Finanțat de Uniunea Europeană NextGenerationEU
Planul Național de Redresare și Reziliență

The future of survey research in OM - lessons from the latest GMRG and EMS surveys

Levente SZÁSZ, Ottó CSÍKI

Babeş–Bolyai University, Cluj-Napoca, Romania
levente.szasz@econ.ubbcluj.ro, otto.csiki@econ.ubbcluj.ro

FSEGA

EUROMA 2025 | MILAN

European Operations Management Association - EurOMA Conference
Special Session
Milan, 17.06.2025

Agenda

1. Survey features and main challenges
2. Survey research in OM and SCM – a bibliometric analysis
3. Tackling survey challenges I. – the GMRG project
4. Tackling survey challenges II. – the EMS project
5. Discussion and conclusion (+ buffer survey project)

Agenda

1. **Survey features and main challenges**
2. Survey research in OM and SCM – a bibliometric analysis
3. Tackling survey challenges I. – the GMRG project
4. Tackling survey challenges II. – the EMS project
5. Discussion and conclusion (+ buffer survey project)

Features of survey research in OM and SCM

All ideas in this presentation refer to scientific research conducted based on self-completion (self-administered) questionnaire as a data collection method, processed by statistical methods

ADVANTAGES

High coverage
(ability to reach a large population of respondents)

Quick and relatively cheap to administer
(economies of scale)

Absence of the interviewer effect
(less interviewer bias in responses – higher reliability)

Convenience for respondents
(tailored time and speed of questionnaire completion)

Relatively high generalizability
(random sampling, representativeness)

DISADVANTAGES

Responses remain on a high level – no in-depth insight
(no possibility to probe, further inquire about responses)

Question (un)clarity - Response (un)reliability
(hard to design a questionnaire to be understood by all)

Respondent identity
(hard to verify that the right person responds)

Response rate – survey length dilemma
(more questions may drastically decrease response rate)

Biased responses
(common method, non-respondent, social desirability)

Survey research challenges

Challenges of multi-country data collection

BJM BRITISH JOURNAL of MANAGEMENT BRITISH ACADEMY OF MANAGEMENT

Check for updates

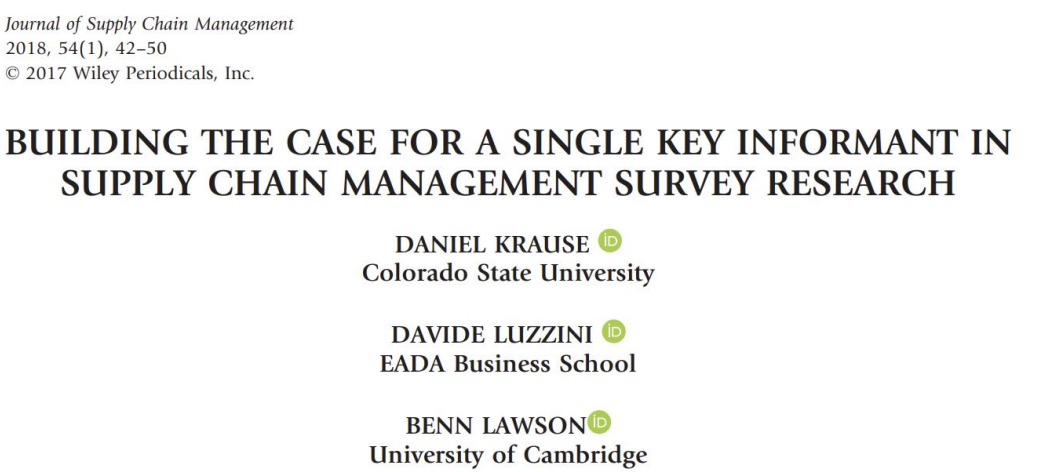
British Journal of Management, Vol. 32, 273–282 (2021)
DOI: 10.1111/1467-8551.12405

Balancing Rigour and Relevance: The Case for Methodological Pragmatism in Conducting Large-Scale, Multi-country and Comparative Management Studies

Emma Parry, Elaine Farndale,[1] Chris Brewster[2] and Michael J. Morley[3]
Cranfield School of Management, Cranfield, Bedfordshire MK43 0AL, UK, [1]School of Labor & Employment Relations, Pennsylvania State University, University Park, PA 16802, USA, [2]Henley Business School, University of Reading, Whiteknights, Reading RG6 6UD, UK, and [3]Kemmy Business School, University of Limerick, Limerick V94 T9PX, Ireland
Corresponding author email: emma.parry@cranfield.ac.uk

- **Sampling** (defining the same population in each country)
- **Response rate and representativeness** (small vs large countries with equal response rate)
- **Equivalence across countries** (translation to preserve construct equivalence, question relevance, culture - response style)
- **Data collection procedures** (same procedure might not work in all countries)

Single versus multiple respondents



Journal of Supply Chain Management
2018, 54(1), 42–50

BUILDING THE CASE FOR A SINGLE KEY INFORMANT IN SUPPLY CHAIN MANAGEMENT SURVEY RESEARCH

DANIEL KRAUSE
Colorado State University

DAVIDE LUZZINI
EADA Business School

BENN LAWSON
University of Cambridge

- **Treatment of multiple responses** (how to aggregate, especially if responses differ? Creates ambiguity. No theory)
- **Lower response rate** (securing multiple respondents might reduce response rate and increase non-response bias)
- **Cost of research**
- **Triangulation?** (should take place across methods, secondary data – but same unit of analysis necessary)
- **Multiple vs Right respondent**

Survey research challenges

Challenges of response bias in questionnaire completion

Addressing Common Method Variance: Guidelines for Survey Research on Information Technology, Operations, and Supply Chain Management

Christopher W. Craighead, David J. Ketchen, Jr., Kaitlin S. Dunn, and G. Tomas M. Hult

Survey respondents can be biased in several ways:

- **Common method bias (CMB)**: relationship between constructs is inflated due to the same measurement method of constructs
- **Social desirability bias: r**espondents answer in a way they believe is socially favorable, rather than what is true.
- **Acquiescence bias (yea-saying):** Tendency to agree with statements regardless of content (e.g. in Likert-scale surveys)
- **Extreme or Central Tendency Bias:** respondents choosing only the extremes of a scale or the opposite, avoiding extremes, choosing “neutral”

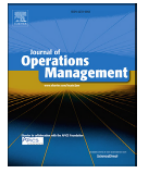
Methods of data analysis: the debate around SEM

ELSEVIER

Contents lists available at ScienceDirect

Journal of Operations Management

journal homepage: www.elsevier.com/locate/jom



Partial least squares path modeling: Time for some serious second thoughts

Mikko Rönkkö [a,*], Cameron N. McIntosh [b], John Antonakis [c], Jeffrey R. Edwards [d]

Journal of Marketing Theory and Practice ›
Volume 31, 2023 - Issue 3

Research Article

“PLS-SEM: indeed a silver bullet” – retrospective observations and recent advances

Marko Sarstedt, Joseph F. Hair Jr. & Christian M. Ringle

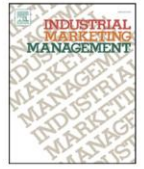
Pages 261-275 | Published online: 12 Apr 2022

ELSEVIER

Contents lists available at ScienceDirect

Industrial Marketing Management

journal homepage: www.elsevier.com/locate/indmarman



Why researchers should be cautious about using PLS-SEM☆

Jörg Henseler [a,d,*], Florian Schuberth [a], Nick Lee [b], Ildikó Kemény [c]

Agenda

1. Survey features and main challenges
2. **Survey research in OM and SCM – a bibliometric analysis**
3. Tackling survey challenges I. – the GMRG project
4. Tackling survey challenges II. – the EMS project
5. Discussion and conclusion (+ buffer survey project)

OM/SCM literature using survey method

We selected 13 relevant OM/SCM journals. Altogether, **35,524 articles were published in the selected journals**. After the **survey keyword** being added to the search string, we ended up with **2,757 articles**.

Search methodology

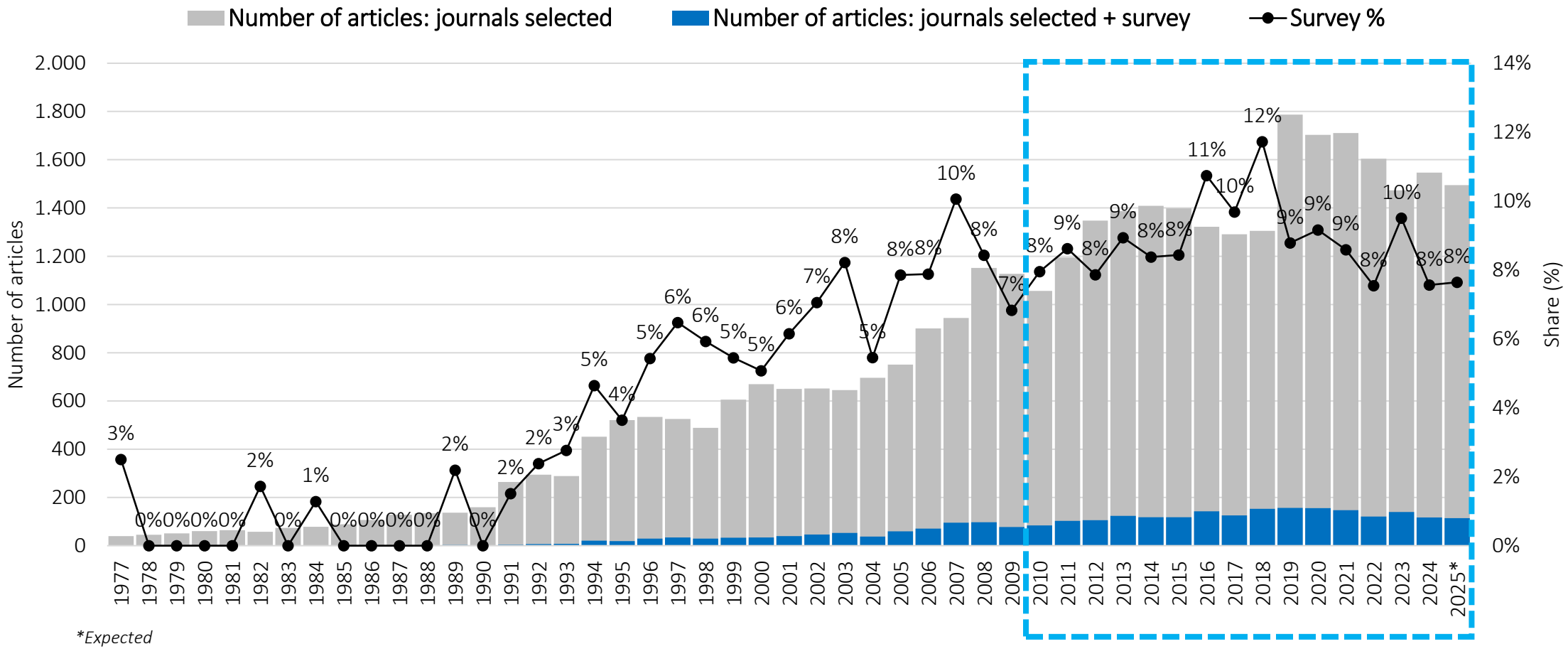
Steps	Search date	Search string
1. Journal selection (13 OM journals) 35,524 articles	28.05.2025	SO=(INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS) OR SO=(INTERNATIONAL JOURNAL OF OPERATIONS PRODUCTION MANAGEMENT) OR SO=(INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH) OR SO=(JOURNAL OF BUSINESS LOGISTICS) OR SO=(JOURNAL OF MANUFACTURING TECHNOLOGY MANAGEMENT) OR SO=(JOURNAL OF OPERATIONS MANAGEMENT) OR SO=(JOURNAL OF PURCHASING "AND" SUPPLY MANAGEMENT) OR SO=(JOURNAL OF SUPPLY CHAIN MANAGEMENT) OR SO=(M SOM MANUFACTURING SERVICE OPERATIONS MANAGEMENT) OR SO=(OPERATIONS MANAGEMENT RESEARCH) OR SO=(PRODUCTION "AND" OPERATIONS MANAGEMENT) OR SO=(PRODUCTION PLANNING CONTROL) OR SO=(SUPPLY CHAIN MANAGEMENT AN INTERNATIONAL JOURNAL) *AND TS=(survey)*
2. Keyword search: "survey" (title and abstract)	Database	
	Clarivate™ Web of Science	

Source: own construction

Evolution of the number of survey-based papers

Survey research became increasingly popular starting in the 1990s, a stagnation and a slight decline/correction began in 2019.

