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

- 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

- 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

University of Calgary Calgary Cardiff University Cardiff

Concordia Concordia University (Montreal)

Cranfield Cranfield University Cochin University

CUT Chalmers University of Technology

École Centrale Paris ECP

EPFL Ecole Polytechnique Fédérale de Lausanne

EPM Ecole Polytechnique de Montréal

Escola Politécnica da Universidade de São Paulo **EPUSP**

FTH FTH Zurich

École de Technologie Supérieure (Québec) ETS

Fooyin University (Taiwan)

FU 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

Indian Institute of Management, Kozhikode IIMK

International Institute of Technology and Management (Murthal, India) IITM

Jönköping University

Kettering Kettering University

KPU Kwantlen Polytechnic University (Canada)

KTH Royal Institute of Technology (Stockholm)

KU Karlstad University

Loyola Maymount University

Linköping University LU

MIT Massachusetts Institute of Technology Montana State University

MSU 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 Purdue University PD

Practitioner

JU

Penn State University

PSU 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 Stockholm School of Economics SSE TAMU Texas A&M University

TTU Texas Tech University Technical University of Denmark TUD 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 University of Johannesburg Uol

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 Wayne State University WSU York University (Toronto)

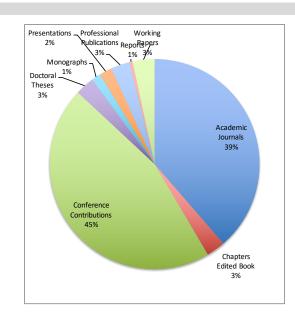
© Rob Dekkers Eduardo Gomes Salgado/2017 Page 1 of 72 Data for Systematic Literature Review 'Lean Product Development' – Overview of Aggregated Data

	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 forma	tted for A3-size	ed 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	

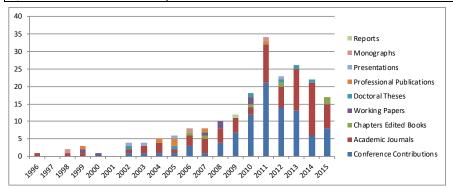
Outlet	EBSCO	Google Scholar	Scopus	Snowballing	Additional	Total
Academic Journals	14	62	44	9	1	80
Monographs	0	2	1	0	0	3
Chapters Edited Book	0	3	4	0	0	6
Conference Contributions	1	59	59	2	0	94
Doctoral Theses	0	4	0	2	0	6
Working Papers	0	7	1	0	0	7
Professional Publications	1	3	1	3	0	6
Reports	0	0	0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

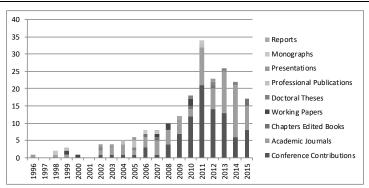


	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Academic Journals	1		1	1	0		1	2	3	1	3	4	4	4	2	11	6	12	15	7	78
Monographs	0		1	0	0		0	0	0	0	1	0	0	0	0	1	0	0	0	0	3
Chapters Edited Books	0		0	0	0		0	0	0	0	1	1	0	0	1	0	1	0	0	2	6
Conference Contributions	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).

	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

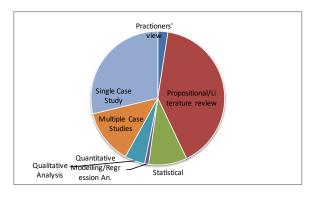




CLASSIFICATION OF PUBLICATIONS

	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 vation & Techn. N Other

174

21

10

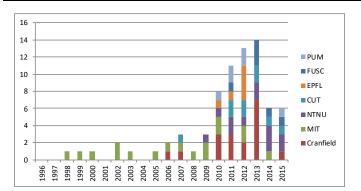
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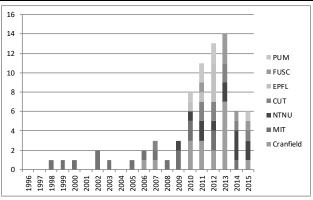
Multiple disciplines 18

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	0	1	0	3	1	1	6
PUM Concordia	0		0	0	0 0		0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	1 1	2 2	2 0	0 1	0 0	1 0	6 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 AIT	0		0	0 0	0 0		0 0	0 0	0 0	1 0	1 0	0 1	0 1	1 1	0 0	0 0	0 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	0	0	0	1	1	0	2
LMU MSU	0		1	1	0 0		0	0	1 0	0 0	0 0	0 0	0 0	0 0	0 0	2 0	0 0	0 0	0 0	0 0	3 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 EPUSP	0		0 0	0 0	0 0		0 0	0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	1 0	0 0	0 0	1 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 MUST	0		0 0	0 0	0 0		0	0	0 0	0 1	0 0	0 0	1 0	0 0	1 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	0	0 0	0 0	1 0	0	0 0	0	0	0	1
RJSU SJTU	0		0	0 0	0		0 0	0 0	0 0	0 0	0	0 0	0	0	0	0 1	0	0 0	1 0	0 0	1 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 UB	0 0		0 0	0 0	0 0		0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	1 0	0 0	0 0	0 0	1 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 inst	itute derived from column P in 'Listing ALL'

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

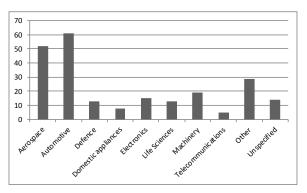
NOTE: Authors have been added using separate database

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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	Publication
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	х	Х	x	x	x	31	27
	х					1	17
	х		x			5	16
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	х	X	x	x		15	9 8 8 8 7
			x			4	8
		X	x			6	8
	х		x	x		13	8
		X				2	
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	х	Х				3	6
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	х				x	17	4
	х	Х	x		x	23	3
				x		8	2
		X		Х		10	2
		Х	x	x		14	2
	х	Х			х	19	2
			x		х	20	2
	х		x		х	21	2
				x	х	24	2
	х			x	х	25	2
	х			Х		9	1
	х	X		X		11	
		X	x		х	22	1
		X	Х	X	x	30	1
		X			x	18	0
		X		X	x	26	0
			Х	Х	Х	28	0
Total	119	85	107	75	64		206

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3724 Costa et al. What to Measure for Success in Lean System 2014 × 0 MIT × x x x Engineering Programs?	0	
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3658 da Costa et al. Toward a better comprehension of Lean metrics R&D 2014 × × × 1 USP × x for research and product development Man. management	0	x
3662 Dal Forno & Lean product development – principles and PMD 2013 × × × 1 x 0 FUSC × x	0	х
3663 Dal Forno et al. Brazilian automotive industry trends in lean 2011 x 0 FUSC x x	0	x
product development practices 3665 Dal Forno et al. Lean Product Development: Benchmarking in 2013 x 0 FUSC x x Brazilian Companies		х

No.	Author(s)	Title Jou	ırnal Year		k	Ceywords			ğΠ	Sear	rch Engin	ie T		Institute		1	ype of	Publicat	tion			Di	scipline			Res	earch N	lethod		\neg
				Lean product development	Lean product and process development	Lean engineering+	Snowballing	Additional Sources	Duplication Keywor	EBSCOhost	Google Scholar	Scopus	Duplication search		Academic Journals	ed Bo	ce Contrik	Doctoral theses	nal Public	Reports Pres entations	Business & Man.		ation & 1. Man.	Other Multiple discipline	Practitioners' viewpoint Propositional/Lit.	=	od./ n	nal.	Multiple case studies	Single case study
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3752	Dal Forno et al.	Use of the Lean Product Development Approach by Capital Goods Companies in Brazil	2013	х				-1	0			х	0	FUSC			x				х			0		(
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	MT 2014					х	0				0	FUSC	x						x			0					х	
3645	Darwish et al	Value stream mapping and analysis of product development (engineering) processes	2010			x		-1	0		х		0 (Cranfield			x				x			0				x		
3629	Dem et al.	Application of lean product development at a	2012			x			0		х	x	1	UoJ			x				х			0					x	
3717	Dombrowski & Schmidt	manufacturing organisation: a case study Integration of design for X approaches in the concept of lean design to enable a holistic product design	2013	х				1	0		х		0 7	aunschwei	ig		x					x		0						х
3693	Dombrowski & Zahn	Design of a lean development framework	2011		x	x		-1	1		x	х	1 7	aunschwei	ig		x				х			0		(
Read-o	n Dombrowski et al.	State of the Art-Lean Development	2011	×	x			- 1	1		х		0 7	aunschwei	ig		x				х	х		1		<				
3702	Dombrowski et al.	Analysis and Integration of Design for X Approaches in Lean Design as basis for a Lifecycle Optimized Product Design	2014	х				-1	0		х	-	0 7	aunschwe	ig		x				х			0						х
3877	El-Sayed	Lean Design for Integrated Product Realization SAI	E-IJM 2010				x	- 1	0				0	Kettering	x						х			0		•				
3801	El-Sayed	Implementation of lean tools and methodologies in design	2012	х				1	0			х	0 1	Kettering			x				х			0					х	
3823	El-Sayed & El- Sayed	Balancing Manufacturability and Performance SAI Attributes in Lean Design	E-IJM 2012				x	1	0				0 1	Kettering	X						x			0				х		
3699	Endris et al.	Advanced process planning in lean product and process development	2012	×	х				1		x	x	1	PUM			x				x			0		(
3815	Farahani & Buiyan	Study of flow in lean product development	2013	x					0			x	0	Concordia			x				х			0		Question	naire	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				х			0				х		
3613	Flores et al.	Do enterprises implement a process architecture towards Lean in product development? A comparative study among large and small firms	2011	х		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		х	x	1	EPFL			x				х			0	x					х
3753	Flores et al.	Understanding customer value and waste in product Development: Evidence from Switzerland and Spain	2012	х					0			х	0	EPFL			×				x			0						х
3651	Fouquet	Design for Six Sigma and Lean Product AJC Development : Differences, Similarities and Links	Q 2007	x					0		x		0	CUT	x						x			0		•				

No.	Author(s)	Title	Journal	Year		-	(eywords			Ď	Sea	rch Eng	ine		Institute			Type o	of Public	ation				Discip	line			Resea	rch Met	hod	
	(,				Lean product development	Lean product and process development	Lean engineering+	Snowballing	Additional Sources	Duplication Keywor	EBSCOhost	Google Scholar	Scopus	Duplication search		Academic Journals	Monographs Chapter Edited Bo	Conference Contrik	S	Working Papers Profes sional Public		Presentations	Man.	Innovation &		Multiple discipline	Practitioners' viewpoint Propositional/Lit. review	cal	: Mod./ ssion	Qual. anal. Multiple case	studies Single case study
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3754	Furuhjelm et al. Garcia and	Creating value through lean product development-applying lean principles		2011	×		X			1			X		ractitione ractitione			X		×			x			0				,	
3636	Drogosz	Lean Engineering - Best Practice in the Automotive Industry		2007	X		*			1		х	Х	1	ractitione					*			x			U)	•
3804	Gautam	A design reuse based framework for lean product development		2005				x		0				0	WSU				x				x			0					х
3705	Gautam et al.	Design reuse framework: a perspective for lean development	IJPD	2007	x					0		x	х	1	ractitione	x							2	×		0	х				
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		х		0	KTH			х					x			0					Х
3755	Gremyr & Fouquet	t Design for Six Sigma and lean product	IJLSS	2012	x	x				1		x	x	1	CUT	x							x			0	х				
3739	Gudem & Welo	development From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value		2010						0			х	0	NTNU			х					x	х		1		Survey			
3722	Gudem et al.	Customer value is not a number–investigating the value concept in lean Product Development		2011	x					0		x	х	1	NTNU			x					x			0	Х				
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			х		NTNU	х							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	х		x			1		х		0	IIMK	x							x			0	х				
3711	Hafer	Applying lean to new product development	ME	2011	x					0	х	Х		1	ractitione	r				х			x			0		х			
3757	Haggerty & Murman	Evidence of lean engineering in aircraft programs		2006			x			0			х	0	MIT			x					x			0		x			
3694 3677	Haque Haque & -James- Moore+	Lean engineering in the aerospace industry Measures of performance for lean product introduction in the aerospace industry	JEM JEM	2003 2004b	x x	x x				1		x x	х	0	UW UW	x x							x x			0	х			>	ţ
3647	Haque & James- Moore+	Characteristics of lean product introduction	IJATM	2002	x	x	x			1		х	х	1	UW	x							x			0					
3758	Haque & James- Moore+	Applying lean thinking to new product introduction	JED	2004a	х	x	×			1	х	x		1	UW	x							x			0	х				
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	х		1				x	
3761	Harris et al.	Knowledge Management to Support Lean Product Development		2006	x					0		x		0	WU		х						x x	x		1)	x

No	Author(s)	Title	Journal	Year			/ av u v a v al a		1 #	1	Search Er	ngino		Institute			Tuno o	f Public	ation			Discipline			Doco	arch Me	thod		٦.
No.	Author(s)	Title	Journal	rear	Lean product development	Lean product and process development	Cean engineering+	Snowballing	Additional Sources Duplication Keyword		EBSCOhost Google Scholar	Scopus	Duplication search	institute	Academic Journals	Monographs Chapter Edited Boo	Conference Contrik		Working Papers	Reports	rieselitations	Business & Man. Engineering Innovation & Techn. Man.	Multiple discipline	Practitioners' viewpoint Propositional/Lit. review	Statistical	Quant. Mod./ Regression	al.	studies Single case study	_
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376		Applying lean in product development - enabler or inhibitor of creativity?	IJIIVI	2015			x		0		х х		1		×							X						Х	
386	Hille & Eseonu	State-of-the-art review of lean product development practices and their impact on project success		2015	х				0			х	0	OST			х					х	0	х					
381	Hines & Packham	Implementing Lean New Product Development		2008	x				0		x		0	Cardiff			x					x	0	х					
366	Hines et al.	Towards lean product lifecycle management: A framework for new product development	JMTM	2006	x				0		x		0	Cardiff	x							х	0					х	
376	Hölttä et al.	Lean information management model for engineering changes		2010	×				0			х		Aalto			x					х	0	х					
373:	Hoppmann et al.	Efficient Introduction of Lean in Product		2009				x	0				0	MIT						x		x	0	х					
3608	Hoppmann et al.	Development Results of the Survey A Framework for Organizing Lean Product Development	EMJ	2011	x		x		1		х	x	0	ETH	x							x	0	х					
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376	Institoris & Bligar	d Human factors engineering as a supportive tool for lean product development		2014	х				0			х	0	CUT			х					х х	1					х	
3660	Jasti & Kodali	Validity and reliability of lean product development frameworks in Indian manufacturing industry	MBE	2014	x				0			х		BITS	x							х	0					x	
3610	Johansson & Sundin	Lean and green product development: two sides of the same coin?	JCP	2014			x		0		х	х	1	JU	x							х	0	х					
3870 376		A second look at Japanese product development Lean approach in concurrent engineering applications	HBR	1994 2013			x	x	0			x	0	UCin Practitione	x r		x					x x	0	х				x	
308		The difficult path to lean product development	JPIM	1996	x	x			1		х	х	1	SSE	x							х	0				х		
376	Åhlström Kerga et al.	Compact Teams: a Model to Achieve Lean in Product Development		2015	x				0			х	0	PUM			x					х	0					x	
3654	Khan	The construction of a model for lean product development		2012	x	x	x		1		х		0	Cranfield				x					0	х					
369:	Khan et al.	Set-Based Concurrent Engineering process within the LeanPPD environment		2011	x				0		х	х	1	Cranfield			x					х	0	х					
360° 376°		Towards lean product and process development Define value: applying the first lean principle to product development		2013 2015	х	x	x x		0		x x x	х		Cranfield Cranfield								x x x	1 0	x			x		

