Publication:
Salgado, E. G. and Dekkers, R. 2018. Lean Product Development: Nothing New Under the Sun? International Journal of Management Reviews, 20(4), pp. 903–933. doi: 10.1111/ijmr.12169

The layout of these review data is formatted for A3-sized pages

Colour coding

	Publication not found, yet.
Paper	Publication discarded after analysis
Paper	Publication evaluated by first reviewer
Paper	Publication evaluated by second reviewer

Inclusion criteria

Related to (new) product development and 'product design and engineering'

Exclusion criteria

About software development
About service development
Not about construction and healthcare
Teaching 'lean' to students, practitioners
If on one page of Google Scholar (n=20), no relevant returns were found, the search was stopped
No Master's dissertations
Not included: 'lean entreprise' -> too broad scope
If journal found based on working paper or conference, latter removed from search

Classification

- Illustrative examples have not been classified as case studies.
- Some conference proceedings replaced by later journal publications
- Classified as conference proceedings when indicated on edited book or status publication (e.g. Procedia)
- Single case study as company or business unit, even when several projects are analysed

Institute

- Institute of corresponding (or first) author or dominant institute in case of list of authors
- List of codes for insitutes see column K

Scope

- Defined by reference model of Dekkers et al. (2013)
  - *Methods, tools for products (= primary engineering process)*
  - *Secondary engineering process (engineering changes and engineering management)*
  - *Optimising operational processes*
  - *Optimising/management NPD*

Principles of lean thinking

- Defined by five principles of lean thinking (Womack and Jones, 1996): value, value stream, waste, flow/pull production, perfection
- Only marked if used for building arguments or constructs in publication (mentioning not enough)

Codes for 'Institute'

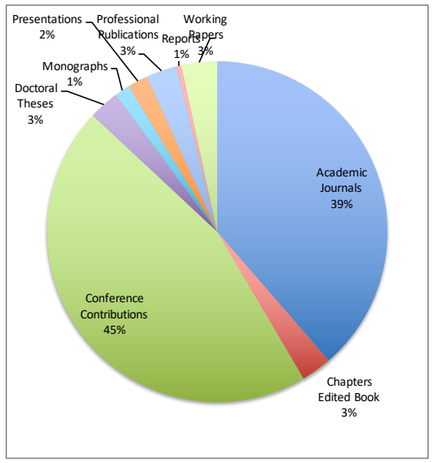
AIT	Aeronautics Institute of Technology (Brazil)
Aalto	Aalto University
BITS	Birla Institute of Technology and Science
Braunschweig	Technische Universität Braunschweig
Calgary	University of Calgary
Cardiff	Cardiff University
Concordia	Concordia University (Montreal)
Cranfield	Cranfield University
CU	Cochin University
CUT	Chalmers University of Technology
ECP	École Centrale Paris
EPFL	Ecole Polytechnique Fédérale de Lausanne
EPM	Ecole Polytechnique de Montréal
EPUSP	Escola Politécnica da Universidade de São Paulo
ETH	ETH Zurich
ETS	Ecole de Technologie Supérieure (Québec)
FU	Fooyin University (Taiwan)
FUA	Federal University of Alfenas
FUBB	Free University of Bozen-Bolzano
FUSC	Federal University of Santa Catarina
GUC	Gjovik University College
HUT	Helsinki University of Technology
IASTB	Institute for Applied Systems Technology Bremen
IIMK	Indian Institute of Management, Kozhikode
IITM	International Institute of Technology and Management (Murthal, India)
JU	Jönköping University
Kettering	Kettering University
KPU	Kwantlen Polytechnic University (Canada)
KTH	Royal Institute of Technology (Stockholm)
KU	Karlstad University
LMU	Loyola Maymount University
LU	Linköping University
MIT	Massachusetts Institute of Technology
MSU	Montana State University
MTU	Michigan Technological University
MUST	Missouri University of Science and Technology
NISR	National Institute for Space Research (São Paulo)
NIT	National Institute of Texhnology (Tamil Nadu)
NMMU	Nelson Mandela Metropolitan University
NTNU	Norwegian University of Science and Technology (Trondheim)
OST	Oregon State University
PD	Purdue University
Practitioner	
PSU	Penn State University
PUM	Polytechnic University of Milan
QUT	Queensland University of Technology
RJSU	Rio de Janeiro State University
RMA	Royal Military Academy (Belgium)
RWTH	RWTH Aachen
SJTU	Shanghai Jiao Tong University
SSE	Stockholm School of Economics
TAMU	Texas A&M University
TTU	Texas Tech University
TUD	Technical University of Denmark
TU-D	Technische Universität Dresden
TUM	Technical University of Munich
TUT	Tallinn University of Technology
UB	University of Bath
UC	University of Cambridge
UCin	University of Cincinnati
UCT	University of Cape Town
UG	University of Greenwich
ULL	University of Louisiana at Lafayette
UoJ	University of Johannesburg
UM	University of Michigan
UP	University of Padova
USP	University of São Paulo
UT	University of Twente
UV	University of Vigo
UW	University of Warwick
VPI	Virginia Polytechnic Institute
WU	Wolverhampton University
WSU	Wayne State University
YU	York University (Toronto)

Data for Systematic Literature Review 'Lean Product Development' – Overview of Aggregated Data

	EBSCO	Google Scholar	Scopus	Total
Lean product development	14	103	92	141
Lean product and process development	7	37	25	39
The layout of these review data is formatted for A3-sized pages				
Lean (design) engineering	10	75	43	84
SUBTOTAL Protocol-driven	16	144	110	189
Snowballing				17
Additional Sources				1
TOTAL				207

TYPES OF PUBLICATION

Outlet		
Academic Journals	80	39%
Chapters Edited Book	6	3%
Conference Contributions	94	45%
Doctoral Theses	6	3%
Monographs	3	1%
Presentations	4	2%
Professional Publications	6	3%
Reports	1	0%
Working Papers	7	3%
Total	207	



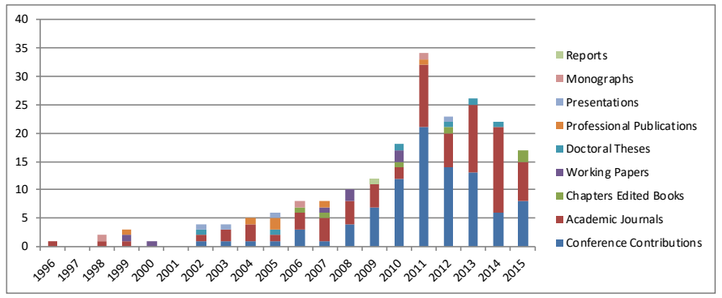
Outlet	EBSCO	Google Scholar	Scopus	Snowballing	Additional	Total
Academic Journals	14	62	44	9	1	80
Monographs	0	2	1	0	0	3
Chapters Edited Book	0	3	4	0	0	6
Conference Contributions	1	59	59	2	0	94
Doctoral Theses	0	4	0	2	0	6
Working Papers	0	7	1	0	0	7
Professional Publications	1	3	1	3	0	6
Reports	0	0	0	1	0	1
Presentations	0	4	0	0	0	4
	16	144	110	17	1	207

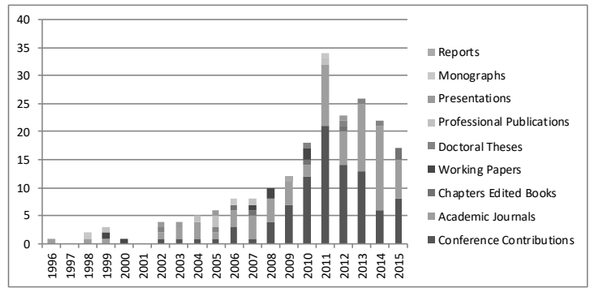
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Academic Journals	1		1	1	0		1	2	3	1	3	4	4	4	2	11	6	12	15	7	78
Monographs	0		1	0	0		0	0	0	0	1	0	0	0	0	1	0	0	0	0	3
Chapters Edited Books	0		0	0	0		0	0	0	0	1	1	0	0	1	0	1	0	0	2	6
Conference Contributions	0		0	0	0		1	1	1	1	3	1	4	7	12	21	14	13	6	8	93
Doctoral Theses	0		0	0	0		1	0	0	1	0	0	0	0	1	0	1	1	1	0	6
Working Papers	0		0	1	1		0	0	0	0	0	1	2	0	2	0	0	0	0	0	7
Professional Publications	0		0	1	0		0	0	1	2	0	1	0	0	0	1	0	0	0	0	6
Reports	0		0	0	0		0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Presentations	0		0	0	0		1	1	0	1	0	0	0	0	0	0	1	0	0	0	4
	1	0	2	3	1	0	4	4	5	6	8	8	10	12	18	34	23	26	22	17	204

NOTE: Difference with cell G34 is due to publications Kamath & Liker (1994), Ward et al. (1994) and Ward et al. (1995).

Data for Systematic Literature Review 'Lean Product Development' – Overview of Aggregated Data

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Conference Contributions	0	0	0	0	0	0	1	1	1	1	3	1	4	7	12	21	14	13	6	8	93
Academic Journals	1	0	1	1	0	0	1	2	3	1	3	4	4	4	2	11	6	12	15	7	78
Chapters Edited Books	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	2	6
Working Papers	0	0	0	1	1	0	0	0	0	0	0	1	2	0	2	0	0	0	0	0	7
Doctoral Theses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	1	1	1	0	6
Professional Publications	0	0	0	1	0	0	0	0	1	2	0	1	0	0	0	1	0	0	0	0	6
Presentations	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	1	0	0	0	4
Monographs	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	3
Reports	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1

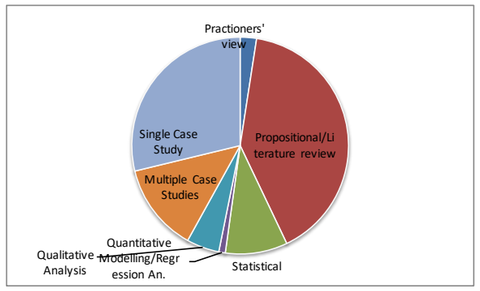




CLASSIFICATION OF PUBLICATIONS

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Practioners' view	0		0	0	0		0	0	0	2	0	0	0	0	1	0	0	1	1	0	5
Propositional/Literature review	0		0	2	1		2	2	1	2	5	3	3	5	10	16	10	6	11	4	83
Statistical	0		0	0	0		0	0	0	0	0	0	1	2	0	1	2	6	2	5	19
Quantitative Modelling/Regression An.	0		0	0	0		0	0	0	0	0	0	0	0	1	0	0	0	1	0	2
Qualitative Analysis	0		0	0	0		1	0	0	0	0	0	0	0	1	2	3	2	1	0	10
Multiple Case Studies	0		1	0	0		1	2	2	1	1	2	1	2	3	2	4	3	1	1	27
Single Case Study	1		1	1	0		0	0	2	0	2	3	5	4	2	13	5	8	4	8	59
Total	**1**	**0**	**2**	**3**	**1**	**0**	**4**	**4**	**5**	**5**	**8**	**8**	**10**	**13**	**18**	**34**	**24**	**26**	**21**	**18**	**205**

Percentage	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Practioners' view	0%		0%	0%	0%		0%	0%	0%	40%	0%	0%	0%	0%	6%	0%	0%	4%	5%	0%	2%
Propositional/Literature review	0%		0%	67%	100%		50%	50%	20%	40%	63%	38%	30%	38%	56%	47%	42%	23%	52%	22%	40%
Statistical	0%		0%	0%	0%		0%	0%	0%	0%	0%	0%	10%	15%	0%	3%	8%	23%	10%	28%	9%
Quantitative Modelling/Regression An.	0%		0%	0%	0%		0%	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	0%	5%	0%	1%
Qualitative Analysis	0%		0%	0%	0%		25%	0%	0%	0%	0%	0%	0%	0%	6%	6%	13%	8%	5%	0%	5%
Multiple Case Studies	0%		50%	0%	0%		25%	50%	40%	20%	13%	25%	10%	15%	17%	6%	17%	12%	5%	6%	13%
Single Case Study	100%		50%	33%	0%		0%	0%	40%	0%	25%	38%	50%	31%	11%	38%	21%	31%	19%	44%	29%



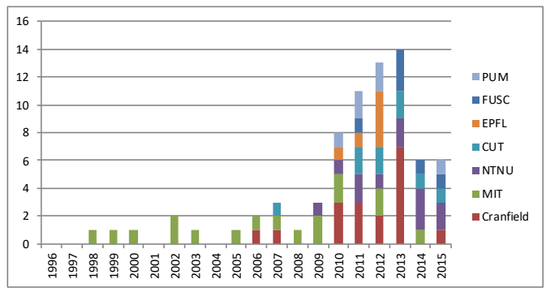
SCIENTIFIC DISCIPLINES

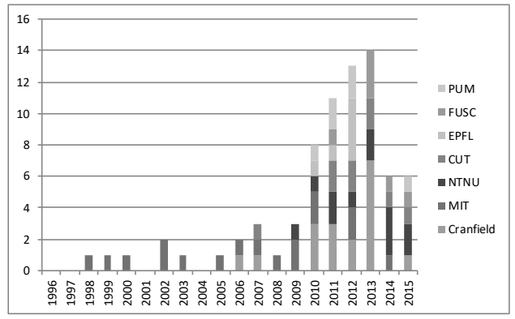
Discipline	Business & Man.	Engineering	ıvation & Techn. M	Other
	174	21	10	0
Multiple disciplines	18			

INSTITUTES

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Practitioner	0		0	1	0		0	1	1	3	0	3	2	4	3	2	0	1	2	1	24
Cranfield	0		0	0	0		0	0	0	0	1	1	0	0	3	3	2	7	0	1	18
MIT	0		1	1	1		2	1	0	1	1	1	1	2	2	0	2	0	1	0	17
NTNU	0		0	0	0		0	0	0	0	0	0	0	1	1	2	1	2	3	2	12
CUT	0		0	0	0		0	0	0	0	0	1	0	0	0	2	2	2	1	1	9
EPFL	0		0	0	0		0	0	0	0	0	0	0	0	1	1	4	0	0	0	6
FUSC	0		0	0	0		0	0	0	0	0	0	0	0	0	1	0	3	1	1	6
PUM	0		0	0	0		0	0	0	0	0	0	0	0	1	2	2	0	0	1	6
Concordia	0		0	0	0		0	0	0	0	0	0	1	0	1	2	0	1	0	0	5
UC	0		0	0	0		0	0	0	0	0	0	0	0	0	0	2	1	1	1	5
Braunschweig	0		0	0	0		0	0	0	0	0	0	0	0	0	2	0	1	1	0	4
ETH	0		0	0	0		0	0	0	0	0	0	0	0	0	1	1	2	0	0	4
JU	0		0	0	0		0	0	0	0	0	0	0	0	2	1	0	0	1	0	4
UM	0		0	0	0		1	0	0	0	2	0	0	1	0	1	0	0	0	0	5
UW	0		0	0	0		1	1	2	0	0	0	0	0	0	0	0	0	0	0	4
WSU	0		0	0	0		0	0	0	1	1	0	0	1	0	0	0	0	0	1	4
AIT	0		0	0	0		0	0	0	0	0	1	1	1	0	0	0	0	0	0	3
Kettering	0		0	0	0		0	0	0	0	0	0	0	0	1	0	2	0	0	0	3
KTH	0		0	0	0		0	0	0	0	0	0	0	0	0	1	1	0	0	1	3
MTU	0		0	0	0		0	1	1	1	0	0	0	0	0	0	0	0	0	0	3
BITS	0		0	0	0		0	0	0	0	0	0	1	0	0	0	0	0	1	0	2
Calgary	0		0	0	0		0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Cardiff	0		0	0	0		0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
FUA	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
IASTB	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
LMU	0		0	0	0		0	0	1	0	0	0	0	0	0	2	0	0	0	0	3
MSU	0		1	1	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
OST	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
RMA	0		0	0	0		0	0	0	0	0	0	0	1	0	1	0	0	0	0	2
RWTH	0		0	0	0		0	0	0	0	0	0	1	0	0	0	0	0	1	0	2
Aalto	0		0	0	0		0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
CU	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
ECP	0		0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
EPM	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
EPUSP	0		0	0	0		0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
ETS	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
FU	0		0	0	0		0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
FUBB	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
GUC	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
HUT	0		0	0	0		0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
IIMK	0		0	0	0		0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
KPU	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
LU	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
MUST	0		0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
NISR	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
NIT	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
NMMU	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
PD	0		0	0	0		0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
PSU	0		0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
QUT	0		0	0	0		0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
RJSU	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
SJTU	0		0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
SSE	1		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TAMU	0		0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
TTU	0		0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
TU-D	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
TUD	0		0	0	0		0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
TUM	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
TUT	0		0	0	0		0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
UB	0		0	0	0		0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
UG	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
UoJ	0		0	0	0		0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
UP	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
USP	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
UT	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
UV	0		0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
VPI	0		0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	1

WU	0		0	0	0		0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
YU	0		0	0	0		0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
IITM	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KU	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UCin	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UCT	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ULL	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**1**	**0**	**2**	**3**	**1**	**0**	**4**	**4**	**5**	**6**	**8**	**8**	**10**	**12**	**18**	**34**	**23**	**26**	**22**	**17**	**204**





Author/Institute	Practitioners	Cranfield	MIT	NTNU	CUT	EPFL	FUSC	PUM	Concordia	UC	raunschwe	Other	Total	Notes
Al-Ashaab		14											14	LeanPPD project
Shehab		14											14	LeanPPD project
Sopelana	10												10	LeanPPD project
Welo				10									10	
Flores, Myrna						9							9	LeanPPD project
Khan		8											8	LeanPPD project
Liker												8	8	
Rebentisch			8										8	Lean Aerospace Initiative
Haque	6											1	7	UK Lean Aerospace Initiative
Terzi												7	7	LeanPPD project
Beauregard	2								4				6	
Dombrowski											6		6	
Murman			5									1	6	Lean Aerospace Initiative
Sorli	6												6	LeanPPD project
Taisch								6					6	LeanPPD project
Bhuiyan*									5				5	
Dal Forno												5	5	
Forcellini												5	5	
Gudem				5									5	
James-Moore												5	5	UK Lean Aerospace Initiative/LeanPPD project
Kirner												5	5	
Maksimovic		5											5	LeanPPD project
Ringen	4			1									5	
Siyam										5			5	
Sobek II												5	5	
Total Institute	24	18	17	12	9	6	6	6	5	5	4		Total institute derived from column P in 'Listing ALL'	

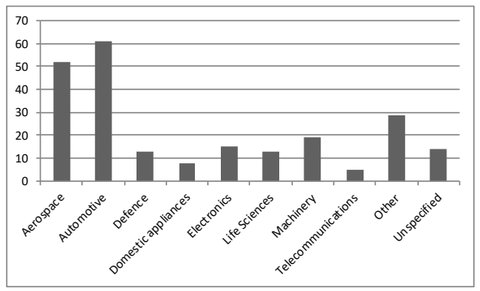
* Bhuiyan also spelled Buiyan in Farahani & Buiyan (2013).

NOTE: Authors have been added using separate database

INDUSTRIES

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Aerospace	0		0	1	1		2	2	3	1	2	3	6	2	4	7	4	8	4	2	52
Automotive	0		2	1	0		1	0	1	1	2	5	2	5	4	3	8	11	7	8	61
Defence	0		0	0	0		0	0	1	0	0	0	0	2	0	4	1	2	1	2	13
Domestic appliances	0		0	0	0		0	0	0	0	0	0	0	0	0	1	1	2	3	1	8
Electronics	1		0	0	0		0	0	0	0	0	1	0	1	2	0	2	2	4	2	15
Life Sciences	0		0	0	0		0	0	0	0	0	1	0	2	1	2	3	3	0	1	13
Machinery	0		0	0	0		0	0	0	0	0	1	0	1	3	0	3	6	2	3	19
Telecommunications	0		0	0	0		0	0	0	0	0	0	0	0	0	0	1	3	0	1	5
Other	0		0	0	0		0	0	1	0	1	1	1	3	1	3	5	5	4	4	29
Unspecified	0		0	0	0		0	0	0	1	0	0	1	0	0	4	3	2	2	1	14
Total	**1**	**0**	**2**	**2**	**1**	**0**	**3**	**2**	**6**	**3**	**5**	**12**	**10**	**16**	**15**	**24**	**31**	**44**	**27**	**25**	**229**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Aerospace	0%		0%	33%	100%		50%	50%	60%	17%	25%	38%	60%	17%	22%	21%	17%	31%	18%	12%	25%
Automotive	0%		100%	33%	0%		25%	0%	20%	17%	25%	63%	20%	42%	22%	9%	35%	42%	32%	47%	30%
Defence	0%		0%	0%	0%		0%	0%	20%	0%	0%	0%	0%	17%	0%	12%	4%	8%	5%	12%	6%
Domestic appliances	0%		0%	0%	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	4%	8%	14%	6%	4%
Electronics	100%		0%	0%	0%		0%	0%	0%	0%	0%	13%	0%	8%	11%	0%	9%	8%	18%	12%	7%
Life Sciences	0%		0%	0%	0%		0%	0%	0%	0%	0%	13%	0%	17%	6%	6%	13%	12%	0%	6%	6%
Machinery	0%		0%	0%	0%		0%	0%	0%	0%	0%	13%	0%	8%	17%	0%	13%	23%	9%	18%	9%
Telecommunications	0%		0%	0%	0%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	12%	0%	6%	2%
Other	0%		0%	0%	0%		0%	0%	20%	0%	13%	13%	10%	25%	6%	9%	22%	19%	18%	24%	14%
Unspecified	0%		0%	0%	0%		0%	0%	0%	17%	0%	0%	10%	0%	0%	12%	13%	8%	9%	6%	7%



PRINCIPLES OF LEAN PRODUCT DEVELOPMENT

Use of principles	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Lean Thinking																					
• Value	0		0	1	1		2	3	3	3	6	6	8	5	10	21	15	11	13	11	119
• Value stream mapping	0		0	1	0		2	3	3	2	3	4	8	5	7	17	9	5	5	7	81
• Waste	0		0	2	0		3	3	4	5	4	7	8	8	8	17	14	7	9	8	107
• Flow/pull production	0		0	1	0		2	3	3	3	4	6	7	4	5	14	6	3	7	6	74
• Perfection	1		0	1	0		3	3	2	1	0	3	4	1	5	12	12	3	7	6	64
Lean product development																					
• Set-based concurrent engineering	0		0	2	0		1	0	2	1	4	4	3	6	6	16	8	8	5	3	69
• Other principles added?	0		2	0	0		1	1	2	0	3	4	1	6	5	15	8	9	3	6	66
• Other tools and methods?	1		1	1	0		2	2	1	4	5	5	4	4	7	14	14	14	8	7	94

Principles of lean thinking	Value	Value Stream M.	Waste	Flow/pull	Perfection	Binary	Publications
						0	40
	x	x	x	x	x	31	27
	x					1	17
	x		x			5	16
	x	x	x			7	9
	x	x	x	x		15	9
			x			4	8
		x	x			6	8
	x		x	x		13	8
		x				2	7
	x	x		x	x	27	7
	x	x				3	6
			x	x		12	6
					x	16	6
	x		x	x	x	29	5
	x				x	17	4
	x	x	x		x	23	3
				x		8	2
		x		x		10	2
		x	x	x		14	2
	x	x			x	19	2
			x		x	20	2
	x		x		x	21	2
				x	x	24	2
	x			x	x	25	2
	x			x		9	1
	x	x		x		11	1
		x	x		x	22	1
		x	x	x	x	30	1
		x			x	18	0
		x		x	x	26	0
			x	x	x	28	0
Total	119	85	107	75	64		206

