Decoding the productivity code: Towards an improvement theory for sustainable organizational performance

This thesis introduces a new perspective on how organizations can achieve sustainable organizational performance in a changing world. By integrating Lean, the strength-based perspective, and organizational development, the false dichotomy and struggle between rationalization and employee well being, that is, the productivity code of the 21st century, is dissolved. Today, organizations are pressured for operational efficiency, often in terms of productivity, due to increased global competition, demographical changes, and use of natural resources. Taylor’s principles for rationalization founded organizational improvement one hundred years ago, but were later criticized by the human relations perspective that placed human needs in the center. Most organizations initiate isolated programs that focus either on economic rationalization or on employee development. However, a single-minded rationalization approach often ends up with demanding intense employee focus to sustain improvement and engagement. Likewise, a single-minded employee development approach often ends up demanding rationalization to achieve the desired financial results. These ineffective approaches make organizations react like pendulums that swing between rationalization and employee development. The productivity code is the lack of alternatives to this ineffective approach. This thesis decodes the productivity code based on the results from a 3-year action research study at a medium-sized manufacturing facility. During the project period, the facility developed a continuous improvement capability by integration of rationalization and employee development. The study shows that sustainable improvement capability requires strategic considerations about integration of improvement realization and development of improvement competence. These considerations can be formulated explicitly to an improvement strategy. The study concludes that the researched facility developed continuous improvement capability over the time period and that it occurred through development of an organizational setting for improvement activities, termed the improvement system. The improvement system consists of five elements: The improvement process, participants, management, organization, and technology. The improvement system is not an organizational structure but rather a capability and readiness to organize the right improvement activities for a given challenge, i.e., to be prepared to initiate improvement. The study shows how the effectiveness of the improvement system depends on the congruent fit between the five elements as well as the bridging coherence between the improvement system and the work system. The bridging coherence depends on how improvements are activated, information shared, and the approach to implementation. Continuous improvement requires active leadership. The project shows how the improvement leadership approach determines if improvement activities exploit and optimize the existing system or explore new possibilities outside the existing assumptions. Improvement leaders can combine different improvement approaches, here problem solving and strength-based thinking, to achieve ambidextrous improvement capability that can balance exploitation and exploration. An organizational transformation is necessary to develop continuous improvement capability. The project identified four levers for organizational transformation: Initiation with a purpose-driven affirmative approach, utilization of strategic metaphors, engagement of everyone through large-scale events, and focus on continuous leadership development to support the transformation process. The project also showed that organizational transformation is not about changing people’s thinking or training them in new methods, but rather about the development of a coherent improvement system and the competence to initiate and management improvement processes in an organizational setting. The study additionally showed that the organization accelerated the development of improvement capability by development of a second order improvement system that continuously improved the improvement system.

General information
State: Published
Organisations: Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Contributors: Hansen, D., Møller, N., Kongsbak, H.
Number of pages: 199
Hvad er jeres forbedringsstrategi?

General information
State: Published
Organisations: Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Contributors: Hansen, D.
Publication date: 2014

Host publication information
Title of host publication: Børsens Ledelseshåndbog for Strategi og Ledelse
Publisher: Dagbladet Børsen

Bibliographical note
http://ledelseshandboger.borsen.dk/article/view/689/artikel.html
Source: dtu
Source-ID: u::10533
Research output: Communication › Book chapter – Annual report year: 2014

Lean som fedtsugning eller styrketræning: Reflektioner som Lean som forbedringssystem

General information
State: Published
Organisations: Department of Management Engineering, Production and Service Management, Implementation and Performance Management
Contributors: Hansen, D.
Pages: 6-8
Publication date: 2013
Peer-reviewed: Unknown

Publication information
Journal: Ledelse i Udvikling
Issue number: 5
Original language: Danish
Electronic versions:
Lean_som_Fedtsugning_eller_Styrketræning.pdf
URLs:
http://issuu.com/pid.dk/docs/ledelse_i_udvikling_nr.5-13_forside?e=1598722/5810815
Source: dtu
Source-ID: u::10535
Research output: Communication › Journal article – Annual report year: 2014

Mellemledelse i forbedringskultur: Snubler jeres Lean-indsats i ledernes tre faldgruber?

