Supplementary material

NEW TRENDS AND TOPIC CHANGES OF JBEM 2007−2019: A BIBLIOMETRIC REVIEW

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Table A1. Top 10 Most Cited papers of the JBEM

No.	Author	Title	Keywords	Institutions	Country	TC	Year
1	Kersu-liene, Violeta	Selection of rational dispute resolution method by applying new step-wise weight assessment ratio analysis (SWARA)	SWARA; dispute resolution; decision-making; ratio analysis	Vilnius Gediminas Tech Univ	Lithuania	224	2010
2	Wei, Gw	Picture fuzzy cross-entropy for multiple attribute decision making problems	multiple attribute decision making; fuzzy set; picture fuzzy set; picture fuzzy cross-entropy; picture fuzzy weighted cross-entropy; enterprise resource planning; system selection; C61	Sichuan Normal Univ	China	157	2016
3	Zavads-kas, E. K.	Contractor selection for construction works by applying SAW-G and TOPSIS grey techniques	contractors; construction; multicriteria; decision-making; grey numbers; SAW; SAW-G; TOPSIS; TOPSIS grey	Vilnius Gediminas Tech Univ	Lithuania	97	2010

No.	Author	Title	Keywords	Institutions	Country	TC	Year
4	Pod-vezko, Valen-tinas	Application of AHP technique	criterion weight; AHP technique; multicriteria evaluation methods; the agreement between expert estimates	Vilnius Gediminas Tech Univ	Lithuania	95	2009
5	Zavads-kas, E. K.	Contractor selection of construction in a competitive environment	attribute; contractor; risk level; Hodges - Lehmann rule	Vilnius Gediminas Tech Univ	Lithuania	83	2008
6	Brauers, W. K. M.	Multi-objective contractor's ranking by applying the MOORA method	contractor; decision making; multi-objectives; alternatives; sampling; ratio analysis; dimensionless measures; ranking and optimization; the MOORA method	Vilnius Gediminas Tech Univ	Lithuania	90	2008
7	Balkyte, Audrone	Perception of competitiveness in the context of sustainable development: facets of "sustainable competitiveness"	competitiveness; national competitiveness; competitiveness models; factors; indicators; benchmarking; sustainable development; sustainable competitiveness; economic growth	Vilnius Gediminas Tech Univ	Lithuania	80	2010
8	Gine-vicius, Romual-das	Evaluating the effect of state aid to business by multicriteria methods	state aid; aid assessment; EU support; structural funds; multicriteria methods; expert estimates	Vilnius Gediminas Tech Univ	Lithuania	75	2008
9	Ghazi-noory, Sepehr	SWOT methodology: a state-of-the-art review for the past, a framework for the future	SWOT; TOWS; review paper; state of the art; strategic planning; strategy	Tarbiat Modares Univ	Iran	68	2011
10	Gine-vicius, Romual-das	Normalization of quantities of various dimensions	multicriteria evaluation methods; data normalization	Vilnius Gediminas Tech Univ	Lithuania	67	2008