No.	Author(s)	Title	Journal	Year	Keywords					Duplication Keywords	Search Engine			Duplication search	Institute	Type of Publication									Discipline				Multiple discipline	Research Method						
					Lean product development	Lean product and process development	Lean engineering+	Snowballing	Additional Sources		EBSCOhost	Google Scholar	Scopus			Academic Journals	Monographs	Chapter Edited Bo	Conference Contrib	Doctoral theses	Working Papers	Professional Public	Reports	Presentations	Business & Man.	Engineering	Innovation & Techn. Man.	Other		Practitioners' viewpoint	Propositional/Lit. review	Statistical	Quant. Mod./ Regression	Qual. anal.	Multiple case studies	Single case study
The layout of these review data is formatted for A3-sized pages																																			
204	207				141	39	84	17	1	61	16	144	110	68	207	80	3	6	94	6	7	6	1	4	174	21	10	0	18	5	83	19	2	11	27	60
3700	Al-Ashaab et al.	The Industrial Requirements of KBE for the LeanPPD Model		2010	x					0		x		0	Cranfield				x						x				0						x	
3683	Al-Ashaab et al.	The Conceptual LeanPPD Model		2010	x					0		x		0	Cranfield			x							x				0		x					
3680	Al-Ashaab et al.	The transformation of product development process into lean environment using set-based concurrent engineering: A case study from an aerospace industry	CERA	2013	x	x				1	x	x	x	1	Cranfield	x									x				0		x					
3686	Al-Ashaab et al.	Lean Product Development Performance Measurement Tool		2013	x	x				1		x		0	Cranfield				x						x				0		x					
3628	Amin et al.	Assessing the leanness in product design : a model for planned design reuse		2010			x			0		x		0	QUT				x							x			0							x
3742	Anand & Kodali	Development of a Conceptual Framework for Lean New Product Development Process	IJPD	2008	x					0		x		0	BITS	x									x				0			x				
3795	Anand et al.	Lean Product Development - Redefining the Indian Automotive Product Development Process using Lean Framework		2009	x		x			1		x	x	1	Practitione	x									x				0		x					
3794	Anderson et al.	Using lean product development to speed time to market for medical devices		2011	x					0			x	0	MUST				x						x				0		x					
3276	Baines et al.	State-of-the-art in lean design engineering: A literature review on white collar lean	JEM	2006	x		x			1		x	x	1	Cranfield	x									x				0		x					
3615	Baines et al.	Beyond theory: An examination of lean new product introduction practices in the UK	JME	2007	x		x			1		x		0	Cranfield	x									x				0		x					
3676	Ballé & Ballé	Lean Development	BSR	2005	x					0		x	x	1	Practitioner							x			x				0		x					
3638	Beauregard	A multi-criteria performance study of lean engineering		2010			x			0		x		0	Concordia					x					x				0		x					
3796	Beauregard et al.	Lean engineering systems for product development in the aerospace industry		2008			x			0			x	0	Concordia				x						x				0		x					
3744	Beauregard et al.	Lean engineering logistics: load levelling of design jobs with capacity considerations	CASJ	2008				x		0				0	Practitione	x									x				0							x
3743	Beauregard et al.	Lean engineering performance analysis	IJPD	2014			x			0			x	0	ETS	x													0		x					
3797	Beauregard et al.	Post-Certification engineering taxonomy and task value optimization in the aerospace industry	EMJ	2011a	x		x			1			x	0	Concordia	x									x				0			DES				
3798	Beauregard et al.	Optimum task size, multitasking and utilization levels for lean product development		2011b	x					0			x	0	Concordia				x						x				0		x					
3625	Becker & Wits	Enabling Lean Design Through Computer Aided Synthesis: The Injection Moulding Cooling Case		2015			x			0		x		0	UT				x						x				0							DES
3745	Belay et al.	Approaching lean product development using system dynamics: investigating front-load effects	AM	2014	x					0			x	0	NTNU	x									x				0							x
3746	Bertelli & Loureiro	Quality problems in complex systems even considering the application of quality initiatives during product development		2015			x			0			x	0	NISR				x										0		x					

No.	Author(s)	Title	Journal	Year	Keywords					Duplication Keywords	Search Engine			Duplication search	Institute	Type of Publication									Discipline				Multiple discipline	Research Method						
					Lean product development	Lean product and process development	Lean engineering+	Snowballing	Additional Sources		EBSCOhost	Google Scholar	Scopus			Academic Journals	Monographs	Chapter Edited Bo	Conference Contrib	Doctoral theses	Working Papers	Professional Public	Reports	Presentations	Business & Man.	Engineering	Innovation & Techn. Man.	Other		Practitioners' viewpoint	Propositional/Lit. review	Statistical	Quant. Mod./ Regression	Qual. anal.	Multiple case studies	Single case study
The layout of these review data is formatted for A3-sized pages																																			
204	207				141	39	84	17	1	61	16	144	110	68	207	80	3	6	94	6	7	6	1	4	174	21	10	0	18	5	83	19	2	11	27	60
3715	Bjarnoe	Lean thinking in product development		2006	x					0		x		0	TUD				x										0						x	
3672	Browning*	On Customer Value and Improvement in Product Development Processes	SE	2003	x					0		x		0	Practitione	x									x				0		x					
3708	Cabello et al.	An analysis of methods to achieve robustness towards a lean product development process		2012	x					0		x	x	1	EPFL				x						x	x			1		x					
3748	Cai & Freiheit	Resource Allocation for Lean Product Development Using a Value Creation Cell Model	JMD	2014	x					0	x	x	x	1	UC	x									x				0							x
3799	Cai & Freiheit	Lean Principles in Product Development Processes		2011a	x					0			x	0	Calgary				x						x				0		x					
3817	Cai & Freiheit	Lean Value Creation in the Product Development Process With the Principle of Set-Based Concurrent Engineering		2011b				x		0				0	Calgary				x						x				0						x	
3749	Candido & Kaminksi	Product value optimisation engineering applied to current component designs: a case study from the Brazilian automotive industry	IJATM	2008			x			0		x		0	EPUSP	x									x	x			1							x
3284	Carleysmith et al.	Implementing Lean Sigma in pharmaceutical research and development: a review by practitioners	R&D Man.	2009		x				0		x		0	Practitione	x									x				0							x
3800	Ćatić & Sobek II	Development of key performance indicators for knowledge management		2013	x					0			x		CUT				x						x				0							x
3688	Ćatić & Vielhaber	Lean Product Development: Hype or sustainable new paradigm?		2011	x					0		x	x	1	CUT				x						x				0			x				
3655	Chase	Measuring Value in Product Development		2000				x		0		x		0	MIT							x			x				0							x
3725	Choothian	A study of the application of lean practices to new product development processes		2014	x					0		x		0	OST					x					x				0						x	
3750	Correia et al.	Mechanisms for communication and knowledge sharing for set-based concurrent engineering	IJPD	2014		x				0			x		IASTB	x													0				x			
3724	Costa et al.	What to Measure for Success in Lean System Engineering Programs?		2014	x					0		x		0	MIT				x						x				0							
	Cusumano & Nobeoka	Thinking Beyond Lean: How Multi-Project Management is Transforming Toyota and Other Companies		1998	x	x	x			1		x		0	MIT		x								x				0			x				x
3658	da Costa et al.	Toward a better comprehension of Lean metrics for research and product development management	R&D Man.	2014	x			x		1		x	x	1	USP	x									x				0							x
3662	Dal Forno & Forcellini	Lean product development – principles and practices	PMD	2013	x			x		1		x		0	FUSC	x									x				0							x
3663	Dal Forno et al.	Brazilian automotive industry trends in lean product development practices		2011				x		0		x		0	FUSC				x						x				0							x
3665	Dal Forno et al.	Lean Product Development: Benchmarking in Brazilian Companies		2013				x		0		x		0	FUSC				x						x				0						x	

No.	Author(s)	Title	Journal	Year	Keywords					Duplication Keywords	Search Engine			Duplication search	Institute	Type of Publication									Discipline				Multiple discipline	Research Method						
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3752	Dal Forno et al.	Use of the Lean Product Development Approach by Capital Goods Companies in Brazil		2013	x					0			x	0	FUSC				x						x				0		x					
3824	Dal Forno et al.	Value Stream Mapping: a study about the problems and challenges found in the literature from the past 15 years about application of Lean tools	IJAMT	2014					x	0				0	FUSC	x									x				0						x	
3645	Darwish et al	Value stream mapping and analysis of product development (engineering) processes		2010			x			0		x		0	Cranfield				x						x				0					x		
3629	Dem et al.	Application of lean product development at a manufacturing organisation: a case study		2012			x			0		x	x	1	UoJ				x						x				0						x	
3717	Dombrowski & Schmidt	Integration of design for X approaches in the concept of lean design to enable a holistic product design		2013	x					0		x		0	raunschweig				x							x			0							x
3693	Dombrowski & Zahn	Design of a lean development framework		2011		x	x			1		x	x	1	raunschweig				x						x				0		x					
Read-on	Dombrowski et al.	State of the Art-Lean Development		2011	x	x				1		x		0	raunschweig				x						x	x			1		x					
3702	Dombrowski et al.	Analysis and Integration of Design for X Approaches in Lean Design as basis for a Lifecycle Optimized Product Design		2014	x					0		x		0	raunschweig				x						x				0							x
3877	El-Sayed	Lean Design for Integrated Product Realization	SAE-IJMI	2010				x		0				0	Kettering	x									x				0		x					
3801	El-Sayed	Implementation of lean tools and methodologies in design		2012	x					0			x	0	Kettering				x						x				0						x	
3823	El-Sayed & El-Sayed	Balancing Manufacturability and Performance Attributes in Lean Design	SAE-IJMI	2012				x		0				0	Kettering	x									x				0				x			
3699	Endris et al.	Advanced process planning in lean product and process development		2012	x	x				1		x	x	1	PUM				x						x				0		x					
3815	Farahani & Buiyan	Study of flow in lean product development		2013	x					0			x	0	Concordia				x						x				0		Questionnaire		x			
3716	Flores et al.	Identifying Lean Thinking Measurement Needs and Trends in Product Development: Evidence from the Life Sciences Sector in Switzerland		2010	x					0		x		0	EPFL				x						x				0				x			
3613	Flores et al.	Do enterprises implement a process architecture towards Lean in product development? A comparative study among large and small firms		2011	x		x			1		x		0	EPFL				x						x				0						x	
3627	Flores et al.	Understanding the approaches to create a process architecture for lean thinking		2012			x			0		x	x	1	EPFL				x						x				0	x						x
3753	Flores et al.	Understanding customer value and waste in product Development: Evidence from Switzerland and Spain		2012	x					0			x	0	EPFL				x						x				0							x
3651	Fouquet	Design for Six Sigma and Lean Product Development : Differences, Similarities and Links	AJQ	2007	x					0		x		0	CUT	x									x				0		x					

No.	Author(s)	Title	Journal	Year	Keywords					Duplication Keywords	Search Engine			Duplication search	Institute	Type of Publication									Discipline				Multiple discipline	Research Method						
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3704	Furian et al.	Knowledge Management in Set Based Lean Product Development Process		2013	x					0		x	x	1	IASTB				x						x				0			x				
3754	Furuhjelm et al.	Creating value through lean product development-applying lean principles		2011	x					0			x	0	Practitioner				x						x				0						x	
3636	Garcia and Drogosz	Lean Engineering - Best Practice in the Automotive Industry		2007	x		x			1		x	x	1	Practitioner						x				x				0						x	
3804	Gautam	A design reuse based framework for lean product development		2005				x		0				0	WSU					x					x				0							x
3705	Gautam et al.	Design reuse framework: a perspective for lean development	IJPD	2007	x					0		x	x	1	Practitione	x										x			0		x					
3697	Gershenson & Pavnaskar	Eight Basic Lean Product Development Tools		2003	x					0		x		0	MTU				x						x				0							x
3721	Gingnell et al.	Swedish Lean Product Development Implementation		2012	x					0		x		0	KTH				x						x				0							x
3755	Gremyr & Fouquet	Design for Six Sigma and lean product development	IJLSS	2012	x	x				1		x	x	1	CUT	x									x				0		x					
3739	Gudem & Welo	From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value		2010						0			x	0	NTNU				x						x		x		1			Survey				
3722	Gudem et al.	Customer value is not a number–investigating the value concept in lean Product Development		2011	x					0		x	x	1	NTNU				x						x				0		x					
3756	Gudem et al.	From lean product development to lean innovation: Searching for a more valid approach for promoting utilitarian and emotional value	IJITM	2014	x					0			x		NTNU	x									x		x		1			Survey				
3614*	Gudem et al.*	Redefining customer value in lean product development design projects	JEDT	2013	x		x			1		x	x	1	NTNU	x									x				0			Survey				
3618	Gurumurthy & Kodali	An application of analytic hierarchy process for the selection of a methodology to improve the product development process	JMM	2012	x		x			1		x		0	IIMK	x									x				0		x					
3711	Hafer	Applying lean to new product development	ME	2011	x					0	x	x		1	Practitioner							x			x				0			x				
3757	Haggerty & Murman	Evidence of lean engineering in aircraft programs		2006			x			0			x	0	MIT				x						x				0			x				
3694	Haque	Lean engineering in the aerospace industry	JEM	2003	x	x				1		x	x	1	UW	x									x				0						x	
3677	Haque & -James-Moore+	Measures of performance for lean product introduction in the aerospace industry	JEM	2004b	x	x				1		x		0	UW	x									x				0		x					
3647	Haque & James-Moore+	Characteristics of lean product introduction	IJATM	2002	x	x	x			1		x	x	1	UW	x									x				0							
3758	Haque & James-Moore+	Applying lean thinking to new product introduction	JED	2004a	x	x	x			1	x	x		1	UW	x									x				0		x					
3759	Harland & Uddin	Effects of product platform development: fostering lean product development and production	IJPD	2014	x		x			1		x	x	1	TU-D	x									x		x		1				x			
3761	Harris et al.	Knowledge Management to Support Lean Product Development		2006	x					0		x		0	WU			x							x	x			1						x	

No.	Author(s)	Title	Journal	Year	Keywords					Duplication Keywords	Search Engine			Duplication search	Institute	Type of Publication									Discipline				Multiple discipline	Research Method							
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3760	Helander et al.	Applying lean in product development - enabler or inhibitor of creativity?	IJTM	2015			x			0	x	x	x	1	KTH	x									x				0							x
3864	Hille & Eseonu	State-of-the-art review of lean product development practices and their impact on project success		2015	x					0			x	0	OST				x						x				0		x					
3816	Hines & Packham	Implementing Lean New Product Development		2008	x					0		x		0	Cardiff				x						x				0		x					
3666	Hines et al.	Towards lean product lifecycle management: A framework for new product development	JMTM	2006	x					0		x		0	Cardiff	x									x				0							x
3762	Hölttä et al.	Lean information management model for engineering changes		2010	x					0			x		Aalto				x						x				0		x					
3731	Hoppmann et al.	Efficient Introduction of Lean in Product Development Results of the Survey		2009				x		0				0	MIT								x		x				0		x					
3608	Hoppmann et al.	A Framework for Organizing Lean Product Development	EMJ	2011	x		x			1		x	x	0	ETH	x									x				0		x					
3763	Institoris & Bligard	Human factors engineering as a supportive tool for lean product development		2014	x					0			x	0	CUT				x						x	x			1							x
3660	Jasti & Kodali	Validity and reliability of lean product development frameworks in Indian manufacturing industry	MBE	2014	x					0			x		BITS	x									x				0							x
3616	Johansson & Sundin	Lean and green product development: two sides of the same coin?	JCP	2014			x			0		x	x	1	JU	x									x				0		x					
3876	Kamath & Liker	A second look at Japanese product development	HBR	1994				x		0				0	UCin	x									x				0							x
3765	Karademir & Cangelir	Lean approach in concurrent engineering applications		2013			x			0			x	0	Practitioner				x						x				0		x					
3086	Karlsson & Åhlström	The difficult path to lean product development	JPIM	1996	x	x				1		x	x	1	SSE	x									x				0				x			
3766	Kerga et al.	Compact Teams: a Model to Achieve Lean in Product Development		2015	x					0			x	0	PUM				x						x				0							x
3654	Khan	The construction of a model for lean product development		2012	x	x	x			1		x		0	Cranfield					x									0		x					
3691	Khan et al.	Set-Based Concurrent Engineering process within the LeanPPD environment		2011	x					0		x	x	1	Cranfield				x						x				0		x					
3607	Khan et al.	Towards lean product and process development	IJCIM	2013	x	x	x			1	x	x	x	1	Cranfield	x									x	x			1				x			
3767	Khan et al.	Define value: applying the first lean principle to product development	IJISE	2015			x			0		x		0	Cranfield	x									x				0		x					

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3695	Kirner et al.	Information in Lean Product Development: Assessment of Value and Waste		2013	x					0		x		0	TUM				x						x				0						x	
3713	Lee & Chang	Developing a lean design for Six Sigma through supply chain methodology	IJPQM	2010	x					0		x		0	FU	x									x				0		x					
3768	Lemieux et al.	A Mixed Performance and Adoption Alignment Framework for Guiding Leanness and Agility Improvement Initiatives in Product Development	JET	2013	x					0		x		0	EPM	x													0						x	
3664	Lempia	Using Lean principles and MBE in design and development of avionics equipment at Rockwell Collins		2008			x			0		x		0	Practitioner				x								x		0		x					
3609	Léon & Farris	Lean Product Development Research: Current State and Future Directions	EMJ	2011	x		x			1		x	x	1	TTU	x									x				0						x	
3829	Letens et al.	Optimizing stakeholder value and reducing waste in new product development projects		2009	x					0			x	0	RMA				x						x				0			x				
3606	Letens et al.	A Multilevel Framework for Lean Product Development System Design	EMJ	2011	x	x	x			1		x	x	1	RMA	x									x				0		x					
3087	Liker & Morgan	The Toyota Way in Services: The Case of Lean Product Development	AMP	2006	x	x				1		x	x	1	UM	x									x				0		x					
3679	Liker & Morgan	Lean product development as a system: a case study of body and stamping development at Ford	EMJ	2011	x		x			1		x	x	1	UM	x													0		x					
3770	Lindlöf & Söderberg	Pros and cons of lean visual planning: experiences from four product development organisations	IJTIP	2011	x	x				1		x	x	1	CUT	x									x				0		x					
3612	Lindlöf et al.	Practices supporting knowledge transfer – an analysis of lean product development	IJCIM	2013	x		x			1	x	x	x	1	CUT	x									x				0		x					
3771	Machado	New Product Development: From Efficiency to Value Creation		2013	x					0			x	1	KPU				x								x		0		x					
3630	Maginness et al.	Principles for aerospace Manufacturing Engineering in integrated New Product Introduction	JME	2013			x			0		x		0	Cranfield	x									x				0						x	
3631	Maginness et al.	Value Stream Analysis of Manufacturing Engineering New Product Introduction Processes		2011a			x			0		x		0	Cranfield				x						x				0						x	
3633	Maginness et al.	Planning Manufacturing in a Concurrent Engineering Environment: A Case Study		2011b			x			0		x		0	Cranfield				x							x			0		x					
3720	Mahlamäki et al.	Lean product development point of view to current challenges of engineering change management in traditional manufacturing industries		2009	x					0		x		0	HUT				x						x				0						x	
3626	Maksimovic	Lean knowledge life cycle framework to support lean product development		2013			x			0		x		0	Cranfield					x					x	x			1							
3807	Mayrl et al.	Eliciting product development knowledge using value stream mapping	IJPD	2013	x					0			x	0	ETH	x									x				0						x	
3674	McManus & Millard	Value Stream Analysis and Mapping for Product Development		2002	x					0		x		0	MIT				x						x				0						x	
3806	McManus et al.*	Lean engineering : a framework for doing the right thing right	AJ	2007	x		x			1	x	x	x	1	MIT	x									x				0						x	
3821	McNeel & Lawrence	How Lean-manufacturing principles speed product design		2004				x		0				0	Practitioner							x			x				0			x				

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3825	Morgan	High performance product development: A systems approach to a lean product development process		2002				x		0				0	UM					x					x	x			1			x			x	
	Morgan & Liker	The Toyota product development system		2006	x	x				1		x		0	UM		x								x	x			1		x					
3657	Mund et al.	Lean product engineering in the South African automotive industry	JMTM	2015			x			0		x	x	1	NMMU	x									x				0							x
3648	Murman	Lean Systems Engineering II		2003			x			0		x		0	MIT									x					0		x					
3646	Murman	Lean Aerospace Engineering		2008			x			0		x		0	MIT						x								0							x
3822	Murman	Innovation in aeronautics through Lean Engineering		2012	x		x			1			x		MIT			x							x				0							x
3661	Negroni & Trabasso	A Quality Improving Method to Assist the Integrated Product Development Process		2009			x			0		x		0	AIT				x										0			x				
3870	Nepal et al.	Lean product development: An approach to achieve Ford's global product development system milestones		2007	x					0			x	0	PD				x						x				0		x					
3701	Nepal et al.	Improving the NPD Process by Applying Lean Principles: A Case Study	EMJ	2011	x	x				1		x	x	1	TAMU	x													0		x					
3641	Nightingale	Lean Engineering Product Development		2002			x			0		x		0	MIT									x	x				0		x					
3656	Oehmen	Lean Enablers for Managing Engineering Programs		2012			x			0		x		0	MIT									x	x				0			x				
3712	Oehmen & Rebentisch	Risk Managament in Lean PD		2010a	x					0		x		0	MIT						x				x				0			x				
3669	Oehmen & Rebentisch	Waste in Lean Product Development		2010b	x	x				1		x		0	MIT						x				x				0				x			
3640	Oppenheim	Lean product development flow	SE	2004	x	x	x			1		x	x	1	LMU	x									x				0		x					
	Oppenheim	Lean for Systems Engineering with Lean Enablers for Systems Engineering		2011	x		x			1			x	0	LMU		x								x	x			1							x

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3637	Oppenheim et al	Lean Enablers for Systems Engineering	SE	2011	x	x	x			1	x	x	x	1	LMU	x									x	x			1		x					
3772	Parry et al.***	Lean new product introduction: a UK aerospace perspective		2008			x			0		x		0	UB						x				x				0		x					
3819	Parsons & Josefik	Accelerating Production Readiness Using Lean Product Development		2009	x					0		x	x	1	Practitioner				x						x				0							x
3773	Paschkewitz	Risk Management in Lean Product Development		2014	x					0			x	0	Practitioner				x							x			0	x						
3774	Pavnaskar & Gershenson	The application of value stream mapping to lean engineering		2004			x			0		x	x	1	MTU				x						x				0	x						
3827	Pavnaskar & Gershenson	A Systematic Method for Leaning Engineering Processes		2005			x			0		x		0	MTU				x						x				0		x					
3639	Pessôa et al.	An approach to lean product development planning		2007	x	x	x			1		x	x	1	AIT			x							x				0							x
3709	Pessôa et al.	A method to lean product development planning	PMD	2008	x					0		x		0	AIT	x									x				0							x
3690	Pessôa et al.	Understanding the Waste Net: A Method for Waste Elimination Prioritization in Product Development		2009	x					0		x	x	1	MIT				x						x				0		x					
3719	Powell et al.	A New Set of Principles for Pursuing the Lean Ideal in Engineer-to-order Manufacturers		2014	x					0		x	x	1	NTNU				x							x			0							x
3775	Pullan et al.	Decision support tool for lean product and process development	PPC	2013	x	x	x			1		x	x	1	CU	x									x				0							x
3611	Qudrat-Ullah et al.	Improving high variable-low volume operations: an exploration into the lean product development	IJTM	2012	x		x			1	x	x	x	1	YU	x									x				0		x					
3734	Radeka & Sutton	What is "lean" about product development? An overview of Lean Product Development	PDMA	2007				x		0				0	Practitioner						x				x				0							x
3776	Rauch et al.	Axiomatic Design based Guidelines for the Design of a Lean Product Development Process		2015	x		x			1			x	0	FUBB				x						x	x			1							x
3081	Raudberget	Practical Applications of Set-Based Concurrent Engineering in Industry		2010	x					0		x	x		JU				x						x	x			1							x
3703	Raudberget	Enabling Set-based Concurrent Engineering in traditional product development		2011	x					0		x		0	JU				x						x				0	x						
3868	Raudberget & Sunnersjö	Experiences of set based concurrent engineering in four product developing companies		2010	x					0			x	0	JU				x						x				0		x					
3649	Rebentisch	Lean Product Development		2005	x		x			1		x		0	MIT								x						0							x
3732	Reinertsen	Lean thinking isn't so simple	ED	1999				x		0				0	Practitioner						x				x				0		x					
3668	Reinertsen	Let it flow: how lean product development sparked a revolution		2005	x	x				1		x		0	Practitioner						x				x				0							x
3733	Reinertsen & Shaeffer	Making R&D Lean	RTM	2005				x		0				0	Practitione	x									x				0							x
3675	Ringen & Holtskog	How enablers for lean product development motivate engineers	IJCIM	2013	x	x				1	x	x	x	1	GUC	x									x				0		x					