General information
State: Published
Organisations: Department of Management Engineering, Production and Service Management, Implementation and Performance Management, Novo Nordisk AS
Contributors: Hansen, D., Jørgensen, R.
Number of pages: 6
Publication date: 2013
Peer-reviewed: Unknown
**Strength-based Lean as a Leadership Approach**

**General information**
- State: Published
- Organisations: Department of Management Engineering, Production and Service Management
- Contributors: Hansen, D.
- Pages: 207-216
- Publication date: 2013

**Host publication information**
- Title of host publication: Strength-Based Lean Six Sigma - building positive and encouraging business improvement
- Publisher: Kogan Page
- Editor: Shaked, D.
- ISBN (Print): 9780749469504
- Source: dtu
- Source-ID: u::9398
- Research output: Research - peer-review » Book chapter – Annual report year: 2013

This paper explores how a work system’s capability for improvement is influenced by its improvement methods. Based on explorative case study at a Lean manufacturing facility, the methods problem solving and Appreciative Inquiry were compared through in-depth qualitative studies over a 12-month period. The findings show how problem solving leads to solutions inside the existing improvement trajectory, whereas Appreciative Inquiry due to increased generative capability enables solutions outside the existing trajectory. The paper suggests how improvement methods can be designed for appropriate generative capability, which can be useful for practitioners who need to create systemic change.

**Work system innovation: Designing improvement methods for generative capability**

**General information**
- State: Published
- Organisations: Department of Management Engineering, Production and Service Management
- Contributors: Hansen, D., Møller, N.
- Number of pages: 10
- Publication date: 2013

**Host publication information**
- Title of host publication: EurOMA 2013 : 20th International Annual EurOMA Conference
- Keywords: Continuous improvement, Lean, Appreciative inquiry
- Electronic versions:
  - WORK_SYSTEM_INNOVATION.pdf
- Source: dtu
- Source-ID: u::9386
- Research output: Research - peer-review » Book chapter – Annual report year: 2013

This paper explores how a work system’s capability for improvement is influenced by its improvement methods. Based on explorative case study at a Lean manufacturing facility, the methods problem solving and Appreciative Inquiry were compared through in-depth qualitative studies over a 12-month period. The findings show how problem solving leads to solutions inside the existing improvement trajectory, whereas Appreciative Inquiry due to increased generative capability enables solutions outside the existing trajectory. The paper suggests how improvement methods can be designed for appropriate generative capability, which can be useful for practitioners who need to create systemic change.
Appreciative Problem Solving
Many industrial production work systems have increased in complexity, and their new business model compete on innovation, rather than low cost. At a medical device production facility committed to Lean Production, a research project was carried out to use Appreciative Inquiry to better engage employee strengths in continuous improvements of the work system. The research question was: “How can Lean problem solving and Appreciative Inquiry be combined for optimized work system innovation?”
The research project was carried out as a co-creation process with close cooperation between researcher and participants and was documented by qualitative methods. This paper presents an academic literature review on Appreciative Inquiry and problem solving for continuous improvements that did not reveal successful attempts in combining the two. Both the literature and the empirical study showed one of the main challenges to be to connect the two different thinking modes in the daily practice. The empirical study found both approaches useful for creating continuous improvements of the work system and identified different practices of combining them. From the empirical study, the paper identifies three approaches to work system innovation and discusses how Appreciative Inquiry, Problem Solving, and the combination ‘Appreciative Problem Solving’ can be used to optimize continuous work system innovation. These findings add to the theoretical foundation of the emerging field of Strength-based Lean.

General information
State: Published
Organisations: Department of Management Engineering, Production and Service Management
Contributors: Hansen, D.
Number of pages: 17
Publication date: 2012

Host publication information
Title of host publication: Binder paper submissions 2012 WAIC
Keywords: Appreciative Problem Solving, Appreciative Inquiry, Problem Solving, Strength-based Lean, Work System Innovation, Success Expansion
Electronic versions:
Hansen_David_2012WAIC_PAPERS_BINDER.pdf
Source: dtu
Source-ID: u::5218
Research output: Research - peer-review › Article in proceedings – Annual report year: 2012

Strength-Based Lean Six Sigma Explorative Workshop
General information
State: Published
Organisations: Department of Management Engineering, Production and Service Management
Contributors: Hansen, D., Shaked, D.
Publication date: 2012
Media of output: PowerPoint

Event information
Event: 2012 World Appreciative Inquiry Conference
Location: International Conference Center Ghent, Ghent, Belgium
Electronic versions:
Slides_for_Ghent_ver_21apr12.pdf
Research output: Research › Sound/Visual production (digital) – Annual report year: 2012

Aerobic oxidation of aldehydes under ambient conditions using supported gold nanoparticle catalysts
A new, green protocol for producing simple esters by selectively oxidizing an aldehyde dissolved in a primary alcohol has been established, utilising air as the oxidant and supported gold nanoparticles as catalyst. The oxidative esterifications proceed with excellent selectivities at ambient conditions; the reactions can be performed in an open flask and at room temperature. Benzaldehyde is even oxidised at a reasonable rate below -70 degrees C. Acrolein is oxidised to methyl acrylate in high yield using the same protocol.