The trend in the number of papers published in selected operations management journals, 1977-2025

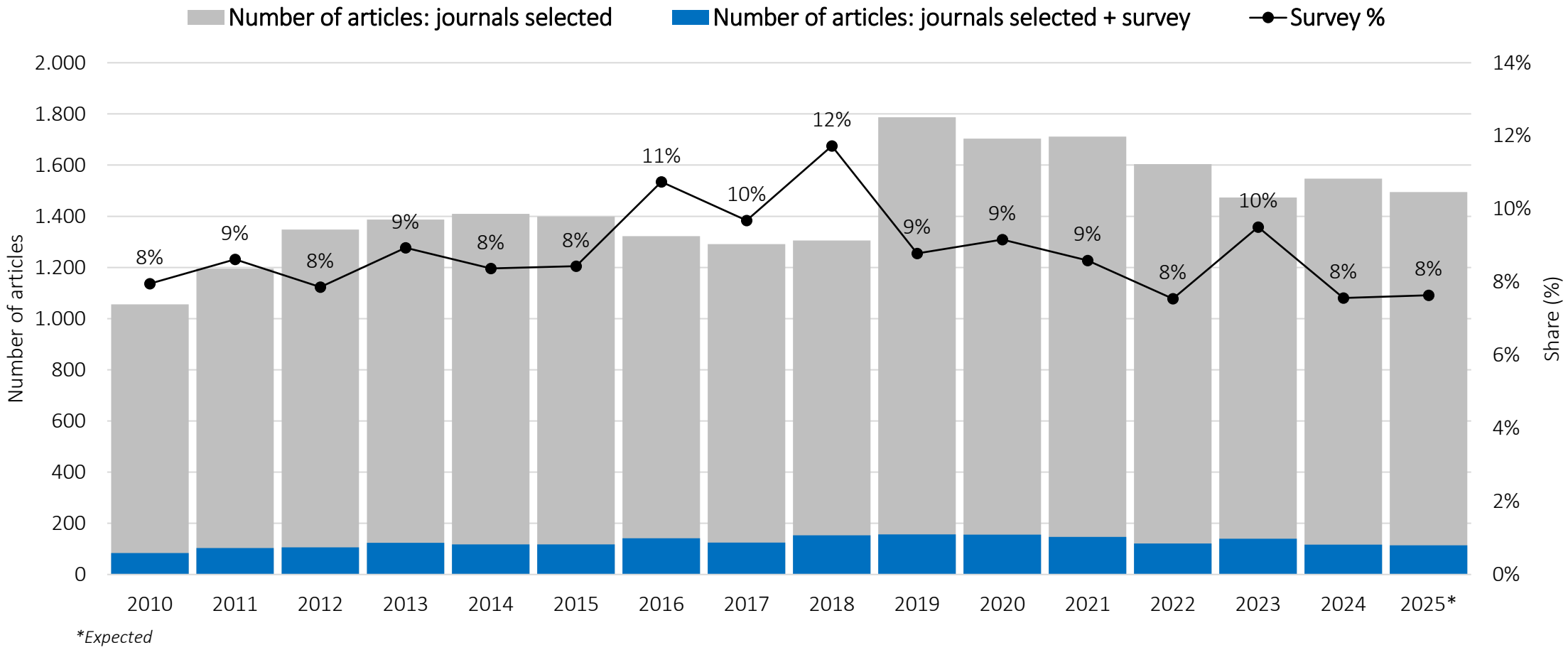


Source: own construction

Evolution of the number of survey-based papers

The peak was in 2018, when 12% of the published papers employed some form of survey research. From 2019 onward, this ratio began to slightly decline to 8% by 2024-25.

The trend in the number of papers published in selected operations management journals, 2010-2025



*Expected

Source: own construction

Survey-based research in main OM/SCM journals

There are important differences in how OM/SCM journals view survey research. For example, the top 3 journal (SCMIJ, IJOPM, JMTM), published a significantly higher number of survey-based studies than their peers.