Table A2. The citation analysis of 8 most cited Lithuanian papers in JBEM

Journal	Re-cords	Institution	Re-cords	Country/ Territory	Re-cords	Keywords	Occu-rrences
TECHNOLOGICAL AND ECONOMIC DEVELOPMENT OF ECONOMY	53	Vilnius Gediminas Tech Univ	270	Lithuania	289	MCDM	145
JOURNAL OF BUSINESS ECONOMICS AND MANAGEMENT	35	Islamic Azad Univ	36	Iran	93	AHP	72
JOURNAL OF CIVIL ENGINEERING AND MANAGEMENT	29	Amirkabir Univ Technol	30	Serbia	44	SWARA	56
INZINERINE EKONOMIKA-ENGINEERING ECONOMICS	27	Univ Belgrade	19	Peoples R China	38	decision making	44
TRANSPORT	20	Mykolas Ro-meris Univ	16	Turkey	37	TOPSIS	33
SUSTAINABILITY	17	Univ Tehran	16	Poland	33	compe-titiveness	25
6TH INTERNATIO-NAL SCIENTIFIC CONFERENCE BUSINESS AND MANAGEMENT 2010, VOLS I AND II	16	Shomal Univ	14	Malaysia	25	sustain-ability	24
INTERNATIONAL JOURNAL OF STRA-TEGIC PROPERTY MANAGEMENT	16	Kaunas Univ Technol	13	Czech Republic	22	MULTI-MOORA	22
ECONOMIC RE-SEARCH-EKONOMS-KA ISTRAZIVANJA	12	Univ Teknol Malaysia	12	USA	19	const-ruction	21
TRANSFORMATIONS IN BUSINESS & ECONOMICS	12	Univ Business Acad Novi Sad	10	India	18	MOORA	20

Table A3. Most productive institutions in the JBEM (Top 15)

Rank	Institutions	Country	Number of Publications	Total Citations	Total Citations/Publications	Percentage/628	TOP 1%
1	Vilnius Gediminas Technical University	Lithuania	125	2017	16.14	19.90	Y
2	Kaunas university of technology	Lithuania	15	99	6.60	2.39	Y
3	University of Ljubljana	Slovenia	15	95	6.33	2.39	Y
4	Tomas Bata University Zlin	The Czech Republic	10	37	3.70	1.59	N
5	University of Economics Prague	The Czech Republic	10	114	11.40	1.59	N
6	University of Maribor	Slovenia	10	55	5.50	1.59	Y
7	University of Zaragoza	Spain	10	18	1.80	1.59	Y
8	Universiti Kebangsaan Malaysia	Malaysia	9	91	10.11	1.43	Y
9	Eastern Mediterranean University	The Czech Republic	7	85	12.14	1.12	Y
10	Islamic Azad University	Iran	7	109	15.57	1.12	Y
11	Universidade da Beira Interior	Portugal	7	36	5.14	1.12	Y
12	Universidade de Lisboa	Portugal	7	30	4.29	1.12	Y
13	Universiti Putra Malaysia	Malaysia	7	49	7.00	1.12	Y
14	University of Memphis	USA	7	70	10.00	1.12	Y
15	Vilnius University	Lithuania	7	35	5.00	1.12	Y

Table A4. Top 20 keywords used in three different stages

2007–2010 (Subset I)		2011–2014 (Subset II)		2015–2019 (Subset III)	
Keywords	Frequency	Keywords	Frequency	Keywords	Frequency
performance	15	performance	46	performance	69
Lithuania	14	model	34	impact	33
model	14	management	22	management	32
management	12	impact	21	model	32
construction	10	behavior	16	innovation	31
FDI	15	industry	14	determinants	18
selection	8	firms	13	risk	17

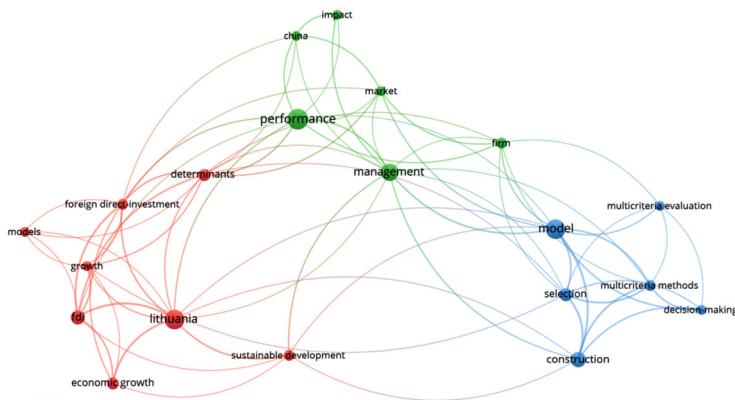| 2007–2010 (Subset I)		2011–2014 (Subset II)		2015–2019 (Subset III)	
Keywords	Frequency	Keywords	Frequency	Keywords	Frequency
determinants	7	growth	13	productivity	16
economic growth	16	innovation	13	growth	15
firm	6	selection	13	models	15
multicriteria methods	15	decision-making	11	firms	14
sustainable development	6	risk	10	information	14
China	5	volatility	10	SMEs	14
decision-making	5	determinants	9	efficiency	13
impact	5	efficiency	9	industry	13
market	5	environment	9	market	13
models	5	investment	9	firm	11
alternatives	4	ownership structure	9	framework	11
behavior	4	productivity	9	perspective	11
strategy	4	satisfaction	9	strategy	11

