University Library

MINERVA ACCESS

A gateway to Melbourne's research publications

Minerva Access is the Institutional Repository of The University of Melbourne

Author/s:
Seyedghorban, Z;Samson, D;Swink, M

Title:
Quo vadis OSCM? An analysis of past and future trends in operations and supply chain management research

Date:
2022-06-01

Citation:
Seyedghorban, Z., Samson, D. & Swink, M. (2022). Quo vadis OSCM? An analysis of past and future trends in operations and supply chain management research. Decision Sciences, 53 (3), pp.429-451. https://doi.org/10.1111/deci.12519.

Persistent Link:
https://hdl.handle.net/11343/302948

Title Page

Quo Vadis OSCM? An Analysis of Past and Future Trends in Operations and Supply Chain Management Research

Running Title:
Quo Vadis OSCM?

Authors:

Dr Zahra Seyedghorban
Assistant Professor in Operations and Supply Chain Management
Department of Management and Marketing
Faculty of Business and Economics
Centre for Workplace Leadership
The University of Melbourne
Address: Level 6, Berkeley Street, The University of Melbourne, Victoria 3010, Australia
Telephone: +61 3 8344 9270
e-mail: zahra.seyedghorban@unimelb.edu.au

Dr Danny Samson
Professor in Operations and Supply Chain Management
Department of Management and Marketing
Faculty of Business and Economics
The University of Melbourne
Address: Level 10, Berkeley Street, The University of Melbourne, Victoria 3010, Australia
Telephone: +61 3 8344 5344
e-mail: d.samson@unimelb.edu.au

Dr Morgan Swink
Professor in Supply Chain Management
Neeley Business School
Texas Christian University
Address: PO Box 298530, Fort Worth, Texas 76129, US
Telephone: +1 817-257-7463
e-mail: m.swink@tcu.edu

Acknowledgement:

Authors would like to thank Jack Meredith and the anonymous reviewers for their helpful comments on the earlier draft of this manuscript.

Author Manuscript

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1002/deci.12519.

This article is protected by copyright. All rights reserved.

Dr. Zahra Seyedghorban is an assistant professor of operations and supply chain management and a research fellow in the Centre for Workplace Leadership at the University of Melbourne. She holds a bachelor degree in business, an MBA, and received her PhD from Monash University, Australia. Her research interests include supply chain management, procurement, technology, and digitalization. Zahra's research has appeared in the *International Journal of Operations and Production Management*, *Production Planning and Control*, *Journal of Business Research*, and a number of industry papers. Prior to joining academia, Zahra worked in the manufacturing and automotive industries in supply chain and procurement roles.

Dr. Danny Samson is Chair of Management in Operations Management at the University of Melbourne. During his past 30 years as professor there he has published over a hundred books and research articles on topics related to decision sciences, operations, supply chain, and general management. He is Co-Editor in Chief of *Operations Management Research*, and his new book is titled Strategic Leadership for Business Value Creation. He has advised numerous large and small companies on strategic management, operations systems design, and business process improvement, and has been a leading executive educator in Asia Pacific, most recently and extensively in health systems management. He has an honours degree in chemical engineering and PhD in management sciences from UNSW, and his developing research interests are in artificial intelligence applications and ESG.

Dr. Morgan Swink is the Eunice and James L. West Chaired Professor of Supply Chain Management and Executive Director of the Center for Supply Chain Innovation in the Neeley School of Business, Texas Christian University. He teaches and leads research in areas of supply chain management, innovation management, project management, and operations strategy. Dr. Swink's current research projects address digital transformation, innovation management, servitization, visibility, collaborative integration, and financial impacts of supply management policies. Dr. Swink has co-authored two supply chain operations textbooks, one managerial book on supply chain excellence, and more than 80 articles in a variety of academic and managerial journals.

Author Manuscript

Abstract

Over the years, Operations and Supply Chain Management (OSCM) researchers have continued to examine foundational topics, while also expanding and adding new ones. Given that the field has changed a great deal, it seems valuable to examine the evolution of OSCM's intellectual structure over its 70 years of academic communications. Using bibliometrics methods, we analyze 96,125 articles containing 1,047,468 references from 31 representative OSCM journals. Our study defines primary topic areas represented in the most co-cited documents, while tracing past and current research trends. We include analyses of recent

This article is protected by copyright. All rights reserved.

bursts in research attention and comparisons of trends in academic and practitioner literatures. The results from an inclusive analysis suggest that OSCM researchers have been responsive to methodological advances and to some of the dynamics in the operating environments of businesses. However, a product/manufacturing focus seems to persist, and inconsistencies between researchers' and practitioners' interests suggest that relevance of OSCM could be further improved. Current hot topics are quite different from those of the past. Trend data suggest that studies of supply chain management and data analytics issues will continue to figure largely in shaping the future research agenda. Our analysis quantifies trends and identifies sub-topics that are growing in prominence. In addition, the findings provide a benchmark for evaluating the progress of the OSCM field, while highlighting opportunities for shaping its development and directions.

Keywords: OSCM, Literature Review, Trends Analysis, Burst Analysis

Introduction

The field of *Operations and Supply Chain Management* (OSCM) has its origins in the industrial revolution, followed by the "scientific methods" of the early twentieth century (Taylor, 1911). It emerged as an academic discipline after World War II, as scholarly publications began to grow in the early 1950s. As recommended by researchers of scientific progress (e.g. Kuhn, 1962; Small, 1980), fields of management regularly evaluate their intellectual structures (Kulkarni, Apte, & Evangelopoulos, 2014). Accordingly, after almost 70 years of scholarly communication in OSCM, it seems valuable to quantitatively examine topical trends in the past and present, to identify prominent knowledge domains and contributions, and to project a likely future research agenda.

Author Manuscript

This article is protected by copyright. All rights reserved.

Our definition of OSCM reflects the evolution of the field from a focus on *production* management (Buffa, 1966) to *operations* management (including more attention to services) (Chase & Aquilano, 1977) to *operations and supply chain* management (Jacobs & Chase, 2020; Swink, Melnyk, & Hartley, 2020). The organizational scope of OSCM has grown, yet the core definition of OSCM has remained remarkably consistent over time and across authors: OSCM is the management of *processes* by which goods and services are designed, procured, produced, and delivered. These processes include transformational activities (e.g. production and service), as well as the management of organizational relationships and flows of materials, information, money, and people (Buffa, 1966; Chase & Aquilano, 1977; Jacobs & Chase, 2020; Swink et al., 2020).

Foregoing researchers offer both qualitative and quantitative retrospective analyses of domains within OSCM (e.g. Meredith, 1979; Buffa, 1980; Chase, 1980; Meredith & Amoako-Gyampah, 1990; Scudder & Hill, 1998; Pilkington & Liston-Heyes, 1999; Pilkington & Fitzgerald, 2006; Pilkington & Meredith, 2009; Giannakis, 2012; Kulkarni et al., 2014; Meredith & Pilkington, 2018; Pilkington & Meredith, 2018; Wang & Sun, 2019). Our study analyzes the field in ways that differ importantly from these prior research efforts. Where prior research often focuses on the roles of specific journals and/or authors, our study focuses on trends in the underlying knowledge structures contributing to the formation, development, and progression of OSCM research. We identify articles and books that are the leading contributions to the development and advancement of the OSCM field over 70 years of research activity. Moreover, we track the progress of dominant functional topics across various slices of time (over the entire horizon, by decade, and in recent 5-year periods). By classifying and tabulating the primary topics addressed by highly co-cited documents, our

Author Manuscript

This article is protected by copyright. All rights reserved.

analysis captures the *conversations* that have dominated the field in each period. In addition, this study further extends prior research in the following ways.

First, we offer a broader, more inclusive view of the field, in terms of both time frame and topical scope. We analyze 96,125 articles containing 1,047,468 references from 31 representative OSCM journals. No prior study has quantitatively traced OCSM research topics from the field's academic genesis in the 1950's to today. Our study thus supplements the mostly narrative extant histories (e.g. Sprague, 2007). Further, this study takes a broader topical approach, identifying important contributions to specific types of OSCM problems and functional processes. While our analysis lists influential books and articles, our primary purpose is to trace and project topical trends rather than to identify prominent authors. Prior quantitative analyses have focused on narrow definitions of OM or SCM, with coverage only of articles in a few selected journals over limited time frames. In contrast, our study examines a wide set of referencing documents sourced in journals reflecting a more comprehensive set of OSCM subdisciplines, including production management, supply management, logistics, and even more narrowly defined OM topics. While some treat these domains as distinct fields (Pilkington & Meredith, 2018), they share common historical roots, with many scholars working across multiple domains, and with many developments in one subfield being intricately connected and applied to others. For example, it is difficult to clearly identify the intellectual boundaries that separate OM from SCM (Pilkington & Liston-Heyes, 1999). Hence, by including sub-disciplines rather than somewhat arbitrarily excluding them, our analysis provides a more holistic treatment of the complete field. We believe such a comprehensive approach is valuable for OSCM scholars who wish to gain a more grounded understanding of the field, a clearer vision of how their chosen research topics fit into the larger scheme, and a quantitatively-based sense of the prevalence of particular research

Author Manuscript

This article is protected by copyright. All rights reserved.

domains. This broader perspective may also serve to mitigate myopic views that tend to prevail in some university departments, academic societies, and geographic regions.

The second contribution of this research study is to develop a new way to trace dominant topics in OSCM over time. Like foregoing bibliometric studies, we employ co-citation analysis (Small, 1980; Pilkington & Fitzgerald, 2006; Pilkington & Meredith, 2009; Giannakis, 2012; Fahimnia, Pournader, Siemsen, Bendoly, & Wang, 2019), as it is considered a less noisy metric than simple citation counts for gauging impacts of research contributions. Co-citation counts measure the number of times that two documents are both cited in another document. Many co-citations suggest shared commonalities and stronger influences on a given research topic (Small, 1973; Benckendorff & Zehrer, 2013; Leung, Sun, & Bai, 2017). For example, when two articles that address a particular type of inventory problem are frequently co-cited, this measure provides a stronger and more precise indication of the attention scholars are paying to this particular problem than simple citations metrics would provide. However, even co-citation metrics are subject to potential biases due to differences in citation norms across sub-disciplines in a field as diverse as OSCM. We offer an examination of co-citation "*shares*" and trends as a way of normalizing data for more balanced interpretations of changes in the structure of the field over time. Our study also employs bibliometric approaches including burst detection and interest index analyses that have not been previously applied to OSCM. Further, our analyses make clear separations between purely methodological contributions and problem-oriented or functionally-oriented ones, while also creating a topical framework that follow-on researchers can use to gauge future progress.

Finally, we develop insights derived from various granular, topical, and time-phased cuts of the co-citation data to identify research opportunities and directions for the field going

This article is protected by copyright. All rights reserved.

Author Manuscript

forward. Over the past seven decades, researchers have identified numerous knowledge domains within OSCM; contributions include venerable theories, principles, and practices, as well those that have risen and declined in popularity. Operations research applications have successfully addressed a host of inventory, scheduling, transportation, and other resource allocation problems. Similarly, quality management, productivity management, and lean production approaches are enduring areas of study, some lasting more than three decades. Recent years witness the emergence of new research challenges and opportunities. For example, sustainability concerns, risk and resilience capabilities, and the continued advance of decision-support, processing, and communications technologies appear to be prominent in current research agenda (note, for example, recent special issues on these topics at leading OSCM journals). This article critically examines the evolution of the OSCM discipline and offers insights into research directions and opportunities going forward.

The remainder of this article is structured as follows. The next section provides a brief overview of prior bibliometrics research on OSCM. Then, we describe research methods, data collection procedure, and the software tool used for analysis. A discussion of the results follows, including a visualization of the discipline and its dominant conversations over time. The article concludes with a discussion of important findings, their implications, research opportunities, and study limitations.

Literature Review

Many foregoing OSCM literature reviews depend primarily on qualitative and narrative analyses (Meredith, 1979; Buffa, 1980; Chase, 1980; Miller, Graham, Freeland, Hottenstein, Maister, Meredith, & Schmenner, 1981; Mabert, 1982; Voss, 1984; Hill, Scudder, & Haugen, 1988; Amoako-Gyampah & Meredith, 1989; Meredith & Amoako-Gyampah, 1990; Neely, 1993; Scudder & Hill, 1998; Pannirselvam, Ferguson, Ash, & Siferd, 1999; Gupta, Verma, &

This article is protected by copyright. All rights reserved.

Author Manuscript

Victorino, 2006). Some focus on a single journal or publication type (e.g. Gupta et al., 2006), context (e.g. manufacturing, services, practice) (e.g. Mabert, 1982; Neely, 1993), or research method (Scudder & Hill, 1998). Such qualitative reviews enrich understanding, yet they are susceptible to perceptual biases and are limited by a researcher's capacity to manually analyze a field of study. In contrast, quantitative studies tend to provide more reliable and more comprehensive findings (Ramos- Rodríguez & Ruíz- Navarro, 2004; Shafique, 2013; Yalcinkaya & Singh, 2015). Moreover, a quantitative approach helps to synthesize scattered communications in scholarly communities, which then can be used to establish practical paths for future research.

Our literature search identified eight published quantitative literature review studies in which a discipline or sub-discipline of OSCM is the primary focus (Pilkington & Liston-Heyes, 1999; Pilkington & Fitzgerald, 2006; Pilkington & Meredith, 2009; Giannakis, 2012; Kulkarni et al., 2014; Meredith & Pilkington, 2018; Pilkington & Meredith, 2018; Wang & Sun, 2019). With one exception (Pilkington & Fitzgerald, 2006), the studies describe the discipline of operations management cross-sectionally, with little discussion of emerging trends. Four of the studies focus on the roles and interconnections of journals in OM and other fields (Giannakis, 2012; Meredith & Pilkington, 2018; Pilkington & Meredith, 2018; Wang & Sun, 2019). Giannakis (2012) provides a network analysis of citations across supply chain management journals. Meredith and Pilkington (2018) analyze citations in three OM journals (IJOPM, JOM, POM) to construct a research network between OM journals and journals in other fields, thereby highlighting interdisciplinary influences and knowledge exchanges. Using citations from the same three journals, Pilkington and Meredith (2018) examine the most cited journals to examine the influences of journals over the past three decades in the knowledge diffusion network. Wang and Sun (2019) provide a comparison of

This article is protected by copyright. All rights reserved.

Author Manuscript

citations and author affiliations for the *International Journal of Production Research* against other leading journals. While these studies contribute to our understanding of the roles of some journals in the OM discipline, they pay less attention to the evolution of knowledge domains in OSCM, more broadly defined.

Four prior studies more directly address OM knowledge and intellectual structure (Pilkington & Liston-Heyes, 1999; Pilkington & Fitzgerald, 2006; Pilkington & Meredith, 2009; Kulkarni et al., 2014). However, these studies focus on citations listed in only one, or at most five OM journals, and over limited periods. Kulkarni et al. (2014) apply latent semantic analysis to operations management research using abstracts of 3,207 articles (DSJ, JOM, MS, MSOM and POM) to identify main research topics of operations management between 1980 and 2012. Pilkington and Liston-Heyes (1999) examine citations in IJOPM from 1994-1997 to identify five knowledge domains including: manufacturing strategy proposers, manufacturing strategy developers, Japanese manufacturing, performance measures, and best practices. A sequel work (Pilkington and Fitzgerald, 2006) extends the IJOPM analysis to 2003, adding process management and case study methods as central themes. The study identifies supply chain management, lean management, theory building from quantitative data, and sustainability as emerging subjects. Pilkington and Meredith (2009) examine co-citations from three journals (IJOPM, POM, JOM) over a 27 year period (1980-2006) with the aim of identifying structural knowledge groups. Their factor analysis identifies 12 knowledge groups that include both methodological and functional topics. Pilkington and Meredith (2009) provide a useful first-look at OM intellectual structure as represented in the three selected journals. However, it offers a somewhat narrow view of OM, arguing that it began as a discipline only in 1980 with the launch of the JOM. Other OM journals (e.g. MSOM, IJPR) are neglected, as are journals that address broader operational

Author Manuscript

This article is protected by copyright. All rights reserved.

contexts (e.g. supply chains). Given this narrow focus and the fact that their study is now 10 years old, we suggest that a broader and more up to date study is needed. Indeed, Pilkington and Meredith (2009) state their hope that this type of study will be repeated each decade.