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26/9 Liber & Morgan Major	3606	Letens et al.	A Multilevel Framework for Lean Product	EMJ 2011	х	х	x		1		х	х	1	RMA	x							x			0	х				
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No.	Author(s)	Title	Journal Year		K	(eywords			ő	Sear	rch Engi	ne		nstitute			Type	of Public	ation				Disci	ipline			Rese	arch Met	hod	
	,,			Lean product development	Lean product and process development	Lean engineering+	Snowballing	Additional Sources	Duplication Keywords	EBSCOhost	Google Scholar	Scopus	Duplication search		Academic Journals	Monographs Chapter Edited Bo			Working Papers Professional Public	sports	Presentations	Business & Man.		Techn. Man. Other	Multiple discipline	Practitioners' viewpoint Propositional/Lit. review	Statistical	Mod./ ssion	Qual. anal. Multiple case	studies Single case study
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3825	Morgan	High performance product development: A systems approach to a lean product development process	2002				х		0				0	UM				х				х	Х		1		Х		х	
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3657	Mund et al.	Lean product engineering in the South African automotive industry	JMTM 2015			x			0		x	х	1	NMMU	x							x			0					х
3648	Murman	Lean Systems Engineering II	2003			x			0		x		0	MIT							x				0	х				
3646	Murman	Lean Aerospace Engineering	2008			X			0		x		0	MIT					x						0					х
3822	Murman	Innovation in aeronautics through Lean Engineering	2012	x		x			1			х		MIT		X						x			0					х
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			х	0	PD			x					х			0	х				
3701	Nepal et al.	Improving the NPD Process by Applying Lean Principles: A Case Study	EMJ 2011	х	x				1		X	х	1	TAMU	x										0	х				
3641	Nightingale	Lean Engineering Product Development	2002			x			0		х		0	MIT							x	x			0	х				
3656	Oehmen	Lean Enablers for Managing Engineering Programs	2012			x			0		x		0	MIT							х	x			0		x			
3712	Oehmen & Rebentisch	Risk Managament in Lean PD	2010a	x					0		x		0	MIT					x			x			0		x			
3669	Oehmen &	Waste in Lean Product Development	2010b	×	x				1		x		0	MIT					x			x			0			x		
3640	Rebentisch Oppenheim	Lean product development flow	SE 2004	x	x	x			1		x	x	1	LMU	x							x			0	x				
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No.	Author(s)	Title	Journal \	Year		К	(eywords		S	ords	Sear	rch Eng	ine		Institute	S	Ty	pe of Pul	olication		\Box	Disc	ipline	- a		Research	Method	
					Lean product development Lean product and	ss	Lean engineering ⁴	Snowballing	Additional Source	Duplication Keyword	EBSCOhost	Google Scholar	Scopus	Duplication search		Academic Journal: Monographs	Chapter Edited Bo	Conference Contri Doctoral theses	Working Papers	Professional Publi Reports	Presentations	Engineering Innovation &	Techn. Man. Other	Multiple discipline	Practitioners' viewpoint Propositional/Lit. review	Statistical Quant. Mod./ Regression	Qual. anal. Multiple case	studies Single case study
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3637 3772	Oppenheim et al Parry et al.***	Lean new product introduction: a UK aerospace		2011	х	х	x x			1 0	х	x x	х	1 0	LMU UB	х			×			x x		1 0	x x			
3819	Parsons & Josefik	perspective Accelerating Production Readiness Using Lean	2	2009	x				- 1	0		x	x	1	ractitione	-		x				x		0				x
3773	Paschkewitz	Product Development Risk Management in Lean Product Development	2	2014	x				- 1	0			x	0	ractitione	•		x				x		0	x			
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3774	Pavnaskar & Gershenson	The application of value stream mapping to lean engineering	2	2004			x		- 1	0		x	x	1	MTU			×				ĸ		0	x			
3827	Pavnaskar & Gershenson	A Systematic Method for Leaning Engineering Processes	2	2005			x		- 1	0		x		0	MTU			x			:	ĸ		0	х			
3639	Pessôa et al.	An approach to lean product development planning	2	2007	Х	x	×		-1	1		x	x	1	AIT		х				:	ĸ		0				х
3709	Pessôa et al.	A method to lean product development planning	PMD 2	2008	x				-1	0		x		0	AIT	×					:	×		0				х
3690	Pessôa et al.	Understanding the Waste Net: A Method for Waste Elimination Prioritization in Product Development	2	2009	х				-1	0		x	x	1	MIT			x			:	ĸ		0	х			
3719	Powell et al.	A New Set of Principles for Pursuing the Lean Ideal in Engineer-to-order Manufacturers	2	2014	x				- 1	0		x	x	1	NTNU			x				x		0				х
3775	Pullan et al.		PPC 2	2013	x	x	x		- 1	1		x	x	1	CU	x						ĸ		0				х
3611	Qudrat-Ullah et al.	Improving high variable-low volume operations: an exploration into the lean product development	IJTM 2	2012	х		x		-1	1	x	x	х	1	YU	X					:	×		0	х			
3734	Radeka & Sutton	What is "lean" about product development? An overview of Lean Product Development	PDMA 2	2007				х	-1	0				0	ractitione					х	:	x		0				х
3776	Rauch et al.	Axiomatic Design based Guidelines for the Design of a Lean Product Development Process	2	2015	х		x		- 1	1			x	0	FUBB			x			:	х х		1				x
3081	Raudberget	Practical Applications of Set-Based Concurrent Engineering in Industry	2	2010	x					0		х	x		JU			x				х х		1				х
3703	Raudberget	Enabling Set-based Concurrent Engineering in traditional product development	2	2011	x					0		x		0	JU			x				к		0	x			
3868	Raudberget & Sunnersjö	Experiences of set based concurrent engineering in four product developing companies	2	2010	х					0			x	0	JU			x				ĸ		0	х			
3649	Rebentisch	Lean Product Development	2	2005	х		х			1		x		0	MIT						x			0				х
3732	Reinertsen	Lean thinking isn't so simple	ED 1	1999				x		0				0	ractitione	=				x		ĸ		0	х			
3668	Reinertsen	Let it flow: how lean product development sparked a revolution		2005	x	x				1		x			ractitione					x		x		0				х
3733	Reinertsen & Shaeffer	Making R&D Lean	RTM 2	2005				Х		0				0	ractitione	x						x		0				х
3675	Ringen & Holtskog	How enablers for lean product development motivate engineers	IJCIM 2	2013	x	X				1	X	х	x	1	GUC	X						K		0	х			

No.	Author(s)	Title	Journal Ye	ear			Keywords	<u> </u>		ğ	Sear	rch Engi	ne		Institute			Type o	of Public	cation				Disc	cipline			Rese	arch Me	ethod		\neg
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3687	Ringen & Lodgaard	Lean product development in the automotive supplier industry	20	009	x					0			х	0	NTNU			Х					х			0	Х					
3623	Ringen & Welo	Knowledge Based Development Practices in Systems Engineering Companies: A Comparative)15			Х			0		Х	х	1	NTNU			Х							Х	0					,	Х
3621	Rocha et al.	Study Mass Customization Enablement Through Lean	IOSCM 20)14			×			0		x		0	RJSU	×							х			0	x					
3021	ocia ct ai.	Design & Set-Based Concurrent Engineering	20				*					^				"							^				^					
3696	Rossi et al.	Application Proposal of a method to systematically identify	20	011	x					0		x		0	PUM			x					х			0	х					
2670	Possi et al	wastes in New Product Development Process	20	012	×	x				1		x	v	1	PUM			x					x			0				v		
3679	Rossi et al.	Lean product development: A five-steps methodology for continuous improvement	20)12	^	^						X	х					^					Х							X		
3718	Ryan & Reik	Applying the Core Elements of a Lean Enterprise to Product Development	20	010	Х					0		х	х	1	ractitione	r		Х					Х			0					>	х
3689	Saad et al.	A3 Thinking Approach to Support Problem	20	013	x	x				1		x	х	1	Cranfield			х					х			0	х					
		Solving in Lean Product and Process Development																														
3779	Salgado et al.	Waste investigation on product development	PMD 20	014				х		0				0	FUA	x							х			0					1	x
		process using the lean and simulation approaches.																														
3624	Salgado et al.	Investigating waste on new product development: case study	PMD 20)15			x			0		x		0	FUA	x							х			0)	х
3793	Saunders et al.	A case study to evaluate lean product	IJPD 20	014	x		x			1		x	х	1	UG	x							х			0	х					
		development practices in the global automotive industry																														
3726	Schuh et al.	Lean Innovation: Introducing Value Systems to Product Development	20	800		x				0		x		0	RWTH			х							x	0)	х
		riodaet bevelopment																														
3780	Schuh et al.		IJPD 20	014	x					0			х		RWTH	x							х			0					,	х
3792	Schulze & Störmer	development using generic activities Lean product development – enabling	IJTM 20)12	x	х	x			1	x	x	х	1	ETH	x							x			0					:	x
	Schulze et al.	management factors for waste elimination		013			×			0				1	ETH	×							v			0		v				
3032	Schulze et al.	learning in product development: value stream	IJCIM 20	113			^				х	Х	х	•	LIII	^							х					Х				
3644	Shirwaiker &	mapping as a facilitator Contributions of TRIZ and axiomatic design to	20	011			x			0		x		0	PSU			x						х		0	x					
	Okudan	leanness in design: an investigation																														
3710	Singer et al.	What Is Set-Based Design?	NEJ 20	009	х					0		Х		0	UM	x										0	х					
3689	Siyam et al.	Lean product development in practice: Insights	20	013	x					0		x	х	1	UC			x					х			0					;	х
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3620	Siyam et al.	Review of Value and Lean in Complex Product	SE 20)15	×		x			1	x	x		1	UC	x							x			0					:	х
		Development							- 1																							

No.	Author(s)	Title	Journal Year			Keywords			ő	Searc	ch Engine		Institute			Type o	f Public	ation				Disc	ipline			Rese	arch Mo	ethod	
	(,			Lean product development	pue	Lean engineering+	Snowballing	Jn Og	Duplication Keywor	ost	Google Scholar	Duplication search		Academic Journals	ň			Working Papers Professional Public	Reports	Presentations	Business & Man.		Techn. Man. Other	Multiple discipline	Practitioners' viewpoint Propositional/Lit. review	Statistical	Quant. Mod./ Regression	al.	Multiple case studies Single case study
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204	207			141	39	84	17	1	61	16	144 11	0 68	3 207	80	0 3 6	94	6	7 6	i 1	4	174	21 1	0 0	18	5 83	19	2	11	27 60
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3707	Siyam et al.	Relating value methods to waste types in lean product development	2012a	x				-	0		х х	1	UC	l		Х								0	SLR				
3781	Siyam et al.	Value and waste dependencies and guidelines	2012b	х				-	0		×	0	UC	ı		x					x			0	х				
3728	Sobek II et al.	Another Look at How Toyota Integrates Product Development	HBR 1998				x	-	0			0	MSU	×							х			0	х				
3083	Sobek II et al.	Toyota's Principles of Set-Based Concurrent Engineering	SMR 1999				x	-	0			0	MSU	x							х			0		х			
3682	Sopelana et al.	The Application of an Assessment Tool for Lean Product Development: An exploratory study in Spanish Companies	2012	x	x			1	1		x x	1	EPFL	l		х					х			0	х				
3706	Sorli et al.	Applying lean thinking concepts to new product development	2010	x				1	0		x x	1	PUM	l		х								0	х				
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	ı		х					х			0				x	
3783	Sorli et al.	Development of KBE system to support LeanPPD application	2012	x				-	0		х	0	Cranfield	d		х					Х			0					x
3784	Stenholm et al.	Knowledge Based Development in Automotive Industry Guided by Lean Enablers for System Engineering	2015	x				1	0		х	0	CUT	l		х					X			0	х				
3785	Stetler	Creativity Just in Time? The Role of Delivery Precision in Product Development	IJITM 2015			x			0		x	0	ractition	e x									x	0	x				
3786	Ström et al.	Transformation to lean product development - Approaches at two automotive suppliers	2012	х					0		×	0	CUT	ı		x					х			0	х				
3866	Subramoniam et al.	Lean Engineering Implementation Challenges for Automotive Remanufacturing	2009	×		X		1	1		X	0	Practition 6	er		X					x			0					
3863	•	Creating Value Through Lean Product Development – Towards a Generic Framework	2010	x					0		x x			er		Х					х			0					х
3862 3787	Tähemaa et al. Taisch et al.	Lean product development in Estonian SMEs Towards a performance measurement system	2012 2011	x x					0		x x	_				X X					Х			0				v	Х
3875		for lean-oriented NPD processes Design for Lean Six Sigma (DFLSS): Philosophy, Tools, Potential and Deployment Challenges in Automotive Product Development	2006	x					0		x	0				x								0				х	x
3652	Tingström et al.	Implementing Value Stream Mapping – VSM in a R&D organisation	2010			x			0		x x	1	?ractitione	er		x					х			0	x				

No.	Author(s)	Title	Journal	Year			Keywords		s	word	Search	Engine		Institute	S	_	Type of	Publicat	0			Disc	ipline	(1)		Resea	rch Met	hod	
					Lean product development	Lean product and process development	Lean engineering+	Snowballing	tional Sour	e e	EBSCOhost	Scopus	Duplication search		Academic Journal	Monographs Chapter Edited Bo	Conference Contr	Doctoral theses	Professional Publi	Reports Presentations	Business & Man.	Engineering Innovation &	Techn. Man. Other	Multiple discipline	Practitioners' viewpoint Propositional/Lit. review	Statistical		Qual. anal. Multiple case	studies Single case stud)
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3788	Tortorella et al.	Lean Product Development (LPD) Enablers for Product Development Process Improvement		2015	х					0		х		FUSC		х					х			0					х
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3687	Tyagi et al.	Value stream mapping to reduce the lead-time of a product development process	IJPE	2015	×				-	0	>	x	0	WSU	x						х			0	х				
3805	Vinodh & Kumar	A case study on lean product and process development		2015	х	х				1		х	0	NIT		x					х			0					х
3685	von Würtemberg et al.	Abstract model of LPD: A critical review of the Lean Product Development concept		2011	x					0	>	x x	1	КТН			x				x			0					x
3653	Vosgien et al.	Lean approach to integrate collaborative product development processes and digital engineering		2011	x		x			1	>	x x	1	ECP			x				x			0		Survey			
3650	Walton	systems Strategies for Lean Product Development		1999	x	x	x			1	>	x	0	MIT				×	(х			0	х				
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	х				
3642	Wang et al.	Focus on implementation: a framework for lean product development	JMTM	2011	x	X	x		-	1	>	x x	1	SJTU	x						х			0	х				
3698	Wangwacharakul et al.	Cultural Aspects when Implementing Lean Production and Lean Product Development – Experiences from a Swedish Perspective	QIP	2014	х				-	0	>	х х	1	LU	x								x	0				х	
3871	Ward et al.	Set-based concurrent engineering and Toyota		1994				X	-	0			0	UM			x				x			0				х	
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	х		1					х
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						х			0				х	
3634	Welo & Ringen	Investigating Lean Development Practices in SE Companies: A Comparative Study Between Sectors		2015			x		-	0	>	x x	1	NTNU			х				x			0	х				
3791	Welo et al.	Enhancing product innovation through a customer-centered, Lean framework	IJITM	2012			x			0	>	x	0	NTNU	x						x		x	1	х				
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	t	2014	×					0		x	0	ractitione	r		х							0					х
3790	Yang & Cai	The integration of DFSS, lean product development and lean knowledge management	IJSSCA	2009	×	X	x		_	0	>	x	0	WSU	x									0	х				