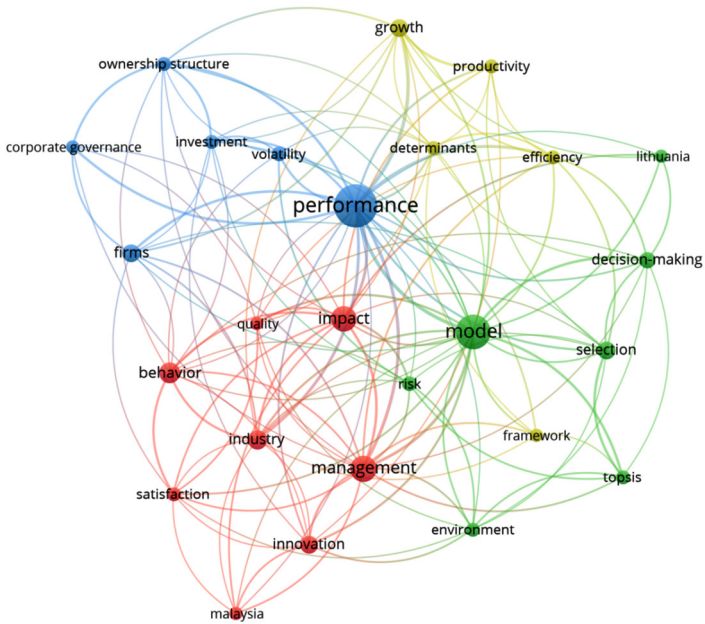Figure A1. Keywords co-occurrence of papers 2007–2010
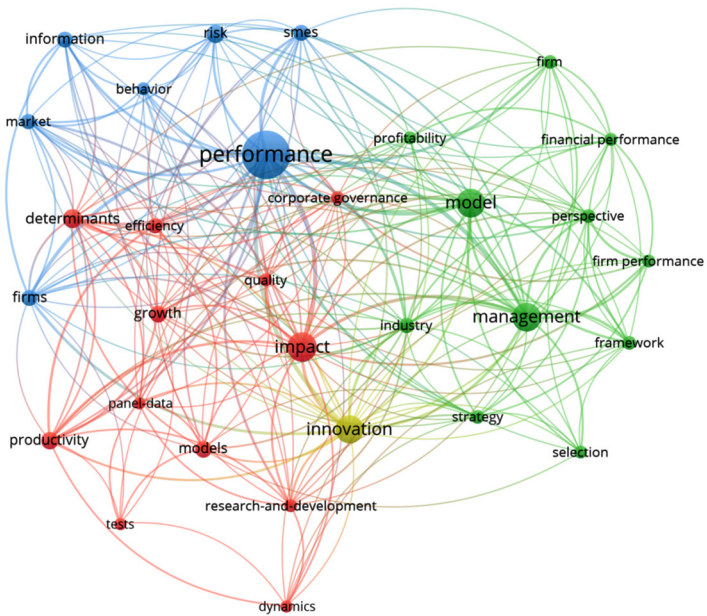
Figure A2. Keywords co-occurrence of papers 2011–2014

Figure A3. Keywords co-occurrence of papers 2015–2019