

### **Modelling structure of customer satisfaction with construction**

**Purpose** – The purpose of this paper is to build a tested model and framework for describing the structure and factors influencing customer satisfaction in the construction industry. **Design/methodology/approach** – The paper introduces a structural equation model illustrating the interdependencies of the factors influencing customer satisfaction. Data for the model are based on 831 assessments obtained from project customers with regard to the successfulness of the project. **Findings** – The results show that customer satisfaction in construction is a complex phenomenon in which various factors have a different impact on the quality as perceived by the customer. Management and factors related to skills have a different impact on the factors describing the end result and methods of the project. According to this study, the contractor's ability to cooperate is divided into two directions: managing changes and communication. The result emphasises the significance of communication in project production. In order to improve their level of service, the contractors should focus on developing and improving their central processes. With regard to customer satisfaction, this stresses the significance of the entire selection of services and products the contractor offers. **Originality/value** – Customer satisfaction has become a significant tool for measuring performance alongside the traditional, harder measurement tools. Although the demands of customer-orientation and customer satisfaction have been acknowledged in the field, little attention has been paid to development of customer satisfaction and the factors involved.

#### **General information**

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Organisations: Aalto University  
Contributors: Kärnä, S., Junnonen, J. M., Sorvala, V. M.  
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Original language: English  
ASJC Scopus subject areas: Business and International Management, Strategy and Management, Management of Technology and Innovation  
Keywords: Construction industry, Customer relations, Customer satisfaction, Customer services quality, Performance measures  
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Source ID: 85015512355  
Research output: Contribution to journal › Article › Scientific › peer-review

### **Proactive contracting in Finnish PPP projects**

Public-private-partnership projects are long term, complex and very challenging contractual arrangements and relationships. They bring new roles for public sector and also for private sector in terms of construction and services. This paper will go through some features of the Finnish PPPs. Proactive law focuses in practical views as regards contract law and contractual issues. The main target is to prevent problems instead of confronting them. This paper will clarify what proactive law is about in terms of contract law and contracting especially in PPPs. For instance, 20-40 years' partnership relation with PPPs brings up also dozens of different risks into the picture. This paper will discuss the risks and risk management in terms of proactive law and after that, focus on PPPs in Finland.

#### **General information**

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MoE publication type: A1 Journal article-refereed  
Organisations: Research group: Responsible Construction, Helsinki University of Technology  
Contributors: Tieva, A., Junnonen, J. M.  
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Pages: 219-228  
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Peer-reviewed: Yes

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ISSN (Print): 1648-715X  
Ratings:

Scopus rating (2009): SJR 0.577 SNIP 0.804

Original language: English

ASJC Scopus subject areas: Strategy and Management

Keywords: Proactive contracting, Public-private partnership, Risk management

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10.3846/1648-715X.2009.13.219-228

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### **Is performance measurement suitable for an extended enterprise?**

**Purpose:** The purpose of this paper is to assess whether performance measurement literature and as a result, practical applications, models and frameworks drawing from this literature are compatible with the central features of extended enterprises. **Design/methodology/approach:** The paper is based on a bibliometric study that is supplemented with an empirical case study. **Findings:** The results of this paper indicate that literature on performance measurement and literature on extended enterprises are only partially compatible. The common underlying reasons for measuring performance are highly valid also in the context of an extended enterprise. However, performance measurement processes and practices utilized within firms are to a considerable degree incompatible with central characteristics of extended enterprises. A highly apparent conflict between the two streams of literature is related to choosing individual performance measures (i.e. the question of what to measure). Performance measurement literature emphasizes intra-organizational measures which conflicts starkly with the emphasis of inter-organizational collaboration dominant in literature addressing extended enterprises. **Research limitations/implications:** The sample consists of articles published in many leading academic journals. The primary implication of this paper is that the importance of inter-organizational relations and collaboration, and the lack of a central decision-making authority should be taken into consideration when designing and implementing performance measurement systems for extended enterprises. **Practical implications:** Managers implementing performance measurement systems may tend to adopt solutions recommended by industry actors and dominant performance measurement literature. As increasingly many firms operate as a part of an extended enterprise, the adoption of these off-the-shelf solutions poses considerable risks. **Originality/value:** The main contribution of this paper is that it systematically assesses the compatibility of performance measurement and extended enterprise literature by means of a bibliometric analysis. In addition, the paper identifies key contributions from both streams of literature. An empirical case representing the shipbuilding industry is carried out to validate obtained findings.

### **General information**

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MoE publication type: A1 Journal article-refereed

Organisations: Boston Consulting Group, Aalto University

Contributors: Lehtinen, J., Ahola, T.

Number of pages: 24

Pages: 181-204

Publication date: 1 Jan 2010

Peer-reviewed: Yes

### **Publication information**

Journal: International Journal of Operations and Production Management

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ISSN (Print): 0144-3577

Ratings:

Scopus rating (2010): SJR 1.275 SNIP 1.683

Original language: English

ASJC Scopus subject areas: Decision Sciences(all), Strategy and Management, Management of Technology and Innovation

Keywords: Business enterprise, Performance measurement (quality), Research work

DOIs:

10.1108/01443571011018707

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Source: Scopus

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Research output: Contribution to journal › Article › Scientific › peer-review

### **Governmental stakeholder and project owner's views on the regulative framework in nuclear projects**

This article aims at increasing the understanding of a specific type of stakeholder, namely governmental stakeholders who have significant influence over projects and base their influence on a regulative framework. Various parties in nuclear projects create their own interpretations of the framework. To understand why there are differences in these interpretations, we used three institutional elements: (1) laws and rules, (2) practices, and (3) values for analysis. This article uses interview data from a nuclear industry governmental stakeholder and a project owner. The results show that interpretations are not always coherent, and the incoherencies are clearest in the practice element.

#### **General information**

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MoE publication type: A1 Journal article-refereed

Organisations: Managing digital industrial transformation (mDIT), Aalto University

Contributors: Sallinen, L., Ahola, T., Ruuska, I.

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Peer-reviewed: Yes

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Volume: 42

Issue number: 6

ISSN (Print): 8756-9728

Ratings:

Scopus rating (2011): CiteScore 0.4 SJR 0.22 SNIP 0.667

Original language: English

ASJC Scopus subject areas: Business and International Management, Management of Technology and Innovation, Strategy and Management

Keywords: governmental stakeholder, institutional theory, nuclear project, project owner, regulative framework

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10.1002/pmj.20270

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Source ID: 81755187185

Research output: Contribution to journal › Article › Scientific › peer-review

### **Computing alone? A professional association as a forum for knowledge and learning processes**

The main objective of this article is to explore how a professional association can aid individuals' knowledge and learning processes as a part of a local innovation environment (LIE). An association for ICT professionals, called PITKY, is used as an empirical, illustrative case. The results indicate that an association can have many roles in LIEs from the individual point of view, but these benefits are available mainly for the active members of the association. The roles of the association also change over time, emphasising professional associations' need to reinvent themselves constantly.

#### **General information**

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MoE publication type: A1 Journal article-refereed

Organisations: Institute of Society and Space (SOCIS), School of Management

Contributors: Kolehmainen, J.

Number of pages: 14

Pages: 250-263

Publication date: 2012

Peer-reviewed: Yes

#### **Publication information**

Journal: International Journal of Knowledge-Based Development

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ISSN (Print): 2040-4476

Ratings:

Scopus rating (2012): CiteScore 0.7 SJR 0.168 SNIP 0.167

Original language: English

ASJC Scopus subject areas: Management of Technology and Innovation, Information Systems and Management, Strategy and Management

Keywords: Association, Community of practice, Interpersonal relationships, Knowledge, Knowledge community, Learning, LIE, Local innovation environment, Social capital, Strong ties, Weak ties

DOIs:

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<http://www.scopus.com/inward/record.url?scp=84870283056&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84870283056

Research output: Contribution to journal › Article › Scientific › peer-review

### **Practical difficulties encountered in attempting to implement a partnering approach**

**Purpose** – The purpose of this paper is to present practical difficulties in attempting to implement a partnering approach. **Design/methodology/approach** – The paper comprises empirical evidence from case studies in Norway and Canada and an extensive literature review on partnering. **Findings** – The authors identified a lack of shared understanding of key partnering concepts, missing initial effort to establish shared ground rules, communication difficulties in inter-organizational relationships and unclear (perceived) roles and responsibilities. In existing partnering literature, a large number of construction studies have identified conceptual partnering models. However, studies that describe partnering models to take these practical difficulties into account have not been found and the paper develops a practical model that outlines the phases of a typical partnering effort. **Research limitations/implications** – Partnering has both a legal/contractual side and a management/collaboration side. This paper looks at the management and collaboration aspects of partnering only. **Practical implications** – The paper will be a very useful source of information and advice for project managers who are attempting to implement partnering in projects. **Originality/value** – The paper presents organizational challenges and difficulties in attempting to implement partnering and a practical model which takes these difficulties into account.

### **General information**

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Organisations: Managing digital industrial transformation (mDIT), Norwegian Univ. of Sci. and Technol., Project Business Research Group, Aalto University, University of Calgary

Contributors: Aarseth, W., Andersen, B., Ahola, T., Jergeas, G.

Number of pages: 19

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Journal: International Journal of Managing Projects in Business

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ISSN (Print): 1753-8378

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Scopus rating (2012): CiteScore 2.4 SJR 0.368 SNIP 0.744

Original language: English

ASJC Scopus subject areas: Business and International Management, Management of Technology and Innovation, Strategy and Management

Keywords: Canada, Collaboration in projects, Conflict management, Norway, Organizations, Partnering model, Partnership, Project management, Stakeholder management, Stakeholders

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10.1108/17538371211214941

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Source: Scopus

Source ID: 84889561768

Research output: Contribution to journal › Article › Scientific › peer-review

### **Insights for the governance of large projects: Analysis of Organization Theory and Project Management: Administering Uncertainty in Norwegian Offshore Oil by Stinchcombe and Heimer**

**Purpose**The purpose of this paper is to scrutinize the influence of the highly cited Organization Theory and Project Management on consequent project research and to highlight the key contributions of the book, how it has affected consequent project research and to identify areas that could be further explored in future research.

**Design/methodology/approach**The paper takes the form of a book review and literature analysis. **Findings**It is found that the book offers insights to elaborating the salient characteristics of large, complex and uncertain projects. It identifies the

underlying theories and concepts to improve our understanding of the three main issues: the sources of uncertainty in large engineering intensive projects; management and governance approaches utilized to tackle uncertainty; and project routines and innovation. Some of these insights have later been acknowledged by project scholars focusing topics such as project governance and the management of uncertainty in projects. Practical implicationsThe book offers several insights and lessons to scholars and practitioners working with large engineering intensive projects. Originality/valueThe contribution of the book is not used to its full potential in project research. The paper's identification of the book's key insights should be useful for both scholars and practitioners.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Managing digital industrial transformation (mDIT), School of Science, Aalto University, Imperial College, London, 24.8.2012

Contributors: Ahola, T., Davies, A.

Number of pages: 19

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Publication date: 7 Sep 2012

Peer-reviewed: Yes

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Volume: 5

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ISSN (Print): 1753-8378

Ratings:

Scopus rating (2012): CiteScore 2.4 SJR 0.368 SNIP 0.744

Original language: English

ASJC Scopus subject areas: Business and International Management, Management of Technology and Innovation, Strategy and Management

Keywords: Governance, Offshore, Oil industry, Project governance, Project management, Uncertainty management  
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Research output: Contribution to journal > Article > Scientific > peer-review

#### How governmental stakeholders influence large projects: the case of nuclear power plant projects

PurposeThe purpose of this paper is to increase understanding on stakeholder influence in large projects, using nuclear power plant projects and a governmental stakeholder that influences them as the empirical example. The authors focus on examining the means used by the stakeholder to influence the projects. Design/methodology/approachThis paper adopts the descriptive single case study approach, using data from 18 semi-structured interviews. The authors interviewed experts at a governmental stakeholder organization, but in order to gain insight from outside the governmental stakeholder, they also interviewed two other organizations: an energy company, and the highest administrative ministry in the nuclear industry. FindingsThe governmental stakeholder bases its influence on regulations and laws. This paper points out the distinct means that are used by the governmental stakeholder to influence nuclear projects: means that restrain, and also means that enable and advance projects. Both types of means are used at the same time. Enabling means include, among others, allowing projects and firms to contribute to the very same regulations that control the projects. Originality/valueMuch of the earlier research emphasizes government influence as negative to projects, but this paper shows an example of a stakeholder whose influence also includes aspects that are beneficial for projects. The governmental stakeholder can also be understood as a stakeholder that combines two stakes: its own legal stake, and society's moral stake. In carrying society's stake in projects, the governmental stakeholder acts as an intermediary.

#### General information

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MoE publication type: A1 Journal article-refereed

Organisations: Managing digital industrial transformation (mDIT), Aalto University

Contributors: Sallinen, L., Ruuska, I., Ahola, T.