Finally, researchers have applied bibliometrics and quantitative method to examine individual sub-disciplines within OSCM (e.g. behavioral operations and supply chain management, supply chain risk, supply chain finance, efficiency measurement) (e.g. Fahimnia, Tang, Davarzani, & Sarkis, 2015; Lampe & Hilgers, 2015; Xu, Chen, Jia, Brown, Gong, & Xu, 2018; Fahimnia et al., 2019). Other researchers have quantitatively analyzed the co-authorship and movement network of OSCM (e.g. Behara, Babbar, & Smart, 2014; Babbar, Behara, Koufteros, & Huo, 2017; Babbar, Behara, Koufteros, & Wong, 2018; Babbar, Koufteros, Behara, & Wong, 2019; Babbar, Koufteros, Bendoly, Behara, Metters, & Boyer, 2020), while some scholars have analyzed a specific journal (e.g. Laengle, Merigó, Miranda, Słowiński, Bomze, Borgonovo, Dyson, Oliveira, & Teunter, 2017; Wang, Lim, Zhao, Tseng, Chien, & Lev, 2020). For brevity we omit a review of these works.

Our research focuses on the developments of broader OSCM knowledge domains. OM has evolved to become OSCM in consonance with changes in globalization, economics, and technologies over the last century. Accordingly, we consider a wider set of publication outlets and epochs, and we apply more advanced analytical methods to uncover supplemental insights into OSCM knowledge structure and trends.

Research Method

1.1 Bibliometrics Analysis of OSCM Research

Bibliometrics analysis is "the quantitative study of physical published units, or of bibliographic units, or of the surrogates for either" (Broadus, 1987). This method is considered a reliable meta-analytical and scientometric approach that significantly

This article is protected by copyright. All rights reserved.

Author Manuscript

contributes to the understanding and appreciation of a specific field of study (Pritchard, 1969). It is applied to systematically evaluate the genesis of a domain of knowledge, to visualize its movement patterns (Guilera, Barrios, & Gómez-Benito, 2013), and to provide researchers with measures of activity, impact, and linkage (Narin, Olivastro, & Stevens, 1994; Vinkler, 2010). Bibliometrics analysis can be used to identify major topics and their fundamental structure, progression, and evolution (Vogel & Güttel, 2013).

Our research objective is to inclusively evaluate OSCM, mapping its underlying intellectual structure, knowledge development and transition, and identifying steps for further advancement. Thus, an analysis of a wide array of research publications within the OSCM discipline is required. We apply a series of co-citation analyses to provide insights into how knowledge has developed and evolved within our field of study (Small, 1973; 1978). This approach is based on the premise that, when two documents are both cited in another document(s), the documents in the pair are likely to be linked by shared commonalities (Small, 1973; Benckendorff & Zehrer, 2013; Leung et al., 2017). Accordingly, a document is considered to exert strong influence if it is co-cited more often in subsequent documents (Liu, Yin, Liu, & Dunford, 2015). If a large number of referencing documents cite a given pair of documents, it suggests a similarity or affiliation in the content of the two documents, as well as the importance of their contribution to the topic or topics addressed by the co-citing references. By identifying documents that are commonly cited together, co-citation provides a stronger indication of the structure of influence on a field than simple citation metrics provide (Small, 1980; Pilkington & Meredith, 2009; Boyack & Klavans, 2010). While citation and co-citation counts for articles are often correlated, co-citation provides a less noisy measure of the discipline-specific influence of a given document, as it controls for extraneous citations not relevant to important topics. For example, a highly cited document

Author Manuscript

This article is protected by copyright. All rights reserved.

might have been cited for reasons not related to paradigm development (citations of a popular general treatise on theory, or a general textbook, for example). Co-citation measures identify linkage frequencies, thereby indicating levels of influence as well as larger network structures that describe knowledge content. Bibliometrics experts (Boyack & Klavans, 2010; Small, Boyack, & Klavans, 2014), as well as OSCM researchers (Pilkington & Fitzgerald, 2006; Pilkington & Meredith, 2009; Giannakis, 2012; Fahimnia et al., 2019) identify co-citation as a preferred bibliographic method.

By classifying and tabulating the primary topics addressed by highly co-cited documents across time, our analysis captures the *conversations* that have dominated the field in each period, where a conversation is represented by the fraction of total co-citations given to a particular topic. In addition, to uncover potentially influential topics in the future, we employ an algorithm known as "*burst detection*" that identifies references with a sudden increase in their citations. A citation burst for a reference reflects increased attention from the scholarly community for a given period. References experiencing current ongoing bursts provide signals of emerging trends in the research community. To supplement this future-oriented view, we conclude our research with the results of an "*interest index*" analysis that compares topical trends across scholarly and practitioner journals (Baskerville & Myers, 2009). In addition to suggesting future trends, this analysis provides an indication of the leading or lagging roles of scholarly research in forwarding certain topical agendas.

1.2 Search Tactics and Data Collection

Figure 1 illustrates our data collection process. As our research aims were breadth and inclusiveness, we applied a comprehensive data searching strategy. We first downloaded the entire Operations Research and Management Science journal list (N=82) and selected journals from the Management journal list (N=51) provided by the Web of Science (WoS), a

This article is protected by copyright. All rights reserved.

Author Manuscript

highly regarded source of data describing scientific activity and impact. Unlike Google Scholar, where citing sources might include not only journals but also other popular press items, proceedings, textbooks, editorials, and non-peer reviewed articles, the WoS allows a more controlled data collection procedure that limits data extraction and analysis to peer-reviewed materials.

We sent the combined WoS journal list to 10 OSCM academics,[1] asking them to rate each journal in terms of importance to the field of OSCM. We retained in our list any journal rated as important or very important[2] by any single expert. Simultaneously, we identified journals listed in 15 published OSCM literature reviews (Goh, Holsapple, Johnson, & Tanner, 1997; Soteriou, Hadjinicola, & Patsia, 1999; Barman, Hanna, & LaForge, 2001; Rungtusanatham, Choi, Hollingworth, Wu, & Forza, 2003; Zsidisin, Smith, McNally, & Kull, 2007; Charvet, Cooper, & Gardner, 2008; Craighead & Meredith, 2008; Giunipero, Hooker, Joseph-Matthews, Yoon, & Brudvig, 2008; Linderman & Chandrasekaran, 2010; Barratt, Choi, & Li, 2011; Carter & Easton, 2011; Tang & Musa, 2011; Ashby, Leat, & Hudson-Smith, 2012; Johnsen, Miemczyk, & Howard, 2017; Merigó & Yang, 2017). We combined these journals with the expert rated list, yielding a candidate list of 22 journals that were identified as important, either by the expert panel or by previously published reviews.

[1] Average years of experience for these academics was above 10, ranging from senior lecturer to full professor positions. The list included editorial board members for JOM, JSCM, POM, DSJ, EJOR, and TR-Part E. All but one key informant had published more than 10 articles in leading OSCM journals at the time of the inquiry.
[2] A five-point scale (1= not important to 5 = very important) was used to rate each journal.

This article is protected by copyright. All rights reserved.

Author Manuscript

Author Manuscript

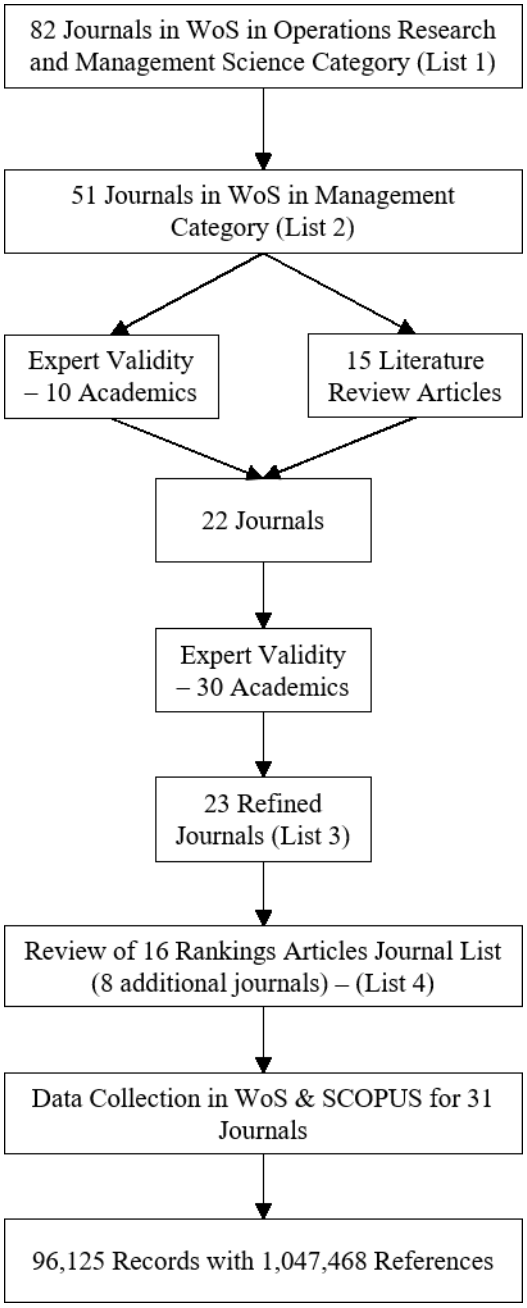


Figure 1: Data collection procedure

We then sent the candidate journal list to 65 highly published scholars, associate editors, and editors-in-chief of OSCM related journals[3], requesting their judgments on the importance

[3] The list included EICs for JOM, TR-Part E, IJPR, IJLM, EJOR, IJPDLM, POM, Interfaces, JBL, IJOPM, DSJ, and Omega, plus department, senior, and associate editors for DSJ, POMS, JSCM, JBL, JOM, IISE

This article is protected by copyright. All rights reserved.

of the journals, as well as suggestions for additional journal inclusion, given the stated objective of our investigation. Thirty scholars responded, some recommending the addition of *Manufacturing and Service Operations Management*. Next, we compared our revised journal list with the lists present in 16 published journal ranking papers; these rankings include a wide variety of perspectives and methods within OSCM (Meredith, Steward, & Lewis, 2011; Petersen, Aase, & Heiser, 2011; and Watson & Montabon, 2014 provide meta-analyses of these studies). An examination of the top 20 ranked OSCM-focused journals in each of the 16 published analyses confirmed the journals included in our initial list, while leading us to add eight more journals.

Table 1 provides the final list of 31 journals. The list includes a substantial mix of methodologically and topically diverse outlets. By our reckoning, almost half of the journals primarily publish research that employs analytical and mathematical modeling methods, while the others publish a mix of methods, with a few exceptions such as JOM and JSCM that are purely dedicated to empirical research. The list includes journals focused on specific functional disciplines such as scheduling, transportation, purchasing, and production planning, along with broader multi-functional journals (e.g. POM, MSOM, IJOPM, IJPE, JOM) and multi-disciplinary journals (e.g. MS, DS). As specified in the foregoing rankings articles, all of the most influential OSCM "dedicated" journals are represented, as well as many of the important "reference" journals (as defined in Meredith et al., 2011). Overall, we feel confident that the journal identification process produced a representative and robust sample of the OSCM field. By combining inputs from five different types of sources (WoS, initial convenience sample of experts, 15 literature review articles, broader sample of

Transactions, NRL, and Omega. We also included about 20 highly published scholars who were personal contacts of the authors.

This article is protected by copyright. All rights reserved.

Author Manuscript

editorial members, and 16 journal ranking articles), the process corrected for biases inherent in a single source. Moreover, the findings of our study do not appear to be sensitive to the journal sample. We analyzed the data both before and after adding the final eight journals with no appreciable differences in the results. Changes in the constituencies of top-ranked documents were minimal. Changes in the relative co-citation shares for topics were mostly less than 1% and no larger than 5%. Rankings and relative influences of topics were unchanged.

We collected all bibliographical data (full record and cited references) available for these 31 journals from both WoS and SCOPUS (data collection completed early 2020). Utilizing both databases minimizes the impacts of limitations of either database (Meho & Yang, 2007). The oldest journal in our list is the "Journal of the Operational Research Society" (previously Operational Research Quarterly), first published in 1950. Accordingly, we chose the analysis coverage to be from 1950 to 2019.

The co-citation data are from the reference lists of research articles only; we exclude all other documents such as book reviews, editorial materials, letters, errata, corrections, etc. In total, the data include 96,125 records (published documents) and 1,047,468 cited references. Two researchers conducted the data extraction from WoS and SCOPUS independently and simultaneously on two different computers; both extraction processes produced exactly the same data.

Author Manuscript

This article is protected by copyright. All rights reserved.

Table 1: Final journal list

	Journal Name – in alphabetical order (*step in which journal was added to the list)*	**First Published**
1	Annals of Operations Research (AOR) – *List 4*	1984
2	Computers and Operations Research (C&OR) – *List 4*	1974
3	Decision Sciences (DS) – *List 2*	1970
4	European Journal of Operational Research (EJOR) – *List 1*	1977
5	IISE Transactions (formerly: IIE Transactions, AIIE Transactions) – *List 1*	2016 (1982, 1969)
6	Interfaces (INF) – *List 1*	1970
7	International Journal of Logistics Management (IJLM) – *List 2*	1990
8	International Journal of Logistics-Research and Applications (IJL-RA) – *List 2*	1998
9	International Journal of Operations and Production Management (IJOPM) – *List 2*	1980
10	International Journal of Physical Distribution and Logistics Management (formerly: International Journal of Physical Distribution & Materials Management, International Journal of Physical Distribution) (IJPDLM) – *List 2*	1990 (1978, 1971)
11	International Journal of Production Economics (formerly: Engineering Costs & Production Economics, Engineering and Process Economics) (IJPE) – *List 1*	1991 (1980, 1976)
12	International Journal of Production Research (IJPR) – *List 1*	1961
13	Journal of Business Logistics (formerly: Council of Logistics Management) (JBL) – *List 2*	2001 (1979)
14	Journal of Operations Management (JOM) – *List 1*	1980
15	Journal of Purchasing and Supply Management (formerly: European Journal of Purchasing & Supply Management) (JPSM) – *List 2*	2003 (1994)
16	Journal of Scheduling (JSCHED) – *List 4*	1998
17	Journal of Supply Chain Management (formerly: International Journal of Purchasing and Materials Management, Journal of Purchasing and Materials Management, Journal of Purchasing) (JSCM) – *List 2*	1999 (1994, 1974, 1965)
18	Journal of the Operational Research Society (formerly: Operational Research Quarterly) (JORS) – *List 1*	1978 (1950)
19	Management Science (MS) – *List 1*	1954
20	Manufacturing & Service Operations Management (MSOM) – *List 3*	1999
21	Mathematics of Operations Research (MOR) – *List 4*	1976
22	Naval Research Logistics (formerly: Naval Research Logistics Quarterly) (NRL) – *List 4*	1972 (1954)
23	Omega-International Journal of Management Science (OMEGA) – *List 1*	1973
24	Operations Research (formerly: Journal of the Operations Research Society of America) (OR) – *List 1*	1956 (1952)
25	Operations Research Letters (ORL) – *List 4*	1981
26	Production and Inventory Management (PIM) – *List 4*	1970
27	Production and Operations Management (POM) – *List 1*	1992
28	Production Planning & Control (PPC) – *List 1*	1990
29	Supply Chain Management: An International Journal (SCM-IJ) – *List 2*	1996
30	Transportation Research Part E-Logistics and Transportation Review (formerly: Logistics & Transportation Review) (TR: LTR) – *List 1*	1997 (1978)
31	Transportation Science (TS) – *List 4*	1967

Figure 2 illustrates the growth in journals and the total number of OSCM articles published over the past seven decades. The field has shown steady growth, with over 35,000

This article is protected by copyright. All rights reserved.

articles published in the last decade alone. As shown, nine of the OSCM journals in our list originated in the 1990s, yet the overall collection of important journals has remained constant since 2000. Concerns could be raised regarding the omission of influential references published in non-OSCM outlets (e.g. *Academy of Management Journal, Harvard Business Review*, etc.). It is important to remember that the 31 journals serve as the *sources* for co-citations, while the co-cited documents themselves represent a much broader set of publication outlets. Many of the most highly co-cited documents identified in our analysis are published in journals not included in our list. For example, an article by Fisher (1997) published in *Harvard Business Review* (*What is the right supply chain for your product?*) is a highly co-cited reference. Books and a wide range of general management and other journals also often appear as influential publication outlets in our results.

1.3 Knowledge Mapping and Discovery Software

Advancements in computer science and graphical tools have simplified the process of thoroughly analyzing a knowledge domain. In this research, we use a Java-based scientific visualization software package – *CiteSpace* 5.7R1 – to run co-citation analyses. *CiteSpace* combines data mining algorithms, information visualization methods, and bibliometrics tools. It is considered one of the most comprehensive science mapping tools in quantitative literature reviews and meta-analytical examinations (Cobo, López- Herrera, Herrera-Viedma, & Herrera, 2011).