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3687	Ringen & Lodgaard	Lean product development in the automotive supplier industry		2009	x					0			x	0	NTNU				x						x				0	x						
3623	Ringen & Welo	Knowledge Based Development Practices in Systems Engineering Companies: A Comparative Study		2015			x			0		x	x	1	NTNU				x								x		0							x
3621	Rocha et al.	Mass Customization Enablement Through Lean Design & Set-Based Concurrent Engineering Application	JOSCM	2014			x			0		x		0	RJSU	x									x				0		x					
3696	Rossi et al.	Proposal of a method to systematically identify wastes in New Product Development Process		2011	x					0		x		0	PUM				x						x				0		x					
3679	Rossi et al.	Lean product development: A five-steps methodology for continuous improvement		2012	x	x				1		x	x	1	PUM				x						x				0					x		
3718	Ryan & Reik	Applying the Core Elements of a Lean Enterprise to Product Development		2010	x					0		x	x	1	Practitioner				x						x				0							x
3689	Saad et al.	A3 Thinking Approach to Support Problem Solving in Lean Product and Process Development		2013	x	x				1		x	x	1	Cranfield				x						x				0		x					
3779	Salgado et al.	Waste investigation on product development process using the lean and simulation approaches.	PMD	2014				x		0				0	FUA	x									x				0							x
3624	Salgado et al.	Investigating waste on new product development: case study	PMD	2015			x			0		x		0	FUA	x									x				0							x
3793	Saunders et al.	A case study to evaluate lean product development practices in the global automotive industry	IJPD	2014	x		x			1		x	x	1	UG	x									x				0		x					
3726	Schuh et al.	Lean Innovation: Introducing Value Systems to Product Development		2008		x				0		x		0	RWTH				x							x			0							x
3780	Schuh et al.	Systematic waste elimination in lean product development using generic activities	IJPD	2014	x					0			x		RWTH	x									x				0							x
3792	Schulze & Störmer	Lean product development – enabling management factors for waste elimination	IJTM	2012	x	x	x			1	x	x	x	1	ETH	x									x				0							x
3632	Schulze et al.	Exploring the 4I framework of organisational learning in product development: value stream mapping as a facilitator	IJCIM	2013			x			0	x	x	x	1	ETH	x									x				0			x				
3644	Shirwaiker & Okudan	Contributions of TRIZ and axiomatic design to leanness in design: an investigation		2011			x			0		x		0	PSU				x							x			0	x						
3710	Singer et al.	What Is Set-Based Design?	NEJ	2009	x					0		x		0	UM	x													0	x						
3689	Siyam et al.	Lean product development in practice: Insights from 4 companies		2013	x					0		x	x	1	UC				x						x				0							x
3620	Siyam et al.	Review of Value and Lean in Complex Product Development	SE	2015	x		x			1	x	x		1	UC	x									x				0							x

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3707	Siyam et al.	Relating value methods to waste types in lean product development		2012a	x					0		x	x	1	UC				x										0		SLR					
3781	Siyam et al.	Value and waste dependencies and guidelines		2012b	x					0			x	0	UC				x						x				0		x					
3728	Sobek II et al.	Another Look at How Toyota Integrates Product Development	HBR	1998				x		0				0	MSU	x									x				0		x					
3083	Sobek II et al.	Toyota's Principles of Set-Based Concurrent Engineering	SMR	1999				x		0				0	MSU	x									x				0			x				
3682	Sopelana et al.	The Application of an Assessment Tool for Lean Product Development: An exploratory study in Spanish Companies		2012	x	x				1		x	x	1	EPFL				x						x				0		x					
3706	Sorli et al.	Applying lean thinking concepts to new product development		2010	x					0		x	x	1	PUM				x										0		x					
3782	Sorli et al.	Expanding lean thinking to the product and process design and development within the framework of sustainability		2011	x					0	x			0	UV				x						x				0					x		
3783	Sorli et al.	Development of KBE system to support LeanPPD application		2012	x					0			x	0	Cranfield				x						x				0						x	
3784	Stenholm et al.	Knowledge Based Development in Automotive Industry Guided by Lean Enablers for System Engineering		2015	x					0			x	0	CUT				x						x				0		x					
3785	Stetler	Creativity Just in Time? The Role of Delivery Precision in Product Development	IJITM	2015			x			0		x		0	Practitione	x										x			0		x					
3786	Ström et al.	Transformation to lean product development - Approaches at two automotive suppliers		2012	x					0			x	0	CUT				x						x				0		x					
3866	Subramoniam et al.	Lean Engineering Implementation Challenges for Automotive Remanufacturing		2009	x		x			1		x		0	Practitioner				x						x				0							
3863	Swan & Furuhjelm	Creating Value Through Lean Product Development – Towards a Generic Framework		2010	x					0		x	x	1	Practitioner				x						x				0							x
3862	Tähemaa et al.	Lean product development in Estonian SMEs		2012	x					0			x	0	TUT				x						x				0							x
3787	Taisch et al.	Towards a performance measurement system for lean-oriented NPD processes		2011	x					0			x	0	PUM				x										0					x		
3875	Thomas & Singh	Design for Lean Six Sigma (DFLSS): Philosophy, Tools, Potential and Deployment Challenges in Automotive Product Development		2006	x					0		x		0	WSU				x										0						x	
3652	Tingström et al.	Implementing Value Stream Mapping – VSM in a R&D organisation		2010			x			0		x	x	1	Practitioner				x						x				0		x					

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3788	Tortorella et al.	Lean Product Development (LPD) Enablers for Product Development Process Improvement		2015	x					0			x		FUSC			x							x				0							x
3687	Tyagi et al.	Value stream mapping to reduce the lead-time of a product development process	IJPE	2015	x					0		x		0	WSU	x									x				0		x					
3805	Vinodh & Kumar	A case study on lean product and process development		2015	x	x				1			x	0	NIT			x							x				0							x
3685	von Würtemberg et al.	Abstract model of LPD: A critical review of the Lean Product Development concept		2011	x					0		x	x	1	KTH				x						x				0							x
3653	Vosgien et al.	Lean approach to integrate collaborative product development processes and digital engineering systems		2011	x		x			1		x	x	1	ECP				x						x				0			Survey				
3650	Walton	Strategies for Lean Product Development		1999	x	x	x			1		x		0	MIT						x				x				0		x					
3617	Wang et al	Using Value Stream Mapping to Analyze an Upholstery Furniture Engineering Process	FPJ	2011			x			0		x		0	VPI	x									x				0		x					
3642	Wang et al.	Focus on implementation: a framework for lean product development	JMTM	2011	x	x	x			1		x	x	1	SJTU	x									x				0		x					
3698	Wangwacharakul et al.	Cultural Aspects when Implementing Lean Production and Lean Product Development – Experiences from a Swedish Perspective	QIP	2014	x					0		x	x	1	LU	x											x		0					x		
3871	Ward et al.	Set-based concurrent engineering and Toyota		1994				x		0				0	UM				x						x				0					x		
0852	Ward et al.	The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster	SMR	1995				x		0				0	UM	x									x				0					x		
3684	Wasim et al.	An innovative cost modelling system to support lean product and process development	IJAMT	2013	x	x				1	x	x	x	1	Cranfield	x									x	x			1							x
3610	Welo	On the application of lean principles in Product Development: a commentary on models and practices	IJPD	2011	x	x	x			1		x		0	NTNU	x									x				0					x		
3634	Welo & Ringen	Investigating Lean Development Practices in SE Companies: A Comparative Study Between Sectors		2015			x			0		x	x	1	NTNU				x						x				0		x					
3791	Welo et al.	Enhancing product innovation through a customer-centered, Lean framework	IJITM	2012			x			0		x		0	NTNU	x									x		x		1		x					
3622	Welo et al.	Assessing the Relationship between New Product Development Practices and Performance in the Norwegian Manufacturing Industry		2013			x			0		x		0	NTNU				x										0							x
3789	Wohnhas	Value management in lean product development		2014	x					0			x	0	Practitioner				x										0							x
3790	Yang & Cai	The integration of DFSS, lean product development and lean knowledge management	IJSSCA	2009	x	x	x			1		x		0	WSU	x													0		x					
										0				0															0							

* conference proceeding found but substituted by journal publication

No.	Author(s)	Title	Journal	Year	Keywords						Duplication Keywords	Search Engine			Duplication search	Institute	Type of Publication									Discipline					Research Method						
					Lean product development	Lean product and process development	Lean engineering+	Snowballing	Additional Sources			EBSCOhost	Google Scholar	Scopus			Academic Journals	Monographs	Chapter Edited Bo	Conference Contrib	Doctoral theses	Working Papers	Professional Public	Reports	Presentations	Business & Man.	Engineering	Innovation & Techn. Man.	Other	Multiple discipline	Practitioners' viewpoint	Propositional/Lit. review	Statistical	Quant. Mod./ Regression	Qual. anal.	Multiple case studies	Single case study
The layout of these review data is formatted for A3-sized pages																																			
204	207				141	39	84	17	1	61	16	144	110	68	207	80	3	6	94	6	7	6	1	4	174	21	10	0	18	5	83	19	2	11	27	60

** working paper replaced with journal publication
*** working paper taken (rather than chapter in edited book)
**** First edition used
+ Name of 'Moore' corrected to 'James-Moore'

ALTERNATIVE SEARCH TERMS
+ "lean design engineering"

Do not forget total

Institute	# Sources	Total
AIT	3	196
Aalto	1	
BITS	2	
Braunschwei	4	
Cardiff	2	
Concordia	5	

No.	Author(s)	Title	Journal	Year	Industry												Scope				
					Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industries	Optimising/management NPD	Methods, tools for products	Secondary engineering	Optimising operational processes	Duplication
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204	207				52	64	13	8	15	13	19	5	29	14	61	32	161	49	3	6	24
3700	Al-Ashaab et al.	The Industrial Requirements of KBE for the LeanPPD Model		2010		x					x		x		x	3			x		0
3683	Al-Ashaab et al.	The Conceptual LeanPPD Model		2010											x	0	x				0
3680	Al-Ashaab et al.	The transformation of product development process into lean environment using set-based concurrent engineering: A case study from an aerospace industry	CERA	2013	x											0	x				0
3686	Al-Ashaab et al.	Lean Product Development Performance Measurement Tool		2013											x	0		x			0
3628	Amin et al.	Assessing the leanness in product design : a model for planned design reuse		2010		x										0	x				0
3742	Anand & Kodali	Development of a Conceptual Framework for Lean New Product Development Process	IJPD	2008		x			x		x		x			4	x				0
3795	Anand et al.	Lean Product Development - Redefining the Indian Automotive Product Development Process using Lean Framework		2009											x	0	x	x			1
3794	Anderson et al.	Using lean product development to speed time to market for medical devices		2011											x	0					0
3276	Baines et al.	State-of-the-art in lean design engineering: A literature review on white collar lean	JEM	2006											x	0		x			0
3615	Baines et al.	Beyond theory: An examination of lean new product introduction practices in the UK	JME	2007											x	0		x			0
3676	Ballé & Ballé	Lean Development	BSR	2005											x	0	x				0
3638	Beauregard	A multi-criteria performance study of lean engineering		2010											x	0	x				0
3796	Beauregard et al.	Lean engineering systems for product development in the aerospace industry		2008											x	0	x	x			1
3744	Beauregard et al.	Lean engineering logistics: load levelling of design jobs with capacity considerations	CASJ	2008									x			0	x				0
3743	Beauregard et al.	Lean engineering performance analysis	IJPD	2014	x											0	x				0
3797	Beauregard et al.	Post-Certification engineering taxonomy and task value optimization in the aerospace industry	EMJ	2011a	x											0	x				0
3798	Beauregard et al.	Optimum task size, multitasking and utilization levels for lean product development		2011b								x				0	x				0
3625	Becker & Wits	Enabling Lean Design Through Computer Aided Synthesis: The Injection Moulding Cooling Case		2015	x											0	x				0
3745	Belay et al.	Approaching lean product development using system dynamics: investigating front-load effects	AM	2014	x											0	x				0
3746	Bertelli & Loureiro	Quality problems in complex systems even considering the application of quality initiatives during product development		2015											x	0	x				0

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204	207				52	64	13	8	15	13	19	5	29	14	61	32	161	49	3	6	24
3715	Bjarnoe	Lean thinking in product development		2006	x	x					x					3				x	0
3672	Browning*	On Customer Value and Improvement in Product Development Processes	SE	2003											x	0		x			0
3708	Cabello et al.	An analysis of methods to achieve robustness towards a lean product development process		2012											x	0		x		x	1
3748	Cai & Freiheit	Resource Allocation for Lean Product Development Using a Value Creation Cell Model	JMD	2014	x											0	x				0
3799	Cai & Freiheit	Lean Principles in Product Development Processes		2011a											x	0	x				0
3817	Cai & Freiheit	Lean Value Creation in the Product Development Process With the Principle of Set-Based Concurrent Engineering		2011b	x	x										2	x				0
3749	Candido & Kaminksi	Product value optimisation engineering applied to current component designs: a case study from the Brazilian automotive industry	IJATM	2008										x		0		x			0
3284	Carleysmith et al.	Implementing Lean Sigma in pharmaceutical research and development: a review by practitioners	R&D Man.	2009	x											0		x	(x)		1
3800	Ćatić & Sobek II	Development of key performance indicators for knowledge management		2013	x											0	x				0
3688	Ćatić & Vielhaber	Lean Product Development: Hype or sustainable new paradigm?		2011	x	x		x								3	x				0
3655	Chase	Measuring Value in Product Development		2000	x											0	x				0
3725	Choothian	A study of the application of lean practices to new product development processes		2014		x										0		x			0
3750	Correia et al.	Mechanisms for communication and knowledge sharing for set-based concurrent engineering	IJPD	2014										x		0	x				0
3724	Costa et al.	What to Measure for Success in Lean System Engineering Programs?		2014	x	x		x		x		x				5		x			0
	Cusumano & Nobeoka	Thinking Beyond Lean: How Multi-Project Management is Transforming Toyota and Other Companies		1998		x		x	x	x	x		x			6	x				0
3658	da Costa et al.	Toward a better comprehension of Lean metrics for research and product development management	R&D Man.	2014										x		0	x				0
3662	Dal Forno & Forcellini	Lean product development – principles and practices	PMD	2013	x											0	x				0
3663	Dal Forno et al.	Brazilian automotive industry trends in lean product development practices		2011							x					0	x				0
3665	Dal Forno et al.	Lean Product Development: Benchmarking in Brazilian Companies		2013	x	x			x	x			x			5	x	x			1

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3752	Dal Forno et al.	Use of the Lean Product Development Approach by Capital Goods Companies in Brazil		2013											x	0	x	x			1
3824	Dal Forno et al.	Value Stream Mapping: a study about the problems and challenges found in the literature from the past 15 years about application of Lean tools	IJAMT	2014	x	x	x									3	x				0
3645	Darwish et al	Value stream mapping and analysis of product development (engineering) processes		2010	x	x			x	x			x			5	x	x			1
3629	Dem et al.	Application of lean product development at a manufacturing organisation: a case study		2012		x										0	x				0
3717	Dombrowski & Schmidt	Integration of design for X approaches in the concept of lean design to enable a holistic product design		2013		x										0	x				0
3693	Dombrowski & Zahn	Design of a lean development framework		2011											x	0	x				0
Read-on	Dombrowski et al.	State of the Art-Lean Development		2011											x	0		x			0
3702	Dombrowski et al.	Analysis and Integration of Design for X Approaches in Lean Design as basis for a Lifecycle Optimized Product Design		2014		x										0	x	x			1
3877	El-Sayed	Lean Design for Integrated Product Realization	SAE-IJM	2010	x											0	x				0
3801	El-Sayed	Implementation of lean tools and methodologies in design		2012						x						0	x				0
3823	El-Sayed & El-Sayed	Balancing Manufacturability and Performance Attributes in Lean Design	SAE-IJM	2012										x		0	x				0
3699	Endris et al.	Advanced process planning in lean product and process development		2012											x	0		x			0
3815	Farahani & Buiyan	Study of flow in lean product development		2013		x				x	x	x	x			5	x				0
3716	Flores et al.	Identifying Lean Thinking Measurement Needs and Trends in Product Development: Evidence from the Life Sciences Sector in Switzerland		2010					x	x	x		x			4	x				0
3613	Flores et al.	Do enterprises implement a process architecture towards Lean in product development? A comparative study among large and small firms		2011	x	x		x								3	x				0
3627	Flores et al.	Understanding the approaches to create a process architecture for lean thinking		2012									x			0	x				0
3753	Flores et al.	Understanding customer value and waste in product Development: Evidence from Switzerland and Spain		2012		x										0	x	x			1
3651	Fouquet	Design for Six Sigma and Lean Product Development : Differences, Similarities and Links	AJQ	2007											x	0	x				0

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3704	Furian et al.	Knowledge Management in Set Based Lean Product Development Process		2013		x										0	x				0
3754	Furuhjelm et al.	Creating value through lean product development-applying lean principles		2011		x					x					2	x				0
3636	Garcia and Drogosz	Lean Engineering - Best Practice in the Automotive Industry		2007		x										0	x				0
3804	Gautam	A design reuse based framework for lean product development		2005	x											0					0
3705	Gautam et al.	Design reuse framework: a perspective for lean development	IJPD	2007											x	0		x			0
3697	Gershenson & Pavnaskar	Eight Basic Lean Product Development Tools		2003					x							0	x				0
3721	Gingnell et al.	Swedish Lean Product Development Implementation		2012					x							0	x				0
3755	Gremyr & Fouquet	Design for Six Sigma and lean product development	IJLSS	2012											x	0	x				0
3739	Gudem & Welo	From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value		2010		x										0		x			0
3722	Gudem et al.	Customer value is not a number–investigating the value concept in lean Product Development		2011											x	0					0
3756	Gudem et al.	From lean product development to lean innovation: Searching for a more valid approach for promoting utilitarian and emotional value	IJITM	2014		x	x		x		x		x			5		x			0
3614*	Gudem et al.*	Redefining customer value in lean product development design projects	JEDT	2013							x					0	x	x			1
3618	Gurumurthy & Kodali	An application of analytic hierarchy process for the selection of a methodology to improve the product development process	JMM	2012												0	x				0
3711	Hafer	Applying lean to new product development	ME	2011												0	x				0
3757	Haggerty & Murman	Evidence of lean engineering in aircraft programs		2006		x										0	x				0
3694	Haque	Lean engineering in the aerospace industry	JEM	2003		x					x		x			3			x		0
3677	Haque & -James-Moore+	Measures of performance for lean product introduction in the aerospace industry	JEM	2004b		x										0	x				0
3647	Haque & James-Moore+	Characteristics of lean product introduction	IJATM	2002	x	x		x								3					0
3758	Haque & James-Moore+	Applying lean thinking to new product introduction	JED	2004a										Hypothetical ca		0	x				0
3759	Harland & Uddin	Effects of product platform development: fostering lean product development and production	IJPD	2014		x			x		x					3	x				0
3761	Harris et al.	Knowledge Management to Support Lean Product Development		2006		x			x		x					3	x				0

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3760	Helander et al.	Applying lean in product development - enabler or inhibitor of creativity?	IJTM	2015									x			0		x			0
3864	Hille & Eseonu	State-of-the-art review of lean product development practices and their impact on project success		2015											x	0					0
3816	Hines & Packham	Implementing Lean New Product Development		2008											x	0	x				0
3666	Hines et al.	Towards lean product lifecycle management: A framework for new product development	JMTM	2006		x										0	x				0
3762	Hölttä et al.	Lean information management model for engineering changes		2010											x	0					0
3731	Hoppmann et al.	Efficient Introduction of Lean in Product Development Results of the Survey		2009											x	0	x				0
3608	Hoppmann et al.	A Framework for Organizing Lean Product Development	EMJ	2011											x	0	x				0
3763	Institoris & Bligard	Human factors engineering as a supportive tool for lean product development		2014		x					x		x			3		x			0
3660	Jasti & Kodali	Validity and reliability of lean product development frameworks in Indian manufacturing industry	MBE	2014		x						x	x			3	x				0
3616	Johansson & Sundin	Lean and green product development: two sides of the same coin?	JCP	2014	x		x									2	x				0
3876	Kamath & Liker	A second look at Japanese product development	HBR	1994	x		x									2	x	x			1
3765	Karademir & Cangelir	Lean approach in concurrent engineering applications		2013	x		x									2	x	x			1
3086	Karlsson & Åhlström	The difficult path to lean product development	JPIM	1996		x										0	x				0
3766	Kerga et al.	Compact Teams: a Model to Achieve Lean in Product Development		2015		x										0	x				0
3654	Khan	The construction of a model for lean product development		2012	x											0	x				0
3691	Khan et al.	Set-Based Concurrent Engineering process within the LeanPPD environment		2011	x											0		x			0
3607	Khan et al.	Towards lean product and process development	IJCIM	2013	x											0	x				0
3767	Khan et al.	Define value: applying the first lean principle to product development	IJISE	2015											x	0	x				0

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3695	Kirner et al.	Information in Lean Product Development: Assessment of Value and Waste		2013	x											0	x				0
3713	Lee & Chang	Developing a lean design for Six Sigma through supply chain methodology	IJPQM	2010	x											0	x				0
3768	Lemieux et al.	A Mixed Performance and Adoption Alignment Framework for Guiding Leanness and Agility Improvement Initiatives in Product Development	JET	2013	x											0	x				0
3664	Lempia	Using Lean principles and MBE in design and development of avionics equipment at Rockwell Collins		2008	x											0	x				0
3609	Léon & Farris	Lean Product Development Research: Current State and Future Directions	EMJ	2011	x											0	x				0
3829	Letens et al.	Optimizing stakeholder value and reducing waste in new product development projects		2009	x	x			x	x			x			5	x				0
3606	Letens et al.	A Multilevel Framework for Lean Product Development System Design	EMJ	2011	x											0	x				0
3087	Liker & Morgan	The Toyota Way in Services: The Case of Lean Product Development	AMP	2006	x											0	x				0
3679	Liker & Morgan	Lean product development as a system: a case study of body and stamping development at Ford	EMJ	2011										x		0	x				0
3770	Lindlöf & Söderberg	Pros and cons of lean visual planning: experiences from four product development organisations	IJTIP	2011											x	0	x				0
3612	Lindlöf et al.	Practices supporting knowledge transfer – an analysis of lean product development	IJCIM	2013	x											0	x	x			1
3771	Machado	New Product Development: From Efficiency to Value Creation		2013	x											0	x				0
3630	Maginness et al.	Principles for aerospace Manufacturing Engineering in integrated New Product Introduction	JME	2013		x										0	x				0
3631	Maginness et al.	Value Stream Analysis of Manufacturing Engineering New Product Introduction Processes		2011a		x										0	x				0
3633	Maginness et al.	Planning Manufacturing in a Concurrent Engineering Environment: A Case Study		2011b											x	0		x			0
3720	Mahlamäki et al.	Lean product development point of view to current challenges of engineering change management in traditional manufacturing industries		2009		x										0	x				0
3626	Maksimovic	Lean knowledge life cycle framework to support lean product development		2013												0					0
3807	Mayrl et al.	Eliciting product development knowledge using value stream mapping	IJPD	2013						x						0					0
3674	McManus & Millard	Value Stream Analysis and Mapping for Product Development		2002		x										0		x			0
3806	McManus et al.*	Lean engineering : a framework for doing the right thing right	AJ	2007		x										0	x				0
3821	McNeel & Lawrence	How Lean-manufacturing principles speed product design		2004		x										0	x				0