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Peer-reviewed: Yes

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Journal: International Journal of Managing Projects in Business

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Scopus rating (2013): CiteScore 2 SJR 0.27 SNIP 0.522

Original language: English

ASJC Scopus subject areas: Business and International Management, Management of Technology and Innovation, Strategy and Management

Keywords: Finland, Governmental stakeholder, Influence, Large projects, Means of influence, Nuclear energy industry, Project management, Stakeholder influence, Stakeholders

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Source: Scopus

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Research output: Contribution to journal › Article › Scientific › peer-review

### **Federation lifecycle management incorporating coordination of bio-inspired self-management processes**

As it has evolved, the Internet has had to support a broadening range of networking technologies, business models and user interaction modes. Researchers and industry practitioners have realised that this trend necessitates a fundamental rethinking of approaches to network and service management. This has spurred significant research efforts towards developing autonomic network management solutions incorporating distributed self-management processes inspired by biological systems. Whilst significant advances have been made, most solutions focus on management of single network domains and the optimisation of specific management or control processes therein. In this paper we argue that a networking infrastructure providing a myriad of loosely coupled services must inherently support federation of network domains and facilitate coordination of the operation of various management processes for mutual benefit. To this end, we outline a framework for federated management that facilitates the coordination of the behaviour of bio-inspired management processes. Using a case study relating to distribution of IPTV content, we describe how Federal Relationship Managers realising our layered model of management federations can communicate to manage service provision across multiple application/storage/ network providers. We outline an illustrative example in which storage providers are dynamically added to a federation to accommodate demand spikes, with appropriate content being migrated to those providers servers under control of a bio-inspired replication process.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Wireless Communications and Positioning (WICO), Waterford Institute of Technology, Trinity College Dublin

Contributors: Meskill, B., Balasubramaniam, S., Brennan, R., Feeney, K., Jennings, B.

Number of pages: 27

Pages: 650-676

Publication date: Dec 2013

Peer-reviewed: Yes

### **Publication information**

Journal: JOURNAL OF NETWORK AND SYSTEMS MANAGEMENT

Volume: 21

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Ratings:

Scopus rating (2013): CiteScore 1.5 SJR 0.237 SNIP 0.651

Original language: English

ASJC Scopus subject areas: Information Systems, Hardware and Architecture, Computer Networks and Communications, Strategy and Management

Keywords: Bio-inspired processes, Federation, IPTV content distribution, Network management

DOIs:

10.1007/s10922-013-9263-7

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Research output: Contribution to journal › Article › Scientific › peer-review

### **A methodology supporting syntactic, lexical and semantic clarification of requirements in systems engineering**

Product development is a challenging activity. The process begins with a description and representation of a design problem in form of a requirements document. It involves two phases: elicitation by description in Natural Language (NL) and clarification of the description. NL implies interpretation of terms within a context to avoid later misunderstanding. The paper proposes a methodology to elicit and refine the initial needs. The elicitation is done by finding support information from several sources such as patent databases, encyclopaedias and commercial websites. The refinement supported by a computer-based approach is done on different levels (grammar, words and context selection) to reduce the ambiguity of the requirements descriptions. The initial description is refined by an automatic questioning process. This is followed by an assisted search and selection of answers from different web-based sources. Relevant answers are selected using a similarity metric. A case study is used to demonstrate the approach.

#### **General information**

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Organisations: Intelligent dexterity for secure networked infrastructure and applications (IDSNIA), Concordia University - Engineering and Computer Science, Ecole Centrale de Nantes, IRCCyN UMR CNRS 6597 1, Aalto Univ, Aalto University, Aalto Univ Finland, Dept Engr Design & Prod, Sch Engr, Aalto University

Contributors: Christophe, F., Mokammel, F., Coatanéa, E., Nguyen, A., Bakhouya, M., Bernard, A.

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Peer-reviewed: Yes

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Journal: International Journal of Product Development

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ISSN (Print): 1477-9056

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Scopus rating (2014): CiteScore 1.2 SJR 0.31 SNIP 0.591

Original language: English

ASJC Scopus subject areas: Business and International Management, Economics and Econometrics, Strategy and Management, Management of Technology and Innovation

Keywords: Data mining, Early design process, Lexical and semantic clarification, Natural language processing, Product development, Requirements engineering, Syntactic

DOIs:

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<http://www.scopus.com/inward/record.url?scp=84904020962&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84904020962

Research output: Contribution to journal › Article › Scientific › peer-review

### **Expectations and benefits of utilizing social media tools in new product development**

This paper discusses drivers of the use of social media tools by organizational members. Specifically, we contrast the expectations of senior managers of social media tool adoption with the benefits perceived by organizational members after the implementation of these tools. We analyzed empirical findings from 252 respondents to a survey of three global companies before and after social media tool adoption. The respondents to the survey held various internal functions and were from several organizational layers. According to our results, the working practices, notably in terms of information sharing, among organizations become more similar due to the social media tool adoption. We present individual-level drivers of the use of social media tools based on expectations and perceived benefits, such as increased transparency inside the organization. Additionally, based on the empirical evidence, we present both managerial and theoretical implications. The identified drivers can be used by practitioners as guidance in social media tool implementation. From a theoretical perspective, the study contributes to discussions on absorptive capacity, new product development (NPD) performance, and company-level social media tool adoption.

#### **General information**

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Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research, Tampere University of Technology, Department of Industrial Engineering and Management, Managing digital industrial transformation (mDIT)

Contributors: Peltola, T., Mäkinen, S. J.

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<http://www.scopus.com/inward/record.url?scp=84910150087&partnerID=8YFLogxK> (Link to publication in Scopus)

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Contribution: organisation=tta,FACT1=1<br/>Portfolio EDEND: 2014-09-30<br/>Publisher name: Portland International Center on Management of Engineering and Technology  
Source: researchoutputwizard  
Source ID: 1009  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Massive Open Online Research: An approach to deal with wicked problems

Humans are hardwired as problem-solvers. Professional education, in particular, enables us to solve complex problems. Even decades ago, we could safely send a crew to the moon and back. A moon-bound project is a very challenging and complex problem, but it is a tame one. The problem is clearly defined and the challenge becomes how to find the best solution. As the world and issues become more interconnected, there is a different type of problem in the horizon - 'wicked' problems. A wicked problem is normally complex and challenging, but differs from the 'tame' problem because there is no agreement in terms of problem definition. A wicked problem does not allow for the 'choice' of best solution. Solutions tend to only mitigate the problem and sometimes generate unpredictable consequences. For instance, climate change is an issue that requires a level of ingenuity that cannot be achieved by a limited group of people, regardless how brilliant they are. It cannot be addressed by our dominant scientific, reductionist, discipline-based, and proprietary approach either. This paper proposes Massive Online Open Research (MOOR) as a better approach to deal with wicked problems. In terms of organization, this paper includes a literature review on online collaboration, focusing on the dynamics of knowledge creation and innovation. Selected open online research initiatives are used to contextualize the literature review. Based on the literature review and real cases, a MOOR framework is presented and discussed. Limitations and opportunities for future research are also included.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research, Kwantlen Polytechnic University  
Contributors: Machado, M., Verghese, G., Peltola, T.  
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ISBN (Print): 9781890843304  
ASJC Scopus subject areas: Management of Technology and Innovation, Strategy and Management, Transportation  
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<http://www.scopus.com/inward/record.url?scp=84910125519&partnerID=8YFLogxK> (Link to publication in Scopus)  
Source: Scopus



Source ID: 84910125519

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Designing a performance measurement system to support outsourcing decisions in a Finnish university**

In recent years, the role and importance of performance measurement in public organisations has been much emphasised. However, the discussion on the issue so far has been on a rather general level. This paper aims to understand the challenges faced by public organisations in developing performance measurement systems (PMSs) for a specific managerial purpose, to support outsourcing decisions. The objective of the paper is approached with a literature review and a single qualitative case study carried out as an action research. The case study introduces a detailed description of a PMS development project carried out in the support services of a Finnish university. A framework developed in prior research is utilised to analyse the impacts of two typical characteristics (conflicting stakeholder needs and undefined objectives) of public organisations in a PMS design project. The contribution of the paper is to extend the existing understanding about public sector PMS especially regarding two key points: 1) to understand the impact of different purposes for measurement (in this case the outsourcing context) on the PMS development process; 2) to understand the need to align the PMS system with the organisational culture and other managerial control systems in order to achieve desired performance outcomes.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services, Department of Information Management and Logistics, Managing digital industrial transformation (mDIT), Lappeenranta University of Technology

Contributors: Jääskeläinen, A., Lönnqvist, A., Kulmala, H. I.

Number of pages: 16

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Publication date: 3 Jan 2015

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Scopus rating (2015): CiteScore 0.3 SJR 0.125 SNIP 1.03

Original language: English

ASJC Scopus subject areas: Strategy and Management, Organizational Behavior and Human Resource Management, Public Administration

Keywords: Decision-making, Finland, Outsourcing, Performance management, Performance measurement system, PMS, Productivity, Public sector, Support services, University

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ORG=ttta,0.6

ORG=ttlo,0.4

EXT="Kulmala, Harri I."

Source: Scopus

Source ID: 84924369881

Research output: Contribution to journal › Article › Scientific › peer-review

### **Designing a model for profiling organizational performance management**

Purpose: The purpose of this paper is to design and test a model for analyzing organizational performance management (PM) practices.

Design/methodology/approach: This study follows the design science approach. Variables affecting the status of PM are reviewed and classified based on existing literature. These variables are analyzed and a compact set of critical variables are chosen to represent PM maturity. Designed model is implemented in practice as a survey receiving 271 responses, and tested by using both quantitative and qualitative approach.

Findings: The survey data are utilized in the development of four distinct PM maturity profiles. The empirical results provide understanding on the current PM maturity level and common development targets in Finnish organizations.

Research limitations/implications: External validity of the research is compromised by the context and respondent group. More in-depth qualitative studies could provide more understanding on the causes of presented findings.

Practical implications: The proposed model offers best practices to develop PM and identifies variables crucial to create satisfaction toward PM. The presented profiles also help in evaluating the status of PM in the organization examined. Originality/value: The originality of the new model relates to its balance between rigor and relevance. In addition, the study is one of the first attempts to widely apply PM maturity models in practice. A distinctive feature of this study is the maturity profiles which are built upon empirical data.

#### **General information**

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Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services, Managing digital industrial transformation (mDIT)

Contributors: Jääskeläinen, A., Roitto, J.

Number of pages: 23

Pages: 5-27

Publication date: 12 Jan 2015

Peer-reviewed: Yes

#### **Publication information**

Journal: International Journal of Productivity and Performance Management

Volume: 64

Issue number: 1

ISSN (Print): 1741-0401

Ratings:

Scopus rating (2015): CiteScore 2.7 SJR 0.645 SNIP 1.36

Original language: English

ASJC Scopus subject areas: Business, Management and Accounting(all), Strategy and Management

Keywords: Maturity model, Performance management, Performance measurement, Personnel satisfaction, Profiling

DOIs:

10.1108/IJPPM-01-2014-0001

URLs:

<http://www.scopus.com/inward/record.url?scp=84921848779&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84921848779

Research output: Contribution to journal › Article › Scientific › peer-review

#### **SmartWoW – constructing a tool for knowledge work performance analysis**

Purpose – New Ways of Working (NewWoW) refers to a novel approach for improving the performance of knowledge work. The purpose of this paper is to seek innovative solutions concerning facilities, information technology tools and work practices in order to be able to “work smarter, not harder.” In order to develop work practices toward the NewWoW mode there is a need for an analytical management tool that would help assess the status of the organization’s current work practices and demonstrate the impacts of development initiatives. This paper introduces such a tool.

Design/methodology/approach – Constructive research approach was chosen to guide the development of the Smart ways of working (SmartWoW) tool. The tool was designed on the basis of previous knowledge work performance literature as well as on interviews in two knowledge-intensive organizations. The usefulness of the tool was verified by applying it in four organizations.

Findings – SmartWoW is a compact questionnaire tool for analyzing and measuring knowledge work at the individual level. The questionnaire consists of four areas: work environment, personal work practices, well-being at work and productivity. As SmartWoW is a standardized tool its results are comparable between organizations.

Research limitations/implications – SmartWoW was designed a pragmatic managerial tool. It is considered possible that it can be valuable as a research instrument as well but the current limited amount of collected data does not yet facilitate determining its usefulness from that perspective.

Originality/value – This paper makes a contribution to the existing literature on knowledge work measurement and management by introducing an analytical tool which takes into account the NewWoW perspective.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Information Management and Logistics, Research group: Novi, Department of Industrial Management, Research group: Center for Research on Operations Projects and Services, Managing digital industrial transformation (mDIT)

Contributors: Palvalin, M., Vuolle, M., Jääskeläinen, A., Laihonon, H., Lönnqvist, A.