Author Manuscript

This article is protected by copyright. All rights reserved.

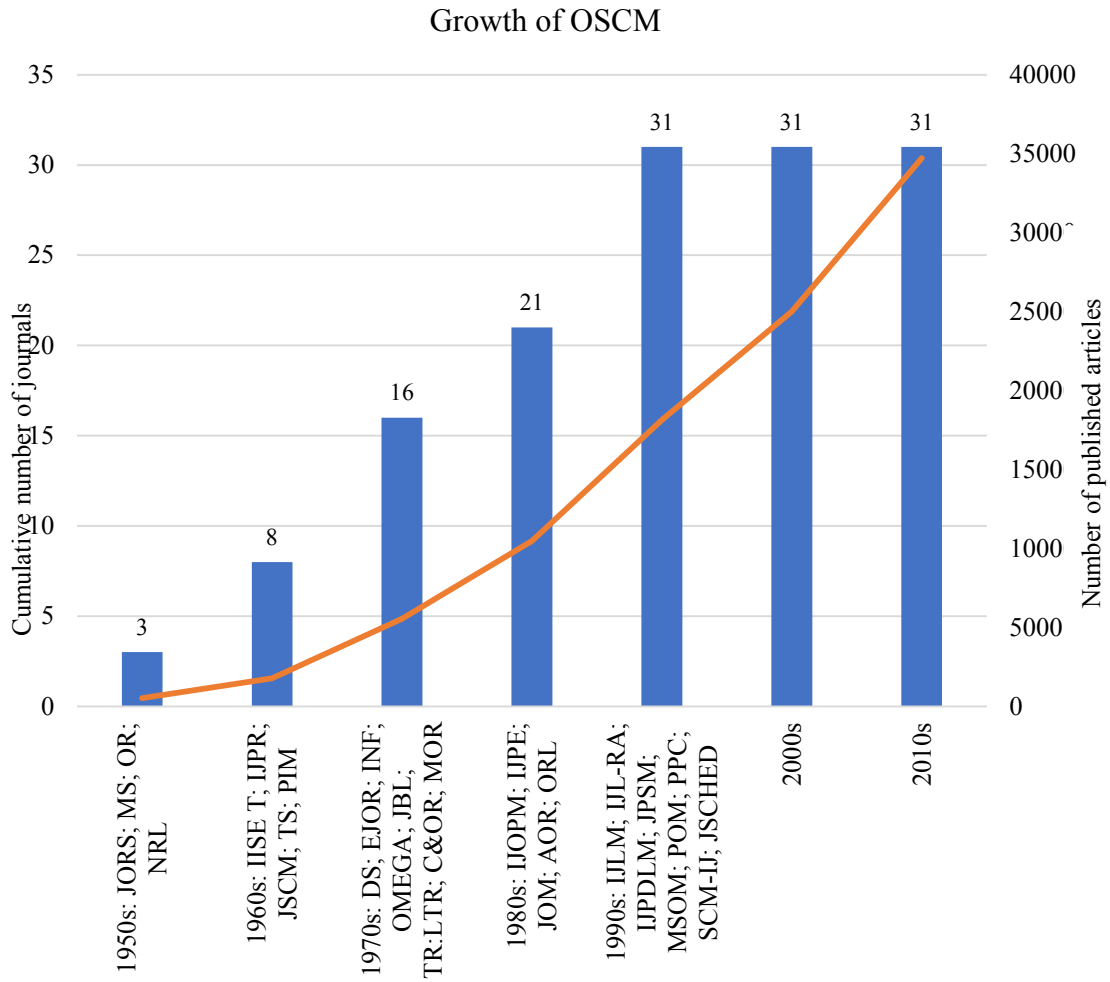


Figure 2: Journal and publication growth of OSCM

Author

Results

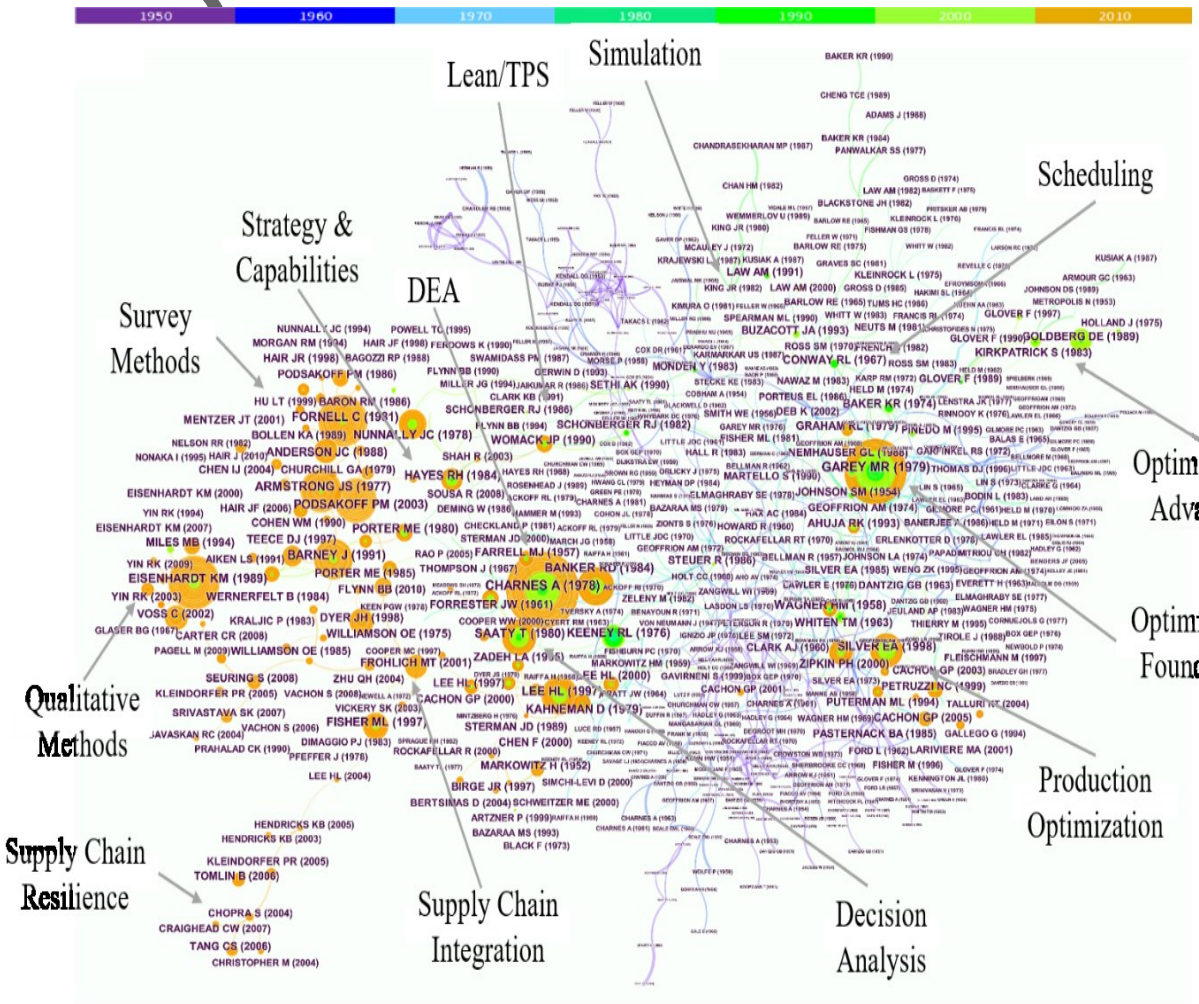
1.4 Document Co-Citation Analysis

1.4.1 A Topical Map of Co-cited Documents in OSCM

Results for document co-citation analysis can produce the network of co-cited references, thus providing insight into the fundamental structure of a discipline. Documents with a high co-citation frequency point to breakthrough ideas that have shaped the intellectual structure and development of a field of study (Small, 1973; 1980; 2003). The CiteSpace system applies color-coded nodes and edges to distinguish between combined networks that describe

This article is protected by copyright. All rights reserved.

knowledge domains for a field. Figure 3 illustrates these networks for OSCM documents included in our analysis. Upon close visual inspection, one finds numerous references to early contributors in operations research and research methods, yet contributors in empirical research, supply chain research, and even more practice-oriented documents (e.g. Schonberger, 1986; Womack, Jones, & Roos, 1990) are also well represented. As mentioned earlier, the network includes a substantial number of references to documents not published in our list of journals (e.g. Kraljic, 1983; Wernerfelt, 1984; Eisenhardt, 1989), thus lending confidence that important topics are comprehensively included.



Note: Colors represent the year of co-citation. For example, the gold color highlights co-citations that occurred during the years 2010 to 2019.

Figure 3: Document Co-citation in OSCM literature

This article is protected by copyright. All rights reserved.

Considering the network map illustrated in Figure 3 as a "landscape" of OSCM, one can easily identify major themes. Near the center of the map is a large grouping of documents representing data envelopment analysis (DEA), system dynamics, analytical hierarchy process, and other mathematical techniques (e.g. Forrester, 1961; Charnes, Cooper, & Rhodes, 1978; Saaty, 1980). Moving eastward on the map one encounters many applications of optimization and other operation research methods. Many references in the southeast quadrant represent resource allocation and assignment problems in OM, whereas in the northeast quadrant more scheduling and inventory management studies appear. References in the western quadrants represent more theoretical and empirical studies. In the northwest, empirical and statistical methods articles are prominent. Documents shown in the far west region include a mix of business strategy and case study methods seminal works. Manufacturing strategy articles and a host of books and articles addressing lean, quality management, and related topics occupy the middle northern region. Supply chain topics are most prominently represented in the references positioned in the southwest quadrant.

1.4.2 Classification of Functional OSCM Topics

In following sections, we examine the most co-cited documents in different eras. In order to examine evolving research trends addressing specific OSCM problems, topics, and contexts, the authors created a consolidated list of all highly co-cited documents and categorized each document according to its primary topical focus. We omitted highly co-cited documents that make *general methodological contributions.* These documents are purely methodological in nature; each one's primary contribution is to develop a method for general uses, rather than applying the method to a specific OSCM problem or topic area (examples would include a text on linear programming or statistics, a tutorial on empirical methods, development of an estimation technique, or an article addressing strengths and weaknesses of a particular

This article is protected by copyright. All rights reserved.

Author Manuscript

statistical method). While omitting these types of documents, we retained any document that extends or applies a given method to a specific problem or context (e.g. developing an algorithm to solve a facility location problem); we considered such documents to make specific functional contributions.

The scheme for categorization was developed iteratively by first examining document titles and abstracts for the top 100 most co-cited documents. One author initially classified the documents, then refinements were made based on reviews and discussions with the other two authors. Each document was assigned to a single topical category. We then adjusted and validated the reliability of the final categorization scheme through subsequent analysis of the super-set of documents, inclusive of all subsamples of highly co-cited documents collected for each of the eras we study. Two of the authors independently categorized all the documents. Initial agreement between the two authors' inputs was 86%. Differences in categorizations were easily resolved through author team discussion, which led to the articulation of decision guidelines and produced sharper definitions of the categories. For example, studies of sequencing and prioritization of orders, jobs, or tasks were classified as "scheduling" contributions, whereas studies of the scheduling of inventory replenishments or allocations were classified as "inventory". We used a functional orientation to allocate documents to various groups. For example, though vehicle routing and scheduling studies could be assigned to "scheduling", we placed these documents in the broad category of "logistics", as these decisions are typically made by managers in logistics functional areas. Overall, we initially categorized each document based on the type of decision or problem it addresses, rather than the *industrial context* of the research (e.g. services, manufacturing, re-manufacturing, projects, humanitarian settings). We considered contextual refinements and other specific problem refinements in subsequent sub-topic classifications.

Author Manuscript

This article is protected by copyright. All rights reserved.

Several of the less frequently co-cited articles were not clearly identifiable to common OSCM topic areas (e.g. an article on sales response to advertising expenditures), suggesting that our collection of documents had reached a saturation point in identifying highly co-cited articles that are directly relevant to OSCM. The authors categorized these few documents after deeper analysis of their contents and their citing documents.

Table 2: Categorization of functional topic areas

General text: Textbook that covers more than one of the topics below
Inventory management: Research of lot sizing, replenishment, and allocation decisions (includes newsvendor, economic order quantity, multi-echelon, etc.)
Logistics: Research of locational decisions and patterns (traffic and transportation, facility location, distribution design, networks, warehousing, vehicle routing and scheduling)
Organizational issues: Research of design and interaction of organizational units and people within a firm (includes vertical integration decisions, behavioral issues)
Pricing: Research of decisions related to pricing goods and services (demand and revenue management, and auctions)
Process improvement: Research of paradigms, approaches, and techniques guiding the improvement of internal operational activities (lean, quality management, productivity factors, facility layout, product innovation, organizational learning)
Queuing: Research of waiting lines, arrival and service processes, service system design.
Scheduling: Research of decisions regarding the prioritization and sequencing of orders, jobs, and tasks across resources (includes scheduling of production, workforce, projects)
Strategy: Research of competitive structure and sources of advantage (including capabilities)
Supply management: Research of inter-organizational structures and relationships (design, integration, governance, risk, and sustainability)

The documents are grouped into ten broad classifications: *general texts* (books that cover multiple topics), *inventory management, logistics, organizational issues, pricing, process improvement* (e.g. documents addressing lean, JIT, quality management, and productivity factors), *queuing*, *scheduling, strategy,* and *supply management*. While we recognize that other categorization schemes are possible, we sought to balance the competing needs of granularity (enough discrimination to obtain interesting insights) and parsimony (avoiding conceptual overlap and complexity from too many categories). After making the initial assignment to the top-level categories, we identified sub-topics within each category

This article is protected by copyright. All rights reserved.

Author Manuscript

and assigned documents to each sub-topic, respectively. The creation of these sub-topics allows more fine-grained analysis and potentially addresses concerns that some top-level categories (such as "process improvement") are so broad that they obscure important developments in the field. Table 2 provides definitions and examples for each of the topic categories.

1.4.3 OSCM Documents Ranked in the Top 100 Most Co-cited

Appendix A lists the documents ranked in the top 100 most co-cited OSCM documents across the entire 70-year time horizon[4]. Table 3 provides descriptive statistics by category. Collectively, the 101 documents have been co-cited 37,739 times. One-third of the top 101 most co-cited documents are books; four of these are general texts (Nahmias, 1989; Hopp & Spearman, 1996; Vollmann, Berry, & Whybark, 1997; Silver, Pyke, & Peterson, 1998), while the remainder are focused on specific topics. For example, the most co-cited item of all is Pinedo's (1995) book on scheduling, with 981 co-citations. Interestingly, the frequency of books in the most co-cited documents has declined over time (only nine of the top 100 most co-cited documents in 2015-2019 are books).

Table 3: Descriptive statistics of most co-cited documents by category

	Number	Co-citations	Co-citations/Doc
Inventory	9	4186	465.1
Scheduling	10	4579	457.9
General Textbooks	4	1669	417.3
Strategy	16	6434	402.1
Supply Management	29	10771	371.4
Queuing	2	674	337.0
Logistics	11	3533	321.2
Process Improvement	9	2766	307.3
Organizational Issues	5	1422	284.4
Pricing	6	1705	284.2

[4] The list contains 101 documents – two documents are tied for 100th rank. Please contact authors to obtain the full list of references cited in the appendices.

This article is protected by copyright. All rights reserved.

Author Manuscript

As shown in Table 3, inventory research documents have received the most co-citations per document on average in our top list of documents, followed by scheduling, general textbooks and strategy. Almost one-third of documents in the list belong to the supply management category, receiving over 370 co-citations on average, followed by queueing, logistics, process improvement, organizational issues, and pricing.

1.4.4 OSCM Research Trends

In order to develop a more detailed view of trends in OSCM research, we now dig deeper into frequently co-cited documents, and parse the analysis using various time horizons. While providing a more penetrating probe into prevalent topics in each era, this approach also mitigates some of the challenges of comparing research interests across methodological and functional topics. First, we recognize that citation norms may vary across different types of research. For example, empirical research articles typically contain more references than mathematical modeling research articles. To address this issue, our analysis of specific functional topics trends is methodologically agnostic. Published research studies addressing a given functional topic (e.g. logistics) may apply mathematical models or empirical models, or both. Our comparisons across functional topics are based on all types of co-citations regardless of the method employed by a given co-cited document. Also, we focus on trends over time, rather than comparisons made at a given point in time. Thus, it is unlikely that our findings are biased by differences in citation norms. Second, the total number of co-citations across all topics has grown over the years. To create more valid comparisons, we trace trends in proportions of total co-citations to documents representing each topic in our categorization scheme. Using this proportional approach effectively standardizes the data by time period, while examining changes (trends) in proportions provides a basis for comparing relative emphases across and within topics over time. We note that comparing both numbers of co-

This article is protected by copyright. All rights reserved.