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3825	Morgan	High performance product development: A systems approach to a lean product development process		2002		x										0	x				0
	Morgan & Liker	The Toyota product development system		2006											x	0	x				0
3657	Mund et al.	Lean product engineering in the South African automotive industry	JMTM	2015								Leisure boats				0		x			0
3648	Murman	Lean Systems Engineering II		2003											x	0	x				0
3646	Murman	Lean Aerospace Engineering		2008									x			0	x				0
3822	Murman	Innovation in aeronautics through Lean Engineering		2012								Leisure boats				0		x			0
3661	Negroni & Trabasso	A Quality Improving Method to Assist the Integrated Product Development Process		2009		x	x			x	x		x			5	x				0
3870	Nepal et al.	Lean product development: An approach to achieve Ford's global product development system milestones		2007										x		0	x				0
3701	Nepal et al.	Improving the NPD Process by Applying Lean Principles: A Case Study	EMJ	2011											x	0	x				0
3641	Nightingale	Lean Engineering Product Development		2002									x			0	x				0
3656	Oehmen	Lean Enablers for Managing Engineering Programs		2012	x		x							x		2	x				0
3712	Oehmen & Rebentisch	Risk Managament in Lean PD		2010a	x	x	x						x			4	x				0
3669	Oehmen & Rebentisch	Waste in Lean Product Development		2010b	x	x		x	x		x		x			6	x	x			1
3640	Oppenheim	Lean product development flow	SE	2004											x	0	x				0
	Oppenheim	Lean for Systems Engineering with Lean Enablers for Systems Engineering		2011		x										0	x				0

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3637	Oppenheim et al	Lean Enablers for Systems Engineering	SE	2011											x	0	x				0
3772	Parry et al.***	Lean new product introduction: a UK aerospace perspective		2008											x	0		x			0
3819	Parsons & Josefik	Accelerating Production Readiness Using Lean Product Development		2009									x			0	x				0
3773	Paschkewitz	Risk Management in Lean Product Development		2014										x		0	x			x	1
3774	Pavnaskar & Gershenson	The application of value stream mapping to lean engineering		2004											x	0	x				0
3827	Pavnaskar & Gershenson	A Systematic Method for Leaning Engineering Processes		2005											x	0	x				0
3639	Pessôa et al.	An approach to lean product development planning		2007		x										0	x				0
3709	Pessôa et al.	A method to lean product development planning	PMD	2008		x										0		x			0
3690	Pessôa et al.	Understanding the Waste Net: A Method for Waste Elimination Prioritization in Product Development		2009											x	0	x				0
3719	Powell et al.	A New Set of Principles for Pursuing the Lean Ideal in Engineer-to-order Manufacturers		2014	x											0	x				0
3775	Pullan et al.	Decision support tool for lean product and process development	PPC	2013	x											0					0
3611	Qudrat-Ullah et al.	Improving high variable-low volume operations: an exploration into the lean product development	IJTM	2012		x										0	x				0
3734	Radeka & Sutton	What is "lean" about product development? An overview of Lean Product Development	PDMA	2007						x						0		x			0
3776	Rauch et al.	Axiomatic Design based Guidelines for the Design of a Lean Product Development Process		2015									x			0	x			x	1
3081	Raudberget	Practical Applications of Set-Based Concurrent Engineering in Industry		2010		x										0	x				0
3703	Raudberget	Enabling Set-based Concurrent Engineering in traditional product development		2011											x	0	x				0
3868	Raudberget & Sunnersjö	Experiences of set based concurrent engineering in four product developing companies		2010											x	0	x				0
3649	Rebentisch	Lean Product Development		2005		x										0	x				0
3732	Reinertsen	Lean thinking isn't so simple	ED	1999											x	0	x				0
3668	Reinertsen	Let it flow: how lean product development sparked a revolution		2005						x					x	0	x				0
3733	Reinertsen & Shaeffer	Making R&D Lean	RTM	2005	x											0	x				0
3675	Ringen & Holtskog	How enablers for lean product development motivate engineers	IJCIM	2013											x	0		x			0

No.	Author(s)	Title	Journal	Year	Industry												Scope				
					Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industries	Optimising/management NPD	Methods, tools for products	Secondary engineering	Optimising operational processes	Duplication
The layout of these review data is formatted for A3-sized pages																					
204	207				52	64	13	8	15	13	19	5	29	14	61	32	161	49	3	6	24
3687	Ringen & Lodgaard	Lean product development in the automotive supplier industry		2009				x								0	x				0
3623	Ringen & Welo	Knowledge Based Development Practices in Systems Engineering Companies: A Comparative Study		2015		x										0	x				0
3621	Rocha et al.	Mass Customization Enablement Through Lean Design & Set-Based Concurrent Engineering Application	JOSCM	2014											x	0		x			0
3696	Rossi et al.	Proposal of a method to systematically identify wastes in New Product Development Process		2011											x	0	x	x			1
3679	Rossi et al.	Lean product development: A five-steps methodology for continuous improvement		2012										x		0	x				0
3718	Ryan & Reik	Applying the Core Elements of a Lean Enterprise to Product Development		2010				x								0	x				0
3689	Saad et al.	A3 Thinking Approach to Support Problem Solving in Lean Product and Process Development		2013											x	0		x		x	1
3779	Salgado et al.	Waste investigation on product development process using the lean and simulation approaches.	PMD	2014										x		0	x				0
3624	Salgado et al.	Investigating waste on new product development: case study	PMD	2015							x					0	x				0
3793	Saunders et al.	A case study to evaluate lean product development practices in the global automotive industry	IJPD	2014											x	0		x			0
3726	Schuh et al.	Lean Innovation: Introducing Value Systems to Product Development		2008		x										0	x				0
3780	Schuh et al.	Systematic waste elimination in lean product development using generic activities	IJPD	2014			x									0	x				0
3792	Schulze & Störmer	Lean product development – enabling management factors for waste elimination	IJTM	2012			x									0	x				0
3632	Schulze et al.	Exploring the 4I framework of organisational learning in product development: value stream mapping as a facilitator	IJCIM	2013										x	x	0	x				0
3644	Shirwaiker & Okudan	Contributions of TRIZ and axiomatic design to leanness in design: an investigation		2011											x	0	x				0
3710	Singer et al.	What Is Set-Based Design?	NEJ	2009											x	0	x				0
3689	Siyam et al.	Lean product development in practice: Insights from 4 companies		2013					x							0	x				0
3620	Siyam et al.	Review of Value and Lean in Complex Product Development	SE	2015										x		0	x				0

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204	207				52	64	13	8	15	13	19	5	29	14	61	32	161	49	3	6	24
3707	Siyam et al.	Relating value methods to waste types in lean product development		2012a											x	0					0
3781	Siyam et al.	Value and waste dependencies and guidelines		2012b											x	0	x				0
3728	Sobek II et al.	Another Look at How Toyota Integrates Product Development	HBR	1998	x											0	x	x			1
3083	Sobek II et al.	Toyota's Principles of Set-Based Concurrent Engineering	SMR	1999	x	x				x	x	x	x			6	x				0
3682	Sopelana et al.	The Application of an Assessment Tool for Lean Product Development: An exploratory study in Spanish Companies		2012											x	0	x	x			1
3706	Sorli et al.	Applying lean thinking concepts to new product development		2010	x											0	x				0
3782	Sorli et al.	Expanding lean thinking to the product and process design and development within the framework of sustainability		2011	x				x			x				3	x				0
3783	Sorli et al.	Development of KBE system to support LeanPPD application		2012					x					x		0	x				0
3784	Stenholm et al.	Knowledge Based Development in Automotive Industry Guided by Lean Enablers for System Engineering		2015											x	0	x				0
3785	Stetler	Creativity Just in Time? The Role of Delivery Precision in Product Development	IJITM	2015											x	0	x				0
3786	Ström et al.	Transformation to lean product development - Approaches at two automotive suppliers		2012											x	0	x				0
3866	Subramoniam et al.	Lean Engineering Implementation Challenges for Automotive Remanufacturing		2009		x										0	x				0
3863	Swan & Furuhjelm	Creating Value Through Lean Product Development – Towards a Generic Framework		2010		x										0	x				0
3862	Tähemaa et al.	Lean product development in Estonian SMEs		2012		x										0	x				0
3787	Taisch et al.	Towards a performance measurement system for lean-oriented NPD processes		2011		x										0	x				0
3875	Thomas & Singh	Design for Lean Six Sigma (DFLSS): Philosophy, Tools, Potential and Deployment Challenges in Automotive Product Development		2006		x										0					0
3652	Tingström et al.	Implementing Value Stream Mapping – VSM in a R&D organisation		2010											x	0	x				0

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204	207				52	64	13	8	15	13	19	5	29	14	61	32	161	49	3	6	24
3788	Tortorella et al.	Lean Product Development (LPD) Enablers for Product Development Process Improvement		2015		x										0	x	x			1
3687	Tyagi et al.	Value stream mapping to reduce the lead-time of a product development process	IJPE	2015			x									0	x				0
3805	Vinodh & Kumar	A case study on lean product and process development		2015		x										0	x				0
3685	von Würtemberg et al.	Abstract model of LPD: A critical review of the Lean Product Development concept		2011			x									0	x				0
3653	Vosgien et al.	Lean approach to integrate collaborative product development processes and digital engineering systems		2011	x	x	x						x			4	x				0
3650	Walton	Strategies for Lean Product Development		1999									x			0	x	x			1
3617	Wang et al	Using Value Stream Mapping to Analyze an Upholstery Furniture Engineering Process	FPJ	2011											x	0	x	x			1
3642	Wang et al.	Focus on implementation: a framework for lean product development	JMTM	2011	x											0	x				0
3698	Wangwacharakul et al.	Cultural Aspects when Implementing Lean Production and Lean Product Development – Experiences from a Swedish Perspective	QIP	2014	x											0	x				0
3871	Ward et al.	Set-based concurrent engineering and Toyota		1994	x											0	x				0
0852	Ward et al.	The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster	SMR	1995	x											0	x				0
3684	Wasim et al.	An innovative cost modelling system to support lean product and process development	IJAMT	2013									x			0	x				0
3610	Welo	On the application of lean principles in Product Development: a commentary on models and practices	IJPD	2011		x										0		x			0
3634	Welo & Ringen	Investigating Lean Development Practices in SE Companies: A Comparative Study Between Sectors		2015		x										0		x		x	1
3791	Welo et al.	Enhancing product innovation through a customer-centered, Lean framework	IJITM	2012																	
3622	Welo et al.	Assessing the Relationship between New Product Development Practices and Performance in the Norwegian Manufacturing Industry		2013							x					0	x				0
3789	Wohnhas	Value management in lean product development		2014									x			0		x			0
3790	Yang & Cai	The integration of DFSS, lean product development and lean knowledge management	IJSSCA	2009											x	0	x				0

* conference proceeding found but substituted by journal publication

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** working paper replaced with journal publication
*** working paper taken (rather than chapter in edited book)
**** First edition used
+ Name of 'Moore' corrected to 'James-Moore'

ALTERNATIVE SEARCH TERMS
+ "lean design engineering"

No.	Author(s)	Title	Journal	Year	Which principles of 'lean thinking' have been used?						
					Value	Value stream mapping	Waste	Flow/pull production	Perfection	Set-based CE	Other principles?
The layout of these review data is formatted for A3-sized pages											
204	207				119	85	107	75	64	72	67
3700	Al-Ashaab et al.	The Industrial Requirements of KBE for the LeanPPD Model		2010			x		x		Standardisation of process for engineering changes.
3683	Al-Ashaab et al.	The Conceptual LeanPPD Model		2010	x		x	x		x	
3680	Al-Ashaab et al.	The transformation of product development process into lean environment using set-based concurrent engineering: A case study from an aerospace industry	CERA	2013	x	x	x	x	x	x	
3686	Al-Ashaab et al.	Lean Product Development Performance Measurement Tool		2013					x		
3628	Amin et al.	Assessing the leanness in product design : a model for planned design reuse		2010	x	x	x	x	x		
3742	Anand & Kodali	Development of a Conceptual Framework for Lean New Product Development Process	IJPD	2008							
3795	Anand et al.	Lean Product Development - Redefining the Indian Automotive Product Development Process using Lean Framework		2009				x	Kaizen (p. 1918), zero defects (p. 1919).	x	Standardisation (p. 1918). Employees and leadership (p. 1919). Visualisation (p. 1919).
3794	Anderson et al.	Using lean product development to speed time to market for medical devices		2011							
3276	Baines et al.	State-of-the-art in lean design engineering: A literature review on white collar lean	JEM	2006	x		x				
3615	Baines et al.	Beyond theory: An examination of lean new product introduction practices in the UK	JME	2007	x		x				
3676	Ballé & Ballé	Lean Development	BSR	2005	x	x	x	x			Principles of lean thinking have been subdivided in concepts.
3638	Beauregard	A multi-criteria performance study of lean engineering		2010	x					x	
3796	Beauregard et al.	Lean engineering systems for product development in the aerospace industry		2008	x	x					
3744	Beauregard et al.	Lean engineering logistics: load levelling of design jobs with capacity considerations	CASJ	2008		x	x				
3743	Beauregard et al.	Lean engineering performance analysis	IJPD	2014		x		x			
3797	Beauregard et al.	Post-Certification engineering taxonomy and task value optimization in the aerospace industry	EMJ	2011a			x	?			
3798	Beauregard et al.	Optimum task size, multitasking and utilization levels for lean product development		2011b			x	x			
3625	Becker & Wits	Enabling Lean Design Through Computer Aided Synthesis: The Injection Moulding Cooling Case		2015	x	x	x	x			
3745	Belay et al.	Approaching lean product development using system dynamics: investigating front-load effects	AM	2014				x			
3746	Bertelli & Loureiro	Quality problems in complex systems even considering the application of quality initiatives during product development		2015	x		x	x		x	Leadership, culture (p. 1545).

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204	207				119	85	107	75	64	72	67
3715	Bjarnoe	Lean thinking in product development		2006	x		x	x		x	Standardisation of knowledge/information man. (p. 1598)
3672	Browning*	On Customer Value and Improvement in Product Development Processes	SE	2003	x		x				
3708	Cabello et al.	An analysis of methods to achieve robustness towards a lean product development process		2012	x		x			x	
3748	Cai & Freiheit	Resource Allocation for Lean Product Development Using a Value Creation Cell Model	JMD	2014		x					
3799	Cai & Freiheit	Lean Principles in Product Development Processes		2011a						x	
3817	Cai & Freiheit	Lean Value Creation in the Product Development Process With the Principle of Set-Based Concurrent Engineering		2011b						x	
3749	Candido & Kaminksi	Product value optimisation engineering applied to current component designs: a case study from the Brazilian automotive industry	IJATM	2008							
3284	Carleysmith et al.	Implementing Lean Sigma in pharmaceutical research and development: a review by practitioners	R&D Man.	2009						x	
3800	Ćatić & Sobek II	Development of key performance indicators for knowledge management		2013						x	
3688	Ćatić & Vielhaber	Lean Product Development: Hype or sustainable new paradigm?		2011						x	
3655	Chase	Measuring Value in Product Development		2000	x						
3725	Choothian	A study of the application of lean practices to new product development processes		2014					?	x	
3750	Correia et al.	Mechanisms for communication and knowledge sharing for set-based concurrent engineering	IJPD	2014							Visualisation by means of A3
3724	Costa et al.	What to Measure for Success in Lean System Engineering Programs?		2014						x	Knowledge-based engineering and poka-yoke.
	Cusumano & Nobeoka	Thinking Beyond Lean: How Multi-Project Management is Transforming Toyota and Other Companies		1998	x						
3658	da Costa et al.	Toward a better comprehension of Lean metrics for research and product development management	R&D Man.	2014		x					
3662	Dal Forno & Forcellini	Lean product development – principles and practices	PMD	2013		x					
3663	Dal Forno et al.	Brazilian automotive industry trends in lean product development practices		2011			x	x			
3665	Dal Forno et al.	Lean Product Development: Benchmarking in Brazilian Companies		2013	x	x		x	x	Mentioned implicitly (p. 32).	Visualisation, cross-functional teams, communication (pp. 24–25).

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204	207				119	85	107	75	64	72	67
3752	Dal Forno et al.	Use of the Lean Product Development Approach by Capital Goods Companies in Brazil		2013	x		x		x	x	Chief engineer (p.3).
3824	Dal Forno et al.	Value Stream Mapping: a study about the problems and challenges found in the literature from the past 15 years about application of Lean tools	IJAMT	2014							Visual planning.
3645	Darwish et al	Value stream mapping and analysis of product development (engineering) processes		2010	x		x	x	x	Mentioned only in one interview (p. 52).	Standardisation (p. 52). Visualisation (p. 53).
3629	Dem et al.	Application of lean product development at a manufacturing organisation: a case study		2012	x	x			x		Visualisation (A3, planning board).
3717	Dombrowski & Schmidt	Integration of design for X approaches in the concept of lean design to enable a holistic product design		2013							
3693	Dombrowski & Zahn	Design of a lean development framework		2011		x					
Read-on	Dombrowski et al.	State of the Art-Lean Development		2011	x						
3702	Dombrowski et al.	Analysis and Integration of Design for X Approaches in Lean Design as basis for a Lifecycle Optimized Product Design		2014	x	x		x	x		People (p. 248)
3877	El-Sayed	Lean Design for Integrated Product Realization	SAE-IJMI	2010	x	x	x				
3801	El-Sayed	Implementation of lean tools and methodologies in design		2012							
3823	El-Sayed & El-Sayed	Balancing Manufacturability and Performance Attributes in Lean Design	SAE-IJMI	2012						Parallel solutions (pp. 4, 7).	
3699	Endris et al.	Advanced process planning in lean product and process development		2012					Focus on methods for variability and robustness.		
3815	Farahani & Buiyan	Study of flow in lean product development		2013							
3716	Flores et al.	Identifying Lean Thinking Measurement Needs and Trends in Product Development: Evidence from the Life Sciences Sector in Switzerland		2010	x		x				
3613	Flores et al.	Do enterprises implement a process architecture towards Lean in product development? A comparative study among large and small firms		2011							Assessment tool based on 56 lean practices.
3627	Flores et al.	Understanding the approaches to create a process architecture for lean thinking		2012	x		x	x			
3753	Flores et al.	Understanding customer value and waste in product Development: Evidence from Switzerland and Spain		2012	x						
3651	Fouquet	Design for Six Sigma and Lean Product Development : Differences, Similarities and Links	AJQ	2007	x					x	11 LPD components (p. 7): strong project manager, process standardisation.

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204	207				119	85	107	75	64	72	67
3704	Furian et al.	Knowledge Management in Set Based Lean Product Development Process		2013	Definition (p. 74).		x				
3754	Furuhjelm et al.	Creating value through lean product development-applying lean principles		2011		x	x				
3636	Garcia and Drogosz	Lean Engineering - Best Practice in the Automotive Industry		2007		x					
3804	Gautam	A design reuse based framework for lean product development		2005	x	x	x	x			
3705	Gautam et al.	Design reuse framework: a perspective for lean development	IJPD	2007	x	x	x				
3697	Gershenson & Pavnaskar	Eight Basic Lean Product Development Tools		2003		x	x				
3721	Gingnell et al.	Swedish Lean Product Development Implementation		2012			x				
3755	Gremyr & Fouquet	Design for Six Sigma and lean product development	IJLSS	2012	x		x				
3739	Gudem & Welo	From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value		2010	Voice of customer (p. 5).	x				x	Standardisation.
3722	Gudem et al.	Customer value is not a number–investigating the value concept in lean Product Development		2011	Voice of customer (p. 136).					x	Chief engineer, visual management, standardisation (p. 136).
3756	Gudem et al.	From lean product development to lean innovation: Searching for a more valid approach for promoting utilitarian and emotional value	IJITM	2014	Voice of customer.	x				x	Standardisation, visual management.
3614*	Gudem et al.*	Redefining customer value in lean product development design projects	JEDT	2013	Voice of customer (p. 5).	x				x	Standardisation, visual management.
3618	Gurumurthy & Kodali	An application of analytic hierarchy process for the selection of a methodology to improve the product development process	JMM	2012		x					
3711	Hafer	Applying lean to new product development	ME	2011	x	x		x	x	x	Enablers
3757	Haggerty & Murman	Evidence of lean engineering in aircraft programs		2006					x		
3694	Haque	Lean engineering in the aerospace industry	JEM	2003			x				Frontloading (pp. 5, 7).
3677	Haque & -James-Moore+	Measures of performance for lean product introduction in the aerospace industry	JEM	2004b							
3647	Haque & James-Moore+	Characteristics of lean product introduction	IJATM	2002							
3758	Haque & James-Moore+	Applying lean thinking to new product introduction	JED	2004a	x	x	x				
3759	Harland & Uddin	Effects of product platform development: fostering lean product development and production	IJPD	2014						x	
3761	Harris et al.	Knowledge Management to Support Lean Product Development		2006						x	

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204	207				119	85	107	75	64	72	67
3760	Helander et al.	Applying lean in product development - enabler or inhibitor of creativity?	IJTM	2015						x	
3864	Hille & Eseonu	State-of-the-art review of lean product development practices and their impact on project success		2015	x		x	x	x	x	
3816	Hines & Packham	Implementing Lean New Product Development		2008	x	x	x	x	x		
3666	Hines et al.	Towards lean product lifecycle management: A framework for new product development	JMTM	2006	x	x		x	x		
3762	Hölttä et al.	Lean information management model for engineering changes		2010	x	x	x	x	x		
3731	Hoppmann et al.	Efficient Introduction of Lean in Product Development Results of the Survey		2009	x						
3608	Hoppmann et al.	A Framework for Organizing Lean Product Development	EMJ	2011	x	x	x		x	x	Visual management, project manager/chief engineer.
3763	Institoris & Bligard	Human factors engineering as a supportive tool for lean product development		2014	Case C	Case B, C	Case A		Case C		Visual planning (p. 8).
3660	Jasti & Kodali	Validity and reliability of lean product development frameworks in Indian manufacturing industry	MBE	2014			x	x			
3616	Johansson & Sundin	Lean and green product development: two sides of the same coin?	JCP	2014	x	x	x	x	x	Set-based design and point design to be balanced (p. 370).	Takt time, taken from lean production (p. 359). Leadership and management (p. 368).
3876	Kamath & Liker	A second look at Japanese product development	HBR	1994	x	x	x	x	x		Respect for people (p. 48).
3765	Karademir & Cangelir	Lean approach in concurrent engineering applications		2013	x	x	x	x	x	Set-based design and point design to be balanced (p. 126).	Takt time, taken from lean production (pp. 29–31). Leadership and management (pp. 38, 40). Respect for people (pp. 204–206).
3086	Karlsson & Åhlström	The difficult path to lean product development	JPIM	1996	x				x	x	
3766	Kerga et al.	Compact Teams: a Model to Achieve Lean in Product Development		2015							Heavyweight propject manager and multi-project organisation (p. 185). Standardisation, modules and manufacturing techniques for minimising impact of product variety (p. 179).
3654	Khan	The construction of a model for lean product development		2012	x	x	x	x	x	p. 33	
3691	Khan et al.	Set-Based Concurrent Engineering process within the LeanPPD environment		2011	x						
3607	Khan et al.	Towards lean product and process development	IJCIM	2013		x	x				
3767	Khan et al.	Define value: applying the first lean principle to product development	IJISE	2015	x	x	x	x	x		

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3695	Kirner et al.	Information in Lean Product Development: Assessment of Value and Waste		2013	x	x	x	x	x		
3713	Lee & Chang	Developing a lean design for Six Sigma through supply chain methodology	IJPQM	2010	x	x	x	x	x		
3768	Lemieux et al.	A Mixed Performance and Adoption Alignment Framework for Guiding Leanness and Agility Improvement Initiatives in Product Development	JET	2013	x						
3664	Lempia	Using Lean principles and MBE in design and development of avionics equipment at Rockwell Collins		2008	x	x	x	x	x		
3609	Léon & Farris	Lean Product Development Research: Current State and Future Directions	EMJ	2011	x	x	x	x	x		
3829	Letens et al.	Optimizing stakeholder value and reducing waste in new product development projects		2009	x	x				x	11 LPD components (p. 2): strong project manager, process standardisation.
3606	Letens et al.	A Multilevel Framework for Lean Product Development System Design	EMJ	2011			x				
3087	Liker & Morgan	The Toyota Way in Services: The Case of Lean Product Development	AMP	2006	x		x	x	x		
3679	Liker & Morgan	Lean product development as a system: a case study of body and stamping development at Ford	EMJ	2011	x	x	x	x	x	Frontloading	
3770	Lindlöf & Söderberg	Pros and cons of lean visual planning: experiences from four product development organisations	IJTIP	2011	x	x	x	x	x		Respect for people (p. 791).
3612	Lindlöf et al.	Practices supporting knowledge transfer – an analysis of lean product development	IJCIM	2013							
3771	Machado	New Product Development: From Efficiency to Value Creation		2013	x	x	x	x	x	Frontloading (p. 28).	Respect for people (p. 28).
3630	Maginness et al.	Principles for aerospace Manufacturing Engineering in integrated New Product Introduction	JME	2013							Integrative leadership, standard skills, standard work processes, design standards (p. 11).
3631	Maginness et al.	Value Stream Analysis of Manufacturing Engineering New Product Introduction Processes		2011a						x	
3633	Maginness et al.	Planning Manufacturing in a Concurrent Engineering Environment: A Case Study		2011b		x	x	x	x		GOLCAD, Design task heijunka, machigaiyoke, single minute exchange of projects and 'kaizen text' (p. 3).
3720	Mahlamäki et al.	Lean product development point of view to current challenges of engineering change management in traditional manufacturing industries		2009	x	x	x	x			
3626	Maksimovic	Lean knowledge life cycle framework to support lean product development		2013		x	x				
3807	Mayrl et al.	Eliciting product development knowledge using value stream mapping	IJPD	2013	x	x			x		
3674	McManus & Millard	Value Stream Analysis and Mapping for Product Development		2002							
3806	McManus et al.*	Lean engineering : a framework for doing the right thing right	AJ	2007	x	x	x		x		
3821	McNeel & Lawrence	How Lean-manufacturing principles speed product design		2004							13 principles based on Morgan & Liker (2006).