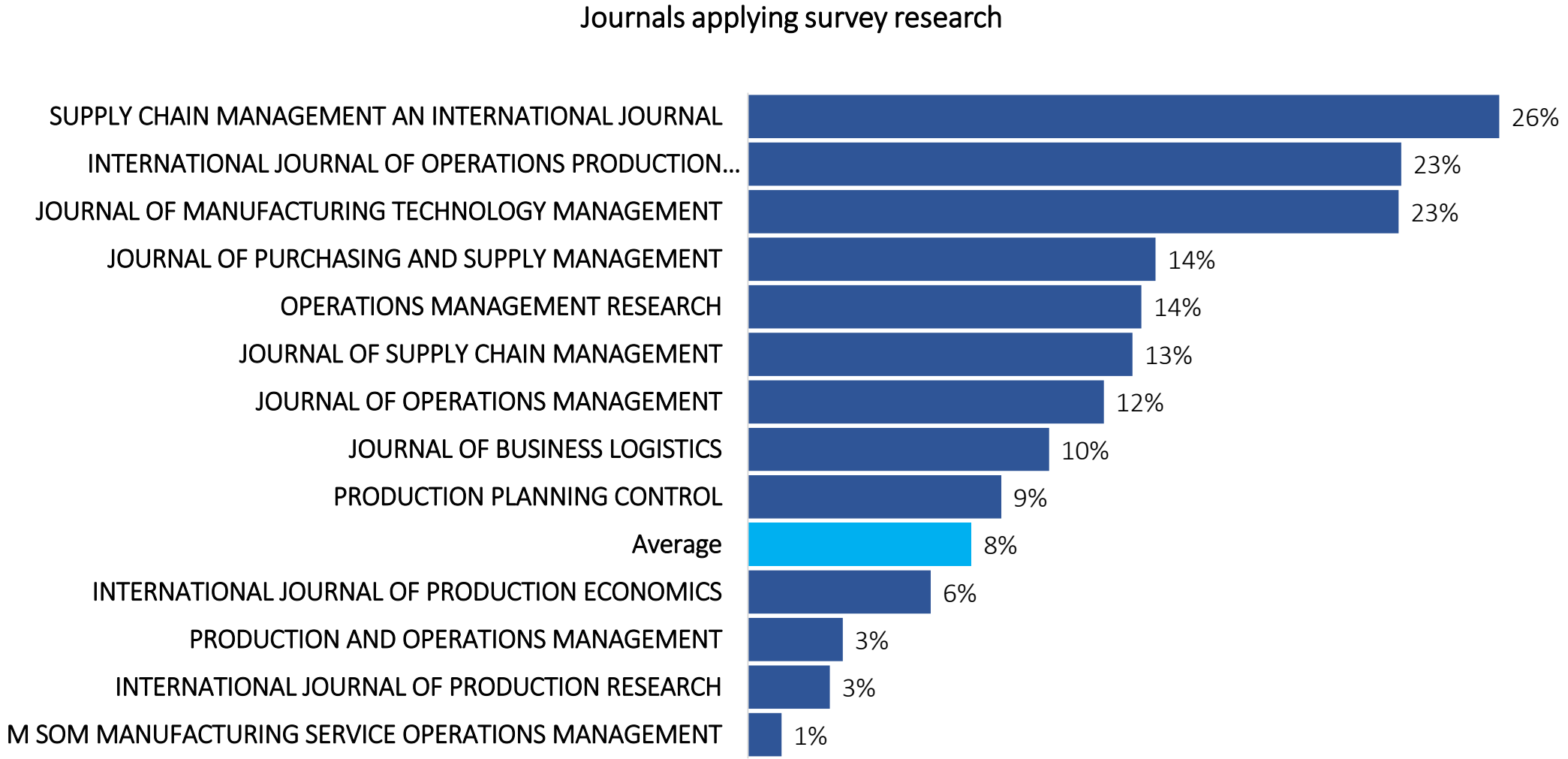
Survey-based research by journals

Journals	Number of papers: TOTAL	% of 35,524	Number of papers: SURVEY	% of 2,757	Survey %
SUPPLY CHAIN MANAGEMENT AN INTERNATIONAL JOURNAL	1,085	3%	283	10%	26%
INTERNATIONAL JOURNAL OF OPERATIONS PRODUCTION MANAGEMENT	2,412	7%	547	20%	23%
JOURNAL OF MANUFACTURING TECHNOLOGY MANAGEMENT	1,359	4%	307	11%	23%
JOURNAL OF PURCHASING AND SUPPLY MANAGEMENT	537	2%	76	3%	14%
OPERATIONS MANAGEMENT RESEARCH	527	1%	72	3%	14%
JOURNAL OF SUPPLY CHAIN MANAGEMENT	412	1%	55	2%	13%
JOURNAL OF OPERATIONS MANAGEMENT	1,133	3%	140	5%	12%
JOURNAL OF BUSINESS LOGISTICS	507	1%	53	2%	10%
PRODUCTION PLANNING CONTROL	2,727	8%	240	9%	9%
INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	8,192	23%	520	19%	6%
PRODUCTION AND OPERATIONS MANAGEMENT	2,827	8%	93	3%	3%
INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH	12,517	35%	356	13%	3%
M SOM MANUFACTURING SERVICE OPERATIONS MANAGEMENT	1,289	4%	15	1%	1%
Total / Average	**35.524**	**100%**	**2.757**	**100%**	**8%**

Source: own construction

Survey-based research in main OM/SCM journals

The top three journals have a survey ratio higher than 20%, while the overall average is 8%, i.e., 8% of the papers published in OM/SCM journals since 1977 use survey research.



Source: own construction

Survey-based research in main OM/SCM journals

Different trends can be observed over time across various journals. Some journals that previously published survey research have since decreased their focus, while others have recently increased the number of survey-based publications.

Journals applying survey research between 2000 and 2025 (survey ratio, %)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
INTERNATIONAL JOURNAL OF OPERATIONS PRODUCTION MANAGEMENT	16%	16%	18%	16%	14%	20%	27%	25%	32%	18%	28%	33%	39%	35%	24%	29%	35%	36%	38%	31%	19%	16%	25%	18%	10%	40%
INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	3%	5%	3%	9%	6%	3%	4%	5%	6%	5%	6%	6%	8%	5%	7%	7%	12%	7%	8%	6%	8%	9%	7%	9%	9%	7%
INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH	3%	1%	5%	3%	1%	5%	1%	5%	3%	1%	3%	4%	3%	3%	4%	4%	3%	3%	5%	3%	3%	3%	2%	3%	4%	5%
JOURNAL OF BUSINESS LOGISTICS									10%	15%	6%	9%	11%	21%	15%	10%	11%	10%	15%	4%	7%	4%	11%	8%	4%	19%
JOURNAL OF MANUFACTURING TECHNOLOGY MANAGEMENT						15%	9%	14%	22%	12%	13%	15%	11%	17%	21%	28%	38%	29%	36%	16%	16%	38%	48%	26%	25%	58%
JOURNAL OF OPERATIONS MANAGEMENT	20%	14%	19%	27%	11%	15%	17%	9%	17%	21%	18%	16%	32%	21%	17%	11%	10%		6%	5%	4%	8%	2%	2%	4%	4%
JOURNAL OF PURCHASING "AND" SUPPLY MANAGEMENT										15%	12%	23%	11%	13%	19%	3%	5%	4%	11%	21%	9%	17%	13%	37%	11%	14%
JOURNAL OF SUPPLY CHAIN MANAGEMENT									11%	8%	24%	23%	18%	21%	20%	10%	14%	19%	30%		4%	3%	7%			8%
M SOM MANUFACTURING SERVICE OPERATIONS MANAGEMENT							8%	12%		2%	3%										2%		2%		2%	
OPERATIONS MANAGEMENT RESEARCH											6%	6%	8%	30%	64%	10%	17%	27%	43%	25%	14%	4%	9%	17%	10%	32%
PRODUCTION "AND" OPERATIONS MANAGEMENT	3%	11%	9%	15%	9%	5%	8%	19%	2%	2%		3%	1%	2%	1%	4%	5%	5%	2%	1%	1%	4%	1%	3%	2%	5%
PRODUCTION PLANNING CONTROL		5%	4%	4%	6%	3%	6%	7%	3%	11%	5%	8%	3%	17%	3%	12%	12%	17%	13%	8%	9%	18%	14%	12%	34%	30%
SUPPLY CHAIN MANAGEMENT AN INTERNATIONAL JOURNAL				11%	9%	15%	27%	29%	28%	24%	29%	13%	8%	30%	22%	27%	36%	37%	36%	30%	20%	12%	58%	57%	37%	33%