Author Manuscript

citations and numbers of highly co-cited articles across topics yield similar results, thus the findings appear to be robust to the metric used.

1.5 Research Across the Decades

To analyze trends, we extracted documents ranked in the top 50 most co-cited references in each decade; Appendix B provides the references list. Figure 4 depicts the topic share of total co-citations to the top 50 ranked co-cited documents in each decade. Again, the pattern of co-citations can be viewed as an illustration of the prevalent conversations among OSCM researchers across the decades.

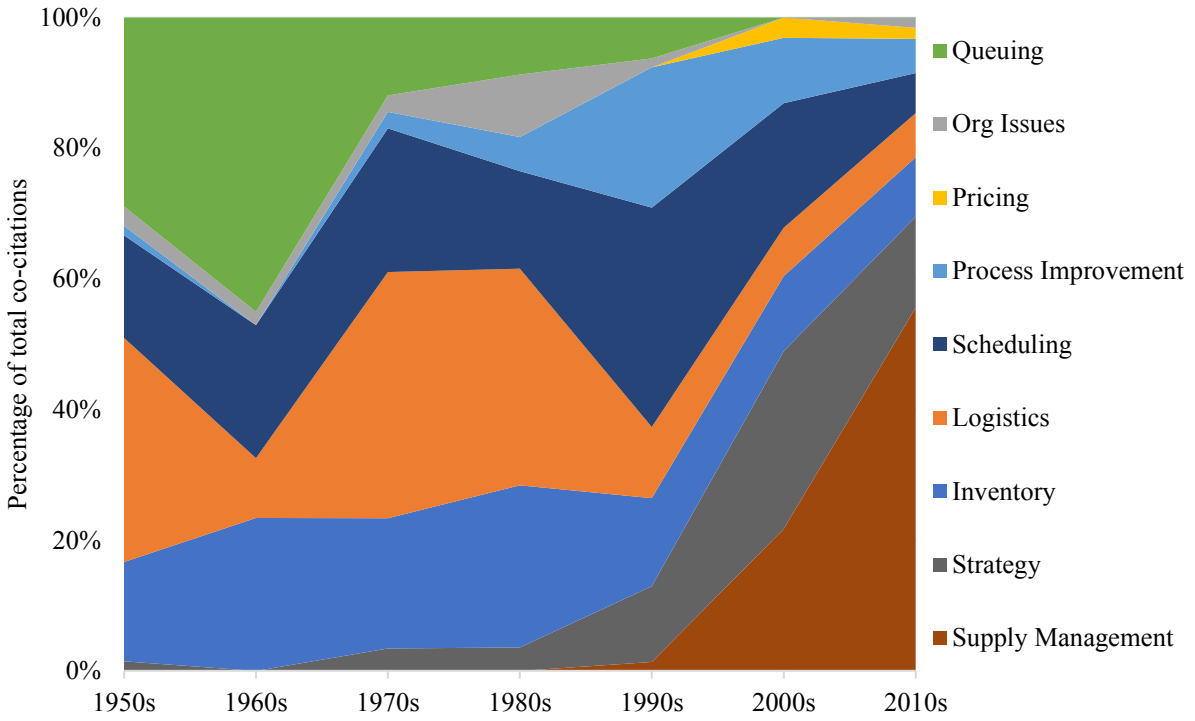


Figure 4: OSCM topical trends: Co-citation share for the top 50 co-cited documents in each decade, 1950-2019

Dominant OSCM conversations have substantially changed over the decades. Logistics research owned a substantial share of topical focus in the 1950s and again in the 1970s and 1980s. Queueing research loomed large in the 1960s, and inventory research maintained a somewhat steady share (10-25%) of total co-citations until the 1990s. Process improvement research attracted around 20% of functional research attention in the 1990s, yet this focus has

This article is protected by copyright. All rights reserved.

Author Manuscript

dropped sharply in recent years. Research that cites seminal strategy articles, starting in the 1970s has grown to represent a 14% share of co-citations today. Supply management, starting in the 1990s, has grown to dominate the overall conversation in recent decades. In the most recent decade, supply management research accounts 54% of total co-citations to functional topics research.

1.6 Enduring Research Contributions

Scanning across the lists of documents in Appendix B reveals 338 unique references that have been highly co-cited (in the top 50) within any of the seven decades. We were interested in identifying "enduring" references, which we define as a document appearing in the top 50 co-cited items in at least three different decades. Table 4 shows each of the 18 documents that satisfied this criterion and lists the percentage of total co-citations each document accrued in each decade in which it was highly co-cited. Collectively, the timings of co-citations to these enduring works provide another snapshot of popular topics across the decades. These works can be considered "seminal"; they have received significant attention from researchers over long periods. Interestingly, even the most seminal works appear to have limited life spans of prominence.

1.7 Research Trends in the 21st Century

To uncover finer details of current trends, we next focus on the post 2000 data and analyze co-citations by topic area across the last twenty years. In addition to providing a more recent analysis, this approach provides a look at trends given a stable mix of journals containing co-citing articles (the journal mix has remained constant since 2000). We probe the data by extracting documents ranked in the top 100 most co-cited references in each 5-year sub-period (see Appendix C). Figure 5 displays the trends in percentage share of total co-citations for each functional topic.

This article is protected by copyright. All rights reserved.

Author Manuscript

Table 4: Co-citation share for enduring references (top 50 in three or more decades)

Title	Author (first only)	Year	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Priority assignment in waiting line problems	Cobham A	1954	1.4%	4.6%	1.5%				
Planning production, inventories, and work force	Holt CC	1960		3.4%	3.1%	1.9%			
A heuristic program for locating warehouses	Kuehn AA	1963		1.7%	2.8%	1.4%			
Organizations	March JG	1958		1.9%	2.4%	1.9%			
Optimal two- and three- stage production schedules with setup times included	Johnson S M	1954		1.9%	1.8%		2.1%	1.6%	
Dynamic version of the economic lot size model	Wagner HM	1958		1.9%	3.2%	4.7%	3.1%	2.4%	1.6%
Facility layout and location: an analytical approach	Francis RL	1974			1.7%	3.4%	1.8%		
Computer solutions of the traveling salesman problem	Lin S	1965			2.0%	1.9%	1.4%		
Introduction to sequencing and scheduling	Baker K	1974			1.5%	4.0%	5.5%	1.9%	
Optimal policies for a multi-echelon inventory problem	Clark AJ	1960				1.3%	1.3%	1.6%	
Theory of scheduling	Conway R L	1967				4.8%	4.2%	1.7%	
Complexity of machine scheduling problems	Lenstra J K	1977				1.3%	1.7%	1.6%	
Competitive strategy: techniques for analyzing industries and competition	Porter M E	1980				2.0%	2.4%	2.5%	
Scheduling of vehicles from a central depot to a number of delivery points	Clarke G	1964				2.3%	1.3%	1.5%	1.7%
Optimization and approximation in deterministic sequencing and scheduling: a survey	Graham R L	1979					2.0%	3.0%	3.3%
Competitive advantage: Creating and sustaining superior performance	Porter ME	1985					2.4%	2.5%	1.9%
The economic institutions of capitalism: firms, markets, relational contracting	Williamson OE	1985					1.3%	2.2%	2.2%
Machine that changed the world	Womack JP	1990					2.2%	2.5%	1.7%

Each entry is the percentage share of total co-citations generated by the top 50 documents in that decade.

Similar to the prior decade-oriented analysis, the results illustrated in Figure 5 reveal a dramatic change in topical focus.[5] In the 2000-2004 period, research appears to have been fairly evenly spread across a larger set of topics; five of the nine topic categories each received at least 10% of the total co-citation share, with the largest categories being strategy, scheduling, and process improvement. In contrast, the data provide clear evidence of the growing preeminence of co-citations to supply management research; this topic commanded more than 61% of all top document co-citations in the 2015-2019 sub-period. None of the other topic areas have grown substantially, while the co-citation share of process improvement research has declined dramatically, from a 20% share in the early 2000s to only a 3% share in the most recent 5-year period. The share of co-citations received by scheduling

[5] We note that similarities between the results of the analyses using 50 documents per decade and 100 documents per 5-year period provide a robustness check. The results do not seem to be sensitive to choices regarding time bucket or depth of highly ranked documents included.

This article is protected by copyright. All rights reserved.

Author Manuscript

research has similarly declined, from 21% to 4%. Strategy co-citations share has declined from 22% to 10%.

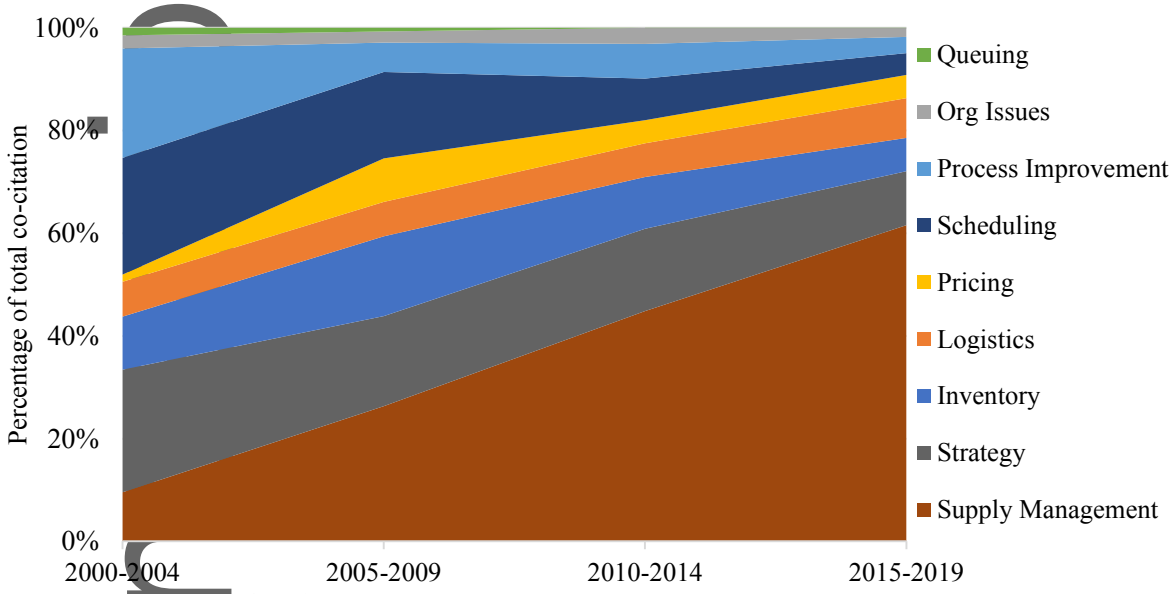


Figure 5: Recent OSCM Trends: Share for top 100 co-cited documents in each 5-year period, 2000-2019

Figure 6 illustrates trends in co-citation shares for eight sub-topics within supply management, including supply network design, governance, integration, sustainability, risk management, remanufacturing, and other topics. Whereas integration appears to have gathered much of the scholarly attention in the first decade of the millennium (especially 2005-2009), it has given way to growing interests in sustainability and risk in the most recent period. The co-citation share of research addressing supply relationship governance has also declined, from attracting about 35% of co-citations in the early 2000s to 13% in the most recent period.

Author Manuscript

This article is protected by copyright. All rights reserved.

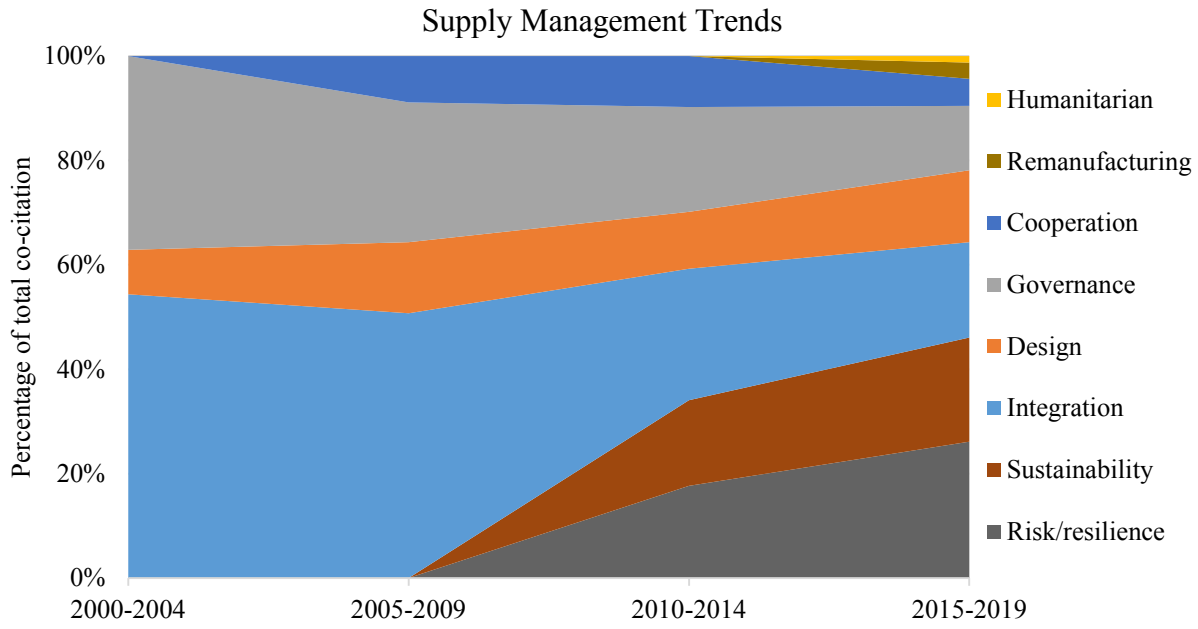


Figure 6: Recent Trends in Supply Management Sub-topics

1.8 Current OSCM Research: 2015-2019

As a final cut of the data, we develop a snapshot of current OSCM research by extracting documents ranked among the 300 most co-cited references in the last five years (2015-2019 – see Appendix D). These documents were collectively co-cited 26,615 times, with a mean of 85.3 co-cites per document. In the same five-year period, our journal set contains a total of 67,693 co-citations to 23,211 documents (including co-citations to general methods documents). Thus, co-citations to these 311 functionally-oriented sources[6] (1.3% of all co-cited items) account for almost 40% of all co-citations. Such highly concentrated distributions of co-citations are also evident in the other document samples we collected across various time horizons.

Table 5 provides a detailed breakdown of the co-citation frequencies and percentages for categories and sub-topics represented in the top 300 ranked documents. To the extent that this

[6] The list contains 311 documents, as 17 documents tied for the 300th rank.

This article is protected by copyright. All rights reserved.

Author Man

sample is representative, it provides a cross-section of current research conversations in OSCM.

Table 5: Topic Areas of Documents Ranked in the Top 300, 2015-2019

Contribution Category	# Documents	# Co-Cites	% Co-Cites
Supply Management	158	14186	53%
Sustainability	31	2936	21%
Risk/resilience	33	2895	20%
Integration	32	2778	20%
Design	25	2127	15%
Governance	20	1882	13%
Cooperation	2	388	3%
Performance measurement	4	257	2%
Remanufacturing	2	233	2%
Review article (literature)	2	186	1%
Supply chain theory	3	186	1%
Textbook	2	163	1%
Humanitarian	2	155	1%
Logistics	41	3137	12%
Vehicle routing/scheduling	18	1507	48%
Humanitarian	7	478	15%
Location	6	427	14%
Warehouse management	3	235	7%
Review article (container terminal ops)	3	188	6%
Reverse logistics	2	172	5%
Sustainability	2	130	4%
Strategy	27	2430	9%
Competitive Advantage	9	771	32%
Resource-Based View	6	758	31%
Remanufacturing	3	224	9%
Dynamic Capability	2	195	8%
Flexibility	3	180	7%
Review article (contingency theory)	1	125	5%
Sustainability	2	115	5%
Servitization	1	62	3%
Inventory	20	1744	7%
Newsvendor	8	766	44%
Lot sizing	3	273	16%
Textbook	2	241	14%
Perishable inventory	3	197	11%
Multi-echelon	2	135	8%
Financing	1	67	4%
Sustainability	1	65	4%
Pricing	20	1577	6%
Dynamic pricing	10	828	53%
Channel management	5	355	23%
Other	2	173	11%
Textbook	1	81	5%
Remanufacturing	1	80	5%
Review article	1	60	4%
Process Improvement	21	1482	6%
Lean	5	396	27%
Knowledge/learning	4	319	22%
Analytics	3	172	12%
Improvement theory	2	128	9%

Author Manuscript

This article is protected by copyright. All rights reserved.