Number of pages: 20

Pages: 479-498

Publication date: 13 Apr 2015

Peer-reviewed: Yes

### Publication information

Journal: International Journal of Productivity and Performance Management

Volume: 64

Issue number: 4

ISSN (Print): 1741-0401

Ratings:

Scopus rating (2015): CiteScore 2.7 SJR 0.645 SNIP 1.36

Original language: English

ASJC Scopus subject areas: Business, Management and Accounting(all), Strategy and Management

Keywords: Knowledge work, Knowledge workers, Measurement, New Ways of Working, Performance, Productivity

Electronic versions:

Full paper

DOIs:

10.1108/IJPPM-06-2013-0122

URLs:

<http://urn.fi/URN:NBN:fi:tty-201603173658>

### Bibliographical note

ORG=tlo,0.75

ORG=tta,0.25

Source: Scopus

Source ID: 84928480375

Research output: Contribution to journal › Article › Scientific › peer-review

### Engineered nanomaterials reduce but do not resolve life cycle environmental impacts of power capacitors

Abstract Engineered nanomaterials are used to improve the properties of products. Often this results in size reduction or increased functionality, which may result in reduced environmental impacts. At the same time the manufacturing and disposal of the nanomaterials increases the life cycle impacts of the product. In this study the effects of using nano-silica polymers in power capacitors were investigated through life cycle assessment (LCA). The analysis was based on existing production technology which was modified to represent a prototype using nanomaterials. Based on the results, the nanomaterials would reduce impacts by c.a. 20% in the most relevant environmental life cycle impact categories. The main impact categories of the power capacitors were in metal depletion, land transformation and ecotoxicity. Although the nanomaterial based capacitor had slightly lower impacts, it did not resolve the main problems in these categories. Contribution analysis revealed that most of the impact is caused by only a few processes in the life cycle, especially raw materials supply for tin solders and waste treatment of insulating oil. Ecodesign alternatives for targeting the identified environmental hotspots are discussed.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Electrical Engineering, Tampere University of Technology, Finnish Environment Institute

Contributors: Alaviitala, T., Mattila, T. J.

Number of pages: 7

Pages: 347-353

Publication date: 15 Apr 2015

Peer-reviewed: Yes

### Publication information

Journal: Journal of Cleaner Production

Volume: 93

ISSN (Print): 0959-6526

Ratings:

Scopus rating (2015): CiteScore 6.8 SJR 1.635 SNIP 2.396

Original language: English

ASJC Scopus subject areas: Industrial and Manufacturing Engineering, Renewable Energy, Sustainability and the Environment, Environmental Science(all), Strategy and Management

Keywords: Ecodesign, Electronics, Life cycle assessment, Nanotechnology, Power capacitors

DOIs:

10.1016/j.jclepro.2015.01.036

### Bibliographical note

INT=dee,"Alaviitala, Tiina"

Source: Scopus

Source ID: 84926155646

### **Characteristics and agronomic usability of digestates from laboratory digesters treating food waste and autoclaved food waste**

Digestate characteristics such as organic and nutrient content, hygienic quality and stability are valuable measures when evaluating the use of food waste (FW) digestate as organic fertiliser. This study compared the characteristics of FW and autoclaved (160 °C, 6.2 bar) FW and their digestates from laboratory-scale reactors. Decreased ammonification and low ammonium nitrogen content were observed in the digestate from an autoclaved FW reactor due to autoclave treatment of FW, which affected the nitrogen-containing molecules by formation of Maillard compounds. The methane potential of autoclaved FW and its digestate was decreased by 40% due to reduced microbial activity as microbes were not able to adapt to the conditions within a reactor fed with autoclaved FW. Both studied materials were suitable for agricultural use in terms of their nutrient content, hygienic quality and stability, and thus the decrease in ammonium nitrogen in digestate from an autoclaved FW reactor supported the use of digestate as soil amendment rather than fertiliser.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Chemistry and Bioengineering, Research group: Industrial Bioengineering and Applied Organic Chemistry, Urban circular bioeconomy (UrCirBio), Natural Resources Institute Finland (Luke)

Contributors: Tampio, E., Ervasti, S., Rintala, J.

Number of pages: 7

Pages: 86-92

Publication date: 1 May 2015

Peer-reviewed: Yes

#### **Publication information**

Journal: Journal of Cleaner Production

Volume: 94

ISSN (Print): 0959-6526

Ratings:

Scopus rating (2015): CiteScore 6.8 SJR 1.635 SNIP 2.396

Original language: English

ASJC Scopus subject areas: Industrial and Manufacturing Engineering, Renewable Energy, Sustainability and the Environment, Environmental Science(all), Strategy and Management

Keywords: Ammonium nitrogen, Autoclave treatment, Characterisation, Digestate, Fertiliser, Food waste

DOIs:

10.1016/j.jclepro.2015.01.086

URLs:

<http://www.scopus.com/inward/record.url?scp=84928768890&partnerID=8YFLogxK> (Link to publication in Scopus)

#### **Bibliographical note**

EXT="Tampio, Elina"

Source: Scopus

Source ID: 84928768890

Research output: Contribution to journal › Article › Scientific › peer-review

### **Mashing Up Software Issue Management, Development, and Usage Data**

Modern software development approaches rely extensively on tools. Motivated by practices such as continuous integration, deployment and delivery, these tools are used in a fashion where data are automatically accumulated in different databases as a side-effect of everyday development activities. In this paper we introduce an approach for software engineering data visualization as a mash up that combines data from issue management, software development and production use. The visualization can show to all stake holders how well continuous delivery is realized in the project. The visualization clearly shows the time spent to specify and develop the features as well the length of the delivery cycle. Further more the visualization shows how much work is unfinished and waiting for delivery. This can help the development team to decrease the amount of unfinished work and by that help them to keep up in continuous delivery mind set. In addition to development data usage of the features is also visualized.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: Software engineering, Intelligent dexterity for secure networked infrastructure and applications (IDSNIA), Managing digital industrial transformation (mDIT), Solita Plc.

Contributors: Mattila, A., Lehtonen, T., Terho, H., Mikkonen, T., Systä, K.

Number of pages: 4

Pages: 26-29  
Publication date: 24 Jul 2015

### Host publication information

Title of host publication: 2015 IEEE/ACM 2nd International Workshop on Rapid Continuous Software Engineering (RCoSE)

Publisher: The Institute of Electrical and Electronics Engineers, Inc.

ISBN (Print): 9781479919345

ASJC Scopus subject areas: Software, Strategy and Management

Keywords: Continuous Delivery, Information Visualization, Software Analytics

DOIs:

10.1109/RCoSE.2015.12

Source: Scopus

Source ID: 84945956781

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Management of distributed knowledge encapsulated in embedded devices

Embedded electronic devices are now to be found everywhere. In general, they can be used to collect different sorts of data (e.g. on temperature, humidity, illumination and locations). In some specific domains, such as industrial automation, embedded devices are used for process control. The devices may have a programme that can respond immediately to environmental changes perceived through sensors. In the control of large sites, where there are many devices, higher level decisions are made or processed in dedicated computers far away from the sources (devices) where the initial data are collected. This article shows how it is possible to manage portions of distributed knowledge, hosted in embedded devices, making it possible for each embedded device to hold and manage its piece of knowledge. In addition, presented approach allows keeping locus of control at the embedded device level, where the embedded device can make decisions knowing the status of the rest of the world, device contributions and their effects in the overall distributed system knowledge base.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Automation Science and Engineering, Research area: Manufacturing and Automation,

Research group: Factory automation systems technology, Tampere University of Technology

Contributors: Ramis Ferrer, B., Iaroyvi, S., Gonzalez, L., Lobov, A., Martinez Lastra, J. L.

Number of pages: 18

Pages: 1-18

Publication date: 2016

Peer-reviewed: Yes

Early online date: 18 Dec 2015

### Publication information

Journal: International Journal of Production Research

Volume: 54

Issue number: 18

ISSN (Print): 0020-7543

Ratings:

Scopus rating (2016): CiteScore 4.4 SJR 1.435 SNIP 1.417

Original language: English

ASJC Scopus subject areas: Industrial and Manufacturing Engineering, Management Science and Operations Research, Strategy and Management

Keywords: distributed knowledge bases, distributed query processing, industrial automation, knowledge-based systems, ontologies

DOIs:

10.1080/00207543.2015.1120902

URLs:

<http://www.scopus.com/inward/record.url?scp=84950116771&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84950116771

Research output: Contribution to journal > Article > Scientific > peer-review

### Manufacturing backshoring : a systematic literature review

The purpose of this research is to review and analyze in a systematic manner the current research published in peer-reviewed international scientific journals on the backshoring of manufacturing. We identify 20 articles published from 2009 to early 2016. We classify and discuss the literature according to publication year, research methodology, industry type, and firm size. Using content analysis, we identify 25 factors that are relevant for backshoring decision-making and

categorize them into seven clusters that influence the decision to move manufacturing back. These clusters are: cost, quality, time and flexibility, access to skills and knowledge, risks, market, and other factors. Further, we provide a research agenda for further research on the phenomenon of moving manufacturing back.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Industrial Management, University of Southern Denmark, Lunds Universitet / Lunds Tekniska Högskola

Contributors: Stentoft, J., Olhager, J., Heikkilä, J., Thoms, L.

Number of pages: 9

Pages: 53–61

Publication date: 2016

Peer-reviewed: Yes

### Publication information

Journal: OPERATIONS MANAGEMENT RESEARCH

Volume: 9

Issue number: 3

ISSN (Print): 1936-9735

Ratings:

Scopus rating (2016): CiteScore 2.1 SJR 0.524 SNIP 0.622

Original language: English

ASJC Scopus subject areas: Strategy and Management, Management Science and Operations Research, Industrial and Manufacturing Engineering, Management of Technology and Innovation

Keywords: Backshoring, Global operations, Manufacturing location, Reshoring

DOIs:

10.1007/s12063-016-0111-2

Source: Scopus

Source ID: 84973097226

Research output: [Contribution to journal](#) › [Article](#) › [Scientific](#) › [peer-review](#)

### Benchmarking construction industry, company and project performance by participants' evaluation

**Purpose:** The construction industry needs effective methods for gathering and utilizing performance information on industry, company and individual project levels. Such benchmarking (BM) information can be collected from project participants' bi-directional evaluations of each other's performance during construction projects. The purpose of this paper is to present the method and discuss the features of a multi-company project evaluation system as a BM tool. Also the accumulated results, based on the extensive BM database in the Finnish construction industry, are investigated.

**Design/methodology/approach:** The web-based project evaluation tool was established in 2007 as a joint research project between the Helsinki University of Technology, construction organizations and main associations widely representing the construction industry in Finland. The evaluation method is based on soft, subjective measures, such as client satisfaction and project participants' satisfaction. The empirical observations of the study are based on over 5,500 evaluations during which the BM system was used in the Finnish construction industry. **Findings:** The use of the evaluation is presented as a multi-level BM tool to evaluate the performance of different discipline groups on project, company and industry levels. The Finnish case shows an example of the industry-level performance BMs of project consultants, main contractors, sub-contractors and architects/designers. The BM categories include project management, staff, collaboration and project goal accomplishment. According to the results, the participants are satisfied with each other's performance. However, main development targets in the Finnish industry are related to risk management and managing design. Also, the development of sub-contractors' selection procedures will contribute to the performance of the industry. **Research limitations/implications:** The industry-level feedback is linked to the Finnish construction industry. Similar studies in other countries would enable international comparisons. **Practical implications:** Client satisfaction and project participants' satisfaction have been identified as one of the key factors affecting project success. With the help of mutual project evaluation, different BMs enable organizations to monitor their performance and to improve their operations in various areas. They also make it possible to position an organization's performance in comparison to the competitors and help to perceive black spots in the process on project level. As a common system for the parties in the industry, the project evaluation BM system promotes quality improvement, customer orientation and collaboration between participants. **Social implications:** Project evaluation between the project participants' enhance collaboration and mutual learning.

**Originality/value:** Multi-company project evaluation is a new and promising topic in performance measurement which holds potential for performance improvement through the utilization of network information and team dynamics. The study presents its wider utility as the basis of national, company and project BM.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Aalto University

Contributors: Kärnä, S., Junnonen, J. M.  
Number of pages: 17  
Pages: 2092-2108  
Publication date: 1 Jan 2016  
Peer-reviewed: Yes

#### Publication information

Journal: Benchmarking  
Volume: 23  
Issue number: 7  
ISSN (Print): 1463-5771  
Ratings:

Scopus rating (2016): CiteScore 1.7 SJR 0.469 SNIP 1.051

Original language: English

ASJC Scopus subject areas: Business and International Management, Strategy and Management

Keywords: Benchmarking, Client satisfaction, Performance measurement, Project management, Project participants' satisfaction, Quality improvement

DOIs:

10.1108/BIJ-05-2015-0050

Source: Scopus

Source ID: 84988912841

Research output: Contribution to journal › Article › Scientific › peer-review

#### Importance of maintenance data quality in extended warranty simulation

As manufacturing industries are transforming towards service orientation, predicting the costs of product-service systems is becoming essential. Simulation is one possibility for evaluating the costs and risks involved in product-service systems, such as extended warranty agreements. We conducted a case study with a globally operating manufacturer of industrial goods who also provides services for the equipment. We created equipment performance simulation (EPSi) models and a tool, EPSitor, for using the models in predicting extended warranty costs. However, reliable simulation results require good quality maintenance and operation data from existing installations. We discovered that it is difficult to collect the data needed for simulations and there were many challenges with data quality. Quality problems were mainly observed in manually collected data. Insufficient data quality leads to a wider margin of error in the simulation models, which increases business risk. Identifying these challenges is the first step in transforming the data collection routines to support equipment performance simulations. The key to long-term business benefits of simulation is to acknowledge the importance of data quality and to establish efficient data collection routines. Future research should find ways to motivate maintenance technicians to collect good quality data. This would contribute to more accurate cost analysis and thus to better profitability of extended warranty contracts.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Mechanical Engineering and Industrial Systems, Research group: Käyttövarmuuden suunnittelu ja kunnossapito, Research area: Life-cycle Management, Aalto University

Contributors: Mahlamäki, K., Niemi, A., Jokinen, J., Borgman, J.