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204	207				119	85	107	75	64	72	67
3825	Morgan	High performance product development: A systems approach to a lean product development process		2002			x			x	Chief engineer, visualisation (p.2).
	Morgan & Liker	The Toyota product development system		2006	x						
3657	Mund et al.	Lean product engineering in the South African automotive industry	JMTM	2015	x						
3648	Murman	Lean Systems Engineering II		2003	x	x	x	x	x	x	Refers to 13 principles of Morgan and Liker (2006) (pp. 328–329).
3646	Murman	Lean Aerospace Engineering		2008	x				x		Standardisation (pp. 8–10).
3822	Murman	Innovation in aeronautics through Lean Engineering		2012	x						
3661	Negroni & Trabasso	A Quality Improving Method to Assist the Integrated Product Development Process		2009	x				x		Standardisation (p. 897).
3870	Nepal et al.	Lean product development: An approach to achieve Ford's global product development system milestones		2007						x	
3701	Nepal et al.	Improving the NPD Process by Applying Lean Principles: A Case Study	EMJ	2011	x	x	x				
3641	Nightingale	Lean Engineering Product Development		2002	x			x	x		See p. 574: (i) leadership, people and learning, (ii) flexibility, (iii) modularisation, (iv) stakeholders and systems integration, (v) transparency and (vi) technology.
3656	Oehmen	Lean Enablers for Managing Engineering Programs		2012	x			Standardisation.			
3712	Oehmen & Rebentisch	Risk Managament in Lean PD		2010a	x				x		Standardisation (p. 237).
3669	Oehmen & Rebentisch	Waste in Lean Product Development		2010b	x	x	x	x	x		
3640	Oppenheim	Lean product development flow	SE	2004	x	x		x	x	x	Standardisation, visualisation, strong project manager, improvement culture (p. 90).
	Oppenheim	Lean for Systems Engineering with Lean Enablers for Systems Engineering		2011	x	x	x				

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3637	Oppenheim et al	Lean Enablers for Systems Engineering	SE	2011			x				
3772	Parry et al.***	Lean new product introduction: a UK aerospace perspective		2008	x						
3819	Parsons & Josefik	Accelerating Production Readiness Using Lean Product Development		2009			x				Cross-functional teams.
3773	Paschkewitz	Risk Management in Lean Product Development		2014	x					x	
3774	Pavnaskar & Gershenson	The application of value stream mapping to lean engineering		2004			x	x			
3827	Pavnaskar & Gershenson	A Systematic Method for Leaning Engineering Processes		2005			x	x			
3639	Pessôa et al.	An approach to lean product development planning		2007		x	x	x			
3709	Pessôa et al.	A method to lean product development planning	PMD	2008			(x)				Re-use. Re-usability pyramid (p. 487).
3690	Pessôa et al.	Understanding the Waste Net: A Method for Waste Elimination Prioritization in Product Development		2009	x		x	x	x	x	Chief engineer (p. 13).
3719	Powell et al.	A New Set of Principles for Pursuing the Lean Ideal in Engineer-to-order Manufacturers		2014	x	x	x	x			
3775	Pullan et al.	Decision support tool for lean product and process development	PPC	2013	x	x	x	x	x		
3611	Qudrat-Ullah et al.	Improving high variable-low volume operations: an exploration into the lean product development	IJTM	2012	x	x	x			x	Standardisation (p. 9), visualisation (p. 9).
3734	Radeka & Sutton	What is "lean" about product development? An overview of Lean Product Development	PDMA	2007		x	x	x			
3776	Rauch et al.	Axiomatic Design based Guidelines for the Design of a Lean Product Development Process		2015	x		x				
3081	Raudberget	Practical Applications of Set-Based Concurrent Engineering in Industry		2010		(x)		x			Visualisation, chief engineer (p. 7).
3703	Raudberget	Enabling Set-based Concurrent Engineering in traditional product development		2011	x			x	x		Transparency (pp. 333–334).
3868	Raudberget & Sunnersjö	Experiences of set based concurrent engineering in four product developing companies		2010	x	x		x	x	x	Visualisation, leveling, standardisation (p. 490). Chief engineeer (p. 495).
3649	Rebentisch	Lean Product Development		2005	x	x	x				
3732	Reinertsen	Lean thinking isn't so simple	ED	1999				x	x		Visualisation, standardisation.
3668	Reinertsen	Let it flow: how lean product development sparked a revolution		2005	x	x	x	x			Eight-week horizon for tasks leading up to decisions (p. 91).
3733	Reinertsen & Shaeffer	Making R&D Lean	RTM	2005							Standardisation.
3675	Ringen & Holtskog	How enablers for lean product development motivate engineers	IJCIM	2013	x	x	x	x	x	x	

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3687	Ringen & Lodgaard	Lean product development in the automotive supplier industry		2009	x						
3623	Ringen & Welo	Knowledge Based Development Practices in Systems Engineering Companies: A Comparative Study		2015							
3621	Rocha et al.	Mass Customization Enablement Through Lean Design & Set-Based Concurrent Engineering Application	JOSCM	2014							
3696	Rossi et al.	Proposal of a method to systematically identify wastes in New Product Development Process		2011	x	x				x	
3679	Rossi et al.	Lean product development: A five-steps methodology for continuous improvement		2012			x				
3718	Ryan & Reik	Applying the Core Elements of a Lean Enterprise to Product Development		2010	x		x				
3689	Saad et al.	A3 Thinking Approach to Support Problem Solving in Lean Product and Process Development		2013			x		x	x	
3779	Salgado et al.	Waste investigation on product development process using the lean and simulation approaches.	PMD	2014		x	x				Suggestions to corrective actions: chief engineer, Obeya (p. 6).
3624	Salgado et al.	Investigating waste on new product development: case study	PMD	2015	x	x	x	x	x		
3793	Saunders et al.	A case study to evaluate lean product development practices in the global automotive industry	IJPD	2014							Re-use of designs
3726	Schuh et al.	Lean Innovation: Introducing Value Systems to Product Development		2008						x	
3780	Schuh et al.	Systematic waste elimination in lean product development using generic activities	IJPD	2014	x		x	x		x	
3792	Schulze & Störmer	Lean product development – enabling management factors for waste elimination	IJTM	2012	x	x		x		x	
3632	Schulze et al.	Exploring the 4I framework of organisational learning in product development: value stream mapping as a facilitator	IJCIM	2013	x		x			x	Standardisation of processes (p. 1131), strong project leader (p. 1132).
3644	Shirwaiker & Okudan	Contributions of TRIZ and axiomatic design to leanness in design: an investigation		2011		x	x				
3710	Singer et al.	What Is Set-Based Design?	NEJ	2009	x	x	x	x	x	x	Chief engineer.
3689	Siyam et al.	Lean product development in practice: Insights from 4 companies		2013					x		
3620	Siyam et al.	Review of Value and Lean in Complex Product Development	SE	2015	x	x	x	x	x		

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3707	Siyam et al.	Relating value methods to waste types in lean product development		2012a	x	x	x	x	x	x	
3781	Siyam et al.	Value and waste dependencies and guidelines		2012b							
3728	Sobek II et al.	Another Look at How Toyota Integrates Product Development	HBR	1998	x		x	x		x	
3083	Sobek II et al.	Toyota's Principles of Set-Based Concurrent Engineering	SMR	1999	x		x				Standardisation (p. 813).
3682	Sopelana et al.	The Application of an Assessment Tool for Lean Product Development: An exploratory study in Spanish Companies		2012	x	x	x			x	
3706	Sorli et al.	Applying lean thinking concepts to new product development		2010	x	x	x	x		x	
3782	Sorli et al.	Expanding lean thinking to the product and process design and development within the framework of sustainability		2011	x		x				Standardisation, visual management (p. 447).
3783	Sorli et al.	Development of KBE system to support LeanPPD application		2012	x						
3784	Stenholm et al.	Knowledge Based Development in Automotive Industry Guided by Lean Enablers for System Engineering		2015	x	x	x				
3785	Stetler	Creativity Just in Time? The Role of Delivery Precision in Product Development	IJITM	2015	x		x			?	
3786	Ström et al.	Transformation to lean product development - Approaches at two automotive suppliers		2012	x		x		x	?	
3866	Subramoniam et al.	Lean Engineering Implementation Challenges for Automotive Remanufacturing		2009				x		Three alternatives presented by supplier three years in advance (p. 166).	Standardisation (p. 163).
3863	Swan & Furuhjelm	Creating Value Through Lean Product Development – Towards a Generic Framework		2010							
3862	Tähemaa et al.	Lean product development in Estonian SMEs		2012						x	
3787	Taisch et al.	Towards a performance measurement system for lean-oriented NPD processes		2011						x	
3875	Thomas & Singh	Design for Lean Six Sigma (DFLSS): Philosophy, Tools, Potential and Deployment Challenges in Automotive Product Development		2006					Reduce variation (pp. 338–339)		
3652	Tingström et al.	Implementing Value Stream Mapping – VSM in a R&D organisation		2010	x		x	x		x	13 principles of LPD presented in tables, incl. standardisation (p. 10), chief engineer (p. 12) and visualisation (p. 15).

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3788	Tortorella et al.	Lean Product Development (LPD) Enablers for Product Development Process Improvement		2015	x	x	x	x		x	13 principles (p. 18), based on Liker (2004).
3687	Tyagi et al.	Value stream mapping to reduce the lead-time of a product development process	IJPE	2015						x	
3805	Vinodh & Kumar	A case study on lean product and process development		2015	x		x	x		x	13 principles of LPD (pp. 17–19).
3685	von Würtemberg et al.	Abstract model of LPD: A critical review of the Lean Product Development concept		2011							Chief design engineer (p. 184-10). 'Respect for people' (p. 184-10).
3653	Vosgien et al.	Lean approach to integrate collaborative product development processes and digital engineering systems		2011	x	x		x	x		Respect for people.
3650	Walton	Strategies for Lean Product Development		1999	x		x			x	Just-in-Time decision making.
3617	Wang et al	Using Value Stream Mapping to Analyze an Upholstery Furniture Engineering Process	FPJ	2011	x		x			x	
3642	Wang et al.	Focus on implementation: a framework for lean product development	JMTM	2011	x		x	x	x	x	Overview of key elements versus lean thinking (Table 1, p. 387).
3698	Wangwacharakul et al.	Cultural Aspects when Implementing Lean Production and Lean Product Development – Experiences from a Swedish Perspective	QIP	2014	B	A, B	A, B, C	B, C	x		
3871	Ward et al.	Set-based concurrent engineering and Toyota		1994	x	x	x	x	x	x	
0852	Ward et al.	The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster	SMR	1995							
3684	Wasim et al.	An innovative cost modelling system to support lean product and process development	IJAMT	2013		x	x		x		Standardisation.
3610	Welo	On the application of lean principles in Product Development: a commentary on models and practices	IJPD	2011	x		x				
3634	Welo & Ringen	Investigating Lean Development Practices in SE Companies: A Comparative Study Between Sectors		2015							
3791	Welo et al.	Enhancing product innovation through a customer-centered, Lean framework	IJITM	2012	x	x	x	x		x	Standardisation to reduce variation and creating flexibility and predictable outcomes (p. 87).
3622	Welo et al.	Assessing the Relationship between New Product Development Practices and Performance in the Norwegian Manufacturing Industry		2013		x	x				
3789	Wohnhas	Value management in lean product development		2014		IDEF0					
3790	Yang & Cai	The integration of DFSS, lean product development and lean knowledge management	IJSSCA	2009	x	x	x	x	x	x	People. Tools/technology.

* conference proceeding found but substituted by journal publication

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** working paper replaced with journal publication
*** working paper taken (rather than chapter in edited book)
**** First edition used
+ Name of 'Moore' corrected to 'James-Moore'

ALTERNATIVE SEARCH TERMS
+ "lean design engineering"

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					Does the study contain an extensive comparison of lean production and lean product development, addressing their characteristics?	What characterestics, methods and tools have been added for the conceptualisation of lean product development? (Beyond principles of lean thinking)	Do authors refer to other methods and tools than those covered by original writing about lean thinking/lean product development?	Is there mention or comparison to other methodologies for new product development?
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204	207				15	95	22	22
3700	Al-Ashaab et al.	The Industrial Requirements of KBE for the LeanPPD Model		2010				
3683	Al-Ashaab et al.	The Conceptual LeanPPD Model		2010				
3680	Al-Ashaab et al.	The transformation of product development process into lean environment using set-based concurrent engineering: A case study from an aerospace industry	CERA	2013				
3686	Al-Ashaab et al.	Lean Product Development Performance Measurement Tool		2013		DFQC (cost-oriented).		
3628	Amin et al.	Assessing the leanness in product design : a model for planned design reuse		2010	Limited discussion: Adaptation of tenets of LM to NPD process (Table 1, p. 197) and the adaptation of seven types of waste to NPD processes (Table 2, p. 198).	In case study: modularisation, families of parts, re-use of knowledge (p.221). Framework for implementation claimed.		
3742	Anand & Kodali	Development of a Conceptual Framework for Lean New Product Development Process	IJPD	2008				
3795	Anand et al.	Lean Product Development - Redefining the Indian Automotive Product Development Process using Lean Framework		2009		Project portfolio management (p. 1920). Frontloading (p. 1920).		
3794	Anderson et al.	Using lean product development to speed time to market for medical devices		2011		Contains evaluation of 10 approaches to lean product development.		
3276	Baines et al.	State-of-the-art in lean design engineering: A literature review on white collar lean	JEM	2006		Life-cycle management, Design for X.		Only reference made to other methodologies, but no evaluation of these (p. 2);later base for framework (p. 3).
3615	Baines et al.	Beyond theory: An examination of lean new product introduction practices in the UK	JME	2007		Life-cycle management, Design for X.		
3676	Ballé & Ballé	Lean Development	BSR	2005				
3638	Beauregard	A multi-criteria performance study of lean engineering		2010				
3796	Beauregard et al.	Lean engineering systems for product development in the aerospace industry		2008		Inclusion of product lifecycle management.		
3744	Beauregard et al.	Lean engineering logistics: load levelling of design jobs with capacity considerations	CASJ	2008				
3743	Beauregard et al.	Lean engineering performance analysis	IJPD	2014		Bottleneck (management) (p. 1520).		
3797	Beauregard et al.	Post-Certification engineering taxonomy and task value optimization in the aerospace industry	EMJ	2011a				
3798	Beauregard et al.	Optimum task size, multitasking and utilization levels for lean product development		2011b				
3625	Becker & Wits	Enabling Lean Design Through Computer Aided Synthesis: The Injection Moulding Cooling Case		2015				Cooper et al. (2001) (p. 87).
3745	Belay et al.	Approaching lean product development using system dynamics: investigating front-load effects	AM	2014				
3746	Bertelli & Loureiro	Quality problems in complex systems even considering the application of quality initiatives during product development		2015				

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3715	Bjarnoe	Lean thinking in product development		2006		Workflow management to avoid queues and bottlenecks (p. 1599).		
3672	Browning*	On Customer Value and Improvement in Product Development Processes	SE	2003		Knowledge-based engineering.		
3708	Cabello et al.	An analysis of methods to achieve robustness towards a lean product development process		2012		Knowledge-based systems.		
3748	Cai & Freiheit	Resource Allocation for Lean Product Development Using a Value Creation Cell Model	JMD	2014				
3799	Cai & Freiheit	Lean Principles in Product Development Processes		2011a				
3817	Cai & Freiheit	Lean Value Creation in the Product Development Process With the Principle of Set-Based Concurrent Engineering		2011b		See third category of Table 5.6 (p. 127) for specifically developed tools.	See Table 5.6 (p. 127) for overview of tools	
3749	Candido & Kaminksi	Product value optimisation engineering applied to current component designs: a case study from the Brazilian automotive industry	IJATM	2008		Knowledge life-cycle		
3284	Carleysmith et al.	Implementing Lean Sigma in pharmaceutical research and development: a review by practitioners	R&D Man.	2009				Reference made to Pugh matrix (pp. 8, 12–14) without citing source.
3800	Ćatić & Sobek II	Development of key performance indicators for knowledge management		2013				
3688	Ćatić & Vielhaber	Lean Product Development: Hype or sustainable new paradigm?		2011	Misunderstanding noted: 'lean PD is lean manufacturing applied to PD' (p. 1115).	Lean enablers (p. 1112). Contains overview of five different approaches to lean product development (Table 1, pp. 1108–1109).		
3655	Chase	Measuring Value in Product Development		2000				
3725	Choothian	A study of the application of lean practices to new product development processes		2014		Knowledge management.		
3750	Correia et al.	Mechanisms for communication and knowledge sharing for set-based concurrent engineering	IJPD	2014				
3724	Costa et al.	What to Measure for Success in Lean System Engineering Programs?		2014		Estimation and costing.		
	Cusumano & Nobeoka	Thinking Beyond Lean: How Multi-Project Management is Transforming Toyota and Other Companies		1998				
3658	da Costa et al.	Toward a better comprehension of Lean metrics for research and product development management	R&D Man.	2014			Metrics proposed (p. 330).	
3662	Dal Forno & Forcellini	Lean product development – principles and practices	PMD	2013				
3663	Dal Forno et al.	Brazilian automotive industry trends in lean product development practices		2011				
3665	Dal Forno et al.	Lean Product Development: Benchmarking in Brazilian Companies		2013			Comparison of lean product development with design for six sigma. Mentions 5S and Kaizen as a tool for LPD (p. 25).	

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3752	Dal Forno et al.	Use of the Lean Product Development Approach by Capital Goods Companies in Brazil		2013		Knowledge management (p. 8).		VD1221 and the works of Ulrich& Eppinger (Product Design and Development, 2007 [book]) and Ullmann (The Mechanical Design Process, 2009 [book]).
3824	Dal Forno et al.	Value Stream Mapping: a study about the problems and challenges found in the literature from the past 15 years about application of Lean tools	IJAMT	2014				
3645	Darwish et al	Value stream mapping and analysis of product development (engineering) processes		2010			Comparison of lean product development with design for six sigma.	
3629	Dem et al.	Application of lean product development at a manufacturing organisation: a case study		2012				
3717	Dombrowski & Schmidt	Integration of design for X approaches in the concept of lean design to enable a holistic product design		2013		Interpretation of principles of lean product development (p. 1092), which includes knowledge management. For knowledge management three performance indicators proposed (pp. 1094–1095).		
3693	Dombrowski & Zahn	Design of a lean development framework		2011		Knowledge development and transfer.		
Read-on	Dombrowski et al.	State of the Art-Lean Development		2011		Human factoring engineering for capturing value and customers' requirements.		
3702	Dombrowski et al.	Analysis and Integration of Design for X Approaches in Lean Design as basis for a Lifecycle Optimized Product Design		2014		Knowledge-based development.		
3877	El-Sayed	Lean Design for Integrated Product Realization	SAE-IJMI	2010		Product life-cycle.		
3801	El-Sayed	Implementation of lean tools and methodologies in design		2012		13 principles of Morgan and Liker (2006) (p. 321). Complemented with balanced score card (p. 322).		
3823	El-Sayed & El-Sayed	Balancing Manufacturability and Performance Attributes in Lean Design	SAE-IJMI	2012		Process architecture.		
3699	Endris et al.	Advanced process planning in lean product and process development		2012		Micro-methods: axiomatic design, QFD, FMEA, Taguchi method, design of experiments, smart assemblies (p.5). Macro-methods: DFSS, MOGA, DFV, VRM, RDM (pp. 6–7).	Several micro-methods for robustness of design, e.g. EQFD, FMEA, System Dynamics, MOGA, Monte Carlo, ANOVA (p. 7/10).	
3815	Farahani & Buiyan	Study of flow in lean product development		2013		Process architecture.		
3716	Flores et al.	Identifying Lean Thinking Measurement Needs and Trends in Product Development: Evidence from the Life Sciences Sector in Switzerland		2010				
3613	Flores et al.	Do enterprises implement a process architecture towards Lean in product development? A comparative study among large and small firms		2011				
3627	Flores et al.	Understanding the approaches to create a process architecture for lean thinking		2012			Agility has been added (pp. 172–173).	
3753	Flores et al.	Understanding customer value and waste in product Development: Evidence from Switzerland and Spain		2012				
3651	Fouquet	Design for Six Sigma and Lean Product Development : Differences, Similarities and Links	AJQ	2007		11 LPD components (p. 7).		