^{*} conference proceeding found but substituted by journal publication

No.	Author(s)	Title	Journal Year			(eywords			Ę	Se	arch Engi	ne		Institute			Туре с	f Public	ation				Disciplin	e			Resea	arch Me	ethod	
				Lean product development	Lean product and process development	Lean engineering+	Snowballing	Additional Sources	Duplication Keywo	EBSCOhost	Google Scholar	Scopus	Duplication search		Academic Journals	Monographs Chapter Edited Boo	Conference Contrik	Doctoral theses	Working Papers Professional Public	Reports	Presentations	Business & Man. Engineering	Innovation & Techn. Man.	Other Multiple discipline	: 15 :	viewpoliic Propositional/Lit. review	Statistical	Quant. Mod./ Regression		Multiple case studies Single case study
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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"

Do not forget total Institute # Sources Total AIT 3 196

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Concordia

No.	Author(s)	Title	Journal	Year						Indu	ıstry								Sc	cope	
					Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industries	Optimising/mana gement 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		х					х		х		х	3			х		0
3683	Al-Ashaab et al.	The Conceptual LeanPPD Model		2010											х	0	х				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	х											0	х				0
3686	Al-Ashaab et al.	Lean Product Development Performance Measurement Tool		2013											х	0		х			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		х			x		x		x			4	x				0
3795	Anand et al.	Lean Product Development - Redefining the Indian Automotive Product Development Process using Lean Framework		2009											х	0	х	х			1
3794	Anderson et al.	Using lean product development to speed time to market for medical devices		2011											х	0					0
3276	Baines et al.	State-of-the-art in lean design engineering: A literature review on white collar lean	JEM	2006											х	0		х			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											х	0	х				0
3638	Beauregard	A multi-criteria performance study of lean engineering		2010											х	0	х				0
3796	Beauregard et al.	Lean engineering systems for product development in the aerospace industry		2008											х	0	х	х			1
3744	Beauregard et al.	Lean engineering logistics: load levelling of design jobs with capacity considerations	CASJ	2008									х			0	х				0
3743	Beauregard et al.	Lean engineering performance analysis	IJPD	2014	х											0	x				0
3797	Beauregard et al.	Post-Certification engineering taxonomy and task value optimization in the aerospace industry	EMJ	2011a	х											0	x				0
3798	Beauregard et al.	Optimum task size, multitasking and utilization levels for lean product development		2011b										x		0	х				0
3625	Becker & Wits	Enabling Lean Design Through Computer Aided Synthesis: The Injection Moulding Cooling Case		2015	х											0	х				0
3745	Belay et al.	Approaching lean product development using system dynamics: investigating front-load effects	AM	2014	х											0	х				0
3746	Bertelli & Loureiro	Quality problems in complex systems even considering the application of quality initiatives during product development		2015											х	0	x				0

No.	Author(s)	Title	Journal	Year						Indu	ıstry								Si	соре	
					Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industries	Optimising/mana gement NPD	Methods, tools for products	Secondary engineering	Optimising operational processes	Duplication
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3715	Bjarnoe	Lean thinking in product development	_	2006	х	х					х					3				х	0
3672	Browning*	On Customer Value and Improvement in Product Development Processes	SE	2003											х	0		x			0
3708	Cabello et al.	An analysis of methods to achieve robustness towards a lean product development process		2012											х	0		x		х	1
3748	Cai & Freiheit	Resource Allocation for Lean Product Development Using a Value Creation Cell Model	JMD	2014	х											0	х				0
3799	Cai & Freiheit	Lean Principles in Product Development Processes		2011a											х	0	х				0
3817	Cai & Freiheit	Lean Value Creation in the Product Development Process With the Principle of Set-Based Concurrent Engineering		2011b	x	x										2	х				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		х			0
3284	Carleysmith et al.	Implementing Lean Sigma in pharmaceutical research and development: a review by practitioners	R&D Man.	2009	х											0		х	(x)		1
3800	Ćatić & Sobek II	Development of key performance indicators for knowledge management		2013	x											0	х				0
3688	Ćatić & Vielhaber	Lean Product Development: Hype or sustainable new paradigm?		2011	х	x		x								3	х				0
3655	Chase	Measuring Value in Product Development		2000	х											0	x				0
3725	Choothian	A study of the application of lean practices to new product development processes		2014		x										0		х			0
3750	Correia et al.	Mechanisms for communication and knowledge sharing for set-based concurrent engineering	IJPD	2014										х		0	х				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		х	x	x	x		x			6	х				0
3658	da Costa et al.	Toward a better comprehension of Lean metrics for research and product development management	R&D Man.	2014										х		0	x				0
3662	Dal Forno & Forcellini	Lean product development – principles and practices	PMD	2013	х											0	х				0
3663	Dal Forno et al.	Brazilian automotive industry trends in lean		2011							x					0	х				0
3665	Dal Forno et al.	product development practices Lean Product Development: Benchmarking in Brazilian Companies		2013	х	х			x	х			х			5	x	х			1
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No.	Author(s)	Title	Journal	Year						Indu	ustry								S	соре	
	.,				Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industries	Optimising/mana gement NPD	Methods, tools for products	Secondary engineering	Optim ising 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
3752	Dal Forno et al.	Use of the Lean Product Development Approach by Capital Goods Companies in Brazil		2013				Т				Т		Т	х	0	х	х	Т		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	х	x	х									3	x				0
3645	Darwish et al	Value stream mapping and analysis of product development (engineering) processes		2010	х	x			x	х			х			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											х	0	х				0
Read-o		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		х										0	x	x			1
3877	El-Sayed		SAE-IJM	2010	х											0	х				0
3801	El-Sayed	Implementation of lean tools and methodologies in design		2012						х						0	x				0
3823	El-Sayed & El- Sayed	Balancing Manufacturability and Performance Attributes in Lean Design	SAE-IJM	2012										х		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				х	x	x	х			5	х				0
3716	Flores et al.	Identifying Lean Thinking Measurement Needs and Trends in Product Development: Evidence from the Life Sciences Sector in Switzerland		2010					х	x	х		х			4	х				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	х	x		х								3	х				0
3627	Flores et al.	Understanding the approaches to create a process architecture for lean thinking		2012									Х			0	x				0
3753	Flores et al.	Understanding customer value and waste in product Development: Evidence from Switzerland and Spain		2012		х										0	х	х			1
3651	Fouquet	Design for Six Sigma and Lean Product Development : Differences, Similarities and Links	AJQ	2007											х	0	х				0

No.	Author(s)	Title	Journal	Year						Indu	istry				,	0)			S	соре	
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3704	Furian et al.	Knowledge Management in Set Based Lean	_	2013		х										0	х				0
3754	Furuhjelm et al.	Product Development Process Creating value through lean product		2011		x					x					2	х				0
3636	Garcia and Drogosz	development-applying lean principles Lean Engineering - Best Practice in the Automotive Industry		2007		х										0	х				0
3804	Gautam	A design reuse based framework for lean product development		2005	х											0					0
3705	Gautam et al.	Design reuse framework: a perspective for lean	IJPD	2007											x	0		x			0
3697	Gershenson & Pavnaskar	development Eight Basic Lean Product Development Tools		2003					х							0	х				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	IJLSS	2012											х	0	х				0
3739	Gudem & Welo	development From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value		2010		х										0		x			0
3722	Gudem et al.	Customer value is not a number–investigating the value concept in lean Product Development		2011											х	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	х	х			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	х				0
3757	Haggerty & Murman	Evidence of lean engineering in aircraft programs		2006		х										0	x				0
3694	Haque	Lean engineering in the aerospace industry	JEM	2003		х					х		х			3			х		0
3677	Haque & -James- Moore+	Measures of performance for lean product introduction in the aerospace industry	JEM	2004b		х										0	х				0
3647	Haque & James- Moore+	Characteristics of lean product introduction	IJATM	2002	х	x		x								3					0
3758	Haque & James- Moore+	Applying lean thinking to new product introduction	JED	2004a									Н	ypothet	ical ca	0	x				0
3759	Harland & Uddin	Effects of product platform development: fostering lean product development and production	IJPD	2014		х			x		x					3	х				0
3761	Harris et al.	Knowledge Management to Support Lean Product Development		2006		х			х		х					3	x				0

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3686	3864	Hille & Eseonu	State-of-the-art review of lean product development practices and their impact on		2015											х	0					0
Transvork for reex product development 2010	3816	Hines & Packham	Implementing Lean New Product Development		2008											х	0	х				0
Politia et al. Lean Information management model for engineering changes Politic et al. Lean Information management model for engineering changes	3666	Hines et al.		JMTM	2006		x										0	х				0
Beelopment Results of the Survey Development A. A Framework for Organizing Lean Product EMJ 2011 X 0 0 x 0 0 X 0 0 0 X	3762	Hölttä et al.	Lean information management model for		2010											x	0					0
Hoppmann et al. A Framework for Organizing Lean Product Development B MB	3731	Hoppmann et al.			2009											х	0	х				0
for lean product development Set-Based Concurrent Engineering product Set-Based Concurrent Engineering process Within the Lean PPD engineering process within the Lean PPD engineering process development IDIM 2013 x 0 0 x 0 x 0 x 0 0 x	3608	Hoppmann et al.	A Framework for Organizing Lean Product	EMJ	2011											x	0	x				0
development frameworks in Indian manufacturing industry 3616 Johansson & Lean and green product development: two sides JCP 2014 x x x 3876 Kamath & Liker A second look at Japanese product development HBR 1994 x x x 3765 Karademir & Lean approach in concurrent engineering 2013 x x x 3086 Karisson & The difficult path to lean product development JPIM 1996 x x 3086 Karisson & The difficult path to lean product development JPIM 1996 x x 3086 Kerga et al. Compact Teams: a Model to Achieve Lean in Product Development 3664 Khan The construction of a model for lean product 2012 x 3676 Khan et al. Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineering process within the LeanPPD environment to Set-Based Concurrent Engineerin			for lean product development				x					×		x					x			
Sundin of the same coin? 3876 Kamath & Liker A second look at Japanese product development HBR 1994 x x x 12 x x 13765 Karademir & Lean approach in concurrent engineering 2013 x x x 2 2 x x x 1 1 x x 1 2 x x 1 1 x 1 x	3660	Jasti & Kodali	development frameworks in Indian	MBE	2014		Х						х	х			3	х				0
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Ahlström 3766 Kerga et al. Compact Teams: a Model to Achieve Lean in Product Development 2015 x 0 x 0 x 0 x 0 x 0 x 0 x 0 x		Karademir &	Lean approach in concurrent engineering	HBR																		
3766 Kerga et al. Compact Teams: a Model to Achieve Lean in Product Development 2015 x 3654 Khan The construction of a model for lean product development 2012 x 2012 x 3691 Khan et al. Set-Based Concurrent Engineering process within the LeanPPD environment 2011 x 2012 x 3691 Khan et al. Towards lean product and process development IJCIM 2013 x 3697 Khan et al. Define value: applying the first lean principle to IJISE 2015 2015 x 2016 x 2017 x 2018 x 2019 x 2010 x 201	3086		The difficult path to lean product development	JPIM	1996		x										0	х				0
development 3691 Khan et al. Set-Based Concurrent Engineering process 2011 x 0 x 0 within the LeanPPD environment 3607 Khan et al. Towards lean product and process development IJCIM 2013 x 0 x 0 x 0 3767 Khan et al. Define value: applying the first lean principle to IJISE 2015 x 0 x	3766				2015		х										0	х				0
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3767 Khan et al. Define value: applying the first lean principle to IJISE 2015 x 0 x	3691	Khan et al.			2011	х											0		х			0
			Define value: applying the first lean principle to			х										х						

No.	Author(s)	Title	Journal	Year						Indi	ıstry								S	соре	
				.cu.	Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industries	Optimising/mana gement NPD	Methods, tools for products	Secondary engineering	Optimising operational processes	Duplication
The lay	out 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
	•				32	0.	15		15						01		101	.,,		,	
3695	Kirner et al.	Information in Lean Product Development: Assessment of Value and Waste		2013	х											0	х				0
3713	Lee & Chang	Developing a lean design for Six Sigma through supply chain methodology	IJPQM	2010	х											0	х				0
3768	Lemieux et al.	A Mixed Performance and Adoption Alignment Framework for Guiding Leanness and Agility Improvement Initiatives in Product Development	JET	2013	х											0	х				0
3664	Lempia	Using Lean principles and MBE in design and development of avionics equipment at Rockwell Collins		2008	х											0	x				0
3609	Léon & Farris	Lean Product Development Research: Current	EMJ	2011	х											0	х				0
3829	Letens et al.	State and Future Directions Optimizing stakeholder value and reducing waste in new product development projects		2009	×	x			x	x			x			5	х				0
3606	Letens et al.	A Multilevel Framework for Lean Product	EMJ	2011	х											0	х				0
3087	Liker & Morgan	Development System Design The Toyota Way in Services: The Case of Lean	AMP	2006	х											0	х				0
3679	Liker & Morgan	Product Development Lean product development as a system: a case study of body and stamping development at Ford	EMJ	2011										x		0	х				0
3770	Lindlöf & Söderberg	Pros and cons of lean visual planning: experiences from four product development organisations	IJTIP	2011											x	0	х				0
3612	Lindlöf et al.	Practices supporting knowledge transfer – an analysis of lean product development	IJCIM	2013	х											0	х	х			1
3771	Machado	New Product Development: From Efficiency to Value Creation		2013	х											0	х				0
3630	Maginness et al.	Principles for aerospace Manufacturing Engineering in integrated New Product Introduction	JME	2013		x										0	х				0
3631	Maginness et al.	Value Stream Analysis of Manufacturing Engineering New Product Introduction Processes		2011a		х										0	x				0
3633	Maginness et al.	Planning Manufacturing in a Concurrent Engineering Environment: A Case Study		2011b											х	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		х										0	х				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		х										0		x			0
3806	McManus et al.*	Lean engineering : a framework for doing the right thing right	AJ	2007		х										0	x				0
3821	McNeel & Lawrence	How Lean-manufacturing principles speed product design		2004		х										0	х				0
		-			•																

No.	Author(s)	Title	Journal	Year						Indu	strv								S	оре	
					Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industries	Optimising/mana gement NPD	Methods, tools for products	Secondary engineering	Optimising operational processes	Duplication
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204	207	unia io commune con con pugeo			52	64	13	8	15	13	19	5	29	14	61	32	161	49	3	6	24
	•			2002	52		10		10	10	1,				01			.,			0
3825	Morgan	High performance product development: A systems approach to a lean product development process		2002		х										0	х				Ü
	Morgan & Liker	The Toyota product development system		2006											x	0	х				0
3657	Mund et al.	Lean product engineering in the South African automotive industry	JMTM	2015								Leis	sure bo	oats		0		x			0
3648	Murman	Lean Systems Engineering II		2003											х	0	х				0
3646	Murman	Lean Aerospace Engineering		2008									х			0	х				0
3822	Murman	Innovation in aeronautics through Lean Engineering		2012								Leis	sure bo	oats		0		x			0
3661	Negroni & Trabasso	A Quality Improving Method to Assist the Integrated Product Development Process		2009		x	x			х	х		x			5	х				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											х	0	х				0
3641	Nightingale	Lean Engineering Product Development		2002									x			0	х				0
3656	Oehmen	Lean Enablers for Managing Engineering Programs		2012	х		x							x		2	х				0
3712	Oehmen & Rebentisch	Risk Managament in Lean PD		2010a	х	х	x						x			4	х				0
3669	Oehmen & Rebentisch	Waste in Lean Product Development		2010b	х	x		х	x		x		x			6	x	х			1
3640	Oppenheim	Lean product development flow	SE	2004											х	0	х				0
	Oppenheim	Lean for Systems Engineering with Lean Enablers for Systems Engineering		2011		x										0	x				0