Number of pages: 8

Pages: 3-10

Publication date: 1 Jan 2016

Peer-reviewed: Yes

#### Publication information

Journal: International Journal of COMADEM

Volume: 19

Issue number: 1

ISSN (Print): 1363-7681

Ratings:

Scopus rating (2016): CiteScore 0.2 SJR 0.128 SNIP 0.163

Original language: English

ASJC Scopus subject areas: Electrical and Electronic Engineering, Industrial and Manufacturing Engineering, Safety, Risk, Reliability and Quality, Bioengineering, Signal Processing, Strategy and Management

Keywords: Asset management, Data quality, Human factors

URLs:

<http://www.scopus.com/inward/record.url?scp=84960940492&partnerID=8YFLogxK> (Link to publication in Scopus)

#### Bibliographical note

INT=mei,"Jokinen, Juuso"

Source: Scopus

Source ID: 84960940492

Research output: Contribution to journal › Article › Scientific › peer-review

### **What is product lifecycle management (PLM) maturity? Analysis of current PLM maturity models**

Product lifecycle management (PLM) implementation and adoption involves extensive changes in both intra- and inter-organizational practices. Various maturity approaches, for instance based on CMM (Capability maturity modeling) principles, can be used to make the implementation of PLM a better approachable and a more carefully planned and coordinated process. However, there are a number of different types of current approaches which can be thought to fall under the concept of PLM maturity. The aim of this paper is to investigate and analyze the various existing PLM maturity approaches to get an organized picture of the current models and their main background presumptions, goals and restrictions. Thus, we aim to facilitate their proper selection and use to facilitate the implementation of PLM.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Information Management and Logistics, Research group: Novi, Lappeeranta University of Technology

Contributors: Kärkkäinen, H., Silventoinen, A.

Number of pages: 8

Pages: 96-103

Publication date: 1 Jan 2016

Peer-reviewed: Yes

#### **Publication information**

Journal: Journal of Modern Project Management

Volume: 3

Issue number: 3

ISSN (Print): 2317-3963

Ratings:

Scopus rating (2016): CiteScore 0.5 SJR 0.333 SNIP 0.217

Original language: English

ASJC Scopus subject areas: Strategy and Management, Management of Technology and Innovation, Business and International Management

Keywords: Comparison, Maturity approaches, Maturity models, Product lifecycle management, State-of-the-art

URLs:

<http://www.scopus.com/inward/record.url?scp=84956607265&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84956607265

Research output: Contribution to journal › Article › Scientific › peer-review

### **Liquid fertilizer products from anaerobic digestion of food waste: Mass, nutrient and energy balance of four digestate liquid treatment systems**

This study compared four different digestate liquid treatment systems of a theoretical anaerobic digestion plant in order to facilitate the utilization of municipal food waste nutrients in agriculture. The mass, nutrient and energy balances of a theoretical plant digesting 60 kt/y of food waste were used to evaluate the feasibility of the treatments to concentrate nutrients into liquid fertilizer products. The studied technologies for digestate liquid treatment were ammonia stripping, ammonia stripping combined with reverse osmosis (RO), evaporation combined with RO, and stripping combined with both evaporation and RO. As a result, processing of digestate into concentrated fertilizer products consumed less than 10% of the produced energy from food wastes and was also sufficient for the heat-demanding digestate liquid treatments, evaporation and stripping. The digestate liquid treatment systems were considered as nitrogen and potassium concentration methods which were able to concentrate up to 67% of the feedstock nitrogen into transportable fertilizer products with low mass. Of the studied digestate systems evaporation combined with RO was evaluated as the most efficient nutrient recovery technology for the production of transportable fertilizer products due to the high concentration of nutrients and nutrient availability as well as low product mass and energy consumption. Overall, the selection of the treatment technology is dependent on the location of the anaerobic digestion plant relative to the agricultural land and the type of fertilizer products needed.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Chemistry and Bioengineering, Research group: Industrial Bioengineering and Applied Organic Chemistry, Natural Resources Institute Finland (Luke)

Contributors: Tampio, E., Marttinen, S., Rintala, J.



Number of pages: 11  
Pages: 22–32  
Publication date: Jul 2016  
Peer-reviewed: Yes

#### **Publication information**

Journal: Journal of Cleaner Production  
Volume: 125  
ISSN (Print): 0959-6526  
Ratings:

Scopus rating (2016): CiteScore 7.4 SJR 1.659 SNIP 2.53

Original language: English

ASJC Scopus subject areas: Industrial and Manufacturing Engineering, Renewable Energy, Sustainability and the Environment, Environmental Science(all), Strategy and Management

Keywords: Anaerobic digestion, Digestate liquid treatment, Evaporation, Food waste, Reverse osmosis, Stripping  
DOIs:

10.1016/j.jclepro.2016.03.127

Source: Scopus

Source ID: 84963538041

Research output: Contribution to journal > Article > Scientific > peer-review

#### **Nordic workplace concept development from office as a city to city as an office**

**Purpose:** The purpose of this paper is to describe, discuss and analyze forerunner cases from three different decades in workplace concept development in Sweden and Finland and discuss the transformation over time to better facilitate management of office development and disseminate Nordic experiences. **Design/methodology/approach:** The reflecting paper is discussing the development of workplace concepts. It is based on case studies collected from 1980s to the new millennium. The reflection is based on the perspective of Nordic culture. The characteristics of the Nordic culture used in the paper are low power distance and individualism. **Findings:** The evolution from “office as a city” to “city as an office” has taken place in both countries and Nordic cultural values have provided fruitful platform for them. However, the layer of organizational culture in the studied workplaces also has an impact on the development and implication of the concepts. **Research limitations/implications:** The selection of case studies is limited to two Nordic countries only. The comparison of all five Nordic countries could increase the understanding of Nordic culture and similarities and differences between the countries. The study could be deepened by a more thorough literature review including not only Nordic but also European cases. **Practical implications:** The dilemma of management when designing workspaces for the changing world is in that individuals increasingly choose where to work, when, with whom and how. Facilitating that freedom of choice is a balancing act in modern workspace design where people is a scarcer resource than space. It requires an active management that sees their facilities as a part of their system not as a costly box top put it in. **Social implications:** Easy access seems to be the key to the workspace of the future when decision power shifts from organizations to individuals. Simultaneously, individuals need to take more and more responsibility and action to get their job done: the cases illustrate how this has been done and that the integration and interaction between office concepts and office work will need to be on business agendas. **Originality/value:** The perspective of Nordic workplace concept development from 1980s provide the material for future development, without an understanding of the past one cannot understand the future.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Chalmers University of Technology

Contributors: Nenonen, S. P., Lindahl, G.

Number of pages: 15

Pages: 302-316

Publication date: 2017

Peer-reviewed: Yes

#### **Publication information**

Journal: Journal of Facilities Management

Volume: 15

Issue number: 3

ISSN (Print): 1472-5967

Ratings:

Scopus rating (2017): CiteScore 1.8 SJR 0.33 SNIP 0.809

Original language: English

ASJC Scopus subject areas: Strategy and Management, Management of Technology and Innovation, Business and International Management

Keywords: Coworking, Culture, Forerunner, Nordic, Workplace concepts, Workplace management

DOIs:

10.1108/JFM-10-2016-0043

Source: Scopus

Source ID: 85023613767

Research output: Contribution to journal › Article › Scientific › peer-review

### **The adoption of green initiatives in logistics service providers-a strategic perspective**

Logistics service providers (LSPs) have started to transform their operations and strategy to be more effective from a green perspective. One concern that is of particular interest of LSPs is how to create organisational green awareness and translate this into practice in their operations. The purpose of this paper is to investigate the roles of green strategic commitment and organisation in LSPs' adoption of green initiatives. The data for this study were collected through a questionnaire survey, investigating a sample of LSPs operating in the Swedish, Finnish and Italian markets. From the literature analysis, a set of testable hypotheses was developed. The results indicate that there are relationships between the nature, as well as the scope, of functional involvement and the green strategic priority. The results further suggest that the inclusion of environmental consideration in the overall business strategy is positively related to the involvement and coordination of multiple functions as well as existence of a separate environmental function.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Business Wellness Center, Centro S3, Linköping University, Aston University

Contributors: Isaksson, K., Evangelista, P., Hüge-Brodin, M., Liimatainen, H., Sweeney, E.

Number of pages: 16

Pages: 349-364

Publication date: 2017

Peer-reviewed: Yes

#### **Publication information**

Journal: International Journal of Business and Systems Research

Volume: 11

Issue number: 4

ISSN (Print): 1751-200X

Ratings:

Scopus rating (2017): CiteScore 0.4 SJR 0.104 SNIP 0.079

Original language: English

ASJC Scopus subject areas: Management Information Systems, Business and International Management, Strategy and Management

Keywords: Environmental sustainability initiatives, Functional involvement, Green strategic priority, Logistics service providers, LSPs, Questionnaire survey.

DOIs:

10.1504/IJBSR.2017.087096

Source: Scopus

Source ID: 85031279182

Research output: Contribution to journal › Article › Scientific › peer-review

### **The impact of workplaces and self-management practices on the productivity of knowledge workers**

**Purpose:** This paper aims to explore the impact of workplaces, which support concentration and communication, and self-management practices on individual and team productivity. The underlying hypothesis is that the impact of these variables on the two levels of productivity (individual and team) and the two dimensions of productivity (quantity and quality) may be different. **Design/methodology/approach:** The paper is based on survey data from 998 Finnish knowledge workers. Factor analysis was used to test the dimensions of the conceptual model. Insights into the impact of workplaces for concentration and communications and self-management practices on productivity were obtained by multiple-regression analyses. **Findings:** The findings show that self-management practices have a larger impact on the quality and quantity of individual output and the quantity of team output than workplaces for communication and concentration. Improving self-management skills is key to increase all productivity dimensions and in particular the quality of the output. **Practical implications:** This paper contributes to a better understanding of the impact of workplace characteristics and self-management practices on different levels and dimensions of productivity. It offers valuable lessons for managers, as they are able to recognize how productivity can be approached from several perspectives. Different dimensions can be enhanced using different workplace settings. For example, the quantitative output of employees can be increased by adding more space for concentration, while quantitative team productivity can be increased by providing appropriate space for collaboration. An important means to enhance a higher quality of the output is to improve self-management skills. The findings also suggest that collaboration between different disciplines – corporate management, corporate real estate management, human resource management and IT – is needed to optimize individual and team productivity. **Originality/value:** This paper explores work environment experiences of Finnish office workers and connects both workplace appraisal and work practices to perceived productivity support, on individual level and team level. It also adds insights into the different impacts on quantity and quality.

### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Industrial and Information Management, Delft University of Technology  
Contributors: Palvalin, M., van der Voordt, T., Jylhä, T.  
Number of pages: 16  
Pages: 423-438  
Publication date: 2017  
Peer-reviewed: Yes

### Publication information

Journal: Journal of Facilities Management  
Volume: 15  
Issue number: 4  
ISSN (Print): 1472-5967  
Ratings:  
Scopus rating (2017): CiteScore 1.8 SJR 0.33 SNIP 0.809  
Original language: English  
ASJC Scopus subject areas: Strategy and Management, Management of Technology and Innovation, Business and International Management  
Keywords: Knowledge workers, Office, Productivity, Self-management, Workplace, Workplace management  
Electronic versions:  
The Impact of Workplaces and Self-management Practices on the Productivity of Knowledge Workers  
DOIs:  
10.1108/JFM-03-2017-0010  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201712012290>  
Source: Scopus  
Source ID: 85029871250  
Research output: [Contribution to journal](#) > [Article](#) > [Scientific](#) > [peer-review](#)

### Towards evidence-based management of external resources: Developing design propositions and future research avenues through research synthesis

The general question of how best to access and leverage resources that reside outside the boundaries of the focal firm has become increasingly important for companies during the last decennia, and scholars across management disciplines have responded with increasing research efforts. However, managers still seldom base their decisions on scientific evidence. Research on managing external resources is carried out in disciplinary silos and it is extremely difficult for managers to make sense of the vast amount of scientific studies. The success story of medicine as the first domain to widely adopt evidence-based practices has been an exemplar for other disciplines such as management to address the prevailing research-practice gap. Through a systematic review and synthesis of 601 articles in six academic journals representing three management disciplines we develop design propositions for supporting evidence-based management of external resources in firms. Our analysis reveals external resource management (ERM) research to be concentrated on six distinct, yet interrelated, themes. We adopt the CIMO-logic (Context, Intervention, Mechanism, Outcomes) for developing the set of design propositions within each of the research themes. A key scientific contribution is our identification of future research opportunities and directions to advance science in the field of ERM.

### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Industrial and Information Management, Aalto University, Chalmers University of Technology, VTT Tech Res Ctr Finland, VTT Technical Research Center Finland  
Contributors: Tanskanen, K., Ahola, T., Aminoff, A., Bragge, J., Kaipia, R., Kauppi, K.  
Number of pages: 19  
Pages: 1087-1105  
Publication date: 2017  
Peer-reviewed: Yes  
Early online date: 16 Apr 2017

### Publication information

Journal: Research Policy  
Volume: 46  
Issue number: 6  
ISSN (Print): 0048-7333  
Ratings:  
Scopus rating (2017): CiteScore 10 SJR 3.688 SNIP 3.351

Original language: English

ASJC Scopus subject areas: Engineering(all), Strategy and Management, Management Science and Operations Research, Management of Technology and Innovation

Keywords: Alliances, Evidence-based management, Interdisciplinarity, Research synthesis, Supply chains

Electronic versions:

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DOIs:

10.1016/j.respol.2017.04.002

URLs:

<http://urn.fi/URN:NBN:fi:tty-201705151396>

URLs:

<http://www.scopus.com/inward/record.url?scp=85017447362&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 85017447362

Research output: Contribution to journal › Article › Scientific › peer-review

### **Knowledge Management for Open Innovation: Comparing Research Results Between SMEs and Large Companies**

Knowledge co-creation and effective knowledge sharing boost innovativeness in companies. However, rapidly developing technologies and constant changes in the business environment challenge the companies' practices for knowledge management (KM). The purpose of this paper is to compare the key KM practices and their effect on open innovation between the small- and medium-sized companies (SMEs) and the large companies, and as empirical focus, comparing them through quantitative survey and complementary qualitative interviews. The results indicate that large companies are more externally open to innovate than SMEs and the large companies also value open dialog and knowledge sharing more. Whereas, SMEs seem to rely more on developing their internal practices to support innovativeness. In the both company sizes technology is used rather poorly to support access to open data and networks. The identified factors provide insights for developing KM practices that support open innovation in varying sizes of companies.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Industrial and Information Management, Research group: Business Ecosystems, Networks and Innovations

Contributors: Väyrynen, H., Helander, N., Vasell, T.

Publication date: 1 Jun 2017

Peer-reviewed: Yes

#### **Publication information**

Journal: International Journal of Innovation Management

Volume: 21

Issue number: 5

Article number: 1740004

ISSN (Print): 1363-9196

Ratings:

Scopus rating (2017): CiteScore 1.3 SJR 0.341 SNIP 0.577

Original language: English

ASJC Scopus subject areas: Business and International Management, Strategy and Management, Management of Technology and Innovation

Keywords: innovation, Knowledge management, large companies, network, openness, small and medium-sized enterprises

DOIs:

10.1142/S1363919617400047

Source: Scopus

Source ID: 85020720005

Research output: Contribution to journal › Article › Scientific › peer-review

### **Business Model Innovation of Startups Developing Multisided Digital Platforms**

Platforms are defined as multisided marketplaces with business models that enable producers and users to create value together by interacting with each other. In recent years, platforms have benefited from the advances of digitalization. Hence, digital platforms continue to triumph, and continue to be attractive for companies, also for startups. In this paper, we first explore the research of platforms compared to digital platforms. We then proceed to analyze digital platforms as business models, in the context of startups looking for business model innovation. Based on interviews conducted at a technology startup event in Finland, we analyzed how 34 startups viewed their business model innovations. Using the 10 sub-constructs from the business model innovation scale by Clauss in 2016, we found out that the idea of business model innovation resonated with startups, as all of them were able to identify the source of their business model innovation. Furthermore, the results indicated the complexity of business model innovation as 79 percent of the respondents

explained it with more than one sub-construct. New technology/equipment, new processes and new customers and markets got the most mentions as sources of business model innovation. Overall, the emphasis at startups is on the value creation innovation, with new proposition innovation getting less, and value capture innovation even less emphasis as the source of business model innovation.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: Business Ecosystems, Networks and Innovations, Industrial and Information Management , VTT Technical Research Centre of Finland

Contributors: Still, K., Seppänen, M., Korhonen, H., Valkokari, K., Suominen, A., Kumpulainen, M.

Number of pages: 6

Pages: 70-75

Publication date: 17 Aug 2017

#### Host publication information

Title of host publication: Proceedings - 2017 IEEE 19th Conference on Business Informatics, CBI 2017

Publisher: IEEE

ISBN (Electronic): 9781538630341

ASJC Scopus subject areas: Strategy and Management, Computer Networks and Communications, Information Systems and Management, Management Science and Operations Research, Modelling and Simulation, Management Information Systems, Organizational Behavior and Human Resource Management

Keywords: Business model, Business model innovation, Digital platforms, Platform, Startups

DOIs:

10.1109/CBI.2017.86

Source: Scopus

Source ID: 85029454278

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Relationships among Civil Engineering Students' Approaches to Learning, Perceptions of the Teaching-Learning Environment, and Study Success

This study examines the relationship among civil engineering students' approaches to learning, their perceptions of the teaching-learning environment, and their study success. The aim was to identify civil engineering students' approaches to learning and how their approaches to learning are related to their perceptions of the learning-teaching environment and their study success. The data of the study consist of the students' answers to a questionnaire (n=215) and their study success data (n=204), which were gathered from their university's study register. The study success data consist of the cumulative study credits and weighted averages of their course grades. The students were classified into four clusters according to their approaches to learning. Differences in their perceptions of the teaching-learning environment and study success between the clusters were statistically significant. Students who belonged to clusters that emphasized the deep approach to learning experienced their teaching-learning environment more positively than did other students. Students who belonged to clusters emphasizing organized studying earned more credits and higher marks in their studies than did other students.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Research group: Digitalization in the real estate and construction sector, Industrial and Information Management, University of Helsinki

Contributors: Salmisto, A., Postareff, L., Nokelainen, P.

Publication date: 1 Oct 2017

Peer-reviewed: Yes

#### Publication information

Journal: Journal of Professional Issues in Engineering Education and Practice

Volume: 143

Issue number: 4

Article number: 04017010

ISSN (Print): 1052-3928

Ratings:

Scopus rating (2017): CiteScore 2.3 SJR 0.456 SNIP 1.301

Original language: English

ASJC Scopus subject areas: Civil and Structural Engineering, Industrial relations, Strategy and Management

Keywords: Approaches to learning, Engineering education, Study success, Teaching-learning environment

DOIs:

10.1061/(ASCE)EI.1943-5541.0000343

Source: Scopus

Source ID: 85023205638

Research output: Contribution to journal › Article › Scientific › peer-review

### **A demand-based nutrient utilization approach to urban biogas plant investment based on regional crop fertilization**

This study aimed to develop a regional nutrient demand-based approach to assess the potential use of digestate nutrients from a planned biogas plant investment as a part of a regional circular economy concept. The assumed biogas plant is expected to treat urban wastes; biowastes (23,500 t/y) and sewage sludges (120,000 t/y) from the Tampere region, Finland (total population of 500,000). The calculation of the regional nutrient balance was based on the fertilizable crop areas, fertilization regimes and biomass nutrient amounts, with an assumption that livestock manures were primarily utilized in crop production. Subsequently, a Geographic Information System (GIS)-based methodology was applied to evaluate the transportation distances of nutrients from the biogas plant to the closest crop fields. As a result from the presented approach, livestock manure covered 41% and 12% of the phosphorus (P) and soluble nitrogen (N) need of the studied region. There was a residual potential for the regional utilization of biogas plant nutrients, which together with the livestock manure accounted for 50% of P and 15% of soluble-N need. Transportation of nutrients up to 40 km from the biogas plant is necessary if all nearby fields receive the waste-based nutrients, while the distance increased to 66 km if 30% of the local farmers are willing to use the nutrients. The approach presented in this study acts as a tool for planning nutrient cycles, which can be used to sustainably manage the regional nutrient flows when planning a new biogas plant investment.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Chemistry and Bioengineering, Natural Resources Institute Finland (Luke)

Contributors: Tampio, E., Lehtonen, E., Kinnunen, V., Mönkäre, T., Ervasti, S., Kettunen, R., Rasi, S., Rintala, J.

Number of pages: 11

Pages: 19-29

Publication date: 15 Oct 2017

Peer-reviewed: Yes

#### **Publication information**

Journal: Journal of Cleaner Production

Volume: 164

ISSN (Print): 0959-6526

Ratings:

Scopus rating (2017): CiteScore 7.7 SJR 1.467 SNIP 2.383

Original language: English

ASJC Scopus subject areas: Renewable Energy, Sustainability and the Environment, Environmental Science(all), Strategy and Management, Industrial and Manufacturing Engineering

Keywords: Biogas plant, Biowaste, Digestate, Livestock manure, Nutrient recycling, Sewage sludge

DOIs:

10.1016/j.jclepro.2017.06.172

#### **Bibliographical note**

EXT="Tampio, Elina"

Source: Scopus

Source ID: 85027488845

Research output: Contribution to journal › Article › Scientific › peer-review

### **Relationships between organisational culture and efficiency in Finnish construction projects**

The construction industry has struggled with efficiency issues for the last two decades, and longer. Organisational culture is identified to contain a lot of potential for developing the industry's effectiveness. This study was conducted in the Finnish construction industry, where 30 case projects were measured for their culture and performance to investigate the presumptive correlation between construction project culture and efficiency. The projects' culture was measured with the Organisational Culture Assessment Instrument. The projects with the highest performance and customer satisfaction levels seemed to identify their project culture stronger than poorer level projects. This is congruent with the academic observations that a strong comprehensive culture supports better efficiency outcomes. The article revealed that construction sites would embrace a Clan typology at the expense of a Market typology to achieve a better level of site efficiency.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, YIT Construction Ltd, YIT Corporation

Contributors: Teräväinen, V., Junnonen, J., Salopää, T., Sobolev, A.  
Publication date: 2018  
Peer-reviewed: Yes

#### Publication information

Journal: International Journal of Construction Management

ISSN (Print): 1562-3599

Ratings:

Scopus rating (2018): CiteScore 2.7 SJR 0.581 SNIP 0.963

Original language: English

ASJC Scopus subject areas: Building and Construction, Strategy and Management, Management of Technology and Innovation

Keywords: construction, efficiency, Finland, OCAI, Organisational culture, performance, quality

DOIs:

10.1080/15623599.2018.1503835

Source: Scopus

Source ID: 85055986652

Research output: Contribution to journal › Article › Scientific › peer-review

#### Towards the encapsulation and decentralisation of OKD-MES services within embedded devices

Traditionally, the resources of embedded devices which are employed for process control at shop floors were resource constrained. However, advances in embedded system technologies permit the enhancement of the processing and storage capabilities of embedded devices. Therefore, semantic descriptions of manufacturing systems can now be hosted and computed at the device level. This fact permits the creation of a decentralised solution for controlling processes at the lowest level of the manufacturing enterprises and the reduction in the time and effort requirements for the configuration and information exchange. The eScop project presented the Open Knowledge-Driven Manufacturing Execution System (OKD-MES) solution, which enables monitoring and controlling production systems openly and allows runtime re-configurability of interconnected industrial equipment and services. This research work presents how part of the OKD-MES functionality can be handled at lower level. More precisely, the OKD-MES representation and management of knowledge can be decentralised and handled at the shop floor level, where the industrial machines are connected to devices that are capable of controlling the execution of processes. The main objective of this paper is to describe a decentralised vision for the OKD-MES framework, which is a centric solution in terms of knowledge management. Moreover, the article also discusses some of the advantages to be gained from decentralising the management of knowledge model semantic descriptions.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Research group: Factory automation systems technology, Automation and Hydraulic Engineering

Contributors: Ramis Ferrer, B., Martinez Lastra, J. L.

Number of pages: 13

Pages: 1286-1298

Publication date: 2018

Peer-reviewed: Yes

Early online date: 13 May 2017

#### Publication information

Journal: International Journal of Production Research

Volume: 56

Issue number: 3

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Ratings:

Scopus rating (2018): CiteScore 6 SJR 1.585 SNIP 1.766

Original language: English

ASJC Scopus subject areas: Strategy and Management, Management Science and Operations Research, Industrial and Manufacturing Engineering

Keywords: cyber-physical systems, decentralised knowledge bases, industrial automation, OKD-MES, service oriented architecture

DOIs:

10.1080/00207543.2017.1328141

URLs:

<http://www.scopus.com/inward/record.url?scp=85019193059&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 85019193059

Research output: Contribution to journal › Article › Scientific › peer-review

### **Business customers' readiness to adopt manufacturer's new services**

**Purpose** – For successful servitization, manufacturing firms must understand how their customers adopt new services. The purpose of this paper is to explore customers' readiness for a manufacturer's new services to complement its goods. The goal is to increase knowledge of the aspects that manufacturers should consider when bringing new kinds of services to market. **Design/methodology/approach** – A qualitative case study design is used to analyze readiness for services and interest in service adoption in three customer firms of a manufacturer. The interview data were collected from 14 persons at customer sites and were content analyzed. **Findings** – The results show that readiness - a concept that is often used in the field of technology - is relevant also for the service adoption process. In a business-to-business context, readiness for service adoption concerns the individual and organizational levels, and hence a new dimension of organizational culture and habits had to be added to the concept that originally focuses on individuals. People consider different factors when making consecutive decisions during the service adoption process and these factors can vary even within a company. The cornerstone for new service adoption is the customer firm's actual need for the service. **Originality/value** – The results offer new knowledge about service adoption in a business-to-business context by taking a customer firm's perspective. They, thus, complement previous studies on the supplier perspective of servitization and service adoption in consumer business. The contributions help manufacturers focus their efforts when bringing new services to market.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Industrial and Information Management, Research group: Center for Research on Operations Projects and Services, Delft University of Technology

Contributors: Vaittinen, E., Martinsuo, M., Ortt, R.