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3704	Furian et al.	Knowledge Management in Set Based Lean Product Development Process		2013				
3754	Furuhjelm et al.	Creating value through lean product development-applying lean principles		2011				Clark and Fujimoto (1992), Ulrich and Eppinger (2008) (p. 494).
3636	Garcia and Drogosz	Lean Engineering - Best Practice in the Automotive Industry		2007				
3804	Gautam	A design reuse based framework for lean product development		2005			Key metrics engineering (Table 1, p. 370) and systems engineering (Table 2, p. 371).	
3705	Gautam et al.	Design reuse framework: a perspective for lean development	IJPD	2007		Link to six sigma and other quality management methods.		
3697	Gershenson & Pavnaskar	Eight Basic Lean Product Development Tools		2003	Brief discussion based on Bauch [2004] (p. 6).			
3721	Gingnell et al.	Swedish Lean Product Development Implementation		2012				Other approaches mentioned only, e.g. sequential phases for new product development, product platforms, concurrent engineering, waterfall models (p. 31).
3755	Gremyr & Fouquet	Design for Six Sigma and lean product development	IJLSS	2012				
3739	Gudem & Welo	From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value		2010		Project library (knowledge management), early supplier involvement.		
3722	Gudem et al.	Customer value is not a number–investigating the value concept in lean Product Development		2011		SE/integration, early supplier involvement, structural organisation, modularity, learning networks, virtual simulation (p. 136).		
3756	Gudem et al.	From lean product development to lean innovation: Searching for a more valid approach for promoting utilitarian and emotional value	IJITM	2014		Project library (knowledge management), early supplier involvement.		
3614*	Gudem et al.*	Redefining customer value in lean product development design projects	JEDT	2013		Project library (knowledge management), early supplier involvement, virtual simulation.		
3618	Gurumurthy & Kodali	An application of analytic hierarchy process for the selection of a methodology to improve the product development process	JMM	2012				
3711	Hafer	Applying lean to new product development	ME	2011				
3757	Haggerty & Murman	Evidence of lean engineering in aircraft programs		2006		Objectives of projects, customer requirements and team commitment as variables.		
3694	Haque	Lean engineering in the aerospace industry	JEM	2003				
3677	Haque & -James-Moore+	Measures of performance for lean product introduction in the aerospace industry	JEM	2004b		Set-based lean design (similar to DFMA [p. 369]). Lean knowledge life-cycle (pp. 369–370).		
3647	Haque & James-Moore+	Characteristics of lean product introduction	IJATM	2002				
3758	Haque & James-Moore+	Applying lean thinking to new product introduction	JED	2004a		Supplier involvement (blackbox).		
3759	Harland & Uddin	Effects of product platform development: fostering lean product development and production	IJPD	2014				
3761	Harris et al.	Knowledge Management to Support Lean Product Development		2006				

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The layout of these review data is formatted for A3-sized pages								
204	207				15	95	22	22
3760	Helander et al.	Applying lean in product development - enabler or inhibitor of creativity?	IJTM	2015				
3864	Hille & Eseonu	State-of-the-art review of lean product development practices and their impact on project success		2015		Integral approach for process-people-tools.		
3816	Hines & Packham	Implementing Lean New Product Development		2008				Baxter (1995), Ulrich and Eppinger (2000) and Wu (1994).
3666	Hines et al.	Towards lean product lifecycle management: A framework for new product development	JMTM	2006		Modular design (but implicit).		Refers to Baxter (1995).
3762	Hölttä et al.	Lean information management model for engineering changes		2010		Kano model, house of quality and design for six sigma (p. 1839). Cause and effect (p. 1840).		Ulrich and Eppinger (2000)
3731	Hoppmann et al.	Efficient Introduction of Lean in Product Development Results of the Survey		2009				
3608	Hoppmann et al.	A Framework for Organizing Lean Product Development	EMJ	2011		Knowledge sharing. Overview of tools based on literature review in Table 1 (p. 4).		
3763	Institoris & Bligard	Human factors engineering as a supportive tool for lean product development		2014		Frontloading (p. 9).		
3660	Jasti & Kodali	Validity and reliability of lean product development frameworks in Indian manufacturing industry	MBE	2014		Knowledge creation (p. 54)		
3616	Johansson & Sundin	Lean and green product development: two sides of the same coin?	JCP	2014				
3876	Kamath & Liker	A second look at Japanese product development	HBR	1994				
3765	Karademir & Cangelir	Lean approach in concurrent engineering applications		2013				
3086	Karlsson & Åhlström	The difficult path to lean product development	JPIM	1996		14 principles for 'Swedish' lean product development (pp. 132–134).		
3766	Kerga et al.	Compact Teams: a Model to Achieve Lean in Product Development		2015				PD process described by Ulrich & Eppinger (Product Design and Development, 1995 [book]).
3654	Khan	The construction of a model for lean product development		2012		Product life-cycle (pp. 16–18). Modularisation (pp. 46–49).	Integrative mechanisms (p. 27). Design-structure matrix (pp. 81–82). Systems Dynamics (pp. 82–83).	Anderson (1997), Clark and Fujimoto (1991), Ulrich and Eppinger (1995), Wheelwright and Clark (1992) (pp. 12–15); however, not clear what done with it later.
3691	Khan et al.	Set-Based Concurrent Engineering process within the LeanPPD environment		2011				PD process described by Ulrich & Eppinger (Product Design and Development, 2007 [book]).
3607	Khan et al.	Towards lean product and process development	IJCIM	2013				
3767	Khan et al.	Define value: applying the first lean principle to product development	IJISE	2015				

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3695	Kirner et al.	Information in Lean Product Development: Assessment of Value and Waste		2013		Systems Engineering.		
3713	Lee & Chang	Developing a lean design for Six Sigma through supply chain methodology	IJPQM	2010		Integrated product team (p. 22). Commonality of parts across platforms (p. 33 ff.).		NOTE: Product development seen as reduction of uncertainty.
3768	Lemieux et al.	A Mixed Performance and Adoption Alignment Framework for Guiding Leanness and Agility Improvement Initiatives in Product Development	JET	2013		Elements of lean engineering mentioned in Table 3 (p. 10).		
3664	Lempia	Using Lean principles and MBE in design and development of avionics equipment at Rockwell Collins		2008	Claim that product development is analogous to mixed-model production (p. 110).	Three principles: (i) creating right products, (ii) with effective lifecycle and enterprise integration, and (iii) using efficient engineering processes (p. 106).	Advocate model-based design, systems engineering, DFMA, DFX, solid model based design, re-use, simulation (pp. 108–110).	
3609	Léon & Farris	Lean Product Development Research: Current State and Future Directions	EMJ	2011		Product lifecycle management, risk management.	DFX, systems engineering.	
3829	Letens et al.	Optimizing stakeholder value and reducing waste in new product development projects		2009		11 LPD components (p. 2).		
3606	Letens et al.	A Multilevel Framework for Lean Product Development System Design	EMJ	2011				
3087	Liker & Morgan	The Toyota Way in Services: The Case of Lean Product Development	AMP	2006		11 principles (Figure 5.7, p. 335). Utilisation of integrated engineering tools (pp. 347–348).	Refer to 'integrated product and process development' (Fig. 15.15, pp. 341–342).	
3679	Liker & Morgan	Lean product development as a system: a case study of body and stamping development at Ford	EMJ	2011				
3770	Lindlöf & Söderberg	Pros and cons of lean visual planning: experiences from four product development organisations	IJTIP	2011				
3612	Lindlöf et al.	Practices supporting knowledge transfer – an analysis of lean product development	IJCIM	2013		Adding risk management.		
3771	Machado	New Product Development: From Efficiency to Value Creation		2013				
3630	Maginness et al.	Principles for aerospace Manufacturing Engineering in integrated New Product Introduction	JME	2013		Mutual adjustment, direct supervision (p. 11).		
3631	Maginness et al.	Value Stream Analysis of Manufacturing Engineering New Product Introduction Processes		2011a				
3633	Maginness et al.	Planning Manufacturing in a Concurrent Engineering Environment: A Case Study		2011b				
3720	Mahlamäki et al.	Lean product development point of view to current challenges of engineering change management in traditional manufacturing industries		2009				
3626	Maksimovic	Lean knowledge life cycle framework to support lean product development		2013				Improvement tools: PERT, design structure matrix, IDEF, axiomatic design (pp. 440–441).
3807	Mayrl et al.	Eliciting product development knowledge using value stream mapping	IJPD	2013				
3674	McManus & Millard	Value Stream Analysis and Mapping for Product Development		2002		Adds other methods in context of lean product development: Design for Six Sigma, Design FMEA, QFD, TRIZ, Robust Engineering, DFM and DFA (seen as quality tools)		
3806	McManus et al.*	Lean engineering : a framework for doing the right thing right	AJ	2007			QFD (pp. 17, 24–27)	
3821	McNeel & Lawrence	How Lean-manufacturing principles speed product design		2004			Overview of tools and methods (Figure 2, p. 720).	

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3825	Morgan	High performance product development: A systems approach to a lean product development process		2002			Refer to knowledge-based school of lean product development (p. 2).	
	Morgan & Liker	The Toyota product development system		2006	Product developmentmuch more complex 'process' since it concerns the generation and use of information (p. 313).			
3657	Mund et al.	Lean product engineering in the South African automotive industry	JMTM	2015				
3648	Murman	Lean Systems Engineering II		2003	Comparison of manufacturing and product development (pp. 318–319); NOTE: seems based on others without referring to them (e.g. Reinertsen).	Knowledge, system perspective, culture, strategy, management practices (pp. 331–333).	See Table 3 (pp. 330–331) for comparison of conceptualisation of lean product development using key sources.	
3646	Murman	Lean Aerospace Engineering		2008	… the dynamic and complex process of new-product development involves maximizing value, rather than eliminating waste' (p. 4). '… new-product development, variability is a means to generate knowledge that reduces the risk of taking new products to the market, and a means to generate those very few exceptional opportunities [Terwiesch and Ulrich (2009)' (p 5)	Knowledge, stabilisation, culture (pp. 8–10).Lean product innovation framework (p. 10 ff.).		
3822	Murman	Innovation in aeronautics through Lean Engineering		2012	Contains difference between production and product development as processing of information (p. 73).			
3661	Negroni & Trabasso	A Quality Improving Method to Assist the Integrated Product Development Process		2009		Knowledge, stabilisation, culture (p. 897).		
3870	Nepal et al.	Lean product development: An approach to achieve Ford's global product development system milestones		2007				
3701	Nepal et al.	Improving the NPD Process by Applying Lean Principles: A Case Study	EMJ	2011				Innovation strategies. Ultimate goal of lean innovation is continuously finding better ways to satisfy customer needs, searching within domains of utilitarian and emotional value to improve value-waste equation (p. 5).
3641	Nightingale	Lean Engineering Product Development		2002				
3656	Oehmen	Lean Enablers for Managing Engineering Programs		2012		Knowledge management, stabilisation, performance, culture.		
3712	Oehmen & Rebentisch	Risk Managament in Lean PD		2010a		Knowledge, stabilisation, culture (p. 237).		
3669	Oehmen & Rebentisch	Waste in Lean Product Development		2010b		QFD, queue management, stand-up meeting (p. 41).		
3640	Oppenheim	Lean product development flow	SE	2004		Overview on p. 90, but not aggregated.		
	Oppenheim	Lean for Systems Engineering with Lean Enablers for Systems Engineering		2011				

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3637	Oppenheim et al	Lean Enablers for Systems Engineering	SE	2011				
3772	Parry et al.***	Lean new product introduction: a UK aerospace perspective		2008		Breakdown of customer value (pp. 53–54).		
3819	Parsons & Josefik	Accelerating Production Readiness Using Lean Product Development		2009				
3773	Paschkewitz	Risk Management in Lean Product Development		2014		Platform (centres) (p. 21). Principles described as (a) caring about what customers think, (b) limiting late engineering changes, (c) mastering flow and tool elaboration and (d) focus on quality and cost production (p. 18). Stress role of chief engineer (p. 19).		
3774	Pavnaskar & Gershenson	The application of value stream mapping to lean engineering		2004	Contains comparison of production and product development (p. 42), but limited to context of lean.	Batch size reduction, cadence, rapid local adjustments (pp. 44-45).		
3827	Pavnaskar & Gershenson	A Systematic Method for Leaning Engineering Processes		2005	Contains comparison of production and product development (pp. 51–52), but with focus on variability.	Batch size reduction, work with variability, feedback loops, flexibility (pp. 52–54).		
3639	Pessôa et al.	An approach to lean product development planning		2007		Obeya room (p. 3), standardisation, skilled people. Lean engineering can include CAD, CAE and testing.		
3709	Pessôa et al.	A method to lean product development planning	PMD	2008		Model-driven development (pp. 490–494). Knowledge-based development artefacts (pp. 494–500).		
3690	Pessôa et al.	Understanding the Waste Net: A Method for Waste Elimination Prioritization in Product Development		2009		Frontloading, partnerships with suppliers, knowledge (p. 13)		
3719	Powell et al.	A New Set of Principles for Pursuing the Lean Ideal in Engineer-to-order Manufacturers		2014		Bottleneck (management) (pp. 20, 25).		
3775	Pullan et al.	Decision support tool for lean product and process development	PPC	2013	Frontloading.			
3611	Qudrat-Ullah et al.	Improving high variable-low volume operations: an exploration into the lean product development	IJTM	2012		Modular design (p. 7), 5S (p. 8).		
3734	Radeka & Sutton	What is "lean" about product development? An overview of Lean Product Development	PDMA	2007	Limited discussion: less hierarchy, matrix structure, cycle-time related to feedback, resistance to adopt by scientists (pp. 103–104).		Some other methods, such as After-Action Review, FMEA, Kepner-Tregoe, appear in Figure 3 (p. 101).	
3776	Rauch et al.	Axiomatic Design based Guidelines for the Design of a Lean Product Development Process		2015				
3081	Raudberget	Practical Applications of Set-Based Concurrent Engineering in Industry		2010				
3703	Raudberget	Enabling Set-based Concurrent Engineering in traditional product development		2011				
3868	Raudberget & Sunnersjö	Experiences of set based concurrent engineering in four product developing companies		2010		Knowledge focus (learning((p. 490).		
3649	Rebentisch	Lean Product Development		2005				
3732	Reinertsen	Lean thinking isn't so simple	ED	1999				
3668	Reinertsen	Let it flow: how lean product development sparked a revolution		2005				
3733	Reinertsen & Shaeffer	Making R&D Lean	RTM	2005		Up-to-date data, multi-functional work environment, integrated cumputer-based solutions.		
3675	Ringen & Holtskog	How enablers for lean product development motivate engineers	IJCIM	2013				

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3687	Ringen & Lodgaard	Lean product development in the automotive supplier industry		2009		Efficient knowledge management, resource efficiency, creation of innovative environment (p. 3).		
3623	Ringen & Welo	Knowledge Based Development Practices in Systems Engineering Companies: A Comparative Study		2015			Creativity.	
3621	Rocha et al.	Mass Customization Enablement Through Lean Design & Set-Based Concurrent Engineering Application	JOSCM	2014			TRIZ and axiomatic design are added.	
3696	Rossi et al.	Proposal of a method to systematically identify wastes in New Product Development Process		2011		Knowledge-based engineering.		
3679	Rossi et al.	Lean product development: A five-steps methodology for continuous improvement		2012			FMEA	
3718	Ryan & Reik	Applying the Core Elements of a Lean Enterprise to Product Development		2010				
3689	Saad et al.	A3 Thinking Approach to Support Problem Solving in Lean Product and Process Development		2013		QFD and FMEA (p. 6/13).	FMEA (p. 6/13).	
3779	Salgado et al.	Waste investigation on product development process using the lean and simulation approaches.	PMD	2014		Suggestions to corrective actions: modularity, knowledge system (p. 6).		
3624	Salgado et al.	Investigating waste on new product development: case study	PMD	2015		Compact teams for flexibility and productivity.		
3793	Saunders et al.	A case study to evaluate lean product development practices in the global automotive industry	IJPD	2014				
3726	Schuh et al.	Lean Innovation: Introducing Value Systems to Product Development		2008				
3780	Schuh et al.	Systematic waste elimination in lean product development using generic activities	IJPD	2014				
3792	Schulze & Störmer	Lean product development – enabling management factors for waste elimination	IJTM	2012		Portfolio management (p. 77–78).		
3632	Schulze et al.	Exploring the 4I framework of organisational learning in product development: value stream mapping as a facilitator	IJCIM	2013				
3644	Shirwaiker & Okudan	Contributions of TRIZ and axiomatic design to leanness in design: an investigation		2011				Reference model (pp. 394–395) developed based on Pahl and Beitz (2007), Rauhut (2011) and the VDI2 guideline 2221 (1993); NOTE: however, not clarified how.
3710	Singer et al.	What Is Set-Based Design?	NEJ	2009		Framework (p. 10).		Ulrich and Eppinger (2004) and Rozenfeld et al. (2006) (p. 7).
3689	Siyam et al.	Lean product development in practice: Insights from 4 companies		2013	Claim that lean buffers in NPD akin to buffers in manufacturing create pressure for 'must-do' towards deadline (p. 292); no proof provided.	Define lean product development as supplier involvement, simultaneous engineering, cross-functional teams, integrated rather than coordinated, heavyweight team structure (p. 285).		
3620	Siyam et al.	Review of Value and Lean in Complex Product Development	SE	2015				

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3707	Siyam et al.	Relating value methods to waste types in lean product development		2012a		Introduce seven knowledge domains (pp. 46–47).		
3781	Siyam et al.	Value and waste dependencies and guidelines		2012b		Platforms of products.		
3728	Sobek II et al.	Another Look at How Toyota Integrates Product Development	HBR	1998	Compares more extensively production and product development (p. 45).	Platform architecture (p. 45).		Rerers to P-51 Mustang, its development incorporating many principles of lean product development.
3083	Sobek II et al.	Toyota's Principles of Set-Based Concurrent Engineering	SMR	1999		Integration of suppliers and customers, simultaneous engineering and communication (p. 813).		
3682	Sopelana et al.	The Application of an Assessment Tool for Lean Product Development: An exploratory study in Spanish Companies		2012		QFD, target costing, design of experiments (p. 807).	FMEA, DFMA (p. 807).	
3706	Sorli et al.	Applying lean thinking concepts to new product development		2010				
3782	Sorli et al.	Expanding lean thinking to the product and process design and development within the framework of sustainability		2011				
3783	Sorli et al.	Development of KBE system to support LeanPPD application		2012				
3784	Stenholm et al.	Knowledge Based Development in Automotive Industry Guided by Lean Enablers for System Engineering		2015				
3785	Stetler	Creativity Just in Time? The Role of Delivery Precision in Product Development	IJITM	2015				
3786	Ström et al.	Transformation to lean product development - Approaches at two automotive suppliers		2012				
3866	Subramoniam et al.	Lean Engineering Implementation Challenges for Automotive Remanufacturing		2009		Supplier involvement only for two out of roles: partner, mature (p. 164); also more information supplied by customer (p. 167). Role of prototype (p. 168).		
3863	Swan & Furuhjelm	Creating Value Through Lean Product Development – Towards a Generic Framework		2010		Early supplier involvement (p. 322).		Clark and Fujimoto (1991) (pp. 310, 322).
3862	Tähemaa et al.	Lean product development in Estonian SMEs		2012				
3787	Taisch et al.	Towards a performance measurement system for lean-oriented NPD processes		2011				Refer to Shigley's model for design processes. Refer to Pugh (p. 48).
3875	Thomas & Singh	Design for Lean Six Sigma (DFLSS): Philosophy, Tools, Potential and Deployment Challenges in Automotive Product Development		2006		Seven principles for high-performance product development (pp. 8–11). Flexible capacity (p. 333). Cross-functional integration (pp. 345–349).		Clark and Fujimoto (1991), Wheelwright and Clark (1992) (p. 329).
3652	Tingström et al.	Implementing Value Stream Mapping – VSM in a R&D organisation		2010		13 principles of LPD presented in tables (pp. 10, 12, 15).		

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3788	Tortorella et al.	Lean Product Development (LPD) Enablers for Product Development Process Improvement		2015	Limited comparison (p. 46).			
3687	Tyagi et al.	Value stream mapping to reduce the lead-time of a product development process	IJPE	2015				Evans (1959) (p. 3), Pugh (1991) (p. 5), Wheelwright and Clark (1992) (p. 5).
3805	Vinodh & Kumar	A case study on lean product and process development		2015		13 principles of LPD (pp. 17–19).		
3685	von Würtemberg et al.	Abstract model of LPD: A critical review of the Lean Product Development concept		2011		Life-cycle management (p. 184-9).		
3653	Vosgien et al.	Lean approach to integrate collaborative product development processes and digital engineering systems		2011				
3650	Walton	Strategies for Lean Product Development		1999				
3617	Wang et al	Using Value Stream Mapping to Analyze an Upholstery Furniture Engineering Process	FPJ	2011				
3642	Wang et al.	Focus on implementation: a framework for lean product development	JMTM	2011		Refer to Karlsson and Ahlstrom (p. 384) and Sobek et al. (p. 386).		
3698	Wangwacharakul et al.	Cultural Aspects when Implementing Lean Production and Lean Product Development – Experiences from a Swedish Perspective	QIP	2014				
3871	Ward et al.	Set-based concurrent engineering and Toyota		1994		Enablers and enabling tools, e.g. QFD, Design for X, reward and motivation process (p. 12, p. 13)		
0852	Ward et al.	The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster	SMR	1995				
3684	Wasim et al.	An innovative cost modelling system to support lean product and process development	IJAMT	2013		Bottlenecks (implicit).		
3610	Welo	On the application of lean principles in Product Development: a commentary on models and practices	IJPD	2011				
3634	Welo & Ringen	Investigating Lean Development Practices in SE Companies: A Comparative Study Between Sectors		2015			DFSS, etc. (p. 202)	
3791	Welo et al.	Enhancing product innovation through a customer-centered, Lean framework	IJITM	2012		Knowledge management (p. 88 ff.).		
3622	Welo et al.	Assessing the Relationship between New Product Development Practices and Performance in the Norwegian Manufacturing Industry		2013				
3789	Wohnhas	Value management in lean product development		2014		Knowledge management, but only really introduced at end of paper.		
3790	Yang & Cai	The integration of DFSS, lean product development and lean knowledge management	IJSSCA	2009				

* conference proceeding found but substituted by journal publication

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** working paper replaced with journal publication
*** working paper taken (rather than chapter in edited book)
**** First edition used
+ Name of 'Moore' corrected to 'James-Moore'

ALTERNATIVE SEARCH TERMS
+ "lean design engineering"

No.	Author(s)	Title	Journal	Year	Notes	Snowballing
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204	207					
3700	Al-Ashaab et al.	The Industrial Requirements of KBE for the LeanPPD Model		2010	Toolbox: reducing information waste, exchange standardisation, front loading the information, and improving the information flow (p. 1465).	
3683	Al-Ashaab et al.	The Conceptual LeanPPD Model		2010		Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3680	Al-Ashaab et al.	The transformation of product development process into lean environment using set-based concurrent engineering: A case study from an aerospace industry	CERA	2013		Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3686	Al-Ashaab et al.	Lean Product Development Performance Measurement Tool		2013	Addresses only Lean Engineering.	
3628	Amin et al.	Assessing the leanness in product design : a model for planned design reuse		2010	When extrapolating, only information that predominantly flows through product development process rather than material which physically flows through processes in case of manufacturing. According to McManus and Millard (2002), quality of information flow characterised: Form, Fit, Function and Timeliness (FFFT) (p. 196).	
3742	Anand & Kodali	Development of a Conceptual Framework for Lean New Product Development Process	IJPD	2008	Find eight frameworks (out of 35) to be somewhat valid, but conclude also these are incomplete and need further development.	
3795	Anand et al.	Lean Product Development - Redefining the Indian Automotive Product Development Process using Lean Framework		2009		Book: Huthwaite (2007): The Lean Design Solution.
3794	Anderson et al.	Using lean product development to speed time to market for medical devices		2011	Contains evaluation of 10 approaches to lean product development.	Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3276	Baines et al.	State-of-the-art in lean design engineering: A literature review on white collar lean	JEM	2006		Book: Huthwaite (2007): The Lean Design Solution.
3615	Baines et al.	Beyond theory: An examination of lean new product introduction practices in the UK	JME	2007		Book: Huthwaite (2007): The Lean Design Solution.
3676	Ballé & Ballé	Lean Development	BSR	2005	NOTE: Attempts to introduce the order entry point as concept for push and pull, but not explicitly (pp. 2069–2070).	
3638	Beauregard	A multi-criteria performance study of lean engineering		2010	NOTE: Uses hypothetical data for simulation, hence propositional. Uses value categories from Huthwaite (2005) (p. 87).	Book: Huthwaite (2007): The Lean Design Solution. Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3796	Beauregard et al.	Lean engineering systems for product development in the aerospace industry		2008	This is exacerbated in that the technical products development literature is dominated by examples from high innovation, low variety industries such as the automotive sector' (p. 881).	Kamath and Liker (1994), A second look at Japanese product development.
3744	Beauregard et al.	Lean engineering logistics: load levelling of design jobs with capacity considerations	CASJ	2008		Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering. Sobek II et al. (1998): Another Look at How Toyota Integrates Product Development. Ward et al. (1995): The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster.
3743	Beauregard et al.	Lean engineering performance analysis	IJPD	2014	... the bottleneck approach appears most promising in terms of supporting lean engineering objectives' (p. 1520).	
3797	Beauregard et al.	Post-Certification engineering taxonomy and task value optimization in the aerospace industry	EMJ	2011a	Focus on reducing lead-time, waste by allocation model, resulting in increased throughput. Also, evaluation of job-size for new product design and engineering.	Hoppmann et al. (2009): Efficient Introduction of Lean in Product Development Results of the Survey.
3798	Beauregard et al.	Optimum task size, multitasking and utilization levels for lean product development		2011b	Study on flow based on queuing theory, but no evidence of use of 'real data' in simulation model (hence, classified as propositional).	
3625	Becker & Wits	Enabling Lean Design Through Computer Aided Synthesis: The Injection Moulding Cooling Case		2015	Focus on job allocation akin bottleneck and prioritisation of tasks.	Beauregard, Y., Thomson, V., & Bhuiyan, N. (2008). Lean engineering logistics: load leveling of design jobs with capacity considerations. Canadian Aeronautics and Space Journal, 54(2), 19–30. doi: 10.5589/q08-006
3745	Belay et al.	Approaching lean product development using system dynamics: investigating front-load effects	AM	2014	Focus on arrival rates and optimal allocation of tasks to engineers. NOTE: Lean product development seems contaext for this paper.	
3746	Bertelli & Loureiro	Quality problems in complex systems even considering the application of quality initiatives during product development		2015	Definition of lean drifting from eliminating waste to value creation (p. 1543). Refers to Oppenheim (2004) to view product development as 'production' (p. 1546).	Cusumano, M. A. (1994). The Limits of "Lean". SIoan Management Review, 35(4), 27–32. McNeel, R. How Lean-manufacturing principles speed product design. Mach. Des., 2004, 76(7).