General information
State: Published
Organisations: Department of Chemistry, Sustainable and Green Chemistry, Work, Technology and Organisation, Department of Management Engineering, Administration, Department of Chemical and Biochemical Engineering
Contributors: Marsden, C. C., Taarning, E., Hansen, D., Johansen, L., Klitgaard, S. K., Egeblad, K., Christensen, C. H.
Pages: 168-170
Self-assembly of $C_{60}$ into highly ordered chain-like structures on HOPG observed at ambient conditions

The observation of chain-like structures of self-assembled C-60 Molecules on HOPG surfaces at room temperature in aerial atmosphere by means of scanning tunneling microscopy is reported. The ca. 2.5 nm center-to-center distance between two fullerene molecules is much larger than in the close-packed layered or film structures Of C-60 usually found on HOPG surfaces. (c) 2007 Elsevier B.V. All rights reserved.

General information
State: Published
Organisations: Sustainable and Green Chemistry, Department of Chemistry, Metalloprotein Chemistry and Engineering, Energy and Materials, Department of Physics
Pages: L35-L38
Publication date: 2007
Peer-reviewed: Yes

Publication information
Journal: Surface Science
Volume: 601
Issue number: 9
ISSN (Print): 0039-6028
Ratings:
BFI (2019): BFI-level 1
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.87 SJR 0.81 SNIP 0.759
Web of Science (2017): Impact factor 1.997
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.85 SJR 0.746 SNIP 0.834
Web of Science (2016): Impact factor 2.062
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.85 SJR 0.747 SNIP 0.804
Web of Science (2015): Impact factor 1.931
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.81 SJR 0.818 SNIP 0.864
Web of Science (2014): Impact factor 1.925
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.72 SJR 0.829 SNIP 0.781
Keywords: highly-oriented pyrolytic graphite (HOPG), FULLERENE, C60, SURFACES, SCANNING-TUNNELING-MICROSCOPY, GRAPHITE, FILMS, nanostructures

Original language: English

DoIs: 10.1016/j.susc.2007.03.022

Source: orbit
Source-ID: 207074

Research output: Research - peer-review › Journal article – Annual report year: 2007

Projects:

**Anerkendende Lean - Implementering af en bæredygtig forbedringskultur**
Hansen, D., PhD Student, Department of Management Engineering
Møller, N., Main Supervisor
Kongsbak, H., Supervisor
Jensen, P. L., Examiner
Activities:

Fra ekstraordinært projekt til daglig succes: Langsigtet Lean-kultur hos Novo Nordisk
Period: 27 Sep 2013
David Hansen (Lecturer)
Department of Management Engineering
Production and Service Management

Description
Oplæg på Teknologisk Instituts Lean Dag 2013

Related external organisation
Unknown external organisation
Activity: Talks and presentations › Conference presentations

Fra lukningstruet fabrik til rollemodel med Styrkebaseret Lean
Period: 27 Sep 2013
David Hansen (Keynote speaker)
Department of Management Engineering
Production and Service Management

Description
Key Note i plenumsalen.

Related event
IDA ledelsesforum: Lødelse der styrker
27/09/2013 → …
København, Denmark
Activity: Talks and presentations › Conference presentations

Professional Development Workshop: Consultant, Management, Academics: Scandinavian Award-Winning Application of New Consulting Paradigm
Period: 9 Aug 2013
David Hansen (Invited speaker)
Department of Management Engineering
Production and Service Management

Related event
73rd Annual Meeting of the Academy of Management
10/08/2013 → 14/08/2013
Orlando, FL, United States
Activity: Talks and presentations › Conference presentations

3rd World Congress of Positive Psychology
Period: 27 Jun 2013 → 30 Jun 2013
David Hansen (Participant)
Department of Management Engineering
Production and Service Management

Description
Presentation of research at invited speaker session as well as at poster session

Work System Innovation

Related event

3rd World Congress of Positive Psychology: IPPA
27/06/2013 → 30/06/2013
Los Angeles, CA, United States
Activity: Attending an event › Participating in or organising a conference