Layout/line balancing		2		127		9%
NPD		1		84		6%
Capacity		1		69		5%
Flexibility		1		63		4%
Equipment replacement		1		62		4%
Review article (call center ops)		1		62		4%
Scheduling	10		1027		4%	
Review article		4		441		43%
Shop scheduling		5		362		35%
Textbook		1		224		22%
Organizational Issues	10		727		3%	
Organization structure		6		465		64%
Behavioral operations		4		262		36%
General Text	2	2	155	155	1%	
Queuing	2	2	150	150	1%	
Total	**311**		**26615**		**100%**	

Regarding co-citations to specific functional contributions, again supply management constitutes the largest number of co-cited documents and percentage of total co-citations (53%). Within supply management, remanufacturing and humanitarian supply management are relatively nascent in co-citation allotments (2% and 1% of co-citations), while sustainability, risk (including research on resilience), integration, and design (supply network structure) topics appear to be more extensive, each accounting for 15% to 21% of total supply management co-citations. Interestingly, supply relationship governance, a venerable topic going back to Williamson in the 1970s and earlier, received only a modest 13% of co-citations to supply management studies in the most recent five years.

Perhaps the biggest differences between these results describing current research and those describing earlier periods is the rise of co-citations to research in logistics and pricing. Logistics research accounts for 12% of total co-citations, driven primarily by a resurgence in studies of vehicle routing and scheduling. The resurgence parallels the growth in e-commerce and "last mile" delivery services in recent years. The pricing research category comprises six percent of the total co-citations for the sample group and period. Readily identifiable pricing sub-topics include dynamic pricing and markdowns in the presence of strategic consumers, coordinating pricing across channels, and pricing new versus remanufactured products. A

This article is protected by copyright. All rights reserved.

Author Manuscript

notable change in scheduling research is the growth of co-citations to studies of patient scheduling in hospitals and clinics (included in the "shop scheduling" category).

Strategy research accounts for nine percent of all co-citations included in our sample. Topics related to competitive advantage and the resource-based view (RBV, KBV, and dynamic capabilities) collectively have captured most (63%) of the co-citations to strategy research documents. Remanufacturing represents an emerging topic in strategy, with a co-citation share of 9%.

Inventory and process improvement topics also own significant shares of co-citations at 7% and 6%, respectively. Studies of newsvendor problem issues appears to dominate current inventory research (44% of inventory co-citations). Lean manufacturing and organizational learning are the leading topics in process improvement (49% of co-citations combined). However, a new category, analytics, comprises 12% of co-citations. Subsequent analyses below identify this as a rapidly growing area of research.

Research in organization issues and queuing round out the research topics represented in the documents ranked among the 300 most co-cited over the last five years; highly co-cited articles in these domains cover familiar topics. Organization issues' share of co-citations has remained fairly constant over the decades, suggesting that it continues to play a small but perhaps foundational role for studies of supply management and strategy. In contrast, the relatively small co-citation shares of inventory, logistics, scheduling, and queuing, which were quite large in the 1960s-1990s, suggest that the OSCM field has migrated away from these once central topics, with the exceptions of the specialized emerging topics mentioned above.

Author Manuscript

This article is protected by copyright. All rights reserved.

1.9 OSCM Research: Looking Forward

To project future trends in popular research topics, we close our study with two additional analyses. First, we conduct a burst analysis to identify highly active documents in the most recent five years. Burst detection algorithms identify sudden increases in growth and intensity of co-citations to a given document, thus indicating a sustained surge in scholarly attention for a specific period (Chen, 2006; 2014; Feng, Zhang, Du, & Wang, 2015). Current knowledge frontiers and trends detected using burst analysis signal hot topics and suggest how a discipline is evolving. A "burst" is indicated by sharp increases in co-citation frequency of a document, relative to other peer documents examined over a given period of time (Kleinberg, 2003). Following the approach of prior researchers, we derive burst detection results using Kleinberg's algorithm, set at the default criteria (Zhu, Song, Zhu, & Johnson, 2019). Kleinberg's algorithm models time-dependent data using an infinite-state automaton in which bursts appear as state transitions (Small et al., 2014). This algorithm uses a probabilistic automaton method, states of which correspond to the frequencies of individual entities (co-citation frequencies). State transitions correspond to points in time around which the frequency of an event changes significantly (Olmeda-Gómez, Ovalle-Perandones, & Perianes-Rodríguez, 2017). It is analogous to queuing theory for bursty traffic networks (for more detailed technical explanation of burst detection model please see Kleinberg, 2003).

Using documents ranked among the top 500 most co-cited sources in the 2015-2019 period, we identify currently active bursts in co-citations. Table 6 lists the 13 articles that are receiving on-going bursts in attention, in order of burst strength. We describe the core topic addressed by each document by examining the title, co-cited articles, and most recent citing articles.

Author Manuscript

This article is protected by copyright. All rights reserved.

Four of the 13 articles, including the three receiving the strongest bursts, address data analytics as a research topic. The topic most closely associated with four of the other documents is supply risk management. Humanitarian logistics and supply networks are also represented in the list, as well as are documents addressing sustainability and supply chain metrics. These results suggest that data analytics and humanitarian supply chain management are likely to attract significant and growing portions of co-citation shares over the next few years.

Table 6. Active Citation Bursts Among Top 500 Ranked Documents: 2015-2019

Reference (first only)	Published	Burst Strength	Title	Source	Topic Area
Wamba SF	2015	12.5827	How 'big data' can make big impact: Findings from a systematic review and a longitudinal case study	Intl J. Production Economics	Big data, Data science, Analytics
Hazen BT	2014	9.6636	Data quality for data science, predictive analytics, and big data in supply chain management: An introduction to the problem and suggestions for research and applications	Intl J. Production Economics	Big data, Data science, Analytics
Waller MA	2013	9.3802	Data science, predictive analytics, and big data: A revolution that will transform supply chain design and management	J. Business Logistics	Big data, Data science, Analytics
Ho W	2015	6.8187	Supply chain risk management: a literature review	Intl J. Production Research	Supply chain risk
Artzner P	1999	5.8987	Coherent measures of risk	Math. Finance	Risk measurement
Balcik B	2010	5.6048	Coordination in humanitarian relief chains: Practices, challenges and opportunities	Intl J. Production Economics	Humanitarian supply chain
Chen HC	2012	4.2504	Business intelligence and analytics: From big data to big impact	MIS Quarterly	Big data, Data science, Analytics
Rockafellar R	2000	4.0001	Optimization of conditional value-at-risk	Journal of Risk	Risk
Holguin-Veras J	2012	3.1578	On the unique features of post- disaster humanitarian logistics	J. Operations Management	Humanitarian logistics
Campbell JF	2012	2.3673	Twenty-five years of hub location research	Transportation Science	Service/facility networks
Gunasekaran A	2001	2.2339	Performance measures and metrics in a supply chain environment	Intl. J. Operations and Prodn. Mgt.	Supply chain metrics
Brandenburg M	2014	2.1299	Quantitative models for sustainable supply chain management: Developments and directions	Eur. J. Operations Research	Sustainable supply chain
Gunasekaran A	2004	1.806	A framework for supply chain performance measurement	Intl J. Production Economics	Supply chain metrics

As another method for projecting future interests going forward, we adopt an *interest analysis* approach that seeks to compare the relative attention paid to topics in practitioner and academic publications, respectively. Baskerville and Myers (2009) developed a simple

This article is protected by copyright. All rights reserved.

Author Manuscript

"interest index" that uses document counts to estimate the proportional interest levels in a given topic at a given time. They apply this method to analyze "fashion waves" within information systems research and practice. We employ the same approach to identify topical interest trends reflected in OSCM publications.

We first identified all articles listed in EBSCO Business Source Complete database[7] from 1998-2019[8] that contained the terms "operations management" or "supply chain management" anywhere in the article text. Doing so establishes an inclusive population of articles potentially addressing OSCM topics. We then repeatedly searched within this population for articles that contained topic phrases identified in our most recent cross-sectional and burst analyses (Tables 5 and 6), in both practitioner publications and academic publications (as identified by Business Source Complete). To be counted, an article must have contained a variant of the topic phrase in its title, subject terms, or abstract.

Figure 7 presents trends in proportions of article counts (percentages of total practitioner or academic articles) for 16 topical phrases. The graphs are presented in order of decreasing trend slopes. These data suggest several interesting phenomena. First, some topic titles appear to be more familiar to academics than to practitioners. Terms such as remanufacturing, resource-based view, and vehicle routing (scheduling) appear to have found little purchase in practitioner articles. Second, periods of growth and decline in the popularity of topics are more clearly evident in the practitioner literature, whereas most of the topics continue to exhibit positive trends in the academic literature. For a number of the topics, the trend graphs

[7] The Business Source Complete database is considered superior to the ProQuest database in terms of content coverage and searchability (Nolan, 2009). Tests using the ProQuest data yielded essentially the same trend results.

[8] While the proportion of all academic articles that contained "operations management" or "supply chain management" has stayed relatively steady for at least three decades, the number of practitioner articles containing these terms grew rapidly from 1990-1997, before stabilizing in 1998. Thus, we analyze the data from 1998 to avoid proportional differences in earlier periods.

This article is protected by copyright. All rights reserved.

Author Manuscript

suggest that academics and practitioners followed near parallel periods of early growth in interest, followed by a divergence, as practitioner interest declined and academic interest continues to grow (e.g. big data, sustainable supply chain, innovation, supply risk). This pattern may reflect the greater tendency for OSCM scholars to continuously extend and refine topical knowledge, even after practitioner popularity begins to wane.

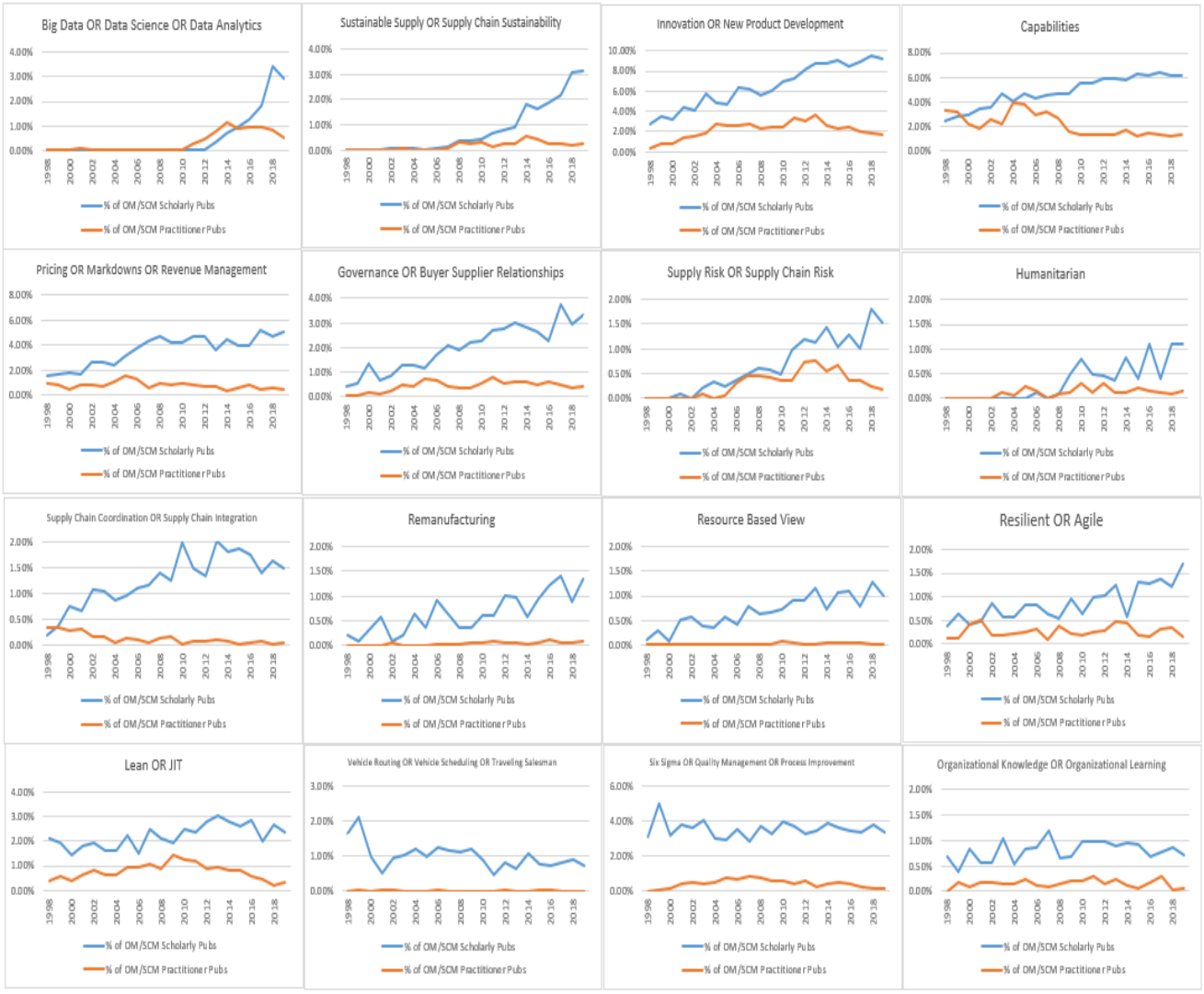


Figure 7: Interest index trends in OSCM scholarly and practitioner publications
Starting with the population of all articles containing "operations management" or "supply chain management" anywhere in the document's text, each figure shows the percentage of these articles that also contain each topic term or phrase in the document's title, subject terms, or abstract.

The trends indicated in this broader analysis of all published OSCM articles are largely consistent with the topic popularities and trends revealed in our more focused co-citation

This article is protected by copyright. All rights reserved.

analyses. Big data/analytics, supply risk, and humanitarian issues are evidencing recent growth in attention, though these topics still account for relatively small proportions of the total OSCM literature. A bit more surprising is the finding that longer-lived topics such as innovation, supply relationship governance, capabilities, and pricing continue to show growth trends, though the latter two topics appear to be flattening out. Innovation is hardly a new topic, for example, yet the proportion of academic OSCM articles addressing innovation has quadrupled over the last 20 years. However, only 1 innovation article in the last five years is among the 300 top ranked articles (Table 5). Similarly, other older topics such as lean and process improvement continue to contribute consistent proportions of publications to the total OSCM academic literature, yet they have received relatively little recent attention as primary conversation drivers present in our lists of top co-cited documents (again see Table 5). Vehicle routing appears to be the only topic included in Figure 7 that shows indication of a slight decline.

Discussion

It is important for scholars to examine how their work fits into larger patterns of progress within a field (Kuhn, 1962; Small, 1980). Researchers have noted that OSCM scholars tend to congregate according to shared perspectives (e.g. problem solving vs theory building/testing) and methodological preferences (e.g. analytical/OR vs empirical; qualitative vs quantitative). Further, these groupings vary across institutions (schools and societies) and geographical regions (Theoharakis, Voss, Hadjinicola, & Soteriou, 2007; Maloni, Carter, & Kaufmann, 2012; Saladin, Shang, Fry, & Donohue, 2015). Specialization and social grouping may be important contributors to research productivity, as they engender centers of excellence. However, a more generalized awareness can also be useful, as it promotes more

Author Manuscript

This article is protected by copyright. All rights reserved.

integrated and holistic views of a specialized research agenda, clarifying its place in the larger field.

Using a sample of 31 scholarly journals, we analyzed co-citations of over 95,000 articles containing more than one million references, applying ranking, burst, interest, and periodic analyses to identify, classify, and visualize underlying intellectual foundations and trends in OSCM. These findings quantify changes in the relative magnitudes of OSCM research conversations over time. As engaged scholars, many of us probably feel that we have a sense of who the strongest contributors and what the "hot" topics are, but it is difficult to know their true prevalence in the grander scheme. For example, the data from Table 5 indicate that about 12% of all co-citations of the most co-cited 311 functionally-oriented articles in the last 5 years addressed sustainability in one of four of the major OSCM topic areas. Similarly, studies of risk and resilience in supply management accrued almost another 11% of all co-citations. In contrast, a venerable topic such as "lean" accounts for only 1.6% of co-citations. Such comparisons enable us to answer the question, *where are OSCM researchers concentrating their efforts?* Moreover, this information prompts a potentially more important question, *where should researchers concentrate their efforts?* Given the current challenges faced by OSCM managers and society as whole, does the portfolio of research emphases represented in Table 5 present an appropriate research profile for our field? Answering this question will require debate that combines economic, practical, and ethical perspectives. We offer the findings of this study as a benchmark to support such a debate.