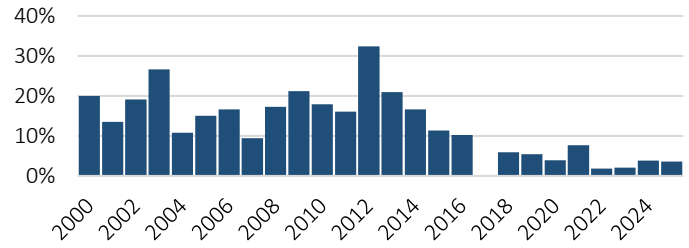
Source: own construction

Survey-based research in main OM/SCM journals

Different trends are visible in different journals: JOM, for example, has significantly reduced publishing survey research, while JMTM and PPC increasingly favor it.

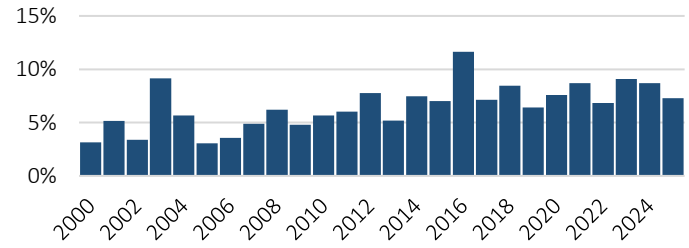
Six notable trends in six major OM journals (JOM, PPC, IJOPM, IJPE, JMTM, IJPR)

JOURNAL OF OPERATIONS MANAGEMENT



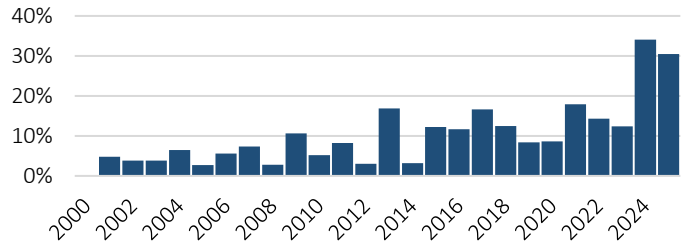
Strong decrease of survey publications

INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS



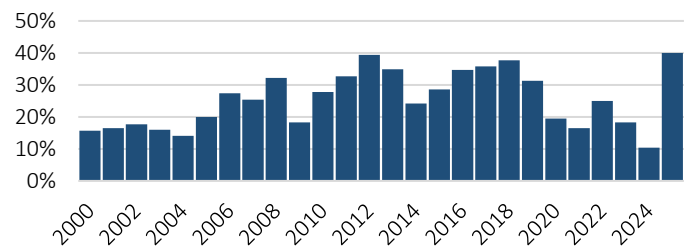
Slightly increasing / stagnating survey publications

PRODUCTION PLANNING CONTROL



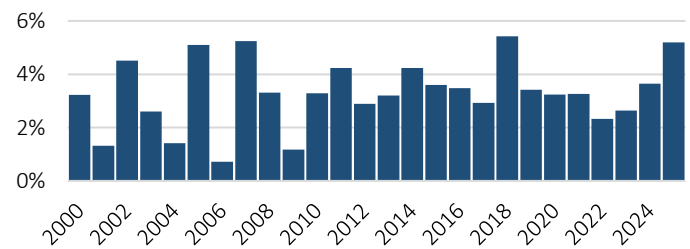
Increasing survey publications

INTERNATIONAL JOURNAL OF OPERATIONS PRODUCTION MANAGEMENT



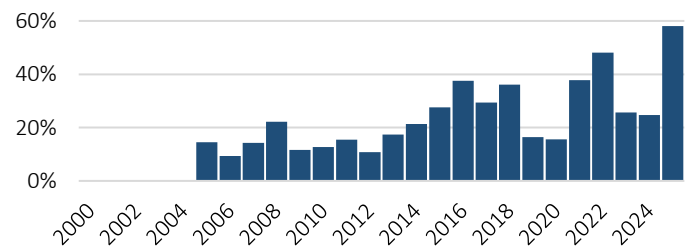
Increasing, later decreasing survey publications

INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH



Stagnating survey publications, low interest

JOURNAL OF MANUFACTURING TECHNOLOGY MANAGEMENT



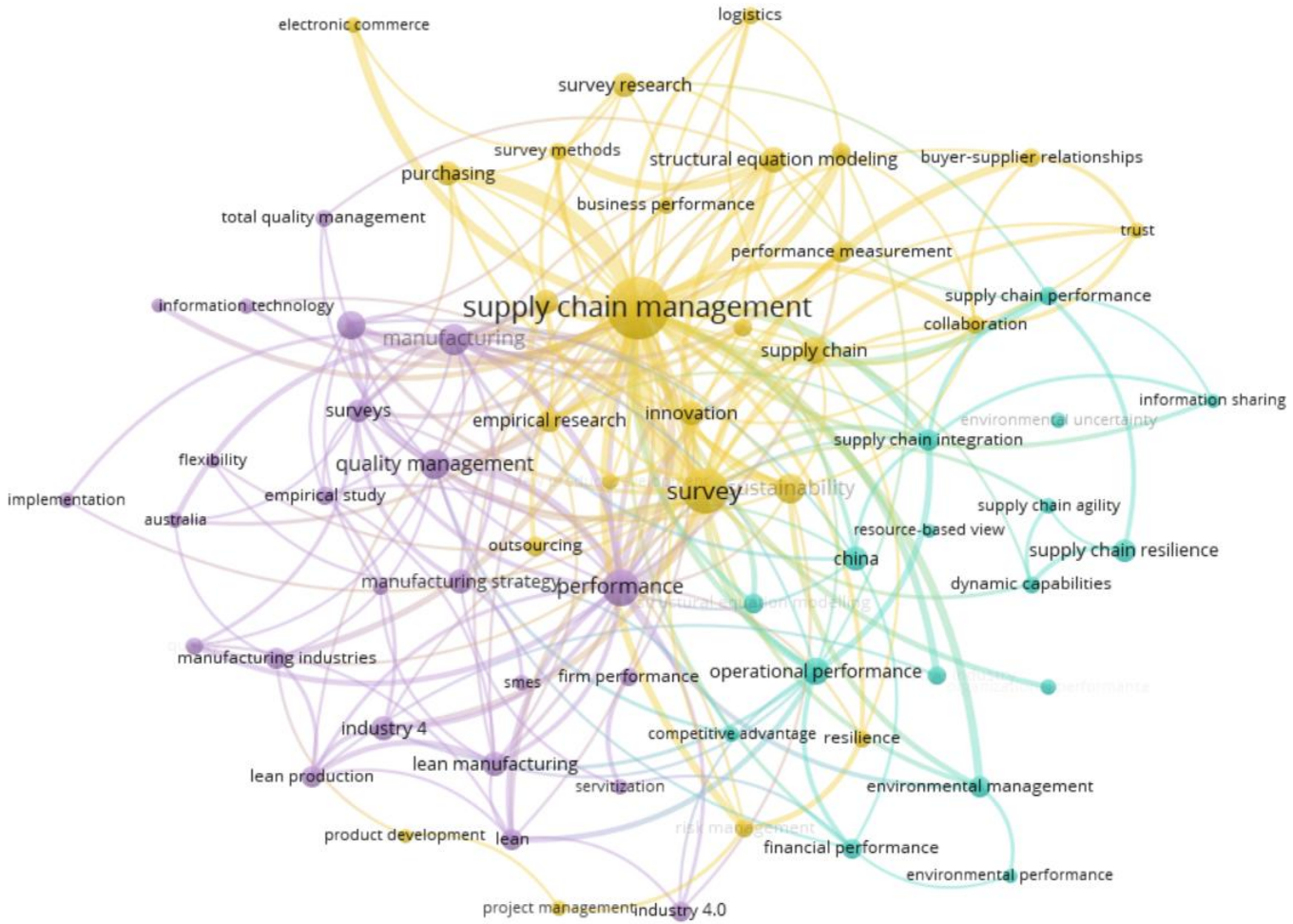
Increasing survey publications and high values

Source: own construction

Keyword co-occurrence (1977-2025)

Survey research is mainly associated with supply chain management and related topics. Performance, manufacturing, sustainability, and quality management also represent major focus areas.

Keyword co-occurrence, 1977-2025



TOP15 keywords

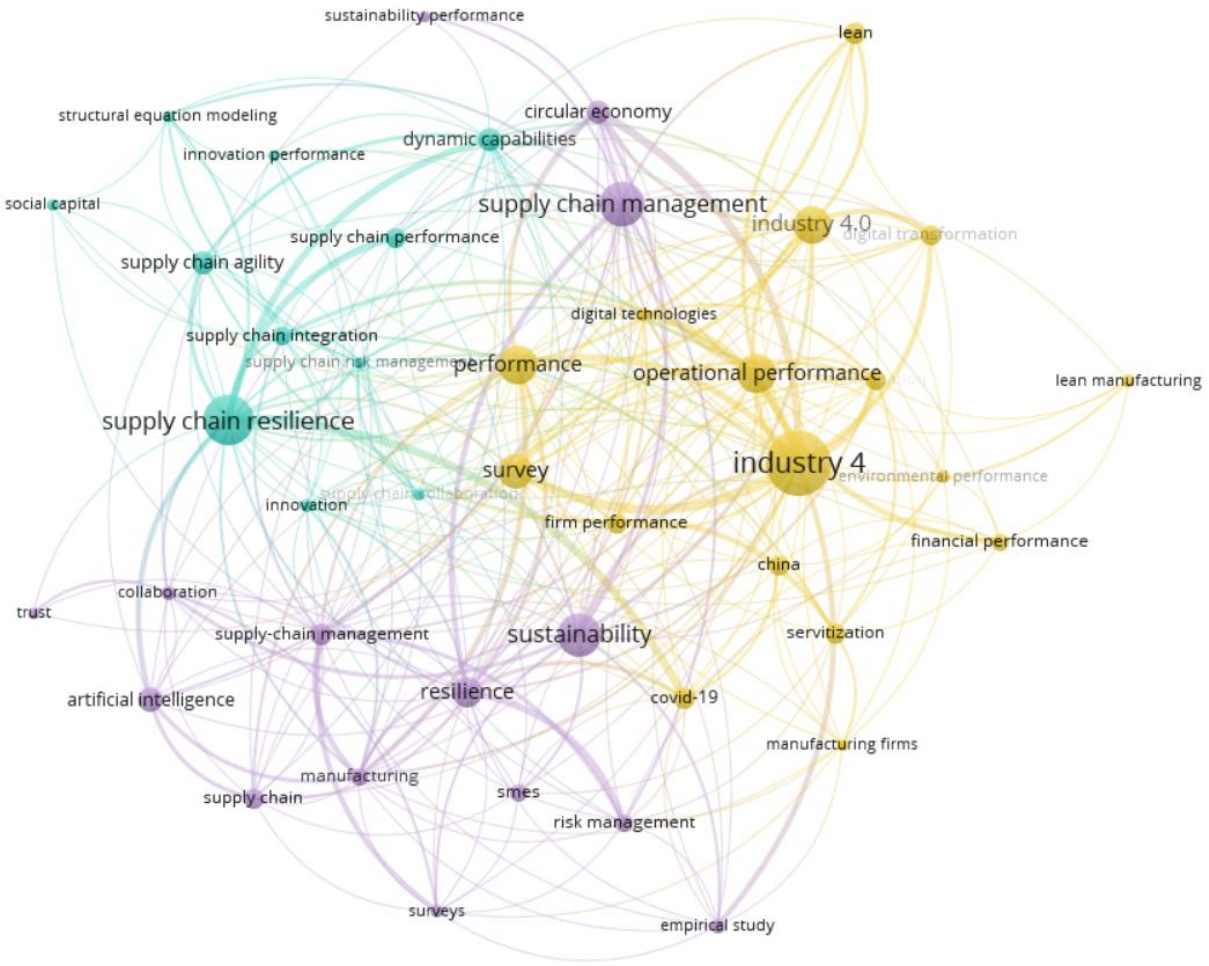
Supply chain management (308)
Survey (175)
Performance (117)
Manufacturing (85)
Sustainability (83)
Quality management (79)
Operations management (76)
Operational performance (70)
Supply chain (69)
Structural equation modelling (61)
Industry 4 (58)
Manufacturing strategy (58)
China (54)
Lean manufacturing (54)
Survey research (54)