Pages: 52-78

Publication date: Jan 2018

Peer-reviewed: Yes

Early online date: 17 Nov 2017

### **Publication information**

Journal: Journal of Service Theory and Practice

Volume: 28

Issue number: 1

ISSN (Print): 2055-6225

Ratings:

Scopus rating (2018): CiteScore 3.8 SJR 0.807 SNIP 0.944

Original language: English

ASJC Scopus subject areas: Strategy and Management

Keywords: B2B, Service acceptance, Service adoption process, Service readiness, Servitization, Technology readiness

Electronic versions:

Business customer's readiness to adopt manufacturer's new services

DOIs:

10.1108/JSTP-03-2017-0053

URLs:

<http://urn.fi/URN:NBN:fi:ty-201712142362>

Source: Scopus

Source ID: 85034582841

Research output: Contribution to journal › Article › Scientific › peer-review

### **Backshoring of production in the context of a small and open Nordic economy**

**Purpose** – The purpose of this paper is to investigate the extent, drivers, and conditions underlying backshoring in the Finnish manufacturing industry, comparing the results to the wider ongoing relocation of production in the international context. **Design/methodology/approach** – The survey of 229 Finnish manufacturing firms reveals the background, drivers, and patterns of offshoring and backshoring. **Findings** – Companies that had transferred their production back to Finland were more commonly in industries with relatively higher technology intensity and they were typically larger than the no-movement companies, and with a higher number of plants. They also reported more commonly having a corporate-wide strategy for guiding production location decisions. **Research limitations/implications** – Backshoring activity in the small and open economy of Finland seems to be higher compared to earlier studies in larger countries. The findings suggest that there is a transformation in the manufacturing industries with some gradual replacement of labor-intensive and lower technology-intensive industries toward higher technology-intensive industries. **Practical implications** – Moving production across national borders is one option in the strategies of firms to stay competitive. Companies must carefully consider the relevance of various decision-making drivers when determining strategies for their production networks. **Social implications** – Manufacturing industries have traditionally been important for employment in the relatively small and open economies of the Nordic countries. From the social perspective, it is important to understand the ongoing transformation and its implications. **Originality/value** – There are few empirical studies available of the ongoing backshoring movement, utilizing data from company decision makers instead of macroeconomic factors.



### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Industrial and Information Management, Research group: Center for Research on Operations Projects and Services

Contributors: Heikkilä, J., Martinsuo, M., Nenonen, S.

Number of pages: 19

Pages: 658-675

Publication date: May 2018

Peer-reviewed: Yes

Early online date: 27 Nov 2017

### Publication information

Journal: Journal of Manufacturing Technology Management

Volume: 29

Issue number: 4

ISSN (Print): 1741-038X

Ratings:

Scopus rating (2018): CiteScore 4.8 SJR 0.954 SNIP 1.393

Original language: English

ASJC Scopus subject areas: Software, Control and Systems Engineering, Computer Science Applications, Strategy and Management, Industrial and Manufacturing Engineering

Keywords: Manufacturing, Manufacturing strategy, Production

DOIs:

10.1108/JMTM-12-2016-0178

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<http://www.scopus.com/inward/record.url?scp=85039840754&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 85039840754

Research output: Contribution to journal > Article > Scientific > peer-review

### Allocating human resources to projects and services in dynamic project environments

Purpose: Resource allocation is challenged by dynamic environments where changes are frequent. The purpose of this paper is to identify resource allocation challenges and practices in service units that perform both project and non-project activities in dynamic environments. Its goal is to show that top-down mechanisms of project resource allocation need to be replaced by or supplemented with mechanisms that are more flexible. Design/methodology/approach: A qualitative comparative case study was conducted in two service units of two project-based firms. The main source of data consisted of semi-structured interviews with 17 service managers and staff members. Findings: This study shows that resource allocation is not necessarily a top-down process at all, and the practices are context-dependent. Two more flexible approaches are revealed – hybrid resource allocation and bottom-up resource allocation – as examples of managing resource allocation in service units that engage in projects under uncertain conditions. The results of the analysis highlight prioritisation and adapting to change and delay as the main issues that managers face in allocating resources to different types of projects and service activities in dynamic environments. Research limitations/implications: The two target companies chosen for the qualitative research design limit the analysis to project-based firms in a business-to-business context. Further, the viewpoint of the service unit is central to the study. Studying project resource allocation in different organisational contexts and uncovering the perspectives of product development and delivery units would offer promising directions for future research. Practical implications: The study reveals that in dynamic project settings such as service organisations, top-down mechanisms of resource allocation need to be accompanied by other, more flexible approaches to ensure the sufficient resourcing of projects and related services in dynamic environments. Companies need to establish practices for resource allocation changes that are caused by re-prioritising tasks and accommodating changes and delays in their project and service activities. Originality/value: Compared to a top-down perspective taken in previous research, the study proposes a more flexible approach for resource allocation in constantly changing environments with different project and service activities. Previous studies have focussed on resource competition between projects, placing project managers in the central role for resource allocation. By contrast, this study discusses hybrid and bottom-up resource allocation, both of which involve broader personnel engagement in resource allocation tasks, drawing on the experience of all employees.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Industrial and Information Management, Research group: Center for Research on Operations Projects and Services

Contributors: Momeni, K., Martinsuo, M. M.

Number of pages: 21

Pages: 486-506

Publication date: Jun 2018  
Peer-reviewed: Yes  
Early online date: 19 Apr 2018

#### **Publication information**

Journal: International Journal of Managing Projects in Business

Volume: 11

Issue number: 2

ISSN (Print): 1753-8378

Ratings:

Scopus rating (2018): CiteScore 2.5 SJR 0.702 SNIP 0.944

Original language: English

ASJC Scopus subject areas: Business and International Management, Strategy and Management, Management of Technology and Innovation

Keywords: Activities, Contingency view, Project-based firms, Resource allocation, Services, Uncertainty

Electronic versions:

Allocating human resources to projects and services in dynamic project environments

DOIs:

10.1108/IJMPB-07-2017-0074

URLs:

<http://urn.fi/URN:NBN:fi:tuni-201912036512>

Source: Scopus

Source ID: 85045448614

Research output: Contribution to journal > Article > Scientific > peer-review

#### **Understanding the complexity of mobility as a service**

##### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Research group: Transport Research Centre Verne, Civil Engineering, Aalto University

Contributors: Liimatainen, H., Mladenović, M. N.

Pages: 1-2

Publication date: Jun 2018

Peer-reviewed: Yes

##### **Publication information**

Journal: Research in Transportation Business and Management

Volume: 27

ISSN (Print): 2210-5395

Ratings:

Scopus rating (2018): CiteScore 4.4 SJR 0.902 SNIP 1.308

Original language: English

ASJC Scopus subject areas: Decision Sciences(all), Business and International Management, Transportation, Economics, Econometrics and Finance (miscellaneous), Tourism, Leisure and Hospitality Management, Strategy and Management, Management Science and Operations Research

DOIs:

10.1016/j.rtbm.2018.12.004

Source: Scopus

Source ID: 85059062273

Research output: Contribution to journal > Article > Scientific > peer-review

#### **Social capital characteristics in RD project networks**

Network research has multiple approaches that offer knowledge related to multiple network types. This article identifies and discusses social capital characteristics in the context of government-funded RD project networks. Previous literature on this context has typically focused on collaboration between universities and firms while our interest is solely on interfirm relationships. Secondly, the previous literature on interfirm collaboration concerns typically other types of networks such as strategic alliances. We argue, that to understand the dynamics of inter firm collaboration in RD project networks, the research needs to be conducted in coherent environment. Data for this qualitative research was collected by interviewing 18 firm representatives who had experience on participating government-funded RD projects. We recognized social capital characteristics in RD projects and organized these findings under structural, cognitive and relational dimensions of social capital. Results indicate that project networks' social capital characteristics differ in many parts from strategic alliances and thus support our argument. The results can be exploited by project coordinators, innovation officers and project network members to facilitate the interfirm collaboration in RD project networks.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Mechanical Engineering and Industrial Systems, Research area: Manufacturing and Automation

Contributors: Majuri, M., Lanz, M.

Publication date: 4 Oct 2018

### Host publication information

Title of host publication: 2018 Portland International Conference on Management of Engineering and Technology (PICMET)

Publisher: IEEE

Article number: 8481775

ISBN (Electronic): 9781890843373

ASJC Scopus subject areas: Strategy and Management, Communication, Engineering (miscellaneous), Management of Technology and Innovation, Organizational Behavior and Human Resource Management, Computer Networks and Communications, Decision Sciences (miscellaneous)

DOIs:

10.23919/PICMET.2018.8481775

### Bibliographical note

jufoid=9093

Source: Scopus

Source ID: 85056486979

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Creating value in the circular economy: A structured multiple-case analysis of business models

The circular economy (CE) has gained traction as a pathway towards more sustainable economic growth. The main actions leading towards a CE have been identified as the 3R principles of reduce, reuse, and recycle. However, understanding is lacking regarding how the adoption of CE using the 3R principles generates value and revenue in a business context. Thus, this study structurally examines business models used by CE-driven firms utilizing the fundamental business model components of value proposition, value creation/delivery, and value capture. By developing a detailed framework of business model components, acknowledging the particular features of CE implementation, and conducting a multiple-case study combining the business model approach with the 3R principles, this study analyzes feasible CE business models from multiple industries in Europe, the US, and China. The following five research propositions are derived from the findings of the explorative case analysis: 1) the cost-efficiency of circular operations is the key proponent to successful CE business, 2) take-back services enable the acquisition of particular wastes as resources, but they need to be incentivized through reductions in customers' total waste management costs, 3) circular business models require the focal firm to separately manage multiple positions in the value chain, 4) the take-back system for gaining value through CE can be implemented successfully in multiple ways, and 5) recycling is easier to implement than reducing or reusing due to a smaller impact on the business. These propositions contribute to the circular business model literature by showing how economic value is generated by CE initiatives and providing foundations for theory-testing future research. The propositions also provide guidance for policymakers and managers on supporting and implementing circular business.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Industrial and Information Management, Research group: Center for Innovation and Technology Research

Contributors: Ranta, V., Aarikka-Stenroos, L., Mäkinen, S. J.

Number of pages: 13

Pages: 988-1000

Publication date: 10 Nov 2018

Peer-reviewed: Yes

### Publication information

Journal: Journal of Cleaner Production

Volume: 201

ISSN (Print): 0959-6526

Ratings:

Scopus rating (2018): CiteScore 8.7 SJR 1.62 SNIP 2.317

Original language: English

ASJC Scopus subject areas: Renewable Energy, Sustainability and the Environment, Environmental Science(all), Strategy and Management, Industrial and Manufacturing Engineering

Keywords: 3R principles, Business model, Circular economy, Value capture, Value creation, Value proposition

DOIs:

10.1016/j.jclepro.2018.08.072

Source: Scopus

Source ID: 85053080716

Research output: Contribution to journal › Article › Scientific › peer-review

### **Promoting project team coordination in repetitive projects**

Interdependencies within and between project teams and changes occurring throughout a project's lifecycle create a need for project team coordination. The existing research on project team coordination has mostly focused on large or innovative projects. In addition, the existing research has focused mostly on the ways project team coordination takes place in different projects, with less focus on how beneficial circumstances for coordination are created or promoted. This study contributes to these knowledge gaps by studying how a standardized project management methodology introduced by a parent organization can promote project team coordination in repetitive projects. An embedded single-case study design with qualitative interview-based data collection was followed. The case firm introduced a management framework in its service centers to promote project team coordination in repetitive maintenance projects. The interviewees perceived improvements in communication, visibility of project and portfolio status information, and information sharing. The improvements were enabled by two coordination mechanisms of the management framework: regular meetings and visual whiteboards. The perceived improvements were considered beneficial for project team coordination, both within and between project teams.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Industrial Engineering and Management, Research group: Center for Research on Project and Service Business (CROPS)

Contributors: Vuorinen, L., Martinsuo, M.

Number of pages: 16

Pages: 162-177

Publication date: 2019

Peer-reviewed: Yes

### **Publication information**

Journal: Journal of Modern Project Management

Volume: 7

Issue number: 1

ISSN (Print): 2317-3963

Ratings:

Scopus rating (2019): CiteScore 0.7 SJR 0.179 SNIP 0.305

Original language: English

ASJC Scopus subject areas: Business and International Management, Strategy and Management, Management of Technology and Innovation

Keywords: Coordination, Maintenance projects, Repetitive projects

DOIs:

10.19255/JMPM01910

Source: Scopus

Source ID: 85072396412

Research output: Contribution to journal › Article › Scientific › peer-review

### **The Gamification of Work: Lessons From Crowdsourcing**

The nature of work and management are in flux; work is increasingly distributed, sporadic, community-driven, and motivated by constant self-development. Developments such as sharing economies, crowdfunding, and crowdsourcing have emerged as new forms of organizing work and economic coordination. At the same time, increased gaming and gamification of our lives have arrived to address this newly found yearning for intrinsically motivated work. Thus, work is increasingly consciously and unconsciously gamified. Crowdsourcing is a frontrunner management domain in employing gamification to positively affect motivation and performance of workers. However, to be able to harness the full potential of gamification, a union of knowledge of interwoven areas of game design, motivational psychology and management is needed. Therefore, in this article, based on the accumulated body of research on gamification in crowdsourcing, we discuss the emerging opportunities and challenges of using gamification in management.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Pervasive Computing, Karlsruhe Institute of Technology, Gamification Group, University of Turku, Gamification Group

Contributors: Morschheuser, B., Hamari, J.