No.	Author(s)	Title	Journal	Year						Indu	ıstry								S	соре	
					Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industrie	Optimising/mana gement NPD	Methods, tools for products	Secondary engineering	Optim ising 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
3637 3772	Oppenheim et al Parry et al.***	Lean Enablers for Systems Engineering Lean new product introduction: a UK aerospace perspective	SE	2011 2008											x x	0	х	х			0
3819	Parsons & Josefik	Accelerating Production Readiness Using Lean Product Development		2009									x			0	х				0
3773	Paschkewitz	Risk Management in Lean Product Development		2014										x		0	х			X	1
3774	Pavnaskar & Gershenson	The application of value stream mapping to lean engineering		2004											x	0	х				0
3827	Pavnaskar & Gershenson	A Systematic Method for Leaning Engineering Processes		2005											х	0	х				0
3639	Pessôa et al.	An approach to lean product development planning		2007		х										0	х				0
3709	Pessôa et al.	A method to lean product development planning	PMD	2008		x										0		х			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	х											0	х				0
3775	Pullan et al.	Decision support tool for lean product and process development	PPC	2013	х											0					0
3611	Qudrat-Ullah et al.	Improving high variable-low volume operations: an exploration into the lean product development	IJTM	2012		х										0	х				0
3734	Radeka & Sutton	What is "lean" about product development? An overview of Lean Product Development	PDMA	2007						х						0		X			0
3776	Rauch et al.	Axiomatic Design based Guidelines for the Design of a Lean Product Development Process		2015									х			0	х			х	1
3081	Raudberget	Practical Applications of Set-Based Concurrent Engineering in Industry		2010		x										0	х				0
3703	Raudberget	Enabling Set-based Concurrent Engineering in		2011											x	0	х				0
3868	Raudberget & Sunnersjö	traditional product development Experiences of set based concurrent engineering in four product developing companies		2010											х	0	x				0
3649	Rebentisch	Lean Product Development		2005		x										0	х				0
3732	Reinertsen	Lean thinking isn't so simple	ED	1999											x	0	х				0
3668	Reinertsen	Let it flow: how lean product development sparked a revolution		2005						х					x	0	x				0
3733	Reinertsen & Shaeffer	Making R&D Lean	RTM	2005	х											0	х				0
3675	Ringen & Holtskog	How enablers for lean product development motivate engineers	IJCIM	2013											x	0		x			0

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

No.	Author(s)	Title	Journal	Year						Indu	ıstry								S	соре	
					Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industries	Optimising/mana gement NPD	Methods, tools for products	Secondary engineering	Optimising operational processes	Duplication
The lay	out 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
3707	Siyam et al.	Relating value methods to waste types in lean product development		2012a											х	0					0
3781	Siyam et al.	Value and waste dependencies and guidelines		2012b											х	0	x				0
3728	Sobek II et al.	Another Look at How Toyota Integrates Product Development	HBR	1998	х											0	x	x			1
3083	Sobek II et al.	Toyota's Principles of Set-Based Concurrent Engineering	SMR	1999	х	x				х	х	х	x			6	х				0
3682	Sopelana et al.	The Application of an Assessment Tool for Lean Product Development: An exploratory study in Spanish Companies		2012											х	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					х					х		0	x				0
3784	Stenholm et al.	Knowledge Based Development in Automotive Industry Guided by Lean Enablers for System Engineering		2015											х	0	x				0
3785	Stetler	Creativity Just in Time? The Role of Delivery Precision in Product Development	IJITM	2015											х	0	x				0
3786	Ström et al.	Transformation to lean product development - Approaches at two automotive suppliers		2012											х	0	x				0
3866	Subramoniam et al.	Lean Engineering Implementation Challenges for Automotive Remanufacturing		2009		x										0	x				0
3863	•	Creating Value Through Lean Product Development – Towards a Generic Framework		2010		х										0	Х				0
3862 3787	Tähemaa et al. Taisch et al.	Lean product development in Estonian SMEs Towards a performance measurement system		2012 2011		x x										0	x x				0
3875	Thomas & Singh	for lean-oriented NPD processes 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											х	0	x				0

No.	Author(s)	Title	Journal	Year						Indu	istry	0			,	91	_		S	соре	
					Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industrie	Optimising/mana gement NPD	Methods, tools for products	Secondary engineering	Optimising operational processes	Duplication
The lay	out 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
3788	Tortorella et al.	Lean Product Development (LPD) Enablers for Product Development Process Improvement	Ī	2015		х										0	х	x			1
3687	Tyagi et al.	Value stream mapping to reduce the lead-time	IJPE	2015			х									0	x				0
3805	Vinodh & Kumar	of a product development process A case study on lean product and process development		2015		x										0	х				0
3685	von Würtemberg	Abstract model of LPD: A critical review of the		2011			х									0	х				0
3653	et al. Vosgien et al.	Lean Product Development concept Lean approach to integrate collaborative product development processes and digital engineering		2011	х	x	x						x			4	х				0
3650	Walton	systems Strategies for Lean Product Development		1999									х			0	x	x			1
3617	Wang et al	Using Value Stream Mapping to Analyze an Upholstery Furniture Engineering Process	FPJ	2011											х	0	х	x			1
3642	Wang et al.	Focus on implementation: a framework for lean product development	JMTM	2011	х											0	х				0
3698	Wangwacharakul et al.	Cultural Aspects when Implementing Lean Production and Lean Product Development – Experiences from a Swedish Perspective	QIP	2014	х											0	х				0
3871	Ward et al.	Set-based concurrent engineering and Toyota		1994	х											0	х				0
0852	Ward et al.	The Second Toyota Paradox: How Delaying Decisions Can Make Better Cars Faster	SMR	1995	х											0	х				0
3684	Wasim et al.	An innovative cost modelling system to support lean product and process development	IJAMT	2013									x			0	х				0
3610	Welo	On the application of lean principles in Product Development: a commentary on models and practices	IJPD	2011		x										0		х			0
3634	Welo & Ringen	Investigating Lean Development Practices in SE Companies: A Comparative Study Between Sectors		2015		х										0		х		х	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							х					0	х				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											х	0	х				0

^{*} conference proceeding found but substituted by journal publication

No.	Author(s)	Title	Journal	Year						Indu	stry								S	соре	
					Aerospace	Automotive	Defence	Domestic appliances	Electronics	Life Sciences	Machinery	Telecommunicatio	Other	Undefined/not specified	Not applicable	Multiple industries	Optimising/mana gement 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
	•																				

ALTERNATIVE SEARCH TERMS
+ "lean design engineering"

^{**} 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'

No.	Author(s)	Title	Journal Ye	ear							
								Whi	ich principles of 'lean think	ing' have been use	d?
					Value	Value	Masta	Flow/pull	Perfection	Sot based CF	Other principles?
					value	Value stream	Waste	production	refrection	Set-based CE	Other principles?
The law	out of those review	data is formatted for A3-sized pages				mapping					
		uata is formatted for A5-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	20	010			х		х		Standardisation of process for engineering changes.
3683	Al-Ashaab et al.	The Conceptual LeanPPD Model	20	010	x		x	х		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 20	013	X	х	х	X	х	х	
3686	Al-Ashaab et al.	Lean Product Development Performance Measurement Tool	20	013					x		
3628	Amin et al.	Assessing the leanness in product design : a model for planned design reuse	20	010	x	x	x	x	х		
3742	Anand & Kodali	Development of a Conceptual Framework for Lean New Product Development Process	IJPD 20	800							
3795	Anand et al.	Lean Product Development - Redefining the Indian Automotive Product Development Process using Lean Framework	20	009				х	Kaizen (p. 1918), zero defects (p. 1919).	х	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	20	011							
3276	Baines et al.	State-of-the-art in lean design engineering: A literature review on white collar lean	JEM 20	006	x		х				
3615	Baines et al.	Beyond theory: An examination of lean new product introduction practices in the UK	JME 20	007	x		х				
3676	Ballé & Ballé	Lean Development	BSR 20	005	x	x	x	x			Principles of lean thinking have been subdivided
3638	Beauregard	A multi-criteria performance study of lean engineering	20	010	x					х	in concepts.
3796	Beauregard et al.	Lean engineering systems for product development in the aerospace industry	20	800	x	x					
3744	Beauregard et al.	Lean engineering logistics: load levelling of design jobs with capacity considerations	CASJ 20	800		х	х				
3743	Beauregard et al.	Lean engineering performance analysis	IJPD 20	014		x		x			
3797	Beauregard et al.	Post-Certification engineering taxonomy and task value optimization in the aerospace industry		11a			x	?			
3798	Beauregard et al.	Optimum task size, multitasking and utilization		11b			x	x			
3625	Becker & Wits	levels for lean product development Enabling Lean Design Through Computer Aided	20	015	х	x	x	x			
		Synthesis: The Injection Moulding Cooling Case									
3745	Belay et al.	Approaching lean product development using system dynamics: investigating front-load effects	AM 20	014				х			
3746	Bertelli & Loureiro	Quality problems in complex systems even considering the application of quality initiatives during product development	20	015	x		х	x		х	Leadership, culture (p. 1545).

No.	Author(s)	Title	ournal Year	Which principles of 'lean thinking' have been used?									
				Value	Value stream mapping	Waste	Flow/pull production	Perfection	Set-based CE	Other principles?			
The lay	out of these review	data is formatted for A3-sized pages											
204	207			119	85	107	75	64	72	67			
3715	Bjarnoe	Lean thinking in product development	2006	х		х	х		х	Standardisation of knowledge/information man. (p. 1598)			
3672	Browning*	On Customer Value and Improvement in Product 9 Development Processes	SE 2003	х		х							
3708	Cabello et al.	An analysis of methods to achieve robustness towards a lean product development process	2012	х		х			х				
3748	Cai & Freiheit	Resource Allocation for Lean Product Development Using a Value Creation Cell Model	MD 2014		x								
3799	Cai & Freiheit	Lean Principles in Product Development Processes	2011a						х				
3817	Cai & Freiheit	Lean Value Creation in the Product Development Process With the Principle of Set-Based Concurrent Engineering	2011b						х				
3749	Candido & Kaminksi	Product value optimisation engineering applied to current component designs: a case study from the Brazilian automotive industry	JATM 2008										
3284	Carleysmith et al.		R&D 2009 Man.						х				
3800	Ćatić & Sobek II	Development of key performance indicators for knowledge management	2013						х				
3688	Ćatić & Vielhaber	Lean Product Development: Hype or sustainable new paradigm?	2011						x				
3655	Chase	Measuring Value in Product Development	2000	х									
3725	Choothian	A study of the application of lean practices to new product development processes	2014					?	х				
3750	Correia et al.	Mechanisms for communication and knowledge sharing for set-based concurrent engineering	JPD 2014							Visualisation by means of A3			
3724	Costa et al.	What to Measure for Success in Lean System Engineering Programs?	2014						х	Knowledge-based engineering and poka-yoke.			
	Cusumano & Nobeoka	Thinking Beyond Lean: How Multi-Project Management is Transforming Toyota and Other Companies	1998	х									
3658	da Costa et al.	Toward a better comprehension of Lean metrics	R&D 2014 Man.		x								
3662	Dal Forno &	Lean product development – principles and	PMD 2013		x								
3663	Forcellini Dal Forno et al.	practices Brazilian automotive industry trends in lean product development practices	2011			х	х						
3665	Dal Forno et al.	Lean Product Development: Benchmarking in Brazilian Companies	2013	х	х		x	x	Mentioned implicitly (p. 32).	Visualisation, cross-functional teams, communication (pp. 24–25).			

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				Value	Value stream mapping	Waste	Flow/pull production	Perfection	Set-based CE	Other principles?
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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	х		х		х	х	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	×		х	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	х	x			x	,	Visualisation (A3, planning board).
	Dombrowski & Schmidt	Integration of design for X approaches in the concept of lean design to enable a holistic product design	2013							
	Dombrowski & Zahn	Design of a lean development framework	2011		x					
Read-on [Dombrowski et al.	State of the Art-Lean Development	2011	х						
3702 [Analysis and Integration of Design for X Approaches in Lean Design as basis for a Lifecycle Optimized Product Design	2014	×	x		x	x		People (p. 248)
3877 E	El-Sayed	Lean Design for Integrated Product Realization	SAE-IJM 2010	х	x	х				
3801 E		Implementation of lean tools and methodologies in design	2012							
	El-Sayed & El- Sayed	Balancing Manufacturability and Performance Attributes in Lean Design	SAE-IJM 2012						Parallel solutions (pp. 4, 7).	
3699 E	Endris et al.	Advanced process planning in lean product and process development	2012					Focus on methods for variability and robustness.		
3815 F	Farahani & Buiyan	Study of flow in lean product development	2013							
3716 F	Flores et al.	Identifying Lean Thinking Measurement Needs and Trends in Product Development: Evidence from the Life Sciences Sector in Switzerland	2010	х		x				
3613 F	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 F	Flores et al.	Understanding the approaches to create a process architecture for lean thinking	2012	х		x	x			
3753 F	Flores et al.	Understanding customer value and waste in product Development: Evidence from Switzerland and Spain	2012	×						
3651 F	Fouquet		AJQ 2007	x					х	11 LPD components (p. 7): strong project manager, process standardisation.

No.	Author(s)	Title	Journal Ye	ar				Whic	ch principles of 'lean	thinking' have been use	ed?
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						stream mapping		production			
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204	207			1	119	85	107	75	64	72	67
3704	Furian et al.	Knowledge Management in Set Based Lean	20		nition		х				
3754	Furuhjelm et al.	Product Development Process Creating value through lean product	20		74).	х	x				
3636	Garcia and	development-applying lean principles Lean Engineering - Best Practice in the	20	07		х					
	Drogosz	Automotive Industry									
3804	Gautam	A design reuse based framework for lean product development	20	05	х	х	х	x			
3705	Gautam et al.	Design reuse framework: a perspective for lean development	IJPD 20	07	x	x	x				
3697	Gershenson & Pavnaskar	Eight Basic Lean Product Development Tools	20	03		x	x				
3721	Gingnell et al.	Swedish Lean Product Development Implementation	20	12			Х				
3755	Gremyr & Fouquet	Design for Six Sigma and lean product development	IJLSS 20	12	x		х				
3739	Gudem & Welo	From Lean Product Development to Lean Innovation: Finding Better Ways of Satisfying Customer Value	20	custor	ce of mer (p. 5).	x				x	Standardisation.
3722	Gudem et al.	Customer value is not a number–investigating the value concept in lean Product Development	20	11 Void	ce of mer (p. 36).					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 20		ce of comer.	X				х	Standardisation, visual management.
3614*	Gudem et al.*	Redefining customer value in lean product development design projects	JEDT 20	custor	ce of mer (p. 5).	х				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 20	12		X					
3711	Hafer	Applying lean to new product development	ME 20	11	х	х		x	x	х	Enablers
3757	Haggerty & Murman	Evidence of lean engineering in aircraft programs	20	06					х		
3694 3677	Haque Haque & -James- Moore+	Lean engineering in the aerospace industry Measures of performance for lean product introduction in the aerospace industry	JEM 20 JEM 200				Х				Frontloading (pp. 5, 7).
3647	Haque & James- Moore+	Characteristics of lean product introduction	IJATM 20	02							
3758	Haque & James- Moore+	Applying lean thinking to new product introduction	JED 200	14a	x	x	x				
3759	Harland & Uddin	Effects of product platform development: fostering lean product development and production	IJPD 20	14						х	
3761	Harris et al.	Knowledge Management to Support Lean Product Development	20	06						х	