As authors, we found that the trends we uncovered in some cases supported and in other cases challenged our prior perceptions of how the field has developed. Each of us, owing to the biases inherent in our own specialized areas of focus, were surprised that certain authors

Author Manuscript

This article is protected by copyright. All rights reserved.

familiar to us were absent from top co-cited lists[9]. Similarly, it was interesting to discover that recent seminal works seem to have replaced older ones as key source documents. No single article appears seminal for the 70-year life of OSCM. Moreover, several of the documents with the most enduring co-citation records were not authored by OSCM researchers (e.g. March & Simon, 1958; Kuehn & Hamburger, 1963; Porter, 1980; 1985; Williamson, 1985). Other formerly long-popular documents have dropped from the most co-cited lists in recent years. These results are likely a product of the recent, rapid expansion of OSCM research.

1.10 The Evolution of OSCM

Our analysis evidences significant growth in the richness and variety of problem types and research questions addressed by OSCM researchers. Pioneering studies from the 1950s and 1960s conducted by Bellman, Johnson, Wagner, and Dantzig, etc., provide leading examples of relatively finely scoped developments, with strict limiting assumptions, that established core foundations for decades of future development. Some of these foundational studies developed methods, such as dynamic programming, or formulated models for focused problems, such as inventory optimization. Interestingly, traffic dynamics (e.g. Reuschel, 1950; Dantzig, 1954) formed a prominent part of the early research conversation. Later studies focused on queuing, capacity and aggregate planning, scheduling, inventory policies, and numerous other resource allocation problems such as location/allocation and transportation optimization algorithms; all of these are essentially single-issue problems.

Into the 1980s and 1990s, researchers armed with growing computational capacity developed more complex models using powerful optimization algorithms, Markov models, and multicriteria models. Empirical methods grew during this period as well, supported by

[9] Only first authors' names are listed in the appendices, for brevity.

This article is protected by copyright. All rights reserved.

Author Manuscript

methods including simulation, structural equation modelling, and other multivariate analytic techniques. These developments addressed manufacturing strategies in addition to operational decisions, and ultimately considered inter-organizational relationships, supply chain designs, and higher order factors such as risk and sustainability.

This evolution from narrow problem focus to broader organizational issues reflects contemporaneous real-world developments. Beginning in the 1980s, rapid globalization and technology advances challenged 'inward facing' operations executives to think about operations more holistically and strategically, and to pursue value creation opportunities with partners in supply networks (Sprague, 2007; Swink et al., 2020, Ch. 1). Such changes called for scholarship that views internal processes more broadly and addresses inter-organizational issues that align with supply chain management opportunities. In the late 1980s, qualitative methods began to be adopted and extended by Eisenhardt, Yin, and others. At the same time, OSCM began to apply more integrative theories from economics and organizational design (e.g. transaction cost economics, resource dependency theory, information processing theory, resource-based view), as well as from popular paradigms in practice (e.g. TQM, six sigma, TPS, lean). These approaches stimulated scientific inquiry of even broader and more complex phenomena. It was recognized from the 1990s in professional practice, and then in research studies of those practices, that even if firms optimized their internal operations, they left significant value on the table if they neglected inter-organizational improvement opportunities. Hence, supply chains were acknowledged as a 'new' unit of analysis to be examined, improved, and optimized. This encouraged the adaptation and application of additional theories to address behavioral and relationship management issues (e.g. social capital theory, social network theory, risk and contracting concepts, and others). Simultaneously, the continued precipitous growth of data storage capacity and computational

Author Manuscript

This article is protected by copyright. All rights reserved.

processing power over this period enabled the development of powerful new optimization models that captured progressively more and more of the complexities of inter- as well as intra-organizational operating processes.

1.11 OSCM Today and Tomorrow

Today, supply management and strategy dominate the OSCM conversation. The complex and dynamic nature of these domains will likely continue to drive research that further applies and extends theories to integrate strategic, tactical, and behavioral elements of supply chain design and execution. The more granular portions of our analyses suggest ways in which current trends may play leading roles in OSCM. The burst analysis (Table 6), snapshot of current research (Table 5), and broader interest analyses (Figure 7) indicate that sub-topics within supply management (e.g. sustainability and risk) and process improvement (e.g. analytics) are receiving increasing levels of attention today. While these trends may be apparent to observers of journal publications and conference presentations, ours is the first study to quantify them. Documents in these areas collectively account for 37% of 37,739 co-citations of the top 100 most co-cited works over the 70-year study period. They include 39 of these 100 most co-cited articles, which is remarkable given their emergence only recently as prominent streams in the OSCM literature. Interestingly, since 2015, documents addressing supply management make up 62 of the 100 top co-cited articles and command 61% of all co-citations of these top 100 articles.

Studies of integration dominated supply management research in the first decade of this millennium, mostly driven by efforts to quantify the impacts of coordination (Cachon & Lariviere, 2005), information sharing, and its distortion (bullwhip effect) (Lee, Padmanabhan, & Whang, 1997; Chen, Drezner, Ryan, & Simchi-Levi, 2000), but also including the development of broader cross-functional and inter-organizational integration concepts

This article is protected by copyright. All rights reserved.

Author Manuscript

(Frohlich & Westbrook, 2001; Flynn, Huo, & Zhao, 2010). In some ways this stream of research reflects and perhaps even presages industrial moves toward greater technology-enabled supply chain integration. However, it is readily apparent that few supply chains have yet achieved the levels of integration envisioned in these academic studies.

Recent trends suggest that supply risk and sustainability have become dominant research topics. Definitional, early studies of supply risk management appearing in the last decade (e.g. Kleindorfer & Saad, 2005; Tang, 2006; Tomlin, 2006) provide foundational frames current researchers are using to apply theories to risk identification and mitigation techniques (e.g. Wiengarten, Humphreys, Gimenez, & McIvor, 2016; Scheibe & Blackhurst, 2018). Similarly, foundational works in supply chain sustainability (Zhu & Sarkis, 2004; Carter & Rogers, 2008; Seuring & Müller, 2008) are supporting subsequent empirical studies (e.g. Chaabane, Ramudhin, & Paquet, 2012). Again, these trends seem to be highly consistent with larger business trends. Rising perceptions of environmental, economic, and geo-political uncertainties, punctuated by natural disasters, a major recession (2008), slowdowns in globalization, and a pandemic have heightened managers' sensitivity to disruptions and longer-term consequences of global supply chain design choices. In addition, as stakeholders increasingly encourage managers to consider objectives beyond short-term profits, OSCM appears to be responding with increasing study of environmental outcomes of operations, social consequences, and new topics such as reverse and humanitarian logistics. An informal survey of recent journal special issue announcements reflects these growing interests; in-progress special issue developments address areas of public policy (e.g. economic inequality, mobility, climate change, globalization, international relations), supply management (e.g. disruptions and pandemics, innovation networks), technology management (big data/analytics, digital transformation, technologies such as blockchain and additive

Author Manuscript

This article is protected by copyright. All rights reserved.

manufacturing), and strategy (e.g. platform and sharing economies, sustainability and social responsibility).

For brevity, we omit discussion of other topics highlighted in our data and findings, many of which appear to be in decline as a proportion of total research co-citations. A small but notable exception is pricing research. Twenty documents (6.4%) of the top 311 most co-cited documents in the last five years address pricing policies as the primary research issue. Only five pricing research documents make the top 100 most co-cited references for the last five years, yet collectively pricing studies represent a substantial and growing area of research. Top co-cited contributions in the last five years address product/quality effects on pricing and revenue management strategies (Mussa & Rosen, 1978; Talluri, Van Ryzin, & Ryzin, 2004); as well as analytical models of inventory pricing under various considerations (e.g. Elmaghraby & Keskinocak, 2003). The sub-topics identified in Table 5 indicate a growing integration of pricing decisions with consumer behavior models, as well as a broadening of pricing applications to special circumstances (e.g. remanufactured products). As the sophistication of analytical modelling and empirical methods continues to evolve, it seems likely that OSCM researchers will increasingly study higher levels of integration of factors including pricing, product mix, and other marketing factors with decisions affecting supply chain design and execution.

1.12 Opportunities

The interest index analysis results depicted in Figure 7 indicate that academic publications in some venerable OSCM research areas continue to grow, even though they do not account for substantial portions of academic co-citations (Table 5), and attention in the practitioner press appears to have waned. Do we OSCM scholars tend to hang on too long to pet topics? Given that the setup costs of research (e.g. learning the literature and relevant theories) are high, we

This article is protected by copyright. All rights reserved.

Author Manuscript

would expect that scholars are incentivized to squeeze every bit of publication potential from a given research stream. A more sanguine view is that scholars are more attuned to the nuances and contingencies associated with a given practice or business trend, thus their attention lasts well beyond that of practitioners who may be more susceptible to "fads" (Baskerville & Myers, 2009). Even so, such findings raise the larger question regarding the relevance of OSCM research. If we define relevance as "being consistent with issues that are of practical (practitioner) concern," the evidence from our study suggests that OSCM scholars are not as responsive to changes in practical concerns as we might wish. Further, our persistence with topics popular in the past could limit our ability to lead, rather than lag, in terms of relevance. Most OSCM empirical studies are based on data related to existing models and phenomena; rarely do they attempt to look over the horizon. Indeed, such speculation is difficult to publish; our research methods and rigor standards almost guarantee a lagging position for research. Journal editors might create special issues with relaxed methodological constraints to encourage forward-looking research that focuses more on next generation factors rather than current events. In the larger frame, our findings suggest that OSCM researchers might make their work more relevant by seeking to address larger, newer problems and questions rather than explicating the details of older ones. Of course, this approach to research entails greater risks; incentives and rewards will need to be adjusted accordingly.

Another interesting opportunity uncovered in our study stems from the absence of new journals[10]. Assuming our journal identification process was inclusive, one notes that not a single important journal has been introduced in OSCM in more than twenty years. Given the growing interest in, and presumed importance of, topics such as sustainability, healthcare

[10] We thank one of the anonymous reviewers for identifying this opportunity.

This article is protected by copyright. All rights reserved.

Author Manuscript

operations, and risk, why are focused journals in these areas scarce, and why are they assigned lower importance? Interestingly, even journals addressing long-standing topics like quality management and service management failed to reach prominence in either our surveys or in existing rankings studies. Moreover, with the exception of *Interfaces,* more explicitly practice-oriented journals are also absent from our list of journals identified as "important" by OSCM academics and prior surveys. Given the probable increasing reliance that professional schools such as business and engineering will have on funding from commercial sources, perhaps it is time to consider realignments in research and journal quality metrics.

Service operations research does not figure largely in our research findings. A paper introducing the "SERVQUAL" model (Parasuraman, Zeithaml, & Berry, 1988) is the only top 100 (number 83) co-cited services-focused (excluding retail services) document in the 2000s. A review of telephone call centers research (Gans, Koole, & Mandelbaum, 2003) is the only top 100 co-cited service research document in the 2010s. Our OSCM journal list includes no service focused journals, yet it remains telling that none of the OM journals (JOM, MSOM, POMS, MS) seem to heavily cite services-focused research. These journals are not necessarily manufacturing focused by design; they appear to have just evolved this way. There may be an opportunity for scholars to consider ways to incentivize and reward publications in manifestly relevant areas such as services, sustainability, and others.

An exception to the dearth of topically oriented journals exists in supply chain management. In recent years, journals that were formerly focused on specific functions (e.g. logistics, internal operations, and purchasing) have become broader in addressing more integrative supply chain management issues. Moreover, SCM appears to have become a dominant, umbrella perspective for viewing and positioning various operations management

Author Manuscript

This article is protected by copyright. All rights reserved.

topics. An opportunity for OSCM scholars is to conceive and implement new ways of organizing research topics and questions under this perspective. In some ways, this opportunity involves challenges similar to those faced by firms who seek to reorganize operations away from functional organizations toward more integrated forms located under chief supply chain officers. Perhaps more capability or process-oriented views of operations management will emerge from this evolution.

A final opportunity emerges from our finding that co-citations tend to be highly concentrated. For example, we estimate that about 2% of all functionally-oriented documents co-cited by our journal set over the last 5 years account for almost 65% of co-citations to all functional contributions in that period. It would be interesting to discover whether such levels of concentration are typical across different fields. Even more interesting would be to uncover the traits of these relatively few highly co-cited articles that make them so influential (e.g. Antonakis, Bastardoz, Liu, and Schriesheim (2014), analyze traits of highly cited articles in *The Leadership Quarterly*). One possibility is that researchers continue to cite prominent sources, creating a kind of momentum. For example, the average publication year of the 311 documents co-cited in the 2015-2019 period is 2002; only 82 are post-2010. Conversely, researchers might explore the roles that articles that receive few co-citations play in the progress of OSCM. Do these works provide momentum, do they serve as foundational stocks for innovation (akin to failed experiments), or do they represent unproductive uses of resources?

Limitations and Conclusion

The knowledge landscape developed in our study includes but supersedes the "knowledge groups" identified in Pilkington and Meredith's (2009) focused OM study. The differences in our findings can be attributed to differences in methods of analysis and a much larger sample

This article is protected by copyright. All rights reserved.

Author Manuscript

of records (31 journals over 70 years versus three journals over 20 years). However, a number of important niches are still notably absent. Topics such as service operations and other contextually focused research topics (e.g. health care, government) are not prominently represented, potentially because they are relatively recent areas of focus that have not had time to build a strong corpus of co-citations. Other limitations to this research should also be considered. First, there is typically a significant time lag between an article's publication and its citation. This likely produces a bias in co-citation counts toward articles published earlier; the impact of recently published work requires further study over time. For this reason, some of our findings are based on extrapolations of backward-looking data. Second, we employ an admittedly modern perspective in identifying and assigning topical classifications. For example, thirty years ago researchers would not likely have used "supply management" as a term by which to organize research topics. Further, some degree of subjectivity is unavoidably present when creating topical categories for article classification. However, we suggest that for trend analysis, *consistent application* of the classification scheme is the most important objective. Our inter-rater comparisons demonstrate an acceptable level of consistency, using conventional standards. We are confident that long-time OSCM researchers will find at least a few differences between our categorization scheme and their views of the field. Indeed, differences in the authors' individual perspectives served as a primary motivation for this type of study. We trust that such differences will lead to constructive debates and a richer understanding of the perspectives and frames with which we can describe our field. Third, we acknowledge that services focused journals are omitted from our analysis. As we discussed earlier, they were not identified by the WoS, surveyed experts, or in the journal ranking articles engaged in our list building process.

Author Manuscript

This article is protected by copyright. All rights reserved.

Noted American historian, Carter Godwin Woodson, is reported to have said, "Knowing the past opens the door to the future" (Bunch, 2018). We trust that the contributions of our study will be useful for researchers who want to better understand how their research interests fit into the larger historical and knowledge structure landscapes of the OSCM discipline. In addition to providing a benchmark against which researchers can compare their perceptions of the field's progress, we expect the findings to be useful for journal editors who want to understand how the topics covered in their journal map against the popularity of topics more broadly in the field. The findings should be also helpful in updating the scope and boundaries of OSCM, stimulating debates about trends that are shaping the field, and identifying desirable paths forward. PhD students may find our analysis useful in helping them study for comprehensive field examinations and in knowing how their research choices fit into the larger scheme of things. Lastly, we hope that our study may at least indirectly affect practice by helping researchers to better appreciate the scope and potential of OSCM's contributions to document and drive improvements in operations and supply chain management.

Author Manuscript

References

Amoako-Gyampah, K., & Meredith, J. R. (1989). The operations management research agenda: an update. *Journal of Operations Management*, 8(3), 250-262.

Antonakis, J., Bastardoz, N., Liu, Y., & Schriesheim, C. A. (2014). What makes articles highly cited? *The Leadership Quarterly*, 25(1), 152-179.

Ashby, A., Leat, M., & Hudson-Smith, M. (2012). Making connections: a review of supply chain management and sustainability literature. *Supply Chain Management: An International Journal*, 17(5), 497-516.