Publication date: 2019  
Peer-reviewed: Yes  
Early online date: 2018

### Publication information

Journal: Journal of Management Inquiry

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ISSN (Print): 1056-4926

Ratings:

Scopus rating (2019): CiteScore 3.7 SJR 1.324 SNIP 1.546

Original language: English

ASJC Scopus subject areas: Business, Management and Accounting(all), Strategy and Management, Management of Technology and Innovation

Keywords: crowdsourcing, gamification, human computation, human resource, motivation, participation, work  
DOIs:

10.1177/1056492618790921

Source: Scopus

Source ID: 85052601769

Research output: Contribution to journal > Article > Scientific > peer-review

### Lifecycle view of managing different changes in projects

Purpose: A project contractor can promote the success of a delivery project by planning the project well and following a project management methodology (PMM). However, various changes typically take place, requiring changes to the project plan and actions that deviate from the firm's established PMM. The purpose of this paper is to explore different types of changes and change management activities over the lifecycle of delivery projects. Design/methodology/approach: A qualitative single case study design was used. In total, 17 semi-structured interviews were carried out during a delivery project in a medium-sized engineering company that delivers complex systems to industrial customers. Findings: Both plan-related changes and deviations from the PMM were mapped throughout the project lifecycle. Various internal and external sources of change were identified. An illustrative example of the interconnectedness of the changes reveals the potential escalation of changes over the project lifecycle. Managers and project personnel engage in different change management activities and improvisation to create alternative paths, re-plan, catch up, and optimize project performance after changes. Research limitations/implications: The empirical study is limited to a single case study setting and a single industry. The findings draw attention to the interconnectedness and potential escalation effect of changes over the lifecycle of the project, and the need for integrated change management and improvisation actions. Practical implications: Efficient change management and improvisation at the early phase of a delivery project can potentially mitigate negative change incidents in later project phases. Changes are not only the project manager's concern; project personnel's skilled change responses are also helpful. The findings emphasize the importance of the project customer as a source of changes in delivery projects, meaning that customer relationship management throughout the project lifecycle is needed for successful change management. Originality/value: The study offers increased understanding of changes and change management throughout the project lifecycle. The results show evidence of plan-related and methodology-related changes and their interconnections, thereby proposing a lifecycle view of integrated change management and improvisation in projects.

### General information

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MoE publication type: A1 Journal article-refereed

Organisations: Research group: Center for Research on Project and Service Business (CROPS), Industrial and Information Management, Research group: Center for Research on Operations Projects and Services

Contributors: Vuorinen, L., Martinsuo, M. M.

Pages: 120-143

Publication date: May 2019

Peer-reviewed: Yes

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ISSN (Print): 1753-8378

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Scopus rating (2019): CiteScore 3.2 SJR 0.835 SNIP 1.419

Original language: English

ASJC Scopus subject areas: Business and International Management, Strategy and Management

Keywords: Change management, Improvisation

Electronic versions:

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DOIs:

10.1108/IJMPB-11-2017-0135

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202001271576>

Source: Scopus

Source ID: 85049600067

Research output: [Contribution to journal](#) › [Article](#) › [Scientific](#) › [peer-review](#)

### **Societal impact as Cost-Benefit Analysis: Comparative analysis of two research infrastructures**

The impact of basic science projects is more difficult to assess than that of science projects, which lead to direct applications. Especially, the benefits of fundamental science projects are less obvious and indirect than applied science (e.g. pharmaceutical or IT). Pure scientific quality does not tell anything about the societal and economical value of the project. Public resources used for funding the growing scientific research face scarcity, and choosing where to distribute the limited resources is difficult without tools to assess the impacts. Politicians and other decision makers are struggling to evaluate the benefits of supporting science projects. Therefore, it is essential to find methods to fairly measure the impacts of science projects into the surrounding society. One way of assessing societal impact is Cost-Benefit Analysis (CBA). This contribution explores CBA as a tool for societal impact assessment by reviewing and comparing two research infrastructures' assessments.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial Engineering and Management, Research group: Center for Innovation and Technology Research , European Organization for Nuclear Research

Contributors: Magazinik, A., Bedolla, J. S., Lasheras, N. C., Mäkinen, S.

Publication date: 1 Jun 2019

#### **Host publication information**

Title of host publication: 2019 IEEE International Conference on Engineering, Technology and Innovation, ICE/ITMC 2019

Publisher: IEEE

ISBN (Electronic): 9781728134017

ASJC Scopus subject areas: Industrial and Manufacturing Engineering, Management of Technology and Innovation, Strategy and Management, Civil and Structural Engineering, Health Informatics, Health(social science), Computer Networks and Communications, Information Systems and Management

Keywords: Big Science Centre, research organisation, social impact assessment, societal impact assessment

DOIs:

10.1109/ICE.2019.8792600

Research output: [Chapter in Book/Report/Conference proceeding](#) › [Conference contribution](#) › [Scientific](#) › [peer-review](#)

### **Towards a circular economy by leveraging hazardous resources: A case study of Fortum HorsePower**

The increasingly efficient use of scarce resources is a central theme in the gradual transition towards a circular economy. Hazardous materials represent a category of resources that is often difficult—and potentially risky—to transport, store, or neutralize. As a result, hazardous materials are rarely included in closed material loops. The present paper analyzes HorsePower, a business concept centered around an innovative way of utilizing horse manure. Horse manure is generated in millions of tons in horse-rich countries such as the UK, Germany, and France. It is a hazardous resource, as it may spread diseases, and cannot be disposed of or landfilled economically. The content analysis of 21 semi-structured interviews carried out with different business actors participating in the HorsePower business network reveals that the success of HorsePower stems from its ability to combine the complementary capabilities and material needs of a relatively complex network of business actors including stables, sawmills, logistical service providers, and heat and power plants. Each actor receives added value; the benefits from participation are greater than the sacrifices of participation. Furthermore, the findings show that certain types of hazardous resources, when combined with resources produced by another actor, may be burned efficiently and safely in specific power plants, reducing the need for other types of fuel. The observations imply that novel approaches for effectively sharing ideas and resource needs across organizational boundaries are needed to facilitate the development of additional innovative CE business concepts, leveraging both actor-specific capabilities and intra-actor resource dependencies.

#### **General information**

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MoE publication type: A1 Journal article-refereed

Organisations: Industrial Engineering and Management, Research group: Center for Research on Operations Projects and Services, Research group: Center for Research on Project and Service Business (CROPS), Lappeenranta University of Technology

Contributors: Tura, N., Ahola, T.  
Number of pages: 9  
Pages: 518-526  
Publication date: 1 Sep 2019  
Peer-reviewed: Yes

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Volume: 230

ISSN (Print): 0959-6526

Ratings:

Scopus rating (2019): CiteScore 10.9 SJR 1.886 SNIP 2.394

Original language: English

ASJC Scopus subject areas: Renewable Energy, Sustainability and the Environment, Environmental Science(all), Strategy and Management, Industrial and Manufacturing Engineering

Keywords: Business models, Business networks, Circular economy, Hazardous resources, Value creation

DOIs:

10.1016/j.jclepro.2019.05.121

Source: Scopus

Source ID: 85066124307

Research output: Contribution to journal › Article › Scientific › peer-review

#### **Creation processes for radical manufacturing technology innovations**

**Purpose:** This paper empirically investigates the processes by which manufacturing firms create radical innovations in their core production process, referred to as radical manufacturing technology innovations (RMTI). The purpose of this paper is to improve the understanding of the processes and practices manufacturing firms use to create RMTI.

**Design/methodology/approach:** Creation processes for 23 RMTI projects from diverse industry and technology contexts are explored. Data were collected via semi-structured interviews, and an inductive analysis was carried out to identify similarities and differences in RMTI types and creation processes.

**Findings:** Three types of RMTI and three alternative RMTI creation processes are revealed and characterized. An integrated view is developed of the activities of the equipment supplier and the manufacturing firm, highlighting their different roles and interaction across the three RMTI creation process types. **Research limitations/implications:** The exploratory design limits the depth of the analysis per RMTI project, and the focus is on manufacturing technology innovations in one country. The results extend previous case and context-specific findings on RMTI creation processes and provide novel frameworks for cross-case comparisons. **Practical implications:** The manufacturing firms' proactive role in RMTI creation is defined. A framework is proposed for using different RMTI creation processes for different types of RMTI. **Originality/value:** This study addresses recent calls for empirical research on understanding the ways in which process innovations unfold in manufacturing firms. The findings emphasize the role of manufacturing firms as creators of RMTI in addition to their role as innovation adopters and implementers and reveal the suitability of different RMTI creation processes for different RMTI types.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Industrial Engineering and Management, Research group: Center for Research on Project and Service Business (CROPS)

Contributors: Chaoji, P., Martinsuo, M.

Number of pages: 29

Pages: 1005-1033

Publication date: Oct 2019

Peer-reviewed: Yes

#### **Publication information**

Journal: Journal of Manufacturing Technology Management

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ISSN (Print): 1741-038X

Ratings:

Scopus rating (2019): CiteScore 6.1 SJR 1.173 SNIP 1.727

Original language: English

ASJC Scopus subject areas: Strategy and Management, Industrial and Manufacturing Engineering

Keywords: Creation processes in firms, Manufacturing technology, Radical process innovation, Technological innovation

Electronic versions:

Creation processes for radical manufacturing 2019

DOIs:

10.1108/JMTM-08-2018-0233

URLs:

<http://urn.fi/URN:NBN:fi:tyy-201907081948>

Source: Scopus

Source ID: 85067889523

Research output: Contribution to journal › Article › Scientific › peer-review

### **Evolving customer expectations of hospitality services: Differences in attribute effects on satisfaction and Re-Patronage**

Survey-based research on hotel re-patronage is based largely on hotel customer satisfaction measurements and stated re-visit intentions. Less is known about actual re-patronage and evolving traveler preferences in re-visit situations. Online reviews enable longitudinal analyses of individual travelers' hotel assessments. Scrutinizing accommodation experiences manifested in half a million online customer reviews, spanning well above 10 years, this study investigated factors in consumers' satisfaction and repeat patronage for different times of visiting the same hotel. The study found robust evidence as to how consumers' service evaluations change with repeated visits. Specifically, room quality becomes less important in shaping consumer satisfaction, while re-patronage decisions come to emphasize the quality of service. Hotel location, to which consumers accord minimal weight when assessing their overall hotel satisfaction, was identified as an important determining factor for re-patronage. The patterns revealed in evolving consumer assessments point to new insights for improving hotel offers.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Information and Knowledge Management, Centre for Structural Systems Biology, Xingzhi College Zhejiang Normal University, Aalto University, Sievo OY

Contributors: Hu, F., Teichert, T., Liu, Y., Li, H., Gundyreva, E.

Number of pages: 13

Pages: 345-357

Publication date: 1 Oct 2019

Peer-reviewed: Yes

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ISSN (Print): 0261-5177

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Scopus rating (2019): CiteScore 12.8 SJR 3.068 SNIP 3.782

Original language: English

ASJC Scopus subject areas: Development, Transportation, Tourism, Leisure and Hospitality Management, Strategy and Management

Keywords: Big data, Evolving demands, Post-acceptance model, Re-patronage, Times of visit

DOIs:

10.1016/j.tourman.2019.04.010

Source: Scopus

Source ID: 85064617902

Research output: Contribution to journal › Article › Scientific › peer-review

### **Acid and ferric sulfate bioleaching of uranium ores: A review**

This review examines the acid and ferric sulfate bioleaching of uranium from low grade ores. The review traces back the progression of the technology from the time the role of microorganisms was recognized in the 1950's and 1960's. Some past and present uranium mining operations with active or potential microbial contribution are summarized. Experimental techniques and laboratory bioleaching experiments are described. Choice microorganisms have been iron- and sulfur-oxidizing acidophiles, comprising bacteria and archaea with mesophilic and thermophilic temperature ranges. Uranium is bioleached from ores in acidic ferric sulfate lixiviant. Ferric iron oxidizes tetravalent uranium to the hexavalent form and is thereby reduced to ferrous iron in this redox reaction. Microorganisms in the bioleaching process oxidize ferrous iron to the ferric form and thus regenerate ferric sulfate. Iron oxidation requires oxygen as the electron acceptor in the leach solution. Acidity ensures that ferric iron is soluble in the lixiviant and protons increase the solubilization of the oxidized, hexavalent uranium. Ancillary sulfide minerals such as pyrite enhance the bioleaching because their oxidation releases ferrous iron and reduced sulfur compounds for biological ferric iron and sulfuric acid generation. The main mining engineering approaches used for uranium leaching are heap, dump, stope, in situ, and in-place leaching. The efficiency of uranium bioleaching is affected by a number of mineralogical, physicochemical, microbial and process factors. Bioinformatics and synthetic biology are progressing the research on bioleaching microorganisms but these developments have not been materialized in the industrial practice of uranium mining. New applications of uranium bioleaching may focus increasingly on deposits where other products such as rare earth elements or base metals can be recovered in addition to uranium.