Source: own construction

Keyword co-occurrence (2020-2025)

Industry 4.0 has gained significantly more importance over the past five years. Supply chain resilience, artificial intelligence, supply chain agility, supply chain integration, and the circular economy are emerging topics between 2020 and 2025.

Keyword co-occurrence, 2020-2025



TOP15 keywords

Industry 4 (52)
Supply chain resilience (40)
Supply chain management (36)
Sustainability (35)
Performance (31)
Operational performance (31)
*Industry 4.0 (30)**
Survey (28)
Resilience (24)
Artificial intelligence (20)
Supply chain agilility (19)
Dynamic capabilities (19)
Circular economy (19)
Supply chain performance (16)
Supply chain integration (15)

**Industry 4 and Industry 4.0 are the same*

Source: own construction

Evolution of the most frequent keywords

Based on the evolution of the TOP15 keywords, emerging topics can be identified, such as supply chain resilience, agility, and Industry 4.0.

Keyword co-occurrences (1977-2025 vs 2020-2025)

Rank	Evolution	Occ.	1977-2025	2020-2025	Occ.	Evolution
1	Down	308	Supply chain management	Industry 4	52	Up+
2	Down	175	Survey	Supply chain resilience	40	New
3	Down	117	Performance	Supply chain management	36	Down
4	Disapp.	85	Manufacturing	Sustainability	35	Up
5	Up	83	Sustainability	Performance	31	Down
6	Disapp.	79	Quality management	Operational performance	31	Up
7	Disapp.	76	Operations management	Industry 4.0	30	*Up**
8	Up	70	Operational performance	Survey	28	Down
9	Disapp.	69	Supply chain	Resilience	24	New
10	Disapp.	61	Structural equation modelling	Artificial intelligence	20	New
11	Up+	58	Industry 4	Supply chain agility	19	New
12	Disapp.	58	Manufacturing strategy	Dynamic capabilities	19	New
13	Disapp.	54	China	Circular economy	19	New
14	Disapp.	54	Lean manufacturing	Supply chain performance	16	New
15	Disapp.	54	Survey research	Supply chain integration	15	New

**Industry 4 and Industry 4.0 are the same*

Source: own construction

The 10 most cited survey-based articles

Four of the ten most cited OM articles were published in JOM, four in IJPE, and two in IJOPM.

The 10 most cited survey-based articles of all times

Authors	Year	Article Title	Source Title	Citation number	Country	Industry	Sample size	Method
Frank, AG; Dalenogare, LS; Ayala, NF	2019	**Industry 4.0** technologies: Implementation patterns in manufacturing companies	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	1617	Brazil	Various manufacturing industries	92	Cluster analysis + ANOVA
Cao, M; Zhang, QY	2011	**Supply chain collaboration**: Impact on collaborative advantage and firm performance	JOURNAL OF OPERATIONS MANAGEMENT	1336	USA	Various manufacturing industries	211	Confirmatory Factor Analys + Structural Equation Modeling
Dalenogare, LS; Benitez, GB; Ayala, NF; Frank, AG	2018	The expected contribution of **Industry 4.0** technologies for industrial performance	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	1231	Brazil	27 industrial sectors	2225	Regression analysis
Kaynak, H	2003	The relationship between **total quality management** practices and their effects on firm performance	JOURNAL OF OPERATIONS MANAGEMENT	1218	USA	Various manufacturing and service industries	214	Structural Equation Modeling
Vachon, S; Klassen, RD	2008	**Environmental management** and manufacturing performance: The role of collaboration in the supply chain	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	1137	USA and Canada	Package printing industry	84	Confirmatory Factor Analys + Regression models
Vachon, S; Klassen, RD	2006	Extending **green practices** across the supply chain - The impact of upstream and downstream integration	INTERNATIONAL JOURNAL OF OPERATIONS & PRODUCTION MANAGEMENT	1021	USA and Canada	Package printing industry	84	Hierarchical Linear Regression
Melnyk, SA; Sroufe, RP; Calantone, R	2003	Assessing the impact of **environmental management** systems on corporate and environmental performance	JOURNAL OF OPERATIONS MANAGEMENT	925	North America	5 manufacturing industries	1510	OLS regression + ANOVA
Zhu, QH; Sarkis, J; Geng, Y	2005	**Green supply chain management** in China: Pressures, practices and performance	INTERNATIONAL JOURNAL OF OPERATIONS & PRODUCTION MANAGEMENT	923	China	Various manufacturing and service industries	314	Exploratory Factor Analysis
Petersen, KJ; Handfield, RB; Ragatz, GL	2005	Supplier integration into **new product development**: coordinating product, process and supply chain design	JOURNAL OF OPERATIONS MANAGEMENT	892	Worldwide	Various industries	134	Multiple Regression Analysis
Akter, S; Wamba, SF; Gunasekaran, A; Dubey, R; Childe, SJ	2016	How to improve firm performance using **big data analytics** capability and business strategy alignment?	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	878	USA	Various industries	152	Structural Equation Modeling

