5th International Workshop - Advances in Cleaner Production
São Paulo - Brazil - 20th to 22nd, May - 2015

The use of Lean Manufacturing practices in Cleaner Production: a systematic review

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Academic Work

Agenda

1. Team and research
2. Introduction
3. Literature review
4. Research method
5. Results
6. Conclusion
7. Further development
8. Publications
9. Bibliography

Team and research

Students

Professors / Tutors

SLR
LM and CP

Geandra Queiroz

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LM Background

SLR
LM and CP
Tools

Mariana Guardia

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Aldo Ometto

CP Background

Introduction

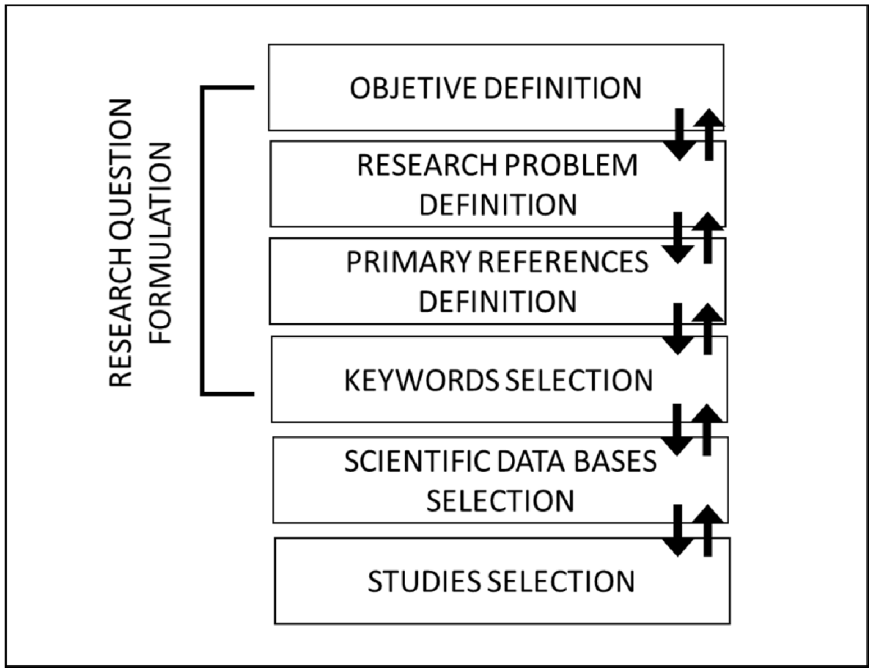
- Sustainability value
- The association of Lean Manufacturing and environmental strategies is claimed to respond to this demand
- “what Lean tool are associated with this value delivery”

Literature Review

- Lean Manufacturing
- Cleaner production
- Lean and Green

Research Method

- SLR aims to assess and collect the existing evidence in the literature on the research subject
- Method recorded in a protocol
- The process went from 918 studies to 90 than to 13 increasing the level of relevance



Results

ID	Título	Autores	Ano	Tipo de Estudo	Ferramentas Lean
1	A case study of lean, sustainable manufacturing	Miller, G. Pawloski, J. Standridge, C.	2010	Case study	Kaizen
2	Assessment of the Lean Production Effect on the Sustainable Industrial Enterprise Development	Dakov, I Novkov, S.	2007	Theory	Performance Indicators
3	Case Study: Honda of America Manufacturing, Inc.: Can Lean Production Practices Increase Environmental Performance?	Maxwell, J. Briscoe, F. Schenk, B. Rothenberg, S.	1998	Case study	Multifunctional operator; visual management
5	Model of efficient and sustainable improvements in a lean production system through processes of environmental innovation	Aguado, S. Alvarez, R Domingo, R	2012	Case study	VSM and pull production
6	Pollution burdens associated with load assemble pack of an AP based MK-66 PIP motor by continuous batch processing	Graham, A. Reardon P. T.	1997	Case study	Continuous flow
7	Reducing carbon emissions in precast concrete production through the lean production philosophy	Peng, W.	2010	Case study	Layout and Just-in-Time

Results

8	Tools and techniques for enabling sustainability through lean initiatives	Vinodh S. Arvind K. R. Somanaathan M.	2011	Theory	Pull production, cell manufacturing, VSM, 5s, TPM, kaizen, visual management, poka yoke.
9	Using lean methodologies for economically and environmentally sustainable foundries	Torielli, R. M. Abrahams, R. A. Smillie, R.W. Voigt, R.C.	2010	Theory	VSM and 5s
10	Lean Processes for Sustainable Project Delivery	LAPINSKI, A. R. HORMAN, M. J. RILEY, D. R.	2007	Case study	Kaizen
11	Integration Of Lean And Green Supply Chain - Impact On Manufacturing Firms In Improving Environmental Efficiencies	PARVEEN, C. M. KUMAR, A. R. P. RAO, T. V. V. L. N.	2011	Survey	JIT,Kaizen,Kanban, TPM,VSM, 5S e cell manufacturing
12	Lean construction implementation and its implication on sustainability: a contractor's case study	SONG, L. LIANG, D.	2011	Case study	Visual maagement, Pull production and operator training
13	Lean and Green at a Romanian secondary tissue paper and board mill - putting theory into practice	Vais, A. Miron, V. Pedersen, M. Folke, J.	2006	Case study	JIT,Kaizen, TPM 5S e cell anufacturing

Conclusion

- Many tools used by Lean Manufacturing can be used for obtaining environmental benefits.
- Practices found:
  - Kaizen
  - VSM
  - Pull Production
  - Manufacturing Mobile
  - TPM
  - JIT
  - Performance Indicators
  - Multifunctional Worker
  - Continuous Flow
  - Layout
  - Poka Yoke
  - Kanban
  - Visual Management
  - Labor Training
- Major practices: Kaizen was mentioned, in 5 studies; VSM was mentioned in 4 studies
- The method was adequate

Further Development

This work

- Classify the types of use of each tool/practice: application, customization, etc
- Add new studies from the SLR to the sample

Other works

- Measure quantitative impact reduction from lean tools/practices

Publications

Published

The adoption of Systematic Literature Review in production engineering: an analysis in the annals of ENEGEP - Mariana Guardia, Geandra Alves Queiroz, Raphael Laraia Rocha de Barros Cobra, José Augusto de Oliveira, Daniel Capaldo Amaral

Identify the benefits and difficulties of cleaner production in industrial enterprises of the state of São Paulo - José Augusto de Oliveira, Raphael Laraia Rocha de Barros Cobra, Mariana Guardia, Otavio Jose de Oliveira, Aldo Roberto Ometto

Proposal for Cleaner Production Deployment using the DMAIC method

Geandra Alves Queiroz, José Augusto de Oliveira, Mariana Guardia, Raphael Laraia Rocha de Barros Cobra, Kleber Francisco Esposto

Accepted

“Waste” as the common “gene” connecting Cleaner Production and Lean Manufacturing: proposition of a hybrid definition - R. L. R. B. Cobra, M. Guardia, G. A. Queiroz, J. A. Oliveira, A. R. Ometto, K. F. Esposto

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Thank you