No.	Author(s)	Title	Journal	Year							
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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						х	
3864	Hille & Eseonu	State-of-the-art review of lean product development practices and their impact on project success		2015	х		х	х	х	x	
3816	Hines & Packham	Implementing Lean New Product Development		2008	х	х	x	x	х		
3666	Hines et al.	Towards lean product lifecycle management: A framework for new product development	JMTM	2006	х	х		x	х		
3762	Hölttä et al.	Lean information management model for engineering changes		2010	х	x	х	х	x		
3731	Hoppmann et al.	Efficient Introduction of Lean in Product Development Results of the Survey		2009	х						
3608	Hoppmann et al.		EMJ	2011	х	x	x		x	х	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			х	x			
3616	Johansson & Sundin	Lean and green product development: two sides of the same coin?	JCP	2014	х	x	X	x	x		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	х	x	x	х	x	370).	Respect for people (p. 48).
3765	Karademir & Cangelir	Lean approach in concurrent engineering applications		2013	х	х	x	х	х	•	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	х				х	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	х	x	X	х	x	p. 33	,
3691	Khan et al.	Set-Based Concurrent Engineering process within the LeanPPD environment		2011	х						
3607 3767	Khan et al. Khan et al.	Towards lean product and process development Define value: applying the first lean principle to product development		2013 2015	х	x x	x x	x	х		
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No.	Author(s)	Title	Journal	Year							
								Whic	ch principles of 'lean thir	king' have been use	d?
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		and it is in the size of pages									
204	207				119	85	107	75	64	72	67
3695	Kirner et al.	Information in Lean Product Development:		2013	×	х	х	х	х		
3713	Lee & Chang	Assessment of Value and Waste Developing a lean design for Six Sigma through supply chain methodology	IJPQM	2010	х	x	x	x	х		
3768	Lemieux et al.	A Mixed Performance and Adoption Alignment	JET	2013	х						
		Framework for Guiding Leanness and Agility Improvement Initiatives in Product Development									
3664	Lempia	Using Lean principles and MBE in design and		2008	x	x	x	x	x		
	20.04.0	development of avionics equipment at Rockwell Collins							"		
3609	Léon & Farris	Lean Product Development Research: Current State and Future Directions	EMJ	2011	х	x	x	х	x		
3829	Letens et al.	Optimizing stakeholder value and reducing waste in new product development projects		2009	х	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			х				
3087	Liker & Morgan	The Toyota Way in Services: The Case of Lean Product Development	AMP	2006	х		х	x	x		
3679	Liker & Morgan	Lean product development as a system: a case study of body and stamping development at Ford	EMJ	2011	х	х	х	х	x	Frontloading	
3770	Lindlöf & Söderberg	Pros and cons of lean visual planning: experiences from four product development organisations	IJTIP	2011	х	х	х	x	х		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	х	х	х	x	х	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		х	x	х	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	х	x	х	х			
3626	Maksimovic	Lean knowledge life cycle framework to support lean product development		2013		х	x				
3807	Mayrl et al.	Eliciting product development knowledge using value stream mapping	IJPD	2013	х	х			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	х	x	x		x		
3821	McNeel & Lawrence	How Lean-manufacturing principles speed product design		2004							13 principles based on Morgan & Liker (2006).
	23 11 1100	product design									

No.	Author(s)	Title .	Journal Year							
							Which	principles of 'lean thi	nking' have been use	d?
				Value	Value	Waste	Flow/pull	Perfection	Set-based CE	Other principles?
					stream mapping		production			
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204	207			119	85	107	75	64	72	67
3825	Morgan	High performance product development: A	2002			х			Х	Chief engineer, visualisation (p.2).
		systems approach to a lean product development process								
	Morgan & Liker	The Toyota product development system	2006	х						
3657	Mund et al.		JMTM 2015	x						
		automotive industry								
3648	Murman	Lean Systems Engineering II	2003	х	x	х	x	х	х	Refers to 13 principles of Morgan and Liker (2006) (pp. 328–329).
3646	Murman	Lean Aerospace Engineering	2008	Х				X		Standardisation (pp. 8–10).
2022	Marine		2242							
3822	Murman	Innovation in aeronautics through Lean Engineering	2012	Х						
3661	Negroni &	A Quality Improving Method to Assist the	2009	х				х		Standardisation (p. 897).
	Trabasso	Integrated Product Development Process								
3870	Nepal et al.	Lean product development: An approach to achieve Ford's global product development	2007						х	
272:	Novel 1	system milestones	F. 41							
3701	Nepal et al.	Improving the NPD Process by Applying Lean Principles: A Case Study	EMJ 2011	х	Х	Х				
3641	Nightingale	Lean Engineering Product Development	2002	Х			Х	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	2012	х			Standardisati			and the territory and the territory.
		Programs					on.			
3712	Oehmen &	Risk Managament in Lean PD	2010a	х				x		Standardisation (p. 237).
	Rebentisch									
3669	Oehmen &	Waste in Lean Product Development	2010b	х	x	x	x	x		
	Rebentisch									
3640	Oppenheim	Lean product development flow	SE 2004	х	x		x	x	х	Standardisation, visualisation, strong project
										manager, improvement culture (p. 90).
	Onnenheim	Lean for Systems Engineering with Lean	2011	v	v	v				
	Oppenheim	Lean for Systems Engineering with Lean Enablers for Systems Engineering	2011	х	х	х				

No.	Author(s)	Title	Journal Year				sad t I		1. 11 1	
							Which	n principles of 'lean thir	nking nave been use	eur
				Value	Value	Waste	Flow/pull	Perfection	Set-based CE	Other principles?
					stream mapping		production			
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204	207			119	85	107	75	64	72	67
3637	Oppenheim et al	Lean Enablers for Systems Engineering	SE 2011			х				
3772	Parry et al.***	Lean new product introduction: a UK aerospace perspective	2008	х						
3819	Parsons & Josefik	Accelerating Production Readiness Using Lean Product Development	2009			Х				Cross-functional teams.
3773	Paschkewitz	Risk Management in Lean Product Development	2014	х					х	
3774	Pavnaskar &	The application of value stream mapping to lean	2004			v	v			
3//4	Gershenson	engineering	2004			х	х			
3827	Pavnaskar & Gershenson	A Systematic Method for Leaning Engineering Processes	2005			Х	Х			
3639	Pessôa et al.	An approach to lean product development planning	2007		x	х	Х			
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	х		x	x	х	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	х	x	x	x			
3775	Pullan et al.	Decision support tool for lean product and process development	PPC 2013	х	x	х	х	x		
3611	Qudrat-Ullah et al.	Improving high variable-low volume operations: an exploration into the lean product development	IJTM 2012	х	x	х			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	х	x			
3776	Rauch et al.	Axiomatic Design based Guidelines for the	2015	х		х				
3081	Raudberget	Design of a Lean Product Development Process 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	х			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	х				
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	х	х			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	х	х	х	x	x	х	

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				Value	Value	Waste	Flow/pull	Perfection	Set-based CE	Other principles?
					stream mapping		production			
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204	207			119	85	107	75	64	72	67
3687	Ringen & Lodgaard	Lean product development in the automotive supplier industry	2009	х						
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	х	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	х		х				
3689	Saad et al.	A3 Thinking Approach to Support Problem Solving in Lean Product and Process Development	2013			х		x	х	
3779	Salgado et al.	Waste investigation on product development process using the lean and simulation approaches.	PMD 2014		x	х				Suggestions to corrective actions: chief engineer, Obeya (p. 6).
3624	Salgado et al.	Investigating waste on new product development: case study	PMD 2015	х	x	х	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						х	
3780	Schuh et al.	Systematic waste elimination in lean product	IJPD 2014	x		x	x		x	
3792	Schulze & Störmer	development using generic activities Lean product development – enabling	IJTM 2012	х	х		x		x	
3632	Schulze et al.	management factors for waste elimination Exploring the 4l framework of organisational learning in product development: value stream mapping as a facilitator	IJCIM 2013	х		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	х	x	x	х	Chief engineer.
3689	Siyam et al.	Lean product development in practice: Insights from 4 companies	2013					×		
3620	Siyam et al.	Review of Value and Lean in Complex Product	SE 2015	×	x	х	x	X		

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				Value	Value stream mapping	Waste	Flow/pull production	Perfection	Set-based CE	Other principles?
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204	207			119	85	107	75	64	72	67
3707	Siyam et al.	Relating value methods to waste types in lean product development	2012a	х	х	х	х	х	х	
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	х		x	x		х	
3083	Sobek II et al.	Toyota's Principles of Set-Based Concurrent Engineering	SMR 1999	х		х				Standardisation (p. 813).
3682		The Application of an Assessment Tool for Lean Product Development: An exploratory study in Spanish Companies	2012	х	x	x			х	
3706	Sorli et al.	Applying lean thinking concepts to new product development	2010	х	x	х	x		х	
3782		Expanding lean thinking to the product and process design and development within the framework of sustainability	2011	х		х				Standardisation, visual management (p. 447).
3783		Development of KBE system to support LeanPPD application	2012	х						
3784		Knowledge Based Development in Automotive Industry Guided by Lean Enablers for System Engineering	2015	х	X	x				
3785	Stetler	Creativity Just in Time? The Role of Delivery	IJITM 2015	x		х			?	
3786		Precision in Product Development Transformation to lean product development - Approaches at two automotive suppliers	2012	x		x		x	?	
	Subramoniam et	Lean Engineering Implementation Challenges for Automotive Remanufacturing	2009				х		Three alternatives presented by supplier three years in advance (p. 166).	Standardisation (p. 163).
	-	Creating Value Through Lean Product Development – Towards a Generic Framework	2010							
	Taisch et al.	Lean product development in Estonian SMEs Towards a performance measurement system for lean-oriented NPD processes	2012 2011						x 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	-	Implementing Value Stream Mapping – VSM in a R&D organisation	2010	х		x	x		х	13 principles of LPD presented in tables, incl. standardisation (p. 10), chief engineer (p. 12) and visualisation (p. 15).

No.	Author(s)	Title	Journal	Year				Whic	ch principles of 'lean thi	nking' have been use	d?
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The laye	out of these review	data is formatted for A3-sized pages				mapping					
204	207				119	85	107	75	64	72	67
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3788	Tortorella et al.	Lean Product Development (LPD) Enablers for Product Development Process Improvement		2015	x	х	X	x		x	13 principles (p. 18), based on Liker (2004).
3687	Tyagi et al.	Value stream mapping to reduce the lead-time	IJPE	2015						х	
3805	Vinodh & Kumar	of a product development process A case study on lean product and process development		2015	х		Х	х		х	13 principles of LPD (pp. 17–19).
3685	von Würtemberg	Abstract model of LPD: A critical review of the		2011							Chief design engineer (p. 184-10). 'Respect for
3653	et al. Vosgien et al.	Lean Product Development concept Lean approach to integrate collaborative product development processes and digital engineering		2011	х	x		x	х		people' (p. 184-10). Respect for people.
3650	Walton	systems Strategies for Lean Product Development		1999	х		x			x	Just-in-Time decision making.
3617	Wang et al	Using Value Stream Mapping to Analyze an Upholstery Furniture Engineering Process	FPJ	2011	х		x			x	
3642	Wang et al.	Focus on implementation: a framework for lean product development	JMTM	2011	х		х	х	x	х	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	В	А, В	A, B, C	В, С	x		
3871	Ward et al.	Set-based concurrent engineering and Toyota		1994	х	x	х	х	x	х	
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		х	x		x		Standardisation.
3610	Welo	On the application of lean principles in Product Development: a commentary on models and practices	IJPD	2011	х		х				
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	х	х	x	х		х	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	х	x	x	x	x	х	People. Tools/technology.

^{*} conference proceeding found but substituted by journal publication

No.	Author(s)	Title	Journal	Year									-
	.,							Whic	ch principles of 'lean thir	iking' have been used	d?		
					Value	Value stream mapping	Waste	Flow/pull production	Perfection	Set-based CE	Other principles?		
The lay	out of these revi	iew data is formatted for A	3-sized pages										
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204	207				119	85	107	75	64	72		67	

ALTERNATIVE SEARCH TERMS

+ "lean design engineering"

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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'

No.	Author(s)	Title	Journal	Year	Review questions			
110.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Journal	reui	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?
The la	yout of these review	data is formatted for A3-sized pages						
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	i	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		
3276	Baines et al.	State-of-the-art in lean design engineering: A literature review on white collar lean	JEM	2006		product development. 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.		Hallework (p. 3).
3676 3638	Ballé & Ballé Beauregard	A multi-criteria performance study of lean	BSR	2005				
3796	Beauregard et al.	engineering 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 y	2011a				
3798	Beauregard et al.			2011b				
3625	Becker & Wits	levels for lean product development 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	АМ	2014				
3746	Bertelli & Loureiro	Quality problems in complex systems even considering the application of quality initiatives during product development		2015				
					1			

No.	Author(s)	Title Journ	nal Year	Review questions			
NO.	Author(3)	Title Journ	iai icai	Does the study contain an extensive comparison of lean	What characterestics, methods and tools have	Do authors refer to other methods and tools	Is there mention or comparison to other
				production and lean product development, addressing their characteristics?	been added for the conceptualisation of lean product development? (Beyond principles of lean thinking)	than those covered by original writing about lean thinking/lean product development?	methodologies for new product development?
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		and to commence to the older pages					
204	207			15	95	22	22
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 SE Development Processes	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 JMD Development Using a Value Creation Cell Model	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 IJATN to current component designs: a case study from the Brazilian automotive industry	vi 2008		Knowledge life-cycle		
3284	Carleysmith et al.	Implementing Lean Sigma in pharmaceutical R&D research and development: a review by Man. practitioners					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 UPD sharing for set-based concurrent engineering	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 R&D for research and product development Man. management				Metrics proposed (p. 330).	
3662	Dal Forno & Forcellini	Lean product development – principles and PMD practices	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).	

No.	Author(s)	Title	Journal	Year	Review questions 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?
The lay	out of these review o	lata is formatted for A3-sized pages						
204	207				15	95	22	22
3752	Dal Forno et al.	Use of the Lean Product Development Approach by Capital Goods Companies in Brazil		2013		Knowledge management (p. 8).	3-	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				riocess, 2005 [BOOK]).
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		2012				
3717	Dombrowski & Schmidt	manufacturing organisation: a case study 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-oi		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-IJM	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-IJM	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 S	2007		11 LPD components (p. 7).		

	Author(s)	Title	Journal	Year	Review questions			
No.	Author(s)	Title	Journal	Teal	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?
The laye	out of these review	data is formatted for A3-sized pages						
204	207				15	95	22	22
3704	Furian et al.	Knowledge Management in Set Based Lean		2013				
3754	Furuhjelm et al.	Product Development Process 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).	methods.		
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				C.g. Celling, Material Models (p. 02)
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 3677	Haque Haque & -James- Moore+	Lean engineering in the aerospace industry Measures of performance for lean product introduction in the aerospace industry	JEM JEM	2003 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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No.	Author(s)	Title	Journal	Year	Review questions 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?
The la	yout 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 3765	Kamath & Liker Karademir & Cangelir	A second look at Japanese product development Lean approach in concurrent engineering applications	HBR	1994 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
3607 3767	Khan et al. Khan et al.	Towards lean product and process development Define value: applying the first lean principle to product development		2013 2015				[book]).

No.	Author(s)	Title	Journal	Year	Review questions			1
NO.	Author(s)	Title	Journal	real	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
3695	Kirner et al.	Information in Lean Product Development: Assessment of Value and Waste		2013		Systems Engineering.		
3713	Lee & Chang		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		2013		Elements of lean engineering mentioned in Table 3 (p. 10).		o. and camp
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		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).	