Babbar, S., Behara, R. S., Koufteros, X. A., & Huo, B. (2017). Emergence of Asia and Australasia in operations management research and leadership. *International Journal of Production Economics*, 184, 80-94.

Babbar, S., Behara, R. S., Koufteros, X. A., & Wong, C. W. (2018). Charting leadership in SCM research from Asia and Europe. *International Journal of Production Economics*, 203, 350-378.

Babbar, S., Koufteros, X., Behara, R. S., & Wong, C. W. (2019). SCM research leadership: the ranked agents and their networks. *Supply Chain Management: An International Journal*, 24(3), 821-854.

This article is protected by copyright. All rights reserved.

Babbar, S., Koufteros, X., Bendoly, E., Behara, R., Metters, R., & Boyer, K. (2020). Looking at ourselves: Lessons about the operations management field learned from our top journals. *Journal of Operations Management*, 66(3), 349-364.
Barman, S., Hanna, M. D., & LaForge, R. L. (2001). Perceived relevance and quality of POM journals: a decade later. *Journal of Operations Management*, 19(3), 367-385.
Barratt, M., Choi, T. Y., & Li, M. (2011). Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management*, 29(4), 329-342.
Baskerville, R. L., & Myers, M. D. (2009). Fashion waves in information systems research and practice. *MIS Quarterly*, 647-662.
Behara, R. S., Babbar, S., & Smart, P. A. (2014). Leadership in OM research: a social network analysis of European researchers. *International Journal of Operations & Production Management*, 34(12), 1537-1563.
Benckendorff, P., & Zehrer, A. (2013). A network analysis of tourism research. *Annals of Tourism Research*, 43, 121-149.
Boyack, K. W., & Klavans, R. (2010). Co- citation analysis, bibliographic coupling, and direct citation: Which citation approach represents the research front most accurately? *Journal of the American Society for information Science and Technology*, 61(12), 2389-2404.
Broadus, R. (1987). Toward a definition of "bibliometrics". *Scientometrics*, 12(5-6), 373-379.
Buffa, E. S. (1966). *Readings in Production and Operations Management*: Wiley.
Buffa, E. S. (1980). Research in operations management. *Journal of Operations Management*, 1(1), 1-7.
Bunch, L. (2018) Knowing the past opens the door to the future, accessed April 20, 2020, [available at https://nmaahc.si.edu/blog-post/knowing-past-opens-door-future-continuing-importance-black-history-month].
Cachon, G. P., & Lariviere, M. A. (2005). Supply chain coordination with revenue-sharing contracts: strengths and limitations. *Management science*, 51(1), 30-44.
Carter, C. R., & Easton, P. L. (2011). Sustainable supply chain management: evolution and future directions. *International Journal of Physical Distribution & Logistics Management*, 41(1), 46-62.
Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360-387.
Chaabane, A., Ramudhin, A., & Paquet, M. (2012). Design of sustainable supply chains under the emission trading scheme. *International Journal of Production Economics*, 135(1), 37-49.
Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. *European journal of operational research*, 2(6), 429-444.
Charvet, F. F., Cooper, M. C., & Gardner, J. T. (2008). The intellectual structure of supply chain management: A bibliometric approach. *Journal of Business Logistics*, 29(1), 47-73.
Chase, R. B. (1980). A classification and evaluation of research in operations management. *Journal of Operations Management*, 1(1), 9-14.
Chase, R. B., & Aquilano, N. J. (1977). *Production and Operations Management: A Life Cycle Approach*: McGraw-Hill/Irwin.
Chen, C. (2006). CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. *Journal of the Association for Information Science and Technology*, 57(3), 359-377.

This article is protected by copyright. All rights reserved.

Author Manuscript

Chen, C. (2014). The CiteSpace Manual.
Chen, F., Drezner, Z., Ryan, J. K., & Simchi-Levi, D. (2000). Quantifying the bullwhip effect in a simple supply chain: The impact of forecasting, lead times, and information. *Management science*, 46(3), 436-443.
Cobo, M. J., López- Herrera, A. G., Herrera- Viedma, E., & Herrera, F. (2011). Science mapping software tools: Review, analysis, and cooperative study among tools. *Journal of the Association for Information Science and Technology*, 62(7), 1382-1402.
Craighead, C. W., & Meredith, J. (2008). Operations management research: evolution and alternative future paths. *International Journal of Operations & Production Management*, 28(8), 710-726.
Dantzig, G. B. (1954). Letter to the editor—A comment on Edie's "Traffic delays at toll booths". *Journal of the Operations Research Society of America*, 2(3), 339-341.
Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of management review*, 14(4), 532-550.
Elmaghraby, W., & Keskinocak, P. (2003). Dynamic pricing in the presence of inventory considerations: Research overview, current practices, and future directions. *Management Science*, 49(10), 1287-1309.
Fahimnia, B., Pournader, M., Siemsen, E., Bendoly, E., & Wang, C. (2019). Behavioral operations and supply chain management–a review and literature mapping. *Decision Sciences*, 50(6), 1127-1183.
Fahimnia, B., Tang, C. S., Davarzani, H., & Sarkis, J. (2015). Quantitative models for managing supply chain risks: A review. *European Journal of Operational Research*, 247(1), 1-15.
Feng, F., Zhang, L., Du, Y., & Wang, W. (2015). Visualization and quantitative study in bibliographic databases: A case in the field of university–industry cooperation. *Journal of Informetrics*, 9(1), 118-134.
Fisher, M. L. (1997). What is the right supply chain for your product? *Harvard Business Review*, March-April, 1-11.
Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of Operations Management*, 28(1), 58-71.
Forrester, J. W. (1961). *Industrial Dynamics*: Massachusetts Institute of Technology Press.
Frohlich, M. T., & Westbrook, R. (2001). Arcs of integration: an international study of supply chain strategies. *Journal of operations management*, 19(2), 185-200.
Gans, N., Koole, G., & Mandelbaum, A. (2003). Telephone call centers: Tutorial, review, and research prospects. *Manufacturing & Service Operations Management*, 5(2), 79-141.
Giannakis, M. (2012). The intellectual structure of the supply chain management discipline: A citation and social network analysis. *Journal of Enterprise Information Management*, 25(2), 136-169.
Giunipero, L. C., Hooker, R. E., Joseph- Matthews, S., Yoon, T. E., & Brudvig, S. (2008). A decade of SCM literature: past, present and future implications. *Journal of Supply Chain Management*, 44(4), 66-86.
Goh, C.-H., Holsapple, C. W., Johnson, L. E., & Tanner, J. R. (1997). Evaluating and classifying POM journals. *Journal of Operations Management*, 15(2), 123-138.
Guilera, G., Barrios, M., & Gómez-Benito, J. (2013). Meta-analysis in psychology: a bibliometric study. *Scientometrics*, 94(3), 943-954.

This article is protected by copyright. All rights reserved.

Gupta, S., Verma, R., & Victorino, L. (2006). Empirical research published in production and operations management (1992–2005): trends and future research directions. *Production and Operations Management*, 15(3), 432-448.
Hill, A., Scudder, G., & Haugen, D. (1988). The operations management research agenda for the 80's: a progress report for Ph. D. dissertation research. *Operations Management Review*, 7(1&2), 24-32.
Hopp, W. J., & Spearman, M. L. (1996). *Factory physics: Foundation of manufacturing management*: Waveland Press.
Jacobs, F. R., & Chase, R. B. (2020). *Operations and Supply Management (13 ed.)*. Irwin New York, NY: McGraw Hill.
Johnsen, T. E., Miemczyk, J., & Howard, M. (2017). A systematic literature review of sustainable purchasing and supply research: Theoretical perspectives and opportunities for IMP-based research. *Industrial Marketing Management*, 61, 130-143.
Kleinberg, J. (2003). Bursty and hierarchical structure in streams. *Data Mining and Knowledge Discovery*, 7(4), 373-397.
Kleindorfer, P. R., & Saad, G. H. (2005). Managing disruption risks in supply chains. *Production and Operations Management*, 14(1), 53-68.
Kraljic, P. (1983). Purchasing must become supply management. *Harvard Business Review*, 61(5), 109-117.
Kuehn, A. A., & Hamburger, M. (1963). A heuristic program for locating warehouses. *Management Science*, 9(4), 643-666.
Kuhn, T. S. (1962). *The Structure of Scientific Revolutions*: University of Chicago Press.
Kulkarni, S. S., Apte, U. M., & Evangelopoulos, N. E. (2014). The use of latent semantic analysis in operations management research. *Decision Sciences*, 45(5), 971-994.
Laengle, S., Merigó, J. M., Miranda, J., Słowiński, R., Bomze, I., Borgonovo, E., Dyson, R. G., Oliveira, J. F., & Teunter, R. (2017). Forty years of the European Journal of Operational Research: A bibliometric overview. *European Journal of Operational Research*, 262(3), 803-816.
Lampe, H. W., & Hilgers, D. (2015). Trajectories of efficiency measurement: A bibliometric analysis of DEA and SFA. *European Journal of Operational Research*, 240(1), 1-21.
Lee, H. L., Padmanabhan, V., & Whang, S. (1997). Information distortion in a supply chain: The bullwhip effect. *Management science*, 43(4), 546-558.
Leung, X. Y., Sun, J., & Bai, B. (2017). Bibliometrics of social media research: A co-citation and co-word analysis. *International Journal of Hospitality Management*, 66, 35-45.
Linderman, K., & Chandrasekaran, A. (2010). The scholarly exchange of knowledge in operations management. *Journal of Operations Management*, 28(4), 357-366.
Liu, Z., Yin, Y., Liu, W., & Dunford, M. (2015). Visualizing the intellectual structure and evolution of innovation systems research: a bibliometric analysis. *Scientometrics*, 103(1), 135-158.
Mabert, V. A. (1982). Service operations management: research and application. *Journal of Operations Management*, 2(4), 203-209.
Maloni, M., Carter, C. R., & Kaufmann, L. (2012). Author affiliation in supply chain management and logistics journals: 2008- 2010. *International Journal of Physical Distribution & Logistics Management*, 42(1), 83-101.
March, J. G., & Simon, H. A. (1958). *Organizations*: Wiley.
Meho, L. I., & Yang, K. (2007). Impact of data sources on citation counts and rankings of LIS faculty: Web of Science versus Scopus and Google Scholar. *Journal of the Association for Information Science and Technology*, 58(13), 2105-2125.

This article is protected by copyright. All rights reserved.

Meredith, J. R. (1979). We are proud to announce ‘‘The Journal of Operations Management’’. *Operations Management Newsletter*, 1(14).
Meredith, J. R., & Amoako-Gyampah, K. (1990). The genealogy of operations management. *Journal of Operations Management*, 9(2), 146-167.
Meredith, J. R., & Pilkington, A. (2018). Assessing the exchange of knowledge between operations management and other fields: Some challenges and opportunities. *Journal of Operations Management*, 60, 47-53.
Meredith, J. R., Steward, M. D., & Lewis, B. R. (2011). Knowledge dissemination in operations management: Published perceptions versus academic reality. *Omega*, 39(4), 435-446.
Merigó, J. M., & Yang, J.-B. (2017). A bibliometric analysis of operations research and management science. *Omega*, 73, 37-48.
Miller, J. G., Graham, M. B., Freeland, J. R., Hottenstein, M., Maister, D. H., Meredith, J. R., & Schmenner, R. W. (1981). Production/operations management: agenda for the'80s. *Decision Sciences*, 12(4), 547-571.
Mussa, M., & Rosen, S. (1978). Monopoly and product quality. *Journal of Economic Theory*, 18(2), 301-317.
Nahmias, S. (1989). *Production and operations analysis*. Homewood, IL: Irwin.
Narin, F., Olivastro, D., & Stevens, K. A. (1994). Bibliometrics/theory, practice and problems. *Evaluation Review*, 18(1), 65-76.
Neely, A. (1993). Production/operations management: research process and content during the 1980s. *International Journal of Operations & Production Management*, 13(1), 5-18.
Nolan, N. (2009). A comparative evaluation of EBSCO Business Source Complete and ProQuest ABI/Inform. *The Charleston Advisor*, 11(1), 24-28.
Olmeda-Gómez, C., Ovalle-Perandones, M.-A., & Perianes-Rodríguez, A. (2017). Co-word analysis and thematic landscapes in Spanish information science literature, 1985–2014. *Scientometrics*, 113(1), 195-217.
Pannirselvam, G. P., Ferguson, L. A., Ash, R. C., & Siferd, S. P. (1999). Operations management research: an update for the 1990s. *Journal of Operations Management*, 18(1), 95-112.
Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12.
Petersen, C. G., Aase, G. R., & Heiser, D. R. (2011). Journal ranking analyses of operations management research. *International Journal of Operations & Production Management*, 31(4), 405-422.
Pilkington, A., & Fitzgerald, R. (2006). Operations management themes, concepts and relationships: a forward retrospective of IJOPM. *International Journal of Operations & Production Management*, 26(11), 1255-1275.
Pilkington, A., & Liston-Heyes, C. (1999). Is production and operations management a discipline? A citation/co-citation study. *International Journal of Operations & Production Management*, 19(1), 7-20.
Pilkington, A., & Meredith, J. (2009). The evolution of the intellectual structure of operations management—1980–2006: A citation/co-citation analysis. *Journal of Operations Management*, 27(3), 185-202.
Pilkington, A., & Meredith, J. R. (2018). The diffusion network of research knowledge in operations management. *International Journal of Operations & Production Management*, 38(2), 333-349.

This article is protected by copyright. All rights reserved.

Author Manuscript

Pinedo, M. (1995). *Scheduling: theory, algorithms and applications*. Englewood Cliffs, NJ: Prentice-Hall.
Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and competition*. Free Press.
Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*: Free Press.
Pritchard, J. (1969). Statistical bibliography or bibliometrics? *Journal of Documentation*, 25(4), 348-349.
Ramos- Rodríguez, A. R., & Ruíz- Navarro, J. (2004). Changes in the intellectual structure of strategic management research: A bibliometric study of the Strategic Management Journal, 1980–2000. *Strategic Management Journal*, 25(10), 981-1004.
Reuschel, A. (1950). Vehicle movements in a platoon with uniform acceleration or deceleration of the lead vehicle. *Zeitschrift des Oesterreichischen Ingenieur-und Architekten-Vereines*, 95, 50-62.
Rungtusanatham, M. J., Choi, T. Y., Hollingworth, D. G., Wu, Z., & Forza, C. (2003). Survey research in operations management: historical analyses. *Journal of Operations management*, 21(4), 475-488.
Saaty, T. L. (1980). *The Analytic Hierarchy Process: Planning, Priority Setting, Resource Allocation*. New York: McGraw-Hill.
Saladin, B. A., Shang, G., Fry, T. D., & Donohue, J. M. (2015). Research constituents and authorship patterns in the production and operations management journal. *Production and Operations Management*, 24(4), 523-534.
Scheibe, K. P., & Blackhurst, J. (2018). Supply chain disruption propagation: a systemic risk and normal accident theory perspective. *International Journal of Production Research*, 56(1-2), 43-59.
Schonberger, R. (1986). *World Class Manufacturing*: Simon and Schuster.
Scudder, G. D., & Hill, C. A. (1998). A review and classification of empirical research in operations management. *Journal of Operations Management*, 16(1), 91-101.
Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699-1710.
Shafique, M. (2013). Thinking inside the box? Intellectual structure of the knowledge base of innovation research (1988–2008). *Strategic Management Journal*, 34(1), 62-93.
Silver, E. A., Pyke, D. F., & Peterson, R. (1998). *Inventory management and production planning and scheduling*. New York: Wiley.
Small, H. (1973). Co- citation in the scientific literature: A new measure of the relationship between two documents. *Journal of the Association for Information Science and Technology*, 24(4), 265-269.
Small, H. (1978). Cited documents as concept symbols. *Social Studies of Science*, 8(3), 327-340.
Small, H. (1980). Co-citation context analysis and the structure of paradigms. *Journal of Documentation*, 36(3), 183-196.
Small, H. (2003). Paradigms, citations, and maps of science: A personal history. *Journal of the Association for Information Science and Technology*, 54(5), 394-399.
Small, H., Boyack, K. W., & Klavans, R. (2014). Identifying emerging topics in science and technology. *Research Policy*, 43(8), 1450-1467.
Soteriou, A. C., Hadjinicola, G. C., & Patsia, K. (1999). Assessing production and operations management related journals: the European perspective. *Journal of Operations Management*, 17(2), 225-238.

This article is protected by copyright. All rights reserved.