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204	207					
3715	Bjarnoe	Lean thinking in product development		2006	Perspectives of three companies on value, lean. Brief evaluation of practices for NPD. NOTE: Claim that Ford obsessed with waste already in 1920s, preceding Ohno (p. 1593).	McNeel, R. How Lean-manufacturing principles speed product design. Mach. Des., 2004, 76(7).
3672	Browning*	On Customer Value and Improvement in Product Development Processes	SE	2003	Focus on specifications for knowledge-based repository for lean product development; seems to aim at re-use of 'designs' ('previous projects' as they call them).	
3708	Cabello et al.	An analysis of methods to achieve robustness towards a lean product development process		2012	Focus on specifications for knowledge-based repository for lean product development; seems to aim at re-use of 'designs' ('previous projects' as they call them). Also, aiming for life-cycle approach. Despite naming case companies, paper is propositional.	Book: Huthwaite (2007): The Lean Design Solution. Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3748	Cai & Freiheit	Resource Allocation for Lean Product Development Using a Value Creation Cell Model	JMD	2014	NOTE: Little evidence provided about effectiviness or how extension of value stream improved process management. NOTE: Proposed metrics similar to metrics for production line (p. 6).	
3799	Cai & Freiheit	Lean Principles in Product Development Processes		2011a		
3817	Cai & Freiheit	Lean Value Creation in the Product Development Process With the Principle of Set-Based Concurrent Engineering		2011b	Containts overview of perspectives in Table 3.1 (pp. 38–41). Enablers LPD (pp. 46–48). Lack of SBCE in cases, but later core of framework proposed. NOTE: Table 5.6 (p. 127) contains mix of tools, many of them not specific for lean product development.	
3749	Candido & Kaminksi	Product value optimisation engineering applied to current component designs: a case study from the Brazilian automotive industry	IJATM	2008		
3284	Carleysmith et al.	Implementing Lean Sigma in pharmaceutical research and development: a review by practitioners	R&D Man.	2009	Main benefit of LeanPD model is structured PD model with well-defined activities and tools (p. 14). Staged process for PD using set-based concurrent engineering. Claim of less rework (p. 15). Lean enablers: value focus, set-based solutions, integrated documentation, knowledge creation and innovation.	Sobek II et al. (1998): Another Look at How Toyota Integrates Product Development
3800	Ćatić & Sobek II	Development of key performance indicators for knowledge management		2013	Method for performance measurement akin balanced score card. However, authors assume that PD cannot be performed without well-defined process with coresponding tools and enablers (p. 4).	Ward (2007): Lean product and process development.
3688	Ćatić & Vielhaber	Lean Product Development: Hype or sustainable new paradigm?		2011	NOTE: Industrial visits and interviews not reported in sufficient detail (p. 1113), hence only questionnaire as research method. NOTE: Contains overview of five different approaches to lean product development (Table 1, pp. 1108–1109).	Book: Huthwaite (2007): The Lean Design Solution.
3655	Chase	Measuring Value in Product Development		2000	Focus on manufacturing engineering. NOTE: Survey conducted within one firm, hence classified as single case study.	
3725	Choothian	A study of the application of lean practices to new product development processes		2014		
3750	Correia et al.	Mechanisms for communication and knowledge sharing for set-based concurrent engineering	IJPD	2014	Research aiming at capturing knowledge with A3 in contect of problem-solving.	
3724	Costa et al.	What to Measure for Success in Lean System Engineering Programs?		2014		Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering. Ward et al. (1995): The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster
	Cusumano & Nobeoka	Thinking Beyond Lean: How Multi-Project Management is Transforming Toyota and Other Companies		1998	NOTE: multiple research methods; survey and case study somewhat disconnected. Multiple overviews for capturing value.	
3658	da Costa et al.	Toward a better comprehension of Lean metrics for research and product development management	R&D Man.	2014	Focus on manufacturing engineering. 'Information that waits in queues for the next processing activity is equated with physical inventory queues in machining systems' (p. 2, based on Reinertsen).	
3662	Dal Forno & Forcellini	Lean product development – principles and practices	PMD	2013	Object of study: manufacturing engineering. Progressively information becoming available (p. 7).	
3663	Dal Forno et al.	Brazilian automotive industry trends in lean product development practices		2011	Demonstrate implementation of lean product and process development.	
3665	Dal Forno et al.	Lean Product Development: Benchmarking in Brazilian Companies		2013	Both methodologies set-based CE, though implicitly mentioned (p. 32). Lean product development aimed at speed (p. 33).	

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3752	Dal Forno et al.	Use of the Lean Product Development Approach by Capital Goods Companies in Brazil		2013		
3824	Dal Forno et al.	Value Stream Mapping: a study about the problems and challenges found in the literature from the past 15 years about application of Lean tools	IJAMT	2014	NOTE: Only in abstract asserted that few industrial cases have been studied out with Toyota (p. 269). NOTE: Hardly lean product development discussed.	
3645	Darwish et al	Value stream mapping and analysis of product development (engineering) processes		2010	Propose a merger between lean product development and design for six sigma (p. 54).	Book for practitioners more than underpinning for our study.
3629	Dem et al.	Application of lean product development at a manufacturing organisation: a case study		2012	Show implementation. NOTE: Cases are not comparable (size, stage). NOTE: Not clear what lessons to be learnt.	Ward et al. (1995): The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster
3717	Dombrowski & Schmidt	Integration of design for X approaches in the concept of lean design to enable a holistic product design		2013	NOTE: Case study driven by company's view on lean product development (p. 1092); focus on knowledge management appears mostly as consulting. NOTE: Case study incomplete (p. 1098).	
3693	Dombrowski & Zahn	Design of a lean development framework		2011		
Read-on	Dombrowski et al.	State of the Art-Lean Development		2011		
3702	Dombrowski et al.	Analysis and Integration of Design for X Approaches in Lean Design as basis for a Lifecycle Optimized Product Design		2014	Lean placed in context of systems engineering. NOTE: Refers to 10 challenges as 'best practices' for managing engineering programmes.	
3877	El-Sayed	Lean Design for Integrated Product Realization	SAE-IJM	2010	NOTE: Questions concept of value, especially in collaborative design environments (p. 11).	
3801	El-Sayed	Implementation of lean tools and methodologies in design		2012	Several publications on the topic exist, but it there is no unique, or at least general, explanation of Lean principles specific to the Product Development process or clear and structured implementation method' (p. 320). Implementation in cases not applied to whole process nor completely applied (p. 326–327).	
3823	El-Sayed & El-Sayed	Balancing Manufacturability and Performance Attributes in Lean Design	SAE-IJM	2012	NOTE: Focus on business processes for NPD (called process architecture). Based on interviews with managers in SMEs: intellectual property management as waste of time and money (p. 7).	
3699	Endris et al.	Advanced process planning in lean product and process development		2012	Focus on conceptual robustness.	
3815	Farahani & Buiyan	Study of flow in lean product development		2013	NOTE: Focus on business processes for NPD (called process architecture).	
3716	Flores et al.	Identifying Lean Thinking Measurement Needs and Trends in Product Development: Evidence from the Life Sciences Sector in Switzerland		2010	Half of interviewed companies don't clearly understand concept of waste in product development process (p. 9).	
3613	Flores et al.	Do enterprises implement a process architecture towards Lean in product development? A comparative study among large and small firms		2011	Points to lack of adequate practices in companies (pp. 8–9).	
3627	Flores et al.	Understanding the approaches to create a process architecture for lean thinking		2012	Case study focused on prioritisation (p. 182). Potential lean and agile enablers (pp. 174–175).	
3753	Flores et al.	Understanding customer value and waste in product Development: Evidence from Switzerland and Spain		2012	NOTE: Context is lean product development, but not explicitly.	
3651	Fouquet	Design for Six Sigma and Lean Product Development : Differences, Similarities and Links	AJQ	2007	... there is an apparent lack of consensus on the constituent elements of Lean PD systems' (p. 13). 'Lean PD is a new and rapidly evolving area of interest, but it represents only a small fraction of the many interest areas associated with the study of PD systems' (p. 13).	

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3704	Furian et al.	Knowledge Management in Set Based Lean Product Development Process		2013	NOTE: Contains figure about retrievals by year (p. 73); different from ours. NOTE: Hypotheses self-evident.	
3754	Furuhjelm et al.	Creating value through lean product development-applying lean principles		2011	NOTE: Knowledge management taken as sharing of information rather re-use of 'technological' knowledge.	
3636	Garcia and Drogosz	Lean Engineering - Best Practice in the Automotive Industry		2007	NOTE: Self-evident inference: SM analysis resulted in specific measures to improve interactions and working practices that had been characterised by inefficiencies (p. 1146).	
3804	Gautam	A design reuse based framework for lean product development		2005	NOTE: Applied to certification processes for aerospace (is that really engineering?).	Beauregard, Y., Thomson, V., & Bhuiyan, N. (2008). Lean engineering logistics: load leveling of design jobs with capacity considerations. Canadian Aeronautics and Space Journal, 54(2), 19–30. doi: 10.5589/q08-006
3705	Gautam et al.	Design reuse framework: a perspective for lean development	IJPD	2007		
3697	Gershenson & Pavnaskar	Eight Basic Lean Product Development Tools		2003		
3721	Gingnell et al.	Swedish Lean Product Development Implementation		2012		Salgado et al. (2014): Waste investigation on product development process using the lean and simulation approaches.
3755	Gremyr & Fouquet	Design for Six Sigma and lean product development	IJLSS	2012	Based on axiomatic design (Suh) but only for improving product development processes.	
3739	Gudem & Welo	From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value		2010	Even when the lean approach is not applied completely, some practices are used, either directly or indirectly' (p. 11). NOTE: numbers of sampling do not match.	
3722	Gudem et al.	Customer value is not a number–investigating the value concept in lean Product Development		2011	Claim that Japane companies used lean since 1950s (p. 131).	Rethinking lean NPD: A distorted view of lean product development. (2007). Strategic Direction, 23(10), 32-34.
3756	Gudem et al.	From lean product development to lean innovation: Searching for a more valid approach for promoting utilitarian and emotional value	IJITM	2014	Most common practices, adopted by 90% of respondents: standardisation of PDP, use of indicators, project library and continuous search for improving (p. 984).	
3614*	Gudem et al.*	Redefining customer value in lean product development design projects	JEDT	2013	None of companies that responded have plan to implement lean development (p. 556). C ompanies do not always call themselves 'lean', despite using some lean practices (p. 557).	
3618	Gurumurthy & Kodali	An application of analytic hierarchy process for the selection of a methodology to improve the product development process	JMM	2012	Product development only placed in context of product families (p. 782).	
3711	Hafer	Applying lean to new product development	ME	2011	NOTE: New product development problems as effectiveness and efficiency (p. 33).	
3757	Haggerty & Murman	Evidence of lean engineering in aircraft programs		2006	Only variable 'customer requirements' significantly related to motivation of engineers (p. 1124).	
3694	Haque	Lean engineering in the aerospace industry	JEM	2003		
3677	Haque & -James-Moore+	Measures of performance for lean product introduction in the aerospace industry	JEM	2004b	NOTE: Implementation gleaned but not evidenced.	Book: Huthwaite (2007): The Lean Design Solution. Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3647	Haque & James-Moore+	Characteristics of lean product introduction	IJATM	2002		Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering. Sobek II et al. (1998): Another Look at How Toyota Integrates Product Development.
3758	Haque & James-Moore+	Applying lean thinking to new product introduction	JED	2004a	Based on hypothetical case study to prove LPD better that PD and APD.	Radeka, K., & Sutton, T. (2007). What is "lean" about product development? PMDA Visions, 31(2), 11–15.
3759	Harland & Uddin	Effects of product platform development: fostering lean product development and production	IJPD	2014	Provides evidence that set-based concurrent engineering has better performance (p. 692), but consumes more resources (p. 690); more resources may be due to inexperience. Also, mention degree of novelty, but find that potential is for unproven or new technology (p. 692).	
3761	Harris et al.	Knowledge Management to Support Lean Product Development		2006	Product cost lower, but lead-time and cost product devolopment increased (p. 364). Better product performance (p. 364). More positive also for effects on product development and future projects (p. 365).	Ward et al. (1994), Set-based concurrent engineering and Toyota. Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.

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204	207					
3760	Helander et al.	Applying lean in product development - enabler or inhibitor of creativity?	IJTM	2015		
3864	Hille & Eseonu	State-of-the-art review of lean product development practices and their impact on project success		2015	Comparising lean and green product development: both searching for increased competitiveness (p. 118). Number of industrial examples where LPD has been implemented and applied is not extensive (p. 111).	
3816	Hines & Packham	Implementing Lean New Product Development		2008	Focus on attributes (form and function integration) (pp. 5–7).	
3666	Hines et al.	Towards lean product lifecycle management: A framework for new product development	JMTM	2006	Focus on product attributes (design attributes).	El-Sayed, M., "Lean Design for Integrated Product Realization" SAE Technical Paper 2010-01-0400, 2010.
3762	Hölttä et al.	Lean information management model for engineering changes		2010		Book: Huthwaite (2007): The Lean Design Solution. El-Sayed, M., "Lean Design for Integrated Product Realization" SAE Technical Paper 2010-01-0400, 2010. El-Sayed, M., El-Sayed, J., "Balancing Manufacturability and Performance Attributes in Lean Design", SAE Int. J.
3731	Hoppmann et al.	Efficient Introduction of Lean in Product Development Results of the Survey		2009		
3608	Hoppmann et al.	A Framework for Organizing Lean Product Development	EMJ	2011	'The most striking difference between the lean product development concept and more traditional approaches to product development is the strong customer focus' (p. 6). ''few companies stating to work with LPD are willing to make that kind of investment' (frontloading for smarter solutions) (p. 6). 'Where is such a remarkable person to be found? The Chief Engineer is supposed perform a lot of teaching and coaching [13], but who teaches the Chief Engineer? To questions like this, the LPD literature offers little support.' (p. 6).	
3763	Institoris & Bligard	Human factors engineering as a supportive tool for lean product development		2014	None of three companies took principles directly from literature (p. 8). None of three cases mentioned ability to adapt to variability (p. 8). None of companies used set-based design (p. 10).	Sigemyr et al. (2006): Not available in English.
3660	Jasti & Kodali	Validity and reliability of lean product development frameworks in Indian manufacturing industry	MBE	2014	Claim that lean product development may inhibit creativity if not looked after (p. 67). Training of personnel engaged in implementation also stands out as key effort in establishing lean perspective and way of working (p. 56).	
3616	Johansson & Sundin	Lean and green product development: two sides of the same coin?	JCP	2014	NOTE: Central theme seems to be takt time (for short, less intense projects).	
3876	Kamath & Liker	A second look at Japanese product development	HBR	1994	Contains figures about waste (pp. 34–36).	
3765	Karademir & Cangelir	Lean approach in concurrent engineering applications		2013	NOTE: Amalgamation of Oppenheim (2004) and Oppenheim et al. (2011). Contains figure about waste (p. 45).	
3086	Karlsson & Åhlström	The difficult path to lean product development	JPIM	1996	Overview of differences between Toyota and Sweden (p. 136).	
3766	Kerga et al.	Compact Teams: a Model to Achieve Lean in Product Development		2015	Multi-project management for diversified and mass markets (p. 194).	
3654	Khan	The construction of a model for lean product development		2012	Based on lean entreprise model (p. 7). Application of lean thinking to new product development (p. 15). NOTE: Amalgamates works of master's dissertations, projects, etc. related to LAI in one overview, but not always integrated.	
3691	Khan et al.	Set-Based Concurrent Engineering process within the LeanPPD environment		2011	NOTE: Front end of doctoral study.	
3607	Khan et al.	Towards lean product and process development	IJCIM	2013		
3767	Khan et al.	Define value: applying the first lean principle to product development	IJISE	2015		

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204	207					
3695	Kirner et al.	Information in Lean Product Development: Assessment of Value and Waste		2013	Indicates rationalisation of product development, based on two studies. NOTE: Master's dissertations underping many findings.	
3713	Lee & Chang	Developing a lean design for Six Sigma through supply chain methodology	IJPQM	2010	Fuzzy front end challenges (p. 26). Link to ERP, PDM (pp. 31–33).	
3768	Lemieux et al.	A Mixed Performance and Adoption Alignment Framework for Guiding Leanness and Agility Improvement Initiatives in Product Development	JET	2013	Raises principles at end of publication. NOTE: Rather descriptive. Makes case that more principles applied, better it is.	
3664	Lempia	Using Lean principles and MBE in design and development of avionics equipment at Rockwell Collins		2008	NOTE: Classified as propositional because of 'scattered evidence'.	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3609	Léon & Farris	Lean Product Development Research: Current State and Future Directions	EMJ	2011		
3829	Letens et al.	Optimizing stakeholder value and reducing waste in new product development projects		2009	Similar components as later published in Hoppmann et al. (2011)	
3606	Letens et al.	A Multilevel Framework for Lean Product Development System Design	EMJ	2011	Types of waste (p. 236).	
3087	Liker & Morgan	The Toyota Way in Services: The Case of Lean Product Development	AMP	2006	NOTE: Classified as propositional, because of evidence scattered throughout chapter.	
3679	Liker & Morgan	Lean product development as a system: a case study of body and stamping development at Ford	EMJ	2011	Lean enablers (slide 40, p. 39): respect for people, programme manager from beginning to end, frequently engage stakeholders, communications plan. NOTE: Are these just not good project management practices.	
3770	Lindlöf & Söderberg	Pros and cons of lean visual planning: experiences from four product development organisations	IJTIP	2011	Mention 43 lean enablers (p. 798).	Taisch et al. (2010): Performance measurement system for lean-oriented NPD process.
3612	Lindlöf et al.	Practices supporting knowledge transfer – an analysis of lean product development	IJCIM	2013		
3771	Machado	New Product Development: From Efficiency to Value Creation		2013		
3630	Maginness et al.	Principles for aerospace Manufacturing Engineering in integrated New Product Introduction	JME	2013	Seen as seminal, but does not apply lean thinking to new product development. NOTE: Toyota's approach to new product development seen as compromise for 'chimney extreme' and 'committee extreme'.	
3631	Maginness et al.	Value Stream Analysis of Manufacturing Engineering New Product Introduction Processes		2011a	Refer to Pugh, Ulrich & Eppinger, Wheelwright & Clark and Dubinskas for similar method as set-based concurrent engineering (p. 71). View set-based concurrent engineering as not only factor, but critical one (p. 72).	
3633	Maginness et al.	Planning Manufacturing in a Concurrent Engineering Environment: A Case Study		2011b	NOTE: 'Product development has significant variability in processing much like a job shop' (p. 6) -> argument not expanded or used. NOTE: Value only used in context of waste and mapping.	Cloke (2000), Lean Products Start with Lean Design, Advanced Manufacturing E Journal.
3720	Mahlamäki et al.	Lean product development point of view to current challenges of engineering change management in traditional manufacturing industries		2009		Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3626	Maksimovic	Lean knowledge life cycle framework to support lean product development		2013		Sobek II et al. (1998): Another Look at How Toyota Integrates Product Development
3807	Mayrl et al.	Eliciting product development knowledge using value stream mapping	IJPD	2013	Describes implementation in medical devices company (Covidien).	NOTE: Bradford (2004) could not be found anywhere.
3674	McManus & Millard	Value Stream Analysis and Mapping for Product Development		2002	NOTE: Cases studies seem to be in same company.	
3806	McManus et al.*	Lean engineering : a framework for doing the right thing right	AJ	2007		
3821	McNeel & Lawrence	How Lean-manufacturing principles speed product design		2004	Some adaptations to SA context (NOTE: unclear whether these are really specific for SA).	

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3825	Morgan	High performance product development: A systems approach to a lean product development process		2002	NOTE: Study with moxed-method approach. Distinguish knowledge-based school and control approach of lean product development (p. 2). Refer to company size, position in value chain, culture, project size, etc. as determinants for implementation (p. 8).	
	Morgan & Liker	The Toyota product development system		2006	Proposes to extend lean product development to lean innovation, seemed to be based on commercial proposition (Doblin Group) without further foundation (NOTE: unclear what distinguishes both concepts).	Book: Huthwaite (2007): The Lean Design Solution.
3657	Mund et al.	Lean product engineering in the South African automotive industry	JMTM	2015	Introduces value chart (NOTE: not clear how this related to LPD).	Gudem and Welo (2010), From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value.
3648	Murman	Lean Systems Engineering II		2003	NOTE: Examples are illustrative only.	
3646	Murman	Lean Aerospace Engineering		2008	... includes methods and practices applicable to extending lean product development practices beyond lead time and cost' (p. 3).	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3822	Murman	Innovation in aeronautics through Lean Engineering		2012	SAME as Paper 3722. Introduces value chart (NOTE: not clear how this related to LPD). "Waste is typically associated with doing activities with the wrong input rather than doing unnecessary activities, as is the case in manufacturing" (p. 73).	Gudem and Welo (2010), From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value.
3661	Negroni & Trabasso	A Quality Improving Method to Assist the Integrated Product Development Process		2009	Performance related to clear project prioritisation, design strategy including standardisation, updating critical project characteristics by project team members, simple visual communication tools (p. 903).	
3870	Nepal et al.	Lean product development: An approach to achieve Ford's global product development system milestones		2007	Using System Dynamics modelling and simulation (data seem to be hypothetical), hence propositional. Mentioning value and waste but actually only cost-oriented model.	Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3701	Nepal et al.	Improving the NPD Process by Applying Lean Principles: A Case Study	EMJ	2011	Advocate lean innovation by placing lean product development in context of innovation types.	Radeka, K., & Sutton, T. (2007). What is "lean" about product development? PMDA Visions, 31(2), 11–15. Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3641	Nightingale	Lean Engineering Product Development		2002	Modularisation for product variety in ETO environment (p. 576); NOTE: not exclusive to lean product development. NOTE: Two cases at end of article do not provide insight to principles but are brief description; hence, study classified as propositional.	
3656	Oehmen	Lean Enablers for Managing Engineering Programs		2012	Systems engineering companies (aerospace and defence) tend to be more immature, compared to other sectors when considering lean practices and capabilities for knowledge (p. 6).	
3712	Oehmen & Rebentisch	Risk Managament in Lean PD		2010a	Systems engineering companies tend to be more immature, especially compared to automotive companies, when considering lean practices and capabilities within principal components customer value, knowledge and performance (p. 242). NOTE: Same as paper 3623 [Ringen & Welo (2015): Knowledge Based Development Practices in Systems Engineering Companies: A Comparative Study].	
3669	Oehmen & Rebentisch	Waste in Lean Product Development		2010b	Sees works in the beginning of 2000s as starting point (e.g. Hague and More [2004], Oppenheim [2004], Reinertsen [2005, 2009]); same for lean thinking (Womack and Jones [1996]).	Radeka, K., & Sutton, T. (2007). What is "lean" about product development? PMDA Visions, 31(2), 11–15.
3640	Oppenheim	Lean product development flow	SE	2004	Decline in publications after 2011 noted (p. 88). Find that automotive and aerospace are dominating (p. 88). NOTE: Focus is on tools (p. 90). '... lack of empirical evidence to support arguments for LPD implementation benefits' (p. 93).	
	Oppenheim	Lean for Systems Engineering with Lean Enablers for Systems Engineering		2011	Case study of Ford: introducing global product development.	Sobek II et al. (1998): Another Look at How Toyota Integrates Product Development.