No.	Author(s)	Title	Journal		Review questions 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?
The la	out of these review	data is formatted for A3-sized pages						
204	207				15	95	22	22
3825	Morgan	High performance product development: A systems approach to a lean product development process	Т	2002			Refer to knowledge-based school of lean product development (p. 2).	
	Morgan & Liker	The Toyota product development system			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			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			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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204	207				15	95	22	22
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		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).		
	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 3639	Gershenson	A Systematic Method for Leaning Engineering Processes An approach to lean product development		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). Obeya room (p. 3), standardisation, skilled		
3033		planning		2007		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		Understanding the Waste Net: A Method for Waste Elimination Prioritization in Product Development		2009		Frontloading, partnerships with suppliers, knowledge (p. 13)		
3719		A New Set of Principles for Pursuing the Lean Ideal in Engineer-to-order Manufacturers		2014		Bottleneck (management) (pp. 20, 25).		
3775		Decision support tool for lean product and process development	PPC	2013	Frontloading.			
3611		Improving high variable-low volume operations: an exploration into the lean product development	IJTM	2012		Modular design (p. 7), 5S (p. 8).		
3734		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		Axiomatic Design based Guidelines for the Design of a Lean Product Development Process		2015	5000.0000 (pp. 200-201).		C (p. 202).	
3081		Practical Applications of Set-Based Concurrent Engineering in Industry		2010				
3703		Enabling Set-based Concurrent Engineering in traditional product development		2011				
3868	-	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		Let it flow: how lean product development sparked a revolution		2005				
3733		Making R&D Lean	RTM	2005		Up-to-date data, multi-functional work environment, integrated cumputer-based solutions.		
3675		How enablers for lean product development motivate engineers	IJCIM	2013				

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No.	Author(s)	Title	Journal	Year	Review questions 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?
The la	yout of these review	data is formatted for A3-sized pages						
204	207				15	95	22	22
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	e	2015			Creativity.	
3621	Rocha et al.	Study 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	2	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	IJPD	2014				
3792	Schulze & Störmer	development using generic activities Lean product development – enabling	IJTM	2012		Portfolio management (p. 77–78).		
3632	Schulze et al.	management factors for waste elimination Exploring the 4I framework of organisational learning in product development: value stream	IJCIM	2013				
3644	Shirwaiker & Okudan	mapping as a facilitator 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:
3710	Singer et al.	What Is Set-Based Design?	NEJ	2009		Framework (p. 10).		however, not clarified how. 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, crossfunctional 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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No.	Author(s)	Title	Journal	Year	Review questions Does the study contain an extensive comparison of lean		Do authors refer to other methods and tools	Is there mention or comparison to other
					production and lean product development, addressing their characteristics?	been added for the conceptualisation of lean product development? (Beyond principles of lean thinking)	than those covered by original writing about lean thinking/lean product development?	methodologies for new product development?
		data is formatted for A3-sized pages						
204	207				15	95	22	22
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 3862	Swan & Furuhjelm Tähemaa et al.	Creating Value Through Lean Product Development – Towards a Generic Framework Lean product development in Estonian SMEs		2010 2012		Early supplier involvement (p. 322).		Clark and Fujimoto (1991) (pp. 310, 322).
3787	Taisch et al.	Towards a performance measurement system		2012				Refer to Shigley's model for design processes.
3875	Thomas & Singh	for lean-oriented NPD processes 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).		Refer to Pugh (p. 48). 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).		

No.	Author(s)	Title	Journal	Year	Review questions Does the study contain an extensive comparison of lean	What characterestics, methods and tools have	Do authors refer to other methods and tools	Is there mention or comparison to other
					production and lean product development, addressing their characteristics?	been added for the conceptualisation of lean product development? (Beyond principles of lean thinking)	than those covered by original writing about lean thinking/lean product development?	methodologies for new product development?
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204	207				15	95	22	22
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).		0 1
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		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

No.	Author(s)	Title	Journal	Year	Review questions			
					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

ALTERNATIVE SEARCH TERMS

+ "lean design engineering"

^{**} 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'

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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	
		LeatiffD Model			loading the information, and improving the information flow (p. 1465).	
3683	Al-Ashaab et al.	The Conceptual LeanPPD Model		2010		
		·				Concurrent Engineering.
3680	Al-Ashaab et al.	The transformation of product development	CERA	2013		Sobek II et al. (1999): Toyota's Principles of Set-Based
		process into lean environment using set-based				Concurrent Engineering.
		concurrent engineering: A case study from an aerospace industry				
3686	Al-Ashaab et al.	Lean Product Development Performance		2013	Addresses only Lean Engineering.	
3000	Al Ashaab et al.	Measurement Tool		2013	Addresses only Lean Engineering.	
3628	Amin et al.	Assessing the leanness in product design : a		2010	When extrapolating, only information that predominantly flows	
		model for planned design reuse			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).	
					characterised. Form, Fit, Function and Timeliness (TTTT) (p. 190).	
3742	Anand & Kodali	Development of a Conceptual Framework for	IJPD	2008	Find eight frameworks (out of 35) to be somewhat valid, but conclude	
3742	Anana a Rodan	Lean New Product Development Process	151 5	2000	also these are incomplete and need further development.	
3795	Anand et al.	Lean Product Development - Redefining the		2009		Book: Huthwaite (2007): The Lean Design Solution.
		Indian Automotive Product Development Process				-
		using Lean Framework				
3794	Anderson et al.	Using lean product development to speed time		2011	Contains evaluation of 10 approaches to lean product development.	Sobek et al. (1999): Toyota's Principles of Set-Based
3276	Baines et al.	to market for medical devices State-of-the-art in lean design engineering: A	JEM	2006		Concurrent Engineering. Book: Huthwaite (2007): The Lean Design Solution.
3270	bailles et al.	literature review on white collar lean	JEIVI	2000		Book. Huttiwaite (2007). The Lean Design Solution.
3615	Baines et al.	Beyond theory: An examination of lean new	JME	2007		Book: Huthwaite (2007): The Lean Design Solution.
		product introduction practices in the UK				
3676	Ballé & Ballé	Lean Development	BSR	2005	NOTE: Attempts to introduce the order entry point as concept for push	
3638	Requirement	A multi-criteria performance study of lean		2010	and pull, but not explicitly (pp. 2069–2070). NOTE: Uses hypothetical data for simulation, hence propositional.	Book: Huthwaite (2007): The Lean Design Solution. Sobek et
3036	Beauregard	engineering		2010	Uses value categories from Huthwaite (2005) (p. 87).	al. (1999): Toyota's Principles of Set-Based Concurrent
						Engineering.
3796	Beauregard et al.	Lean engineering systems for product		2008	This is exacerbated in that the technical products development	Kamath and Liker (1994), A second look at Japanese product
		development in the aerospace industry			literature is dominated by examples from high innovation, low variety	development.
				2000	industries such as the automotive sector' (p. 881).	
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
		design jobs with capacity considerations				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	
272-	Dec. 1	Deat Contilled to	EN C'	2011	supporting lean engineering objectives' (p. 1520).	11
3797	Beauregard et al.	Post-Certification engineering taxonomy and		2011a	Focus on reducing lead-time, waste by allocation model, resulting in	Hoppmann et al. (2009): Efficient Introduction of Lean in Product Development Results of the Survey.
		task value optimization in the aerospace industry			increased throughput. Also, evaluation of job-size for new product design and engineering.	Troduct Development Nesults of the Survey.
3798	Beauregard et al.	Optimum task size, multitasking and utilization		2011b	Study on flow based on queuing theory, but no evidence of use of 'real	
		levels for lean product development			data' in simulation model (hence, classified as propositional).	
3625	Becker & Wits	Enabling Lean Design Through Computer Aided		2015	Focus on job allocation akin bottleneck and prioritisation of tasks.	Beauregard, Y., Thomson, V., & Bhuiyan, N. (2008). Lean
		Synthesis: The Injection Moulding Cooling Case				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	AM	2014	Focus on arrival rates and optimal allocation of tasks to engineers.	3-16. (3-16.), 3-16.), 15. (30.), 15. (30.), 16. (30.), 16. (30.)
3743	Delay et al.	system dynamics: investigating front-load	AIVI	2014	NOTE: Lean product development seems contaext for this paper.	
		effects			,	
3746	Bertelli & Loureiro	Quality problems in complex systems even		2015	Definition of lean drifting from eliminating waste to value creation (p.	Cusumano, M. A. (1994). The Limits of "Lean". Sloan
		considering the application of quality initiatives			1543). Refers to Oppenheim (2004) to view product development as	Management Review, 35(4), 27–32. McNeel, R. How Lean-
		during product development			'production' (p. 1546).	manufacturing principles speed product design. Mach. Des., 2004, 76(7).
					I	2007, 10(1).