Sprague, L. G. (2007). Evolution of the field of operations management. *Journal of Operations Management*, 25(2), 219-238.
Swink, M., Melnyk, S. A., & Hartley, J. L. (2020). *Managing Operations Across the Supply Chain (4 ed.)*. New York, NY: McGraw-Hill Education.
Talluri, K. T., Van Ryzin, G., & Ryzin, G. J. (2004). *The Theory and Practice of Revenue Management*: Springer Science & Business Media.
Tang, C. S. (2006). Perspectives in supply chain risk management. *International Journal of Production Economics*, 103(2), 451-488.
Tang, O., & Musa, S. N. (2011). Identifying risk issues and research advancements in supply chain risk management. *International Journal of Production Economics*, 133(1), 25-34.
Taylor, F. W. (1911). *The Principles of Scientific Management*. New York: Harper & Brothers.
Theoharakis, V., Voss, C., Hadjinicola, G. C., & Soteriou, A. C. (2007). Insights into factors affecting Production and Operations Management (POM) journal evaluation. *Journal of Operations Management*, 25(4), 932-955.
Tomlin, B. (2006). On the value of mitigation and contingency strategies for managing supply chain disruption risks. *Management Science*, 52(5), 639-657.
Vinkler, P. (2010). *The Evaluation of Research by Scientometric Indicators*: Elsevier.
Vogel, R., & Güttel, W. H. (2013). The dynamic capability view in strategic management: A bibliometric review. *International Journal of Management Reviews*, 15(4), 426-446.
Vollmann, T. E., Berry, W. L., & Whybark, D. C. (1997). *Manufacturing planning and control systems*. Irwin, Boston: Dow Jones.
Voss, C. A. (1984). Production/operations management—A key discipline and area for research. *Omega*, 12(3), 309-319.
Wang, C., Lim, M. K., Zhao, L., Tseng, M.-L., Chien, C.-F., & Lev, B. (2020). The evolution of Omega-The International Journal of Management Science over the past 40 years: A bibliometric overview. *Omega*, 93, 102098.
Wang, Q., & Sun, X. (2019). The international journal of production research in the past, the present and the future: a bibliometric analysis. *International Journal of Production Research*, 57(15-16), 4676-4691.
Watson, K., & Montabon, F. (2014). A ranking of supply chain management journals based on departmental lists. *International Journal of Production Research*, 52(14), 4364-4377.
Wernerfelt, B. (1984). A resource- based view of the firm. *Strategic management journal*, 5(2), 171-180.
Wiengarten, F., Humphreys, P., Gimenez, C., & McIvor, R. (2016). Risk, risk management practices, and the success of supply chain integration. *International Journal of Production Economics*, 171, 361-370.
Williamson, O. E. (1985). *The economic institutions of capitalism*: Simon and Schuster.
Womack, J. P., Jones, D. T., & Roos, D. (1990). *Machine that changed the world*: Simon and Schuster.
Xu, X., Chen, X., Jia, F., Brown, S., Gong, Y., & Xu, Y. (2018). Supply chain finance: A systematic literature review and bibliometric analysis. *International Journal of Production Economics*, 204, 160-173.
Yalcinkaya, M., & Singh, V. (2015). Patterns and trends in building information modeling (BIM) research: A latent semantic analysis. *Automation in Construction*, 59, 68-80.
Zhu, J., Song, L. J., Zhu, L., & Johnson, R. E. (2019). Visualizing the landscape and evolution of leadership research. *The Leadership Quarterly*, 30(2), 215-232.

This article is protected by copyright. All rights reserved.

Zhu, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. *Journal of Operations Management*, 22(3), 265-289.

Zsidisin, G. A., Smith, M. E., McNally, R. C., & Kull, T. J. (2007). Evaluation criteria development and assessment of purchasing and supply management journals. *Journal of Operations Management*, 25(1), 165-183.

Appendix A: Documents ranked in the top 100 most co-cited, 1950-2019

Freq*	Author (first only)	Year	Title	Source	Topic Area	Highly Co-cited With
981	Pinedo M	1995	Scheduling: Theory, algorithms, and systems	*Book*	Scheduling	Johnson SM (1954); Graham RL (1979)
808	Barney J	1991	Firm resources and sustained competitive advantage	Journal of Management	Strategy/Comp Adv	Teece, Pisano, and Shuen (1997); Wernerfelt (1984)
794	Hadley G	1963	Analysis of inventory systems	*Book*	Inventory	Silver et al. (1998); Silver and Peterson (1985)
753	Wagner H	1958	Dynamic version of the economic lot size model	Management Science	Inventory	Silver and Peterson (1985); Elmaghraby (1978)
741	Lee Hl	1997	Information distortion in a supply chain: The bullwhip effect	Management Science	SC/Coordination	Chen, Drezner, Ryan, and Simchi-Levi (2000); Sterman (1989)
708	Silver E	1998	Inventory management and production planning and scheduling	*Book*	Inventory	Khouja (1999); Hadley and Whitin (1963)
664	Conway R	1967	Theory of scheduling	*Book*	Scheduling	Baker (1974); Blackstone (1982)
648	Holland J	1975	Adaptation in natural and artificial systems: An introductory analysis with applications to biology, control, and artificial intelligence	*Book*	Org Theory	Goldberg (1989)
639	Baker K	1974	Introduction to sequencing and scheduling	*Book*	Scheduling	Johnson (1954); Conway et al. (1967)
624	Porter M	1985	Competitive advantage: Creating and sustaining superior performance	*Book*	Strategy/Comp Adv	Barney (1991); Porter (1980)
622	Hayes R	1984	Restoring our competitive edge: Competing through manufacturing	*Book*	Strategy/Comp Adv	Skinner (1969); Swamidass (1987)
573	Zipkin P	2000	Foundations of inventory management	*Book*	Inventory	Clark and Scarf (1960); Puterman (1994)
571	Williamson O	1985	The economic institutions of capitalism	*Book*	SC/GOV	Dyer and Singh (1998); Williamson (1975)
570	Kahneman D	1979	Prospect theory: An analysis of decision under risk	Econometrica	SC/Risk	Schweitzer (2000); Pratt (1964)
570	Womack J	1990	Machine that changed the world	*Book*	Process improvement	Shah (2003); Ohno (1988)
564	Porter M	1980	Competitive strategy: Techniques for analyzing industries and competition	*Book*	Strategy/Comp Adv	Porter (1985); Hayes and Wheelwright (1984)
563	Fisher M	1997	What is the right supply chain for your product?	Harvard Business Review	SC/Design	Lee (2002); Frohlich and Westbrook (2001)
515	Clarke G	1964	Scheduling of vehicles from a central depot to a number of delivery points	Operations Research	Scheduling	Solomon (1987); Lin (1973)
504	Monden Y	1983	Toyota production system: An integrated approach to just-in-time	*Book*	Process improvement	Schonberger (1982); Spearman (1990)
497	Dyer J	1998	The relational view: Cooperative strategy and sources of interorganizational competitive advantage	Academy of Management Review	Strategy/Comp Adv	Barney (1991); Williamson (1985)
496	Cachon G	2003	Supply chain coordination with contracts	Handbooks in Operations Research and Management Science	SC/GOV	Cachon (2005); Cachon (2001)
491	Teece D	1997	Dynamic capabilities and strategic management	Strategic Management Journal	Strategy/Comp Adv	Barney (1991); Eisenhardt (2000)
471	Frohlich M	2001	Arcs of integration: An international study of supply chain strategies	Journal of Operations Management	SC/Coordination	Flynn, Huo, and Zhao (2010); Vickery (2003)
468	Williamson O	1975	Markets and hierarchies: Analysis and antitrust implications: A study in the economics of internal organization	*Book*	SC/GOV	Williamson (1985); Coase (1937)
449	Hill T	1985	Manufacturing strategy: Text and cases	*Book*	Strategy/Comp Adv	Hayes; Porter, Womack
436	Wernerfelt B	1984	A resource- based view of the firm	Strategic Management journal	Strategy/Comp Adv	Barney (1991); Prahalad and Hamel (1990)
431	Cachon G	2005	Supply chain coordination with revenue-sharing contracts: Strengths and limitations	Management Science	SC/Coordination	Lee et al. (2000); Frohlich and Westbrook (2001)
429	Clark A	1960	Optimal policies for a multi-echelon inventory problem	Management Science	Inventory	Zipkin (2000); Sherbrooke (1968)
422	Solomon M	1987	Algorithms for the vehicle routing and scheduling problems with time window constraints	Operations Research	Logistics	Clarke G (1964); Lin s (1965)
418	Lee Hl	2000	The value of information sharing in a two-level supply chain	Management Science	Inventory	Gavirneni (1999); Cachon and Fisher (2000)
416	Petruzzi N	1999	Pricing and the newsvendor problem: A review with	Operations	Inventory	Khouja (1999);

This article is protected by copyright. All rights reserved.

Author Manuscript

			extensions	Research		Elmaghraby (2003)
408	Christopher M	1992	Logistics and supply chain management: Creating value-adding networks	*Book*	SC/Design	Chopra S (2001); Mentzer
400	Kleinrock L	1975	Queuing systems	*Book*	Queuing	Neuts (1981); Buzzacott (1993)
388	Nawaz M	1983	A heuristic algorithm for the *m*-machine, *n*-job flow-shop sequencing problem	Omega	Scheduling	Garey MR (1976); Johson SM (1954)
386	Hopp W	1996	Factory physics: Foundation of manufacturing management	*Book*	Process improvement	Monden; Buzzacott
383	Cohen W	1990	Absorptive capacity: A new perspective on learning and innovation	Administrative Science Quarterly	Process improvement	Kogut (1992); March (1991)
378	Flynn B	2010	The impact of supply chain integration on performance: A contingency and configuration approach	Journal of Operations Management	SC/Coordination	Frohlich and Westbrook (2001); Podsakoff et al. (2003)
373	Chopra S	2001	Supply chain management	*Book*	SC/Design	Fisher (1997); Lee et al., (1997)
373	Lenstra J	1977	Complexity of machine scheduling problems	Annals of Discrete Mathematics	Scheduling	Garey MR (1976); Graham RL (1979)
372	Garey M	1976	The complexity of flowshop and jobshop scheduling	Mathematics of Operations Research	Scheduling	Nawaz M (1983); Lenstra JK (1977)
368	Schonberger R	1982	Japanese manufacturing techniques: Nine hidden lessons in simplicity	*Book*	Process improvement	Monden (1983a); Schonberger (1986)
353	Lee HL	1997	The bullwhip effect in supply chains	Sloan Management Review	Inventory	Chen et al. (2000)
350	Seuring S	2008	From a literature review to a conceptual framework for sustainable supply chain management	Journal of Cleaner Production	SC/Risk	Carter (2008); Zhu (2004)
350	Thompson JD	1967	Organizations in actions	*Book*	Org Theory	Williamson (1985); Frohlich and Westbrook (2001)
340	Mentzer J	2001	Defining supply chain management	Journal of Business Logistics	SC/Design	Cooper (1997); Chen and Paulraj (2004)
339	Pfeffer J	1978	The external control of organizations: A resource dependence perspective	Book	Org Theory	Dyer (1998); Williamson (1985)
339	Cachon GP	2000	Supply chain inventory management and the value of shared information	Management Science	SC/Integration	Cachon (2005); Pasternack (1985)
331	Chen F	2000	Quantifying the bullwhip effect in a simple supply chain: The impact of forecasting, lead times, and information	Management Science	SC/Integration	Lee (1997); Lee (2000)
330	Gallego G	1994	Optimal dynamic pricing of inventories with stochastic demand over finite horizons	Management Science	Pricing	Bitran (2003); Elmaghraby (2003)
330	Tomlin B	2006	On the value of mitigation and contingency strategies for managing supply chain disruption risks	Management Science	SC/Risk	Dada (2007); Kleindorfer (2005)
328	Yano Ca	1995	Lot sizing with random yields: A review	Operations Research	Inventory	Henig (1990); Dada (2007)
325	Baker KR	1990	Sequencing with earliness and tardiness penalties: a review	Operations Research	Scheduling	Cheng (1989); Lawler (1977)
320	Lariviere MA	2001	Selling to the newsvendor: An analysis of price-only contracts	Manufacturing & Service Operations Management	Inventory	Cachon (2004); Cachon (2003)
317	Gilmore PC	1961	A linear programming approach to the cutting-stock problem	Operations Research	Scheduling	Gilmore (1963); Gilmore (1965)
315	Lin S	1973	An effective heuristic algorithm for the traveling-salesman problem	Operations Research	Logistics	Lin (1965); Clarke (1964)
313	Chen IJ	2004	Towards a theory of supply chain management: the constructs and measurements	Journal of Operations Management	SC/Review	Frohlich (2001); Paulraj (2008)
313	Tang CS	2006	Perspectives in supply chain risk management	International Journal of Production Economics	SC/Risk	Kleindorfer (2005); Chopra (2004)
312	Tirole J	1988	The theory of industrial organization	Book	Strategy/Comp Adv	Spengler (1950); Mussa (1078)
306	Nahmias S	1989	Production and operations management	Book	*Book*	Hadley (1963); Silver (1998)
304	Morgan RM	1994	The commitment-trust theory of relationship marketing	Journal of Marketing	SC/GOV	Dwyer (1987); Dyer (1998)
301	Simchi-Levi D	2000	Designing and managing the supply chain	*Book*	SC/Textbook	Chopra (2001); Lee (1997)
297	Prahalad CK	1990	The core competence of the corporation	Harvard Business Review	Strategy/Comp Adv	Wernerfelt (1984); Barney (1991)
295	Kleindorfer PR	2005	Managing disruption risks in supply chains	Production and Operations Management	SC/Risk	Chopra (2004); Craighead (2007)
294	Talluri KT	2004	The theory and practice of revenue management	*Book*	Pricing	Bitran (2003); McGill (1999)
294	Black F	1973	The pricing of options and corporate liabilities	Journal of Political Economy	Pricing	Dixit (1994); Markowitz (1952)
292	Porteus EL	1986	Optimal lot sizing, process quality improvement and setup cost reduction	Operations Research	Inventory	Rosenblatt (1986); Yano (1995)
292	Lin S	1965	Computer solutions of the traveling salesman problem	AT&T Technical Journal	Org Theory	Lin (1973); Clarke (1964)
290	Francis RL	1974	Facility layout and location: an analytical approach	*Book*	PI	Amour (1963); Tompkins (1984)
288	Schonberger RJ	1986	World class manufacturing enterprise strategy	*Book*	PI	Schonberger (1982); Hayes (1984)
286	Fisher M	1996	Reducing the cost of demand uncertainty through accurate response to early sales	Operations Research	Strategy/Comp Adv	Iyer (1997); Donohue (2000)
285	Pasternack BA	1985	Optimal pricing and return policies for perishable commodities	Marketing Science	Pricing	Emmons (1998); Tsay (1999)
281	Sherbrooke	1968	METRIC: A multi-echelon technique for recoverable item	Operations	Inventory	Graves (1985); Clark

Author Manuscript

This article is protected by copyright. All rights reserved.

	CC		control	Research		(1960)
279	Fleischmann M	1997	Quantitative models for reverse logistics: A review	European Journal of Operational Research	Logistics	Theirry (1995); Guide (2000)
278	Ferdows K	1990	Lasting improvements in manufacturing performance: in search of a new theory	Journal of Operations Management	PI	Skinner (1969); Miller (1994)
274	Little JDC	1961	A proof for the queuing formula: L= λw	Operations Research	Queuing	Spearman (1990); Hopp (1996)
274	Hakimi SL	1964	Optimum locations of switching centers and the absolute centers and medians of a graph	Operations Research	Logistics	Toregas (1971); Daskin (1995)
273	Clark K B	1991	Product development performance: Strategy, organization, and management in the world auto industry	*Book*	PI	Ulrich (1995); Krishnan (2001)
269	Vollman TE	1988	Manufacturing planning and control systems	*Book*	*Book*	Orlicky (1974); Johnson (1974)
267	Srivastava SK	2007	Green supply- chain management: a state- of- the- art literature review	International Journal of Management Review	SC/SUS	Seuring (2008); Rao (2005)
265	Bodin L	1983	Routing and scheduling of vehicles and crews, the state of the art	Computers & Operations Research	Logistics	Fisher (1981); Laporte (1992)
265	Miller JG	1994	A taxonomy of manufacturing strategies	Management Science	Strategy/Comp Adv	Ferdows (1990); Swamidass (1987)
265	Cachon GP	2001	Contracting to assure supply: How to share demand forecasts in a supply chain	Management Science	SC/Integration	Cachon (2003); Cachon (2004