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204	207					
3637	Oppenheim et al	Lean Enablers for Systems Engineering	SE	2011	NOTE: Just advocating waste as principle.	
3772	Parry et al.***	Lean new product introduction: a UK aerospace perspective		2008		Reinertsen (1999): Lean thinking isn't so simple.
3819	Parsons & Josefik	Accelerating Production Readiness Using Lean Product Development		2009	Brief note about implemtation at LORD Corporation.	
3773	Paschkewitz	Risk Management in Lean Product Development		2014		Kennedy, MN (2003), Product Development for the Lean Enterprise, Oaklea Press (???)
3774	Pavnaskar & Gershenson	The application of value stream mapping to lean engineering		2004	Equals flow to queue management (p. 43).	
3827	Pavnaskar & Gershenson	A Systematic Method for Leaning Engineering Processes		2005		
3639	Pessôa et al.	An approach to lean product development planning		2007	Example of implementation more than anything else.	
3709	Pessôa et al.	A method to lean product development planning	PMD	2008		
3690	Pessôa et al.	Understanding the Waste Net: A Method for Waste Elimination Prioritization in Product Development		2009		
3719	Powell et al.	A New Set of Principles for Pursuing the Lean Ideal in Engineer-to-order Manufacturers		2014		
3775	Pullan et al.	Decision support tool for lean product and process development	PPC	2013		
3611	Qudrat-Ullah et al.	Improving high variable-low volume operations: an exploration into the lean product development	IJTM	2012	NOTE: No evidence of case study presented, hence classified as propositional.	
3734	Radeka & Sutton	What is "lean" about product development? An overview of Lean Product Development	PDMA	2007	Description of practice at GSK: focus on business process improvement. Discusses throughout pros and cons. Also refers to 'focus group' in pharmaceutical industry (p. 98).	Reinertsen, D., & Shaeffer, L. (2005). Making R&D Lean. Research Technology Management, 48(4), 51–57.
3776	Rauch et al.	Axiomatic Design based Guidelines for the Design of a Lean Product Development Process		2015	Description of implementing lean product development for fuel cells. NOTE: No references used.	
3081	Raudberget	Practical Applications of Set-Based Concurrent Engineering in Industry		2010		
3703	Raudberget	Enabling Set-based Concurrent Engineering in traditional product development		2011		
3868	Raudberget & Sunnersjö	Experiences of set based concurrent engineering in four product developing companies		2010	Overview of knowledge value stream versus product value stream (p. 492).	Sobek II et al. (1998): Another Look at How Toyota Integrates Product Development. Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3649	Rebentisch	Lean Product Development		2005	Comparison manufacturing and product development derived from McManus (p. 3). Refer to product development being subject to uncertainty (p. 9).	
3732	Reinertsen	Lean thinking isn't so simple	ED	1999		Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3668	Reinertsen	Let it flow: how lean product development sparked a revolution		2005	Introduces illustrative example.	
3733	Reinertsen & Shaeffer	Making R&D Lean	RTM	2005	Compared with concurrent engineering.	
3675	Ringen & Holtskog	How enablers for lean product development motivate engineers	IJCIM	2013	Connects lean product development to reliability of products.	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.

No.	Author(s)	Title	Journal	Year	Notes	Snowballing
The layout of these review data is formatted for A3-sized pages						
204	207					
3687	Ringen & Lodgaard	Lean product development in the automotive supplier industry		2009	Home appliances are relatively stable platforms and new products are generally just evolutions of former products, data once created in form of functions can be easily reused for future projects (p. 190). NOTE: Descriptive, but not analytical, hence, not classified as case study.	
3623	Ringen & Welo	Knowledge Based Development Practices in Systems Engineering Companies: A Comparative Study		2015	NOTE: Focus on creativity being under pressure from lean product development.	
3621	Rocha et al.	Mass Customization Enablement Through Lean Design & Set-Based Concurrent Engineering Application	JOSCM	2014	NOTE: Advocates use of TRIZ and axiomatic design but does not lead to methodology for new product development.	
3696	Rossi et al.	Proposal of a method to systematically identify wastes in New Product Development Process		2011	NOTE: Scope of project LeanPPD outlined, but nothing beyond it.	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3679	Rossi et al.	Lean product development: A five-steps methodology for continuous improvement		2012	Only purpose of paper: identifying all types of waste.	Soderborg N. (2008): Lean Product Development (WCBF Design for Six Sigma).
3718	Ryan & Reik	Applying the Core Elements of a Lean Enterprise to Product Development		2010	70 indicators for performance measurement of (lean) product development (p. 659). Weakness of model lack of methodology to identify easily which indicators mostly representative of lean state (p. 661).	
3689	Saad et al.	A3 Thinking Approach to Support Problem Solving in Lean Product and Process Development		2013		Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3779	Salgado et al.	Waste investigation on product development process using the lean and simulation approaches.	PMD	2014	Focus on waste identification in actual product development processes: all linked to quality of information, data and requirements in flow (p. 6).	Rossi et al. (2011): Lean Product Development: Fact Finding Research in Italy (COULD NOT BE FOUND).
3624	Salgado et al.	Investigating waste on new product development: case study	PMD	2015	Alternative solution to make lean product development work.	
3793	Saunders et al.	A case study to evaluate lean product development practices in the global automotive industry	IJPD	2014	Focus on standardisation, modularisation, re-use. Development of leanness index. NOTE: index favours re-use, etc. without considering customer value.	
3726	Schuh et al.	Lean Innovation: Introducing Value Systems to Product Development		2008	Rationale (pp. 125): Qudrat-Ullah et al. [2011] for applying lean to high variable-low volume product development, SBCE and people acceptance and involvement. Lack of understanding/knowledge of whole process, such processes are not stable/mature and people tend running away/skip multiple-concept development (p. 134). 'It sounds like the SBCE is seen by some people as just a theory, a non-proved idea in real life' (pp. 134).	
3780	Schuh et al.	Systematic waste elimination in lean product development using generic activities	IJPD	2014		Morgan (2002): High performance product development: A systems approach to a lean product development process.
3792	Schulze & Störmer	Lean product development – enabling management factors for waste elimination	IJTM	2012	Refers to managing bottlenecks (pp. 75–80).	Morgan (2002): High performance product development: A systems approach to a lean product development process.
3632	Schulze et al.	Exploring the 4I framework of organisational learning in product development: value stream mapping as a facilitator	IJCIM	2013	NOTE: Though linked to survey, publication is mostly propositional. Propose lean innovation based on 'structure early, synchronise sasily, adapt securely (p. 1132).	
3644	Shirwaiker & Okudan	Contributions of TRIZ and axiomatic design to leanness in design: an investigation		2011		
3710	Singer et al.	What Is Set-Based Design?	NEJ	2009	NOTE: Though claiming case study, little, or better no, evidene about it provided. NOTE: Framework (p. 10) contains mix of tools and methods associated with lean product development and those independent of lean product development.	
3689	Siyam et al.	Lean product development in practice: Insights from 4 companies		2013	… lean should not been seen as a state, but as a direction.' (p. 293). NOTE: no information given on which knowledge and seminars provided to case company (p. 286).	Funk (1993)?
3620	Siyam et al.	Review of Value and Lean in Complex Product Development	SE	2015		

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204	207					
3707	Siyam et al.	Relating value methods to waste types in lean product development		2012a	The overall assessment suggests that the literature on LPD to date has been more focused on what types of things should be done in order to improve PD processes, rather than exactly how the recommendations should be implemented.' (p. 45)	
3781	Siyam et al.	Value and waste dependencies and guidelines		2012b	Modular and platforms as starting point for lean product development. NOTE: Use of example from literature. Surprisingly, did not get clear picture of relevant effects (p. 267).	
3728	Sobek II et al.	Another Look at How Toyota Integrates Product Development	HBR	1998	Compares more extensively production and product development (p. 45).	
3083	Sobek II et al.	Toyota's Principles of Set-Based Concurrent Engineering	SMR	1999	Lean methods enhanced by other methods for new product development, according to participants (pp. 813–814). Noteworthy conclusion: rating by respondents to 'reshaping lean principles for a better application in PD: 7 out of 10 (p. 818).	Graebsch et al. (2007): Assessing Information Waste in Lean Product Development.
3682	Sopelana et al.	The Application of an Assessment Tool for Lean Product Development: An exploratory study in Spanish Companies		2012	NOTE: Because of limited 'narrated' evidence classified as propositional. 'Lean product development means different things to different organizations' (p. 806). Focus on PLM; however, conceptualisation for lean product development missing mostly.	Radeka, K., & Sutton, T. (2007). What is "lean" about product development? PMDA Visions, 31(2), 11–15.
3706	Sorli et al.	Applying lean thinking concepts to new product development		2010	defined processes that differ according to the degree of novelty they require' (p. 23). 'It can be argued that make vs. buy decisions have to be done anyway by a company, regardless of the NPI process and its leanness' (p. 25).	
3782	Sorli et al.	Expanding lean thinking to the product and process design and development within the framework of sustainability		2011	... waste is more commonly evaluated and tracked than value' (p. 447).	
3783	Sorli et al.	Development of KBE system to support LeanPPD application		2012	NOTE: Model applied to two very different cases, one on sector level and one within firm (does not make sense).	Cai, T., and Freiheit, T., 2011, "Lean Value Creation in the Product Development Process With the Principle of Set-Based Concurrent Engineering," ASME Paper No. DETC2011-48693
3784	Stenholm et al.	Knowledge Based Development in Automotive Industry Guided by Lean Enablers for System Engineering		2015	PD and manufacturing differ [McManus and Millard, 2002; Browning, 2003]. Many LPD articles recognise these differences, yet they are not tackled thoroughly.' (p. 201). NOTE: However, does not offer this themselves either. ' Research should seek more evidence of benefits of lean in complex system PD' (p. 204).	
3785	Stetler	Creativity Just in Time? The Role of Delivery Precision in Product Development	IJITM	2015	Generates generic overview.	
3786	Ström et al.	Transformation to lean product development - Approaches at two automotive suppliers		2012	Generates generic overview. Based on Siyam et al. (2012)/Paper 3707.	
3866	Subramoniam et al.	Lean Engineering Implementation Challenges for Automotive Remanufacturing		2009	Discusses different roles of suppliers in stages of new product development; four different roles of suppliers (pp. 158, 164).	
3863	Swan & Furuhjelm	Creating Value Through Lean Product Development – Towards a Generic Framework		2010	NOTE: Contains systematic literature review using 13 principles of Morgan & Liker (2006) (p.312–313).	
3862	Tähemaa et al.	Lean product development in Estonian SMEs		2012	Focus only on Toyota.	
3787	Taisch et al.	Towards a performance measurement system for lean-oriented NPD processes		2011		
3875	Thomas & Singh	Design for Lean Six Sigma (DFLSS): Philosophy, Tools, Potential and Deployment Challenges in Automotive Product Development		2006	Refers to Pugh (see list of references).	Kamath and Liker (1994), A second look at Japanese product development. Sobek II et al. (1998): Another Look at How Toyota Integrates Product Development.
3652	Tingström et al.	Implementing Value Stream Mapping – VSM in a R&D organisation		2010		Morgan (2002): High performance product development: A systems approach to a lean product development process. Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering. Sobek II et al. (1998): Another Look at How Toyota Integrates Product Development.

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204	207					
3788	Tortorella et al.	Lean Product Development (LPD) Enablers for Product Development Process Improvement		2015	NOTE: Interpretation of socio-technical system (pp. 15–17) rather limited. 13 principles (p. 18), based on Liker (2004): (1) customer-defined value, (2) front-loaded development, (3) leveled product development flow, (4) standardisation, flexible, predictable outcomes, (5) chief engineer, (6) balanced functional expertise and cross-functional integration, (7) technical competence, (8) integrate suppliers, (9) learning and continuous improvement, (10) culture, (11) adapt technology, (12) simple, visual communication, (13) standardisation and organisational learning.	
3687	Tyagi et al.	Value stream mapping to reduce the lead-time of a product development process	IJPE	2015	Advocate use of set-based concurrent engineering for design of naval ships. Relate their argument to design space.	
3805	Vinodh & Kumar	A case study on lean product and process development		2015	We believe these principles are generic enough to apply broadly to product-process development across companies and industries (p. 25). Lean product development is far more than a toolkit to eliminate waste (p. 25). Refer to 'fuzzy front end' (p. 27).	
3685	von Würtemberg et al.	Abstract model of LPD: A critical review of the Lean Product Development concept		2011	Descriptive analysis of case company. Recommendations for case company but no evidence of implementation.	
3653	Vosgien et al.	Lean approach to integrate collaborative product development processes and digital engineering systems		2011	50 metrics (performance indicators) by panel selected from literature (153 indicators). NOTE: not directly related to lean, though used for categorisation.	
3650	Walton	Strategies for Lean Product Development		1999		Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3617	Wang et al	Using Value Stream Mapping to Analyze an Upholstery Furniture Engineering Process	FPJ	2011	NOTE: Relation to sustainability of project LeanPPD outlined, but nothing beyond it.	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3642	Wang et al.	Focus on implementation: a framework for lean product development	JMTM	2011	NOTE: Despite involving aerospace representatives, classified as propositional (lack of evidence).	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering. Sobek II et al. (1998): Another Look at How Toyota Integrates Product Development.
3698	Wangwacharakul et al.	Cultural Aspects when Implementing Lean Production and Lean Product Development – Experiences from a Swedish Perspective	QIP	2014	Focus on feasibility of application.	Cloke (2000), Lean Products Start with Lean Design, Advanced Manufacturing E Journal.
3871	Ward et al.	Set-based concurrent engineering and Toyota		1994	Presence of a coherent and sustainable approach/methodology was missing, as well as proper application of key management tools and technology (p. 29).	Cloke (2000), Lean Products Start with Lean Design, Advanced Manufacturing E Journal.
0852	Ward et al.	The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster	SMR	1995	Developed metrics address key criteria lean process, i.e. delivering 'customer' value, eliminating waste and enabling smooth flow driven by customer needs (p. 1397). NOTE: not clear why metrics are specific for lean.	
3684	Wasim et al.	An innovative cost modelling system to support lean product and process development	IJAMT	2013	NOTE: Problem-solving and rationalisation in structured manner more than lean product development.	
3610	Welo	On the application of lean principles in Product Development: a commentary on models and practices	IJPD	2011	NOTE: Focus on re-use, from perspective of waste; other concepts of lean product development in background for latter, see pp. 71 ff.).	Morgan (2002): High performance product development: A systems approach to a lean product development process.
3634	Welo & Ringen	Investigating Lean Development Practices in SE Companies: A Comparative Study Between Sectors		2015	NOTE: Only propositional. Refer to using lean for product development (p. 202), but do not elaborate much.	
3791	Welo et al.	Enhancing product innovation through a customer-centered, Lean framework	IJITM	2012	Integration of DFSS, lean product development and lean knowledge management. NOTE: Overview of six sigma (Table 1, p. 79) contains methods and tools developed independently of six sigma and lean.	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
3622	Welo et al.	Assessing the Relationship between New Product Development Practices and Performance in the Norwegian Manufacturing Industry		2013	Comparison manufacturing and product development derived from McManus (p. 203). Reduction of lead-time reported (p. 211).	
3789	Wohnhas	Value management in lean product development		2014	NOTE: Link made to knowledge management, but in case bolis down to evaluating alternatives.	
3790	Yang & Cai	The integration of DFSS, lean product development and lean knowledge management	IJSSCA	2009	NOTE: Despite mentioning Toyota and Microsoft no real case studies.	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.

* conference proceeding found but substituted by journal publication

No.	Author(s)	Title	Journal	Year	Notes	Snowballing
The layout of these review data is formatted for A3-sized pages						
204	207					

** working paper replaced with journal publication
*** working paper taken (rather than chapter in edited book)
**** First edition used
+ Name of 'Moore' corrected to 'James-Moore'

ALTERNATIVE SEARCH TERMS
+ "lean design engineering"

No.	Author(s)	Title	Journal	Year	Keywords					Duplication Keywords	Search Engine			Duplication search	Institute	Type of Publication									Notes
					Lean product development	Lean product and process development	Lean engineering+	Snowballing	Additional Sources		EBSCO	Google Scholar	Scopus			Academic Journals	Books	Chapter Edited Bo	Conference Contrib	Doctoral theses	Working Papers	Professional Public	Reports	Presentations	
The layout of these review data is formatted for A3-sized pages																									
	35				28	4	7	2	0	4	3	22	13	2	10	7	9	0	12	0	0	1	0	0	
3278	Bauch	Lean Product Development: Making Waste Transparent (= Master's dissertation)		2004	x					0		x		0											
	Bem-Levy	LEAN product development (LPD)		2009	x								x						x						Discarded because it is about workshop (teaching).
	Cooper & Edgett	Lean, Rapid, and Profitable New Product Development		2005	x					0		x		0			x								Not monograph.
3751	Costa et al.	Systematization of Recurrent New Product Development Management Problems	EMJ	2013			x			0		x		0	MIT	x									Only mentions issues related to lean product development, etc. in a casual
3814	Dwivedi & Attarwala	Design for manufacture and assembly lean and product development through industrial case study		2012	x					0			x	0	ULL				x						Directed at students (see abstract).
3619	Ericson et al.	Needs and requirements-How TRIZ may be applied in product-service development		2009			x			0		x		0											
3667	Gautam & Singh	Lean product development: Maximizing the customer perceived value through design change (redesign)	IJPE	2008	x					0		x		0											
3673	Graebsch	Information and Communication in Lean Product Development		2005	x	x				0		x		0											Master's dissertation.
3741	Graebsch et al.	Assessing information waste in lean product development		2007	x		x			0		x		0											NOTE: Classified as propositional, because two cases are students' projects. DISCARDED as teaching.
3678	Gunasekaran	An integrated product development-quality management system for manufacturing	TQM	1998	x					0		x		0											
3818	Kahlen et al.	The möbius strip of Lean Engineering and Systems Engineering		2013			x			0		x	x	1	UCT				x						Focus on engineering education.
3681	Nilsson-Witell	Continuous improvement in product development: Improvement programs and quality principles	IJQRM	2005	x					0		x		0	KU										Lean product development mentioned only once (p. 766).
3667	Gautam & Singh	Lean product development: Maximizing the customer perceived value through design change (redesign)	IJPE	2008	x					0	x		x	0	Practitione	x									Lean product development only mentioned in title
3735		Rethinking lean NPD: A distorted view of lean product development	SD	2007				x		0				0							x				Is about workshop rather than any conceptual argument.
	Kerga et al.	Lean Product Development: Serious Game and Evaluation of the Learning Outcomes		2013	x								x						x						Game for teaching set-based concurrent engineering.
3764	Kamalov et al.	A formal model of a complex estimation method in lean product development process		2010	x					0			x	0					x						Only first sentence mentions lean; no further reference to lean product
	Kerga et al.	A serious game for introducing setbased concurrent engineering in industrial practices	CERA	2014	x						x		x			x									Game for teaching practitioners.
	Kerga et al.	Set based concurrent engineering: Serious gaming and implications for practice		2015	x								x						x						Teaching to practitioners.
3808	Kumar et al.	Barriers in green lean six sigma product development process: an ISM approach	PPC	2016	x					0			x	0	IITM	x									Consultation of four industry experts and three academics to identify relationships between barriers.
3692	Rossi et al.	Learning Methodologies to Diffuse Lean Product Development to Industries		2012	x					0		x	x	1	PUM				x						Mostly about game teaching to industry concept of lean product development.
	Stone	Four decades of lean: a systematic literature review	IJLSS	2012	x		x			1		x		0		x									About lean in general.
AUTHOR	Alfredson	Challenges of implementing lean principles in product development – the case of Visual planning		2011	x					0		x		0					x						Name of authors do not match with title.
3803	El-Sayed	Lean Implementation in Integrated Design and Manufacturing	SAE-IJMM	2013	x					0	x			0	Kettering	x									Students projects as case studies.
	Fiore	Lean strategies for product development: achieving breakthrough performance in bringing products to market		2003	x					0		x		0			x								Not monograph.
	Fiore	Accelerated Product Development: Combining Lean and Six Sigma for Peak Performance		2004	x	x				1		x		0			x								Not monograph.

No.	Author(s)	Title	Journal	Year	Keywords: Lean product development	Keywords: Lean product and process development	Keywords: Lean engineering+	Keywords: Snowballing	Keywords: Additional Sources	Duplication Keywords	Search Engine: EBSCO	Search Engine: Google Scholar	Search Engine: Scopus	Duplication search	Institute	Type of Publication: Academic Journals	Books	Chapter Edited Book	Conference Contrib	Doctoral theses	Working Papers	Professional Public	Reports	Presentations	Notes
The layout of these review data is formatted for A3-sized pages																									
	35				28	4	7	2	0	4	3	22	13	2	10	7	9	0	12	0	0	1	0	0	
	Garcia et al.	Lean Product Development. How to Create Flow? Reflection after a 4 Years Implementation in One Business Unit - Part 1		2016	x					0			x						x						2016
	Huthwaite	The Lean Design Solution						x		0				0			x								Not monograph.
	Locher	Value Stream Mapping for Lean Development: A How-to Guide for Streamlining Time to Market		2008	x					0		x		0			x								Not monograph, but guide.
	Mynott	Lean Product Development: A Managers Guide		2000	x					0		x		0			x								Not monograph.
	Oosterwal	The Lean Machine: How Harley-Davidson Drove Top-Line Growth and Profitability with Revolutionary Lean Product Development		2010	x	x				1		x		0			x								Not monograph.
3865	Pavnaskar et al.	Design for Lean Manufacturing: Incorporating Lean Considerations During Product Development		2006			x			0		x		0	MTU				x						About designing for manufacturing, not about lean product development.
	Reinertsen	The principles of product development flow: second generation lean product development		2009	x	x				1		x		0			x								Not monograph.
	Tortorella et al.	Relationships between lean product development enablers and problems	IJPR	2016	x								x			x									
	Ulonska et al.	Keep Systems Engineering Simple to Get the Job Done		2013	x					0			x						x						About students.
	Ward & Sobek II	Lean Product and Process Development		2007						0		x		0			x								How-to, not monograph.
3820	Yadav & Allada	Developing a Lean Value Model for Product Development		2009			x			0		x		0	MUST				x						Student project
										0				0											

* conference proceeding found but substituted by journal publication
** working paper replaced with journal publication

ALTERNATIVE SEARCH TERMS
+ "lean design engineering"