No.	Author(s)	Title	Journal Y	/ear	Notes	Spanipalling
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3715	Bjarnoe	Lean thinking in product development	2	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 2	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	2	2012	Focus on specifications for knowledge-based repository for lean product development; seems to aim at re-use of 'designs' ('previous	Book: Huthwaite (2007): The Lean Design Solution. Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent
					projects' as they call them). Also, aiming for life-cycle approach. Despite naming case companies, paper is propositional.	Engineering.
3748	Cai & Freiheit	Resource Allocation for Lean Product	JMD 2	2014	NOTE: Little evidence provided about effectiviness or how extension of	
		Development Using a Value Creation Cell Model			value stream improved process management. NOTE: Proposed	
2700	Cai & Eraibait	Loan Principles in Broduct Development	20	011a	metrics similar to metrics for production line (p. 6).	
3799	Cai & Freiheit	Lean Principles in Product Development Processes	20	OIIG		
3817	Cai & Freiheit	Lean Value Creation in the Product Development	20	011b	Containts overview of perspectives in Table 3.1 (pp. 38–41). Enablers	
		Process With the Principle of Set-Based Concurrent Engineering			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 2	2008		
3284	Carleysmith et al.	Implementing Lean Sigma in pharmaceutical research and development: a review by practitioners	R&D 2 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	2	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?	2	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	2	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	2	2014		
3750	Correia et al.	new product development processes Mechanisms for communication and knowledge sharing for set-based concurrent engineering	IJPD 2	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?	2	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	1	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	R&D 2 Man.	2014	Focus on manufacturing engineering. 'Information that waits in queues for the next processing activity is equated with physical inventors groups in machining systems.' (p. 2, based on Rejection)	
3662	Dal Forno & Forcellini	management Lean product development – principles and practices	PMD 2	2013	inventory queues in machining systems' (p. 2, based on Reinertsen). 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	2	2011	Demonstrate implementation of lean product and process development.	
3665	Dal Forno et al.	Lean Product Development: Benchmarking in Brazilian Companies	2	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		2013		
		by Capital Goods Companies in Brazil				
3824	Dal Forno et al.	Value Stream Mapping: a study about the problems and challenges found in the literature	IJAMT	2014	NOTE: Only in abstract asserted that few industrial cases have been studied out with Toyota (p. 269). NOTE: Hardly lean product	
		from the past 15 years about application of Lean			development discussed.	
2645	Damidah at al	tools		2010	Danasa a managa bahasa a laga dan dan dan laga an da da laga fan	Deal for any ship and a ship and a ship a sh
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 &	Integration of design for X approaches in the		2013	NOTE: Case study driven by company's view on lean product	Science Section Con Mane Section Care 1 acres
	Schmidt	concept of lean design to enable a holistic product design			development (p. 1092); focus on knowledge management appears mostly as consulting. NOTE: Case study incomplete (p. 1098).	
		product design			iniosaly as consulting. NOTE: case study incomplete (p. 1000).	
2522	- 1 1:0			2011		
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		2014	Lean placed in context of systems engineering. NOTE: Refers to 10	
3702	Dombiowski et al.	Approaches in Lean Design as basis for a		2014	challenges as 'best practices' for managing engineering programmes.	
2077	El Control	Lifecycle Optimized Product Design	CAELINA	2040	NOTE O AND	
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		2012	Several publications on the topic exist, but it there is no unique, or at	
		methodologies in design			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	
3823	El-Sayed & El-	Balancing Manufacturability and Performance	SAE-IJM	2012	completely applied (p. 326–327). NOTE: Focus on business processes for NPD (called process	
3023	Sayed	Attributes in Lean Design	SAE-IJIVII	2012	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		2012	Focus on conceptual robustness.	
		process development				
3815	Farahani & Buiyan	Study of flow in lean product development		2013	NOTE: Focus on business processes for NPD (called process	
3716	Flores et al.	Identifying Lean Thinking Measurement Needs		2010	architecture). Half of interviewed companies don't clearly understand concept of	
3, 10		and Trends in Product Development: Evidence		2010	waste in product development process (p. 9).	
2612	Flores et al.	from the Life Sciences Sector in Switzerland		2011	Points to lack of adequate practices in companies (an. 9.0)	
3613	riores et al.	Do enterprises implement a process architecture towards Lean in product		2011	Points to lack of adequate practices in companies (pp. 8–9).	
		development? A comparative study among large and small firms				
3627	Flores et al.	Understanding the approaches to create a		2012	Case study focused on prioritisation (p. 182). Potential lean and agile	
		process architecture for lean thinking			enablers (pp. 174–175).	
3753	Flores et al.	Understanding customer value and waste in product Development: Evidence from		2012	NOTE: Context is lean product development, but not explicitly.	
		Switzerland and Spain				
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	
		Development . Differences, Sillinarities and Links			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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204	207					
3704	Furian et al.	Knowledge Management in Set Based Lean		2013	NOTE: Contains figure about retrievals by year (p. 73); different from	
3704	i uliali et al.	Product Development Process		2013	ours. NOTE: Hypotheses self-evident.	
3754	Furuhjelm et al.	Creating value through lean product		2011	NOTE: Knowledge management taken as sharing of information	
		development-applying lean principles			rather re-use of 'technological' knowledge.	
3636	Garcia and	Lean Engineering - Best Practice in the		2007	NOTE: Self-evident inference: SM analysis resulted in specific	
	Drogosz	Automotive Industry			measures to improve interactions and working practices that had been	
					characterised by inefficiencies (p. 1146).	
3804	Gautam	A design reuse based framework for lean		2005	NOTE: Applied to certification processes for aerospace (is that really	Beauregard, Y., Thomson, V., & Bhuiyan, N. (2008). Lean
		product development			engineering?).	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	IJPD	2007		
		development				1
3697	Gershenson &	Eight Basic Lean Product Development Tools		2003		
	Pavnaskar					
3721	Gingnell et al.	Swedish Lean Product Development		2012		Salgado et al. (2014): Waste investigation on product
		Implementation				development process using the lean and simulation approaches.
						approacties.
3755	Gramur & Fouguet	Design for Six Sigma and lean product	IJLSS	2012	Based on axiomatic design (Suh) but only for improving product	
3733	Gremyr & rouquet	development	11123	2012	development processes.	
3739	Gudem & Welo	From Lean Product Development to Lean		2010	Even when the lean approach is not applied completely, some	
5755	oudem a meio	Innovation: Finding Better Ways of Satisfying		2010	practices are used, either directly or indirectly (p. 11). NOTE:	
		Customer Value			numbers of sampling do not match.	
3722	Gudem et al.	Customer value is not a number–investigating		2011	Claim that Japane companies used lean since 1950s (p. 131).	Rethinking lean NPD: A distorted view of lean product
		the value concept in lean Product Development				development. (2007). Strategic Direction, 23(10), 32-34.
3756	Gudem et al.	From lean product development to lean	IJITM	2014	Most common practices, adopted by 90% of respondents:	
		innovation: Searching for a more valid approach			standardisation of PDP, use of indicators, project library and	
		for promoting utilitarian and emotional value			continuous search for improving (p. 984).	
0.54.4*		5.16.		2012		
3614*	Gudem et al.*	Redefining customer value in lean product	JEDT	2013	None of companies that responded have plan to implement lean	
		development design projects			development (p. 556). C ompanies do not always call themselves 'lean', despite using some lean practices (p. 557).	
3618	Gurumurthy &	An application of analytic hierarchy process for	JMM	2012	Product development only placed in context of product families (p.	
3010	Kodali	the selection of a methodology to improve the	JIVIIVI	2012	782).	
		product development process				
3711	Hafer	Applying lean to new product development	ME	2011	NOTE: New product development problems as effectiveness and	
					efficiency (p. 33).	
3757	Haggerty &	Evidence of lean engineering in aircraft		2006	Only variable 'customer requirements' significantly related to	
	Murman	programs			motivation of engineers (p. 1124).	
3694	Haque	Lean engineering in the aerospace industry	JEM	2003		
3677	Haque & -James-	Measures of performance for lean product	JEM	2004b	NOTE: Implementation gleaned but not evidenced.	Book: Huthwaite (2007): The Lean Design Solution. Sobek II
	Moore+	introduction in the aerospace industry				et al. (1999): Toyota's Principles of Set-Based Concurrent
						Engineering.
3647	Haque & James-	Characteristics of lean product introduction	IJATM	2002		Sobek II et al. (1999): Toyota's Principles of Set-Based
	Moore+					Concurrent Engineering. Sobek II et al. (1998): Another Look
2752		A collection that the collection is	IED	2001	Broad and analysis are also as a second at the second at t	at How Toyota Integrates Product Development.
3758	Haque & James-	Applying lean thinking to new product	JED	2004a	Based on hypothetical case study to prove LPD better that PD and APD.	Radeka, K., & Sutton, T. (2007). What is "lean" about
2750	Moore+	introduction	LIDD	2014	Dravides evidence that set based consumed a series with her butter	product development? PMDA Visions, 31(2), 11–15.
3759	Harland & Uddin	Effects of product platform development: fostering lean product development and	IJPD	2014	Provides evidence that set-based concurrent engineering has better performance (p. 692), but consumes more resources (p. 690); more	
		production			resources may be due to inexperience. Also, mention degree of	
		p. 0440tiOii			novelty, but find that potential is for unproven or new technology (p.	
					692).	
3761	Harris et al.	Knowledge Management to Support Lean		2006	Product cost lower, but lead-time and cost product devolopment	Ward et al. (1994), Set-based concurrent engineering and
		Product Development		_505	increased (p. 364). Better product performance (p. 364). More	Toyota. Sobek II et al. (1999): Toyota's Principles of Set-
					positive also for effects on product development and future projects	Based Concurrent Engineering.
					(p. 365).	
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No.	Author(s)	Title	Journal	Year	Notes	Snowballing
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204	207					
3760	Helander et al.	Applying lean in product development - enabler	LITM	2015		
3700	neialiuei et al.	or inhibitor of creativity?	IJ I IVI	2013		
3864	Hille & Eseonu	State-of-the-art review of lean product		2015	Comparising lean and green product development: both searching for	
		development practices and their impact on			increased competitiveness (p. 118). Number of industrial examples	
		project success			where LPD has been implemented and applied is not extensive (p.	
2016	Hinos O Dashbar	Implementing Loss New Product Development		2000	111). Easy on attributes (form and function integration) (on E. 7)	
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	JMTM	2006	Focus on product attributes (design attributes).	El-Sayed, M., "Lean Design for Integrated Product
		framework for new product development			(allege de la constant de la constan	Realization" SAE Technical Paper 2010-01-0400, 2010.
3762	Hölttä et al.	Lean information management model for		2010		Book: Huthwaite (2007): The Lean Design Solution. El-
		engineering changes				Sayed, M., "Lean Design for Integrated Product Realization"
						SAE Technical Paper 2010-01-0400, 2010. El-Sayed, M., El-Sayed, L. "Palancing Manufactura bility@and Porformance
						Sayed, J., "Balancing Manufacturability@and Performance Attributes in Lean Design", SAE Int. J.
3731	Hoppmann et al.	Efficient Introduction of Lean in Product		2009		, 2001 2001g., , 5.12 III. 3.
3/31	порригани ес ат.	Development Results of the Survey		2003		
3608	Hoppmann et al.	A Framework for Organizing Lean Product	EMJ	2011	'The most striking difference between the lean product development	
		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		2014	None of three companies took principles directly from literature (p. 8).	Sigemyr et al. (2006): Not available in English.
		for lean product development			None of three cases mentioned ability to adapt to variability (p. 8).	
					None of companies used set-based design (p. 10).	
3660	Jasti & Kodali	Validity and reliability of lean product	MBE	2014	Claim that lean product development may inhibit creativity if not	
		development frameworks in Indian manufacturing industry			looked after (p. 67). Training of personnel engaged in implementation also stands out as key effort in establishing lean perspective and way	
		manaractaring maastry			of working (p. 56).	
3616	Johansson &	Lean and green product development: two sides	JCP	2014	NOTE: Central theme seems to be takt time (for short, less intense	
	Sundin	of the same coin?			projects).	
2076	Kamath C Lil	A cocond look at Indiana and at the last	LIDD	1004	Contains figures about wasts (34, 35)	
3876 3765	Kamath & Liker Karademir &	A second look at Japanese product development Lean approach in concurrent engineering	HRK	1994 2013	Contains figures about waste (pp. 34–36). NOTE: Amalgamation of Oppenheim (2004) and Oppenheim et al.	
3703	Cangelir	applications		2013	(2011). Contains figure about waste (p. 45).	
	J				,	
3086	Karlsson &	The difficult path to lean product development	JPIM	1996	Overview of differences between Toyota and Sweden (p. 136).	
2766	Åhlström	Command Tooms, and deliver A. I.		2045	Model and the second of the se	
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).	
		Troduct Development				
3654	Khan	The construction of a model for lean product		2012	Based on lean entreprise model (p. 7). Application of lean thinking to	
		development			new product development (p. 15). NOTE: Amalgamates works of	
					master's dissertations, projects, etc. related to LAI in one overview,	
				2011	but not always integrated.	
3691	Khan et al.	Set-Based Concurrent Engineering process within the LeanPPD environment		2011	NOTE: Front end of doctoral study.	
		within the LeanerD environment				
3607	Khan et al.	Towards lean product and process development	IJCIM	2013		
3767	Khan et al.	Define value: applying the first lean principle to		2015		
		product development				
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No.	Author(s)	Title	Journal \	Year	Notes	Snowballing
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3695	Kirner et al.	Information in Lean Product Development:	2	2013	Indicates rationalisation of product development, based on two	
2742	1 0 Ch	Assessment of Value and Waste	110014	2040	studies. NOTE: Master's dissertations underping many findings.	
3713	Lee & Chang	Developing a lean design for Six Sigma through supply chain methodology	IJPQM 2	2010	Fuzzy front end challenges (p. 26). Link to ERP, PDM (pp. 31–33).	
3768	Lemieux et al.	A Mixed Performance and Adoption Alignment	JET 2	2013	Raises principles at end of publication. NOTE: Rather descriptive.	
		Framework for Guiding Leanness and Agility			Makes case that more principles applied, better it is.	
		Improvement Initiatives in Product Development				
2664	1	Hata I are a destales and MRE to destance of	-	2000	NOTE Classified as a service of least and a ideas.	Solvel Hot al. (4000). To otal a District of Sol Board
3664	Lempia	Using Lean principles and MBE in design and development of avionics equipment at Rockwell	2	2008	NOTE: Classified as propositional because of 'scattered evidence'.	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
		Collins				
3609	Léon & Farris	Lean Product Development Research: Current	EMJ 2	2011		
2020	1.1	State and Future Directions	-	2000	Challer and the later blinks dis Herman and A (2014)	
3829	Letens et al.	Optimizing stakeholder value and reducing waste in new product development projects	2	2009	Similar components as later published in Hoppmann et al. (2011)	
3606	Letens et al.	A Multilevel Framework for Lean Product	EMJ 2	2011	Types of waste (p. 236).	
		Development System Design				
3087	Liker & Morgan	The Toyota Way in Services: The Case of Lean	AMP 2	2006	NOTE: Classified as propositional, because of evidence scattered	
		Product Development			throughout chapter.	
3679	Liker & Morgan	Lean product development as a system: a case study of body and stamping development at Ford		2011	Lean enablers (slide 40, p. 39): respect for people, programme manager from beginning to end, frequently engage stakeholders,	
		study of body and stamping development at Ford			communications plan. NOTE: Are these just not good project	
					management practices.	
3770	Lindlöf &	Pros and cons of lean visual planning:	IJTIP 2	2011	Mention 43 lean enablers (p. 798).	Taisch et al. (2010): Performance measurement system for
	Söderberg	experiences from four product development				lean-oriented NPD process.
3612	Lindlöf et al.	organisations Practices supporting knowledge transfer – an	IJCIM 2	2013		
		analysis of lean product development				
3771	Machado	New Product Development: From Efficiency to	2	2013		
		Value Creation				
3630	Maginness et al.	Principles for aerospace Manufacturing Engineering in integrated New Product	JME 2	2013	Seen as seminal, but does not apply lean thinking to new product development. NOTE: Toyota's approach to new product development	
		Introduction			seen as compromise for 'chimney extreme' and 'committee extreme'.	
					, , , , , , , , , , , , , , , , , , , ,	
3631	Maginness et al.	Value Stream Analysis of Manufacturing	20	011a	Refer to Pugh, Ulrich & Eppinger, Wheelwright & Clark and Dubinskas	
		Engineering New Product Introduction Processes			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	20	011b	NOTE: 'Product development has significant variability in processing	Cloke (2000), Lean Products Start with Lean Design,
		Engineering Environment: A Case Study			much like a job shop' (p. 6) -> argument not expanded or used. NOTE:	Advanced Manufacturing E Journal.
					Value only used in context of waste and mapping.	
3720	Mahlamäki et al.	Lean product development point of view to	2	2009		Sobek II et al. (1999): Toyota's Principles of Set-Based
		current challenges of engineering change management in traditional manufacturing				Concurrent Engineering.
		industries				
3626	Maksimovic	Lean knowledge life cycle framework to support	2	2013		Sobek II et al. (1998): Another Look at How Toyota Integrates
		lean product development				Product Development
3807	Mayrl et al.	Eliciting product development knowledge using	IJPD 2	2013	Describes implementation in medical devices company (Covidien).	NOTE: Bradford (2004) could not be found anywhere.
3674	McManus &	value Stream mapping Value Stream Analysis and Mapping for Product	2	2002	NOTE: Cases studies seem to be in same company.	
3374	Millard	Development	2	-002		
205						
3806	McManus et al.*	Lean engineering : a framework for doing the right thing right	AJ 2	2007		
3821	McNeel &	How Lean-manufacturing principles speed	2	2004	Some adaptations to SA context (NOTE: unclear whether these are	
	Lawrence	product design			really specific for SA).	
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2025	Margan	High performance product developments A		2002	NOTE: Study with moved method approach. Distinguish knowledge	
3825	Morgan	High performance product development: A systems approach to a lean product		2002	NOTE: Study with moxed-method approach. Distinguish knowledge-based school and control approach of lean product development (p. 2).	
		development process			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,	Book: Huthwaite (2007): The Lean Design Solution.
					seemed to be based on commercial proposition (Doblin Group)	
					without further foundation (NOTE: unclear what distinguishes both	
3657	Mund et al.	Lean product engineering in the South African	JMTM	2015	concepts). Introduces value chart (NOTE: not clear how this related to LPD).	Gudem and Welo (2010), From Lean Product Development
3037	iviunu et ai.	automotive industry	JIVITIVI	2013	initioduces value chart (NOTE: not clear now this related to EFD).	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).	Concurrent Engineering.
3822	Murman	Innovation in aeronautics through Lean		2012	SAME as Paper 3722. Introduces value chart (NOTE: not clear how	Gudem and Welo (2010), From Lean Product Development
		Engineering			this related to LPD). "Waste is typically associated with doing activities with the wrong input rather than doing unnecessary	to Lean Innovation: Finding Better Ways of Satisfying Customer Value.
					activities, as is the case in manufacturing" (p. 73).	customer value.
3661	Negroni &	A Quality Improving Method to Assist the		2009	Performance related to clear project prioritisation, design strategy	
	Trabasso	Integrated Product Development Process			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		2007	Using System Dynamics modelling and simulation (data seem to be	Sobek et al. (1999): Toyota's Principles of Set-Based
		achieve Ford's global product development system milestones			hypothetical), hence propositional. Mentioning value and waste but	Concurrent Engineering.
3701	Nepal et al.	Improving the NPD Process by Applying Lean	EMJ	2011	actually only cost-oriented model. Advocate lean innovation by placing lean product development in	Radeka, K., & Sutton, T. (2007). What is "lean" about
3701	ivepai et ai.	Principles: A Case Study	LIVIJ	2011	context of innovation types.	product development? PMDA Visions, 31(2), 11–15. Sobek
		,			The state of the s	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		2012	Systems engineering companies (aerospace and defence) tend to be	
		Programs			more immature, compared to other sectors when considering lean	
					practices and capabilities for knowledge (p. 6).	
3712	Oehmen &	Risk Managament in Lean PD		2010a	Systems engineering companies tend to be more immature, especially	
	Rebentisch				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 &	Waste in Lean Product Development		2010b		Radeka, K., & Sutton, T. (2007). What is "lean" about
	Rebentisch				More [2004], Oppenheim [2004], Reinertsen [2005, 2009]); same for	product development? PMDA Visions, 31(2), 11–15.
2040	Opport	Loop product dovelages ant fla	CE	2004	lean thinking (Womack and Jones [1996]).	
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		2011	Case study of Ford: introducing global product development.	Sobek II et al. (1998): Another Look at How Toyota Integrates
		Enablers for Systems Engineering				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	JL	2008	TOTAL Sust advocating waste as principle.	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 (???)
2774	Da carla d	- h		2004	5 - d (la da a a a a a a a a a a a a a a a a a	
3774	Pavnaskar & Gershenson	The application of value stream mapping to lean engineering		2004	Equals flow to queue management (p. 43).	
3827	Pavnaskar &	A Systematic Method for Leaning Engineering		2005		
3639	Gershenson Pessôa et al.	Processes An approach to lean product development		2007	Example of implementation more than anything else.	
3033	r casou et al.	planning		2007	Example of implementation more than anything else.	
2700	B	A continued to the continued on the cont	DIAD	2000		
3709	Pessôa et al.	A method to lean product development planning	PIVID	2008		
3690	Pessôa et al.	Understanding the Waste Net: A Method for Waste Elimination Prioritization in Product		2009		
		Development				
3719	Powell et al.	A New Set of Principles for Pursuing the Lean		2014		
3775	Pullan et al.	Ideal in Engineer-to-order Manufacturers Decision support tool for lean product and	PPC	2013		
3773	. and if et al.	process development		2013		
3611	Qudrat-Ullah et al.	Improving high variable-low volume operations:	IJTM	2012	NOTE: No evidence of case study presented, hence classified as	
		an exploration into the lean product development			propositional.	
3734	Radeka & Sutton	What is "lean" about product development? An	PDMA	2007	Description of practice at GSK: focus on business process	Reinertsen, D., & Shaeffer, L. (2005). Making R&D Lean.
		overview of Lean Product Development			improvement. Discusses throughout pros and cons. Also refers to	Research Technology Management, 48(4), 51–57.
3776	Rauch et al.	Axiomatic Design based Guidelines for the		2015	'focus group' in pharmaceutical industry (p. 98). Description of implementing lean product development for fuel cells.	
		Design of a Lean Product Development Process			NOTE: No references used.	
3081	Raudberget	Practical Applications of Set-Based Concurrent Engineering in Industry		2010		
3703	Raudberget	Enabling Set-based Concurrent Engineering in		2011		
2000	Davidha wat 0	traditional product development		2010	Oversians of Installation and a state of the	Cababillian at (4000), A sath as task at 2
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
2660	Poinorteen	Let it flow; how loan product development		2005	Introduces illustrative example	Concurrent Engineering.
3668	Reinertsen	Let it flow: how lean product development sparked a revolution		2005	Introduces illustrative example.	
3733	Reinertsen &	Making R&D Lean	RTM	2005	Compared with concurrent engineering.	
	Shaeffer					
3675	Ringen & Holtskog	How enablers for lean product development	IJCIM	2013	Connects lean product development to reliability of products.	Sobek II et al. (1999): Toyota's Principles of Set-Based
		motivate engineers				Concurrent Engineering.