#### **General information**



Publication status: Published  
MoE publication type: A2 Review article in a scientific journal  
Organisations: Materials Science and Environmental Engineering, CSIRO Land and Water, University of Western Australia, Ohio State University  
Contributors: Kaksonen, A. H., Lakaniemi, A., Tuovinen, O. H.  
Number of pages: 25  
Publication date: 2020  
Peer-reviewed: Yes

#### **Publication information**

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Article number: 121586  
ISSN (Print): 0959-6526  
Original language: English  
ASJC Scopus subject areas: Renewable Energy, Sustainability and the Environment, Environmental Science(all), Strategy and Management, Industrial and Manufacturing Engineering  
Keywords: Acidophilic microorganisms, Bioleaching, Iron oxidation, Sulfur oxidation, Uranium mining  
DOIs:  
10.1016/j.jclepro.2020.121586

#### **Bibliographical note**

EXT="Kaksonen, Anna H."  
EXT="Tuovinen, Olli H."  
Source: Scopus  
Source ID: 85084258453  
Research output: Contribution to journal > Review Article > Scientific > peer-review

#### **Getting the best solution from a supplier: A social capital perspective**

Due to the current shift towards solution provision in many industrial markets, buyers are under increasing pressure to develop sourcing strategies to procure custom solutions for their firm in order to achieve competitive advantage. The question arises as to how buyers can ensure they get the best solutions from their suppliers and whether social capital can be applied to improve solution provision processes and value creation. Existing empirical research, however, has paid only little attention to the antecedents of suppliers' solution provision performance, i.e., their capability to diagnose buyer needs and to design and implement solutions to meet them. We tested how social capital dimensions (relational, cognitive, and structural) relate to solution provision. The study uses empirical data obtained from a survey of 475 suppliers representing both manufacturing and service industries. Partial least squares (PLS) structural equation modeling (SEM) and polynomial regression were used to analyze the data. The results demonstrate that the availability of social capital in a buyer-supplier relationship is a relevant antecedent to successful solution provision activities. However, the different dimensions of social capital are found to compensate for each other to some extent. Our study further demonstrates that solution provision is not a monolithic activity but can better be understood as a multi-phase process (diagnosis, solution design, and implementation). Different aspects of social capital may have a different impact depending on the phase of solution provision. The successful diagnosis of buyer needs mediates the effect of social capital on solution design and implementation. It is also found that production characteristics of a buyer and the type of a supplier solution affect the role of social capital in solution provision process.

#### **General information**

Publication status: E-pub ahead of print  
MoE publication type: A1 Journal article-refereed  
Organisations: Industrial Engineering and Management, Research group: Operations and Supply Chain Group (OSCG), Research group: Center for Innovation and Technology Research, University of Twente  
Contributors: Jääskeläinen, A., Schiele, H., Aarikka-Stenroos, L.  
Number of pages: 17  
Publication date: 2020  
Peer-reviewed: Yes

#### **Publication information**

Journal: Journal of Purchasing and Supply Management  
Article number: 100648  
ISSN (Print): 1478-4092  
Original language: English  
ASJC Scopus subject areas: Strategy and Management, Marketing  
Keywords: Polynomial regression, Purchasing, Social capital, Solution provision, Supplier capability, Value creation  
DOIs:  
10.1016/j.pursup.2020.100648

Source: Scopus

Source ID: 85089602038

Research output: Contribution to journal › Article › Scientific › peer-review

### **Mapping the types of business experimentation in creating sustainable value: A case study of cleantech start-ups**

In this study, business experimentation for sustainable value creation is explored through seven cleantech start-ups by applying the systemic combining approach. The findings reveal novel descriptions of six different business experimentation types. The study also advances our theoretical understanding of how the specific roles of learning, signaling, and convincing dominate each of the experimentation types differently and how each type of business experimentation has a distinct purpose. Furthermore, our findings propose how business experimentation types can be applied as a continuum as part of the cleantech start-ups' sustainable value creation process. Hence, our study contributes theoretically to our understanding of business experimentation for sustainable value creation and how the different types are applied in cleantech start-ups. We conclude our treatise with managerial implications and outline fruitful future research avenues.

#### **General information**

Publication status: E-pub ahead of print

MoE publication type: A1 Journal article-refereed

Organisations: Industrial Engineering and Management, Research group: Center for Innovation and Technology Research , Aarhus Universitet, Jönköping International Business School

Contributors: Aagaard, A., Saari, U. A., Mäkinen, S. J.

Number of pages: 12

Publication date: 2020

Peer-reviewed: Yes

#### **Publication information**

Journal: Journal of Cleaner Production

Volume: 279

Article number: 123182

ISSN (Print): 0959-6526

Original language: English

ASJC Scopus subject areas: Renewable Energy, Sustainability and the Environment, Environmental Science(all), Strategy and Management, Industrial and Manufacturing Engineering

Keywords: Business experimentation, Cleantech, Start-up, Sustainable entrepreneurship, Sustainable value creation

DOIs:

10.1016/j.jclepro.2020.123182

#### **Bibliographical note**

EXT="Saari, Ulla A."

Source: Scopus

Source ID: 85089808603

Research output: Contribution to journal › Article › Scientific › peer-review

### **Optional and necessary activities: Operationalising Jan Gehl's analysis of urban space with Foursquare data**

The paper presents a method to operationalise Jan Gehl's categorisation of dweller's activity patterns in public space using Foursquare data. The 'Urban Activity Wheel' method is instrumental in showing how location based social media data is beneficial to understand the distribution and variety of contemporary activity patterns. Re-organising both location-based social media data and statistical sources, unearths emerging activity patterns across scales from local to regional city making. Urban Activity Wheel shifts focus from the traditional functional analysis of urban space towards understanding activities and, thus, the human perspective of use, practices and new agencies. A specific analysis, the Shannon-Wiener Index of the complexity implemented on urban activities, gives further hints about the experiential qualities and development opportunities of urban spaces and neighbourhoods.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Architecture, Research group: Urban Planning and Design, HafenCity University Hamburg

Contributors: Cerrone, D., Baeza, J. L., Lehtovuori, P.

Number of pages: 12

Pages: 68-79

Publication date: 2020

Peer-reviewed: Yes

#### **Publication information**

Journal: International Journal of Knowledge-Based Development

Volume: 11  
Issue number: 1  
ISSN (Print): 2040-4476  
Original language: English  
ASJC Scopus subject areas: Strategy and Management, Information Systems and Management, Management of Technology and Innovation  
Keywords: Activities, Foursquare, Geographic information systems, Instagram, Jan Gehl, Public space, Shannon-Wiener, Social media, Stakeholder participation, Urban analytics  
DOIs:  
10.1504/IJKBD.2020.106836  
Source: Scopus  
Source ID: 85084307497  
Research output: Contribution to journal › Article › Scientific › peer-review

### **Project Is as Project Does: Emerging Microactivities and Play Ontology**

The purpose of the article is to further develop the processual approach in project management theorizing. The article introduces Gadamer's (2004) play ontology as a novel perspective used to describe microactivities in a project environment. Play ontology refers to the back-and-forth movements of seemingly mundane microactivities as they unfold during a project. The findings of the study suggest that sensitivity to the microactivities allows considering dissonant or indecisive events as vital and constructive project elements. Play ontology offers new ways for conceptualizing a project as a process: as something that emerges through practical activities as a dynamic and complex phenomenon.

#### **General information**

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Civil Engineering, Tampere University  
Contributors: Salovaara, P., Savolainen, J., Ropo, A.  
Publication date: 2020  
Peer-reviewed: Yes

#### **Publication information**

Journal: Project Management Journal  
Volume: 51  
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ISSN (Print): 8756-9728  
Original language: English  
ASJC Scopus subject areas: Business and International Management, Strategy and Management, Management of Technology and Innovation  
Keywords: construction project, emerging microactivities, play ontology, process ontology, project-as-practice, vibrant movements  
DOIs:  
10.1177/8756972819894101

#### **Bibliographical note**

dupl=51710068  
Source: Scopus  
Source ID: 85078606574  
Research output: Contribution to journal › Article › Scientific › peer-review

### **The Management of Values in Project Business: Adjusting Beliefs to Transform Project Practices and Outcomes**

Project value is an important topic of debate in project studies, and previous research has identified challenges in value management. This article reveals the challenges of subjectivity, dynamics, and tensions stemming from multistakeholder involvement and competing values over the project life cycle. This research seeks solutions to the management of values by exploring values as beliefs to supplement their treatment as worth. Management of values is portrayed as an exercise in sensemaking, negotiation, and co-creation when adjusting beliefs to transform project practices and outcomes. A research agenda is proposed to cover the social and behavioral aspects of values in project studies.

#### **General information**

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Industrial Engineering and Management, Research group: Center for Research on Project and Service Business (CROPS)  
Contributors: Martinsuo, M.  
Number of pages: 11

Pages: 389–399  
Publication date: Jun 2020  
Peer-reviewed: Yes

#### **Publication information**

Journal: Project Management Journal  
Volume: 51  
Issue number: 4  
ISSN (Print): 8756-9728  
Original language: English  
ASJC Scopus subject areas: Business and International Management, Strategy and Management, Management of Technology and Innovation  
Keywords: belief, project value, value management, values, worth  
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DOIs:  
10.1177/8756972820927890  
URLs:  
<http://urn.fi/URN:NBN:fi:tuni-202008076409>  
Source: Scopus  
Source ID: 85085988113  
Research output: Contribution to journal › Article › Scientific › peer-review

#### **How consumers' respect for nature and environmental self-assets influence their car brand experiences**

This paper provides a novel perspective on sustainability research by exploring how two pro-environmental characteristics of consumers – respect for nature and environmental self-assets – influence their brand experiences. The study uses survey data collected on a car brand that incorporated eco-friendly advances. The results show that respect for nature has an impact on how respondents experience the eco-friendliness of brands and that eco-friendly brand experiences in turn influence general brand experiences. The findings also suggest that the effects of the two pro-environmental characteristics depend on the education level of the consumer: eco-friendly brand experiences of highly educated consumers are affected by their respect for nature, whereas those of consumers with lower education levels are affected by environmental self-assets.

#### **General information**

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Industrial Engineering and Management, Research group: Center for Innovation and Technology Research , Jönköping International Business School, University of Graz, Radboud University Nijmegen, Nyenrode Business Universiteit  
Contributors: Saari, U. A., Mäkinen, S. J., Baumgartner, R. J., Hillebrand, B., Driessen, P. H.  
Publication date: 10 Jul 2020  
Peer-reviewed: Yes

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Volume: 261  
Article number: 121023  
ISSN (Print): 0959-6526  
Original language: English  
ASJC Scopus subject areas: Renewable Energy, Sustainability and the Environment, Environmental Science(all), Strategy and Management, Industrial and Manufacturing Engineering  
Keywords: Automotive industry, Brand experience, Car brand, Eco-friendliness, Partial least squares structural equation modeling, Pro-environmental characteristics  
DOIs:  
10.1016/j.jclepro.2020.121023  
Source: Scopus  
Source ID: 85082527690  
Research output: Contribution to journal › Article › Scientific › peer-review

#### **Optimizing service offerings using asymmetric impact-sentiment-performance analysis**

Researchers refer to various theories to investigate the distinct relationships between importance, performance, and the (a)symmetric impact of service attributes on customer satisfaction (CS). However, a fully integrated model that would allow practitioners to automatically execute analyses to optimize their service offerings in a competitive landscape is missing. Previous studies widely rely on importance/performance ratings of predefined service attributes retrieved from closed-ended questionnaires, which can hardly capture the competitive landscape from the customers' perspective. This paper

introduces a novel asymmetric impact-sentiment-performance analysis (AISPA) to address these gaps by performing automated opinion mining on online reviews. Customers' evaluations of three hotel chains serve as an example application. The impact-asymmetry of the hotel service attributes on CS, the attribute impact and performance are jointly visualized in a 3D grid. An elaborate understanding of service assessments is gained, leading to attribute prioritization and specific recommendations for optimizing future offerings.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Information and Knowledge Management, Xingzhi College Zhejiang Normal University, Centre for Structural Systems Biology, Aalto University

Contributors: Hu, F., Li, H., Liu, Y., Teichert, T.

Publication date: Aug 2020

Peer-reviewed: Yes

Early online date: May 2020

#### **Publication information**

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Volume: 89

Article number: 102557

ISSN (Print): 0278-4319

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Keywords: Asymmetric impact-sentiment-performance analysis, Attribute priority, Hotel chains, Improvement strategies, Sentiment analysis, User-generated content

DOIs:

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Source: Scopus

Source ID: 85084601718

Research output: Contribution to journal › Article › Scientific › peer-review