian manufacturing industry

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Drawing on the social capital theory, this study explore the social capital-performance relationship by linking the antecedents, dimensions and impact of social capital and their consequence on buying firm's performance. A sample size of 204 is used from Australian manufacturing firms to test the model. The result of structural equation modelling suggest that rationale perspective drives buying firms to develop social capital which in turn lead to develop supply chain collaboration and quality of knowledge and their overall impact improve the buying firm's performance.

Understanding inter-firm relationships

UIFR7 Increasing buyer's absorptive capacity by creating social capital in inter-organizational relationships

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This paper posits a model of social capital and its influence on inter-organizational knowledge-sharing routines. The final outcome of the model is the buyer's ability to create and utilize knowledge as a result of joint supplier/buyer activities. This research uses dyadic data obtained from 107 pairs of buyers and their suppliers to ensure that both buyer and supplier perspectives are included. The results illustrate that social capital elements positively influence the absorptive capacity of the buyer when reciprocal knowledge-sharing routines between buyers and suppliers are developed.

UIFR8 Exploring the effect of lean manufacturing on collaborative relations sustainability

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This research argues that the benefits of implementing lean manufacturing at a supplier organization could improve supplier-manufacturer collaborative business relations. Through exploring the relevant literature and performing a case study research, this paper reveals that lean practices provide suppliers with a competitive advantage which manipulates market dynamics effect over their relation with manufacturers. This, in turn, enhances the manufacturer commitment to collaborate. Thus, it could be concluded that lean manufacturing influence collaborative relations sustainability.

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