20th European Operations Management Association Conference
Period: 7 Jun 2013 → 12 Jun 2013
David Hansen (Participant)
Department of Management Engineering
Production and Service Management

Description
20th EUROMA Conference participant

Related event

20th European Operations Management Association Conference: Operations Management at the Heart of the Recovery
07/06/2013 → 12/06/2013
Dublin, Ireland
Activity: Attending an event › Participating in or organising a conference

Lean Transformation Summit 2013
Period: 12 Mar 2013 → 14 Mar 2013
David Hansen (Participant)
Department of Management Engineering
Production and Service Management

Description
Lean Enterprise Institute Transformation Summit 2013

Related event

Lean Transformation Summit 2013
12/03/2013 → 14/03/2013
Orlando, FL, United States
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

University of Michigan - Interdisciplinary College of Organization Studies - Likert Dissertation Poster Session
Period: 22 Feb 2013
David Hansen (Participant)
Department of Management Engineering
Production and Service Management

Description
Poster session participant with poster: Work System Innovation.

Related event

University of Michigan - Interdisciplinary College of Organization Studies - Likert Dissertation Poster Session
22/02/2013 → 22/02/2013
Ann Arbor, MI, United States
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**University of Michigan**
Period: 1 Jan 2013 → 1 May 2013
David Hansen (Visiting researcher)
Department of Management Engineering
Production and Service Management

**Description**
University of Michigan - Visiting Scholar: Department of Industrial and Operations Engineering

5 Months as visiting scholar with Professor Jeffrey K Liker.

Activity: Visiting an external institution › Visiting another research institution

**Styrkebaseret Lean**
Period: 16 Nov 2012
David Hansen (Speaker)
Department of Management Engineering
Production and Service Management

**Description**
Internt kursus for 30 ledere

**Related external organisation**
Berlingske Tidende
København, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

**2012 World Appreciative Inquiry Conference**
Period: 26 Apr 2012
David Hansen (Organizer)
Department of Management Engineering
Production and Service Management

**Description**
Workshop planning and facilitation
Documents:
Workshop slides

**Related event**
2012 World Appreciative Inquiry Conference: Towards an 'Economy' of Connecting Strengths: Scaling-up the generative Power of AI
25/04/2012 → 28/04/2012
Ghent, Belgium
Activity: Attending an event › Participating in or organising a conference

**Mid Sweden University**
David Hansen (Visiting researcher)
Department of Management Engineering
Production and Service Management

**Description**
Mid Sweden University - Visiting Scholar
Visiting Scholar, and Host for Exchange Visitors at DTU

Activity: Visiting an external institution › Visiting another research institution

Prizes:

3rd World Congress of Positive Psychology Scholarship
David Hansen (Recipient)
Department of Management Engineering, Production and Service Management

Details
Awarded date: 20 May 2013
Granting Organisations: International Positive Psychology Association
Prize: Prizes, scholarships, distinctions

Otto Mønsted Fonden
David Hansen (Recipient)
Department of Management Engineering, Production and Service Management

Details
Awarded date: 1 Jan 2013
Granting Organisations: Otto Mønsted Fonden
Prize: Prizes, scholarships, distinctions

Press clippings:

Dårlig kultur æder Lean-værktøjer til morgenmad
David Hansen
19/09/2013
Department of Management Engineering, Production and Service Management

Media contribution (1)

Dårlig kultur æder Lean-værktøjer til morgenmad: Interview
David Hansen
19/09/2013

Subject
Lean Leadership
Department of Management Engineering, Production and Service Management

Media contribution (1)
Der behøver ikke være så meget spild i Lean
David Hansen
10/04/2013

Subject
Lean ledelse
Department of Management Engineering, Production and Service Management

Media contribution (1)

Der behøver ikke være så meget spild i Lean
10/04/2013
Ledelse i Dag, Web
Anders Grove
David Hansen
Department of Management Engineering, Production and Service Management
Press/Media: Press / Media

WAIC Radio Show: The Dark Side of Appreciative Inquiry
David Hansen
27/04/2012

Description
Discussions about the shadow side of appreciative inquiry and whether a problem solving perspective can be useful as a supplementary lens.

Subject
Appreciative Problem Solving
Department of Management Engineering, Production and Service Management

Media contribution (1)

WAIC Radio Show: The Dark Side of Appreciative Inquiry
27/04/2012
WAIC Radio, Radio
Tjip de Jong
5 minutes
David Hansen
Department of Management Engineering, Production and Service Management
Press/Media: Press / Media