Source: own construction

The 5 most cited articles since 2020

The most cited articles from the last five years have predominantly used PLS structural equation modeling. Additionally, a focus on single-country studies is also evident.

The 5 most cited articles since 2020

Authors	Year	Article Title	Source Title	Citation number	Country	Industry	Sample size	Method
Li, Y; Dai, J; Cui, L	2020	The impact of digital technologies on economic and environmental performance in the context of **Industry 4.0**: A moderated mediation model	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	545	China	Various manufacturing industries	188	Confirmatory Factor Analys + Exploratory Factor Analysis + Regression models
Dubey, R; Gunasekaran, A; Childe, SJ; Wamba, SF; Roubaud, D; Foropon, C	2021	Empirical investigation of data analytics capability and organizational flexibility as complements to **supply chain resilience**	INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH	544	India	7 manufacturing industries	213	PLS Structural Equation Modeling
El Baz, J; Ruel, S	2021	Can supply chain risk management practices mitigate the disruption impacts on **supply chains' resilience** and robustness? Evidence from an empirical survey in a COVID-19 outbreak era	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	511	France	Various manufacturing and service industries	470	PLS Structural Equation Modeling
Wamba, SF; Dubey, R; Gunasekaran, A; Akter, S	2020	The performance effects of **big data analytics** and supply chain ambidexterity: The moderating effect of environmental dynamism	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	462	12 countries	Various industries	281	PLS Structural Equation Modeling
Dubey, R; Gunasekaran, A; Childe, SJ; Bryde, DJ; Giannakis, M; Foropon, C; Roubaud, D; Hazen, BT	2020	**Big data analytics** and **artificial intelligence** pathway to operational performance under the effects of entrepreneurial orientation and environmental dynamism: A study of manufacturing organisations	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	423	India	8 manufacturing industries	256	PLS Structural Equation Modeling

Source: own construction

Agenda

1. Survey features and main challenges
2. Survey research in OM and SCM – a bibliometric analysis
3. **Tackling survey challenges I. – the GMRG project**
4. Tackling survey challenges II. – the EMS project
5. Discussion and conclusion (+ buffer survey project)

Robert Wiedmer

Assistant Professor,
Department of Supply Chain Management

Robert.Wiedmer@asu.edu

Business Administration 300 E
Lemon St. Office BA 420
Tempe, AZ 85287

Arizona State University

Agenda

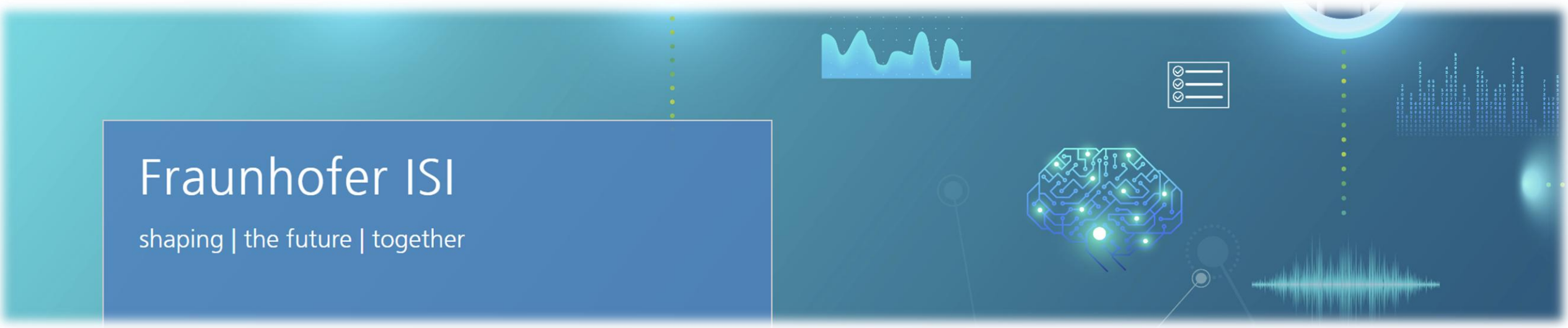
1. Survey features and main challenges
2. Survey research in OM and SCM – a bibliometric analysis
3. Tackling survey challenges I. – the GMRG project
4. **Tackling survey challenges II. – the EMS project**
5. Discussion and conclusion (+ buffer survey project)

EMS survey presentation

Angela Jäger

Fraunhofer ISI

Fraunhofer Institute for Systems and Innovation Research ISI



Agenda

1. Survey features and main challenges
2. Survey research in OM and SCM – a bibliometric analysis
3. Tackling survey challenges I. – the GMRG project
4. Tackling survey challenges II. – the EMS project
5. **Discussion (+ buffer survey project)**

Finanțat de Uniunea Europeană NextGenerationEU
Planul Național de Redresare și Reziliență

Thank you for your attention!

The future of survey research in OM - lessons from the latest GMRG and EMS surveys

Levente SZÁSZ, Ottó CSÍKI

Babeş–Bolyai University, Cluj-Napoca, Romania
levente.szasz@econ.ubbcluj.ro, otto.csiki@econ.ubbcluj.ro

FSEGA

EUROMA 2025 | MILAN

European Operations Management Association - EurOMA Conference
Special Session
Milan, Italy, 17.06.2025