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3687	Pingen & Lodgaard	Lean product development in the automotive	2	2009	Home appliances are relatively stable platforms and new products are	
3007	Killgell & Lougaala	supplier industry		2003	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	
2622	Division O Made	Was dada Barad Barada was Burutan ta	2	2045	study.	
3623	Ringen & Welo	Knowledge Based Development Practices in Systems Engineering Companies: A Comparative	2		NOTE: Focus on creativity being under pressure from lean product development.	
		Study			actiophich.	
3621	Rocha et al.	Mass Customization Enablement Through Lean	JOSCM 2	2014	NOTE: Advocates use of TRIZ and axiomatic design but does not lead	
		Design & Set-Based Concurrent Engineering			to methodology for new product development.	
		Application				
3696	Rossi et al.	Proposal of a method to systematically identify	2	2011	NOTE: Scope of project LeanPPD outlined, but nothing beyond it.	Sobek II et al. (1999): Toyota's Principles of Set-Based
3679	Rossi et al.	wastes in New Product Development Process Lean product development: A five-steps	2	2012	Only purpose of paper: identifying all types of waste.	Concurrent Engineering. Soderborg N. (2008): Lean Product Development (WCBF
3073	NOSSI Et al.	methodology for continuous improvement	2	.012	formy purpose of paper, identifying all types of waste.	Design for Six Sigma).
3718	Ryan & Reik	Applying the Core Elements of a Lean Enterprise	2	2010	70 indicators for performance measurement of (lean) product	
		to Product Development			development (p. 659). Weakness of model lack of methodology to	
					identify easily which indicators mostly representative of lean state (p.	
2000	Cand at al	A2 Thinking Agains ship Company Buchland	2		661).	Cabalist at (4000). Tauata/a Drivatialas of Cat Based
3689	Saad et al.	A3 Thinking Approach to Support Problem Solving in Lean Product and Process	2	2013		Sobek et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
		Development Development				concurrent Engineering.
3779	Salgado et al.	Waste investigation on product development	PMD 2	2014	Focus on waste identification in actual product development	Rossi et al. (2011): Lean Product Development: Fact Finding
		process using the lean and simulation			processes: all linked to quality of information, data and requirements	Research in Italy (COULD NOT BE FOUND).
2624	Calcada at al	approaches.	D14D 3		in flow (p. 6).	
3624	Salgado et al.	Investigating waste on new product development: case study	PMD 2	2015	Alternative solution to make lean product development work.	
3793	Saunders et al.	A case study to evaluate lean product	IJPD 2	2014	Focus on standardisation, modularisation, re-use. Development of	
		development practices in the global automotive			leanness index. NOTE: index favours re-use, etc. without considering	
		industry			customer value.	
3726	Schuh et al.	Lean Innovation: Introducing Value Systems to	2	2008	Rationale (pp. 125): Qudrat-Ullah et al. [2011] for applying lean to	
		Product Development			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	
2700	Cabulant	Contamplia contamplia di Conta	UDD -		idea in real life' (pp. 134).	Marray (2002), High works were a list of the second of the
3780	Schuh et al.	Systematic waste elimination in lean product development using generic activities	IJPD 2	2014		Morgan (2002): High performance product development: A systems approach to a lean product development process.
3792	Schulze & Störmer	Lean product development – enabling	IJTM 2	2012	Refers to managing bottlenecks (pp. 75–80).	Morgan (2002): High performance product development: A
	C & Stormer	management factors for waste elimination			(рр. 75 см).	systems approach to a lean product development process.
3632	Schulze et al.	Exploring the 4I framework of organisational	IJCIM 2		NOTE: Though linked to survey, publication is mostly propositional.	
		learning in product development: value stream			Propose lean innovation based on 'structure early, synchronise sasily,	
2644	Chinuaikar 0	mapping as a facilitator Contributions of TRIZ and axiomatic design to			adapt securely (p. 1132).	
3644	Shirwaiker & Okudan	leanness in design: an investigation	2	2011		
3710	Singer et al.	What Is Set-Based Design?	NEJ 2		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	2	2013	lean should not been seen as a state, but as a direction.' (p. 293).	Funk (1993)?
2303	,	from 4 companies	-		NOTE: no information given on which knowledge and seminars	,
					provided to case company (p. 286).	
3620	Siyam et al.	Review of Value and Lean in Complex Product	SE 2	2015		
3020	Siyaili et al.	Development	JL Z	.013		
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No.	Author(s)	Title	Journal	Year	Notes	Snowballing
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3707	Siyam et al.	Relating value methods to waste types in lean		2012a	The overall assessment suggests that the literature on LPD to date has	
		product development			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	HBR	1998	Compares more extensively production and product development (p.	
		Development			45).	
3083	Sobek II et al.	Toyota's Principles of Set-Based Concurrent	SMR	1999	Lean methods enhanced by other methods for new product	Graebsch et al. (2007): Assessing Information Waste in Lean
		Engineering			development, according to participants (pp. 813–814). Noteworthy conclusion: rating by respondents to 'reshaping lean principles for a	Product Development.
					better application in PD: 7 out of 10 (p. 818).	
3682	Sopelana et al.	The Application of an Assessment Tool for Lean		2012	NOTE: Because of limited 'narrated' evidence classified as	Radeka, K., & Sutton, T. (2007). What is "lean" about
		Product Development: An exploratory study in			propositional. 'Lean product development means different things to	product development? PMDA Visions, 31(2), 11–15.
		Spanish Companies			different organizations' (p. 806). Focus on PLM; however,	
					conceptualisation for lean product development missing mostly.	
3706	Sorli et al.	Applying lean thinking concepts to new product		2010	defined processes that differ according to the degree of novelty they	
		development			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		2011	waste is more commonly evaluated and tracked than value' (p. 447).	
		process design and development within the				
		framework of sustainability				
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-
		аррисаціон			and one within him (does not make sense).	Based Concurrent Engineering," ASME Paper No. DETC2011-
						48693
3784	Stenholm et al.	Knowledge Based Development in Automotive		2015	PD and manufacturing differ [McManus and Millard, 2002; Browning,	
		Industry Guided by Lean Enablers for System			2003]. Many LPD articles recognise these differences, yet they are not	
		Engineering			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	IJITM	2015	Generates generic overview.	
		Precision in Product Development				
3786	Ström et al.	Transformation to lean product development -		2012	Generates generic overview. Based on Siyam et al. (2012)/Paper 3707.	
200-	C. h	Approaches at two automotive suppliers		2025	Discourse different values of the state of t	
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).	
	di.	To Automotive Remailulacturing			development, roal afficient roles of suppliers (pp. 130, 104).	
3863	Swan & Furuhjelm	Creating Value Through Lean Product		2010	NOTE: Contains systematic literature review using 13 principles of	
2062	Tähomas et al	Development – Towards a Generic Framework		2012	Morgan & Liker (2006) (p.312–313).	
3862 3787	Tähemaa et al. Taisch et al.	Lean product development in Estonian SMEs Towards a performance measurement system		2012 2011	Focus only on Toyota.	
3,0,		for lean-oriented NPD processes		2011		
3875	Thomas & Singh	Design for Lean Six Sigma (DFLSS): Philosophy,		2006	Refers to Pugh (see list of references).	Kamath and Liker (1994), A second look at Japanese product
		Tools, Potential and Deployment Challenges in				development. Sobek II et al. (1998): Another Look at How
		Automotive Product Development				Toyota Integrates Product Development.
2052	Tinget-" et al	Implementing Value Streets Manager Manager		2010		Morgan (2002). High wasternamed at the state of
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		2015	NOTE: Interpretation of socio-technical system (pp. 15–17) rather	
		Product Development Process Improvement			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	IJPE	2015	Advocate use of set-based concurrent engineering for design of naval	
		of a product development process			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).	
		uevelopment			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		2011	50 metrics (performance indicators) by panel selected from literature	
		development processes and digital engineering			(153 indicators). NOTE: not directly related to lean, though used for	
2650		systems		4000	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	FPJ	2011	NOTE: Relation to sustainability of project LeanPPD outlined, but	Sobek II et al. (1999): Toyota's Principles of Set-Based
		Upholstery Furniture Engineering Process			nothing beyond it.	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
		product development			propositional (last si chachee)	at How Toyota Integrates Product Development.
3698	Wangwacharakul	Cultural Aspects when Implementing Lean	QIP	2014	Focus on feasibility of application.	Cloke (2000), Lean Products Start with Lean Design,
	et al.	Production and Lean Product Development – Experiences from a Swedish Perspective				Advanced Manufacturing E Journal.
3871	Ward et al.	Set-based concurrent engineering and Toyota		1994	Presence of a coherent and sustainable approach/methodology was	Cloke (2000), Lean Products Start with Lean Design,
					missing, as well as proper application of key management tools and	Advanced Manufacturing E Journal.
0852	Ward et al.	The Second Toyota Paradox: How Delaying	SMR	1995	technology (p. 29). Developed metrics address key criteria lean process, i.e. delivering	
0832	walu et al.	Decisions Can Make Better Cars Faster	SIVII	1995	'customer' value, eliminating waste and enabling smooth flow driven	
					by customer needs (p. 1397). NOTE: not clear why metrics are	
2604	Masim et al	An impossible cost modelling system to support	HANAT	2012	specific for lean.	
3684	Wasim et al.	An innovative cost modelling system to support lean product and process development	IJAIVII	2013	NOTE: Problem-solving and rationalisation in structured manner more than lean product development.	
3610	Welo	On the application of lean principles in Product	IJPD	2011	NOTE: Focus on re-use, from perspective of waste; other concepts of	Morgan (2002): High performance product development: A
		Development: a commentary on models and			lean product development in background for latter, see pp. 71 ff.).	systems approach to a lean product development process.
3634	Welo & Ringen	practices Investigating Lean Development Practices in SE		2015	NOTE: Only propositional. Refer to using lean for product	
3034	TOO G KINGEN	Companies: A Comparative Study Between		2013	development (p. 202), but do not elaborate much.	
		Sectors				
3791	Welo et al.	Enhancing product innovation through a	IJITM	2012	Integration of DFSS, lean product development and lean knowledge	Sobek II et al. (1999): Toyota's Principles of Set-Based Concurrent Engineering.
		customer-centered, Lean framework			management. NOTE: Overview of six sigma (Table 1, p. 79) contains methods and tools developed independently of six sigma and lean.	Concertent Engineering.
3622	Welo et al.	Assessing the Relationship between New		2013	Comparison manufacturing and product development derived from	
		Product Development Practices and Performance in the Norwegian Manufacturing			McManus (p. 203). Reduction of lead-time reported (p. 211).	
		Industry				
3789	Wohnhas	Value management in lean product development		2014	NOTE: Link made to knowledge management, but in case bolis down	
3790	Yang & Cai	The integration of DFSS, lean product	IJSSCA	2009	to evaluating alternatives. NOTE: Despite mentioning Toyota and Microsoft no real case studies.	Sobek II et al. (1999): Toyota's Principles of Set-Based
3730	rung & Car	development and lean knowledge management	1333CA	2003	TOTAL Despite mendoning Toyota and Microsoft No real case studies.	Concurrent Engineering.
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^{*} conference proceeding found but substituted by journal publication

No.	Author(s)	Title	Journal	Year	Notes	Snowballing
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ALTERNATIVE SEARCH TERMS

+ "lean design engineering"

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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'

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3278	Bauch	Lean Product Development: Making Waste Transparent (= Master's dissertation)		2004	x					0		х	- 1	0										
	Bem-Levy	LEAN product development (LPD)		2009	х								x						X					Discarded because it is about workshop (teaching).
	Cooper & Edgett	Lean, Rapid, and Profitable New Product Development		2005	х					0		x	-	0			x							Not monograph.
3751	Costa et al.	Systematization of Recurrent New Product Development Management Problems	EMJ	2013			x			0		х	-1	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		2012	х					0			x	0	ULL				x					Directed at students (see abstract).
3619	Ericson et al.	study Needs and requirements-How TRIZ may be applied in product-service development		2009			x			0		x	-1	0										
3667	Gautam & Singh		IJPE	2008	x					0		х		0										
3673	Graebsch	change (redesign) Information and Communication in Lean Product		2005	х	x				0		x		0										Master's dissertation.
3741	Graebsch et al.	Development 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	х					0		x		0										שוטטהועדה פט ובפטוווון.
3818	Kahlen et al.	The möbius strip of Lean Engineering and Systems Engineering		2013			x			0		x	х	1	UCT				x					Focus on engineering education.
3681	Nilsson-Witell	Continuous improvement in product development: Improvement programs and	IJQRM	2005	x					0		x		0	KU									Lean product development mentioned only once (p. 766).
3667	Gautam & Singh	customer perceived value through design	IJPE	2008	×					0	x		x	0	ractitione	x								Lean product development only mentioned in title
3735		change (redesign) 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					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	х					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	х						x		х			x								Game for teaching practitioners.
	Kerga et al.	Set based concurrent engineering: Serious gaming and implications for practice		2015	x								х						x					Teaching to practitioners.
3808	Kumar et al.		PPC	2016	×					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		х	х	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	х		x			1		x		0		x								About lean in general.
AUTHO	R Alfredson	Challenges of implementing lean principles in product development – the case of Visual		2011	×					0		x		0					x					Name of authors do not match with title.
3803	El-Sayed		SAE- IJMM	2013	х					0	x			0 1	Kettering	x								Students projects as case studies.
	Fiore	Lean strategies for product development: achieving breakthrough performance in bringing products to market		2003	x					0		х		0			x							Not monograph.
	Fiore	Accelerated Product Development: Combining Lean and Six Sigma for Peak Performance		2004	х	x				1		x		0			x							Not monograph.

No.	Author(s)	Title	Journal	Year			Keywords			ž	Sea	arch Eng	ine		Institute			Ту	pe of P	ublicat	ion			Notes
					Lean product development	Lean product and process development	Lean engineering+	Snowballing	Additional Sources	Duplication Keyword	EBSCO	Google Scholar	Scopus	Duplication search		Academic Journals	Books	Chapter Edited Boo	Conference Contrik	Working Papers	Professional Public	Reports	Presentations	
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	Garcia et al.	Lean Product Development. How to Create Flow? Reflection after a 4 Years Implementation in One Business Unit - Part 1	Т	2016	×		Т	Т	Т	0			х						Х					2016
	Huthwaite Locher	The Lean Design Solution Value Stream Mapping for Lean Development: A How-to Guide for Streamlining Time to Market		2008	x			x		0		х		0			x x							Not monograph. Not monograph, but guide.
	Mynott Oosterwal	Lean Product Development: A Managers Guide The Lean Machine: How Harley-Davidson Drove Top-Line Growth and Profitability with Revolutionary Lean Product Development		2000 2010	x x	x				0		x x		0			x x							Not monograph. Not monograph.
3865	Pavnaskar et al.	Design for Lean Manufacturing: Incorporating Lean Considerations During Product Development		2006			x			0		х		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	х	x				1		x		0			x							Not monograph.
	Tortorella et al.	Relationships between lean product development enablers and problems	IJPR	2016	x								х			x								
	Ulonska et al.	Keep Systems Engineering Simple to Get the Job Done		2013	х					0			х						x					About students.
3820	Ward & Sobek II Yadav & Allada	Lean Product and Process Development Developing a Lean Value Model for Product		2007 2009			x			0		X X		0	MUST		X		x					How-to, not monograph. Student project
3620	raudy & Allaud	Developing a Lean Value Model for Product Development		2009			^			0		x		0	11031				^	_	_			Statem project

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

ALTERNATIVE SEARCH TERMS + "lean design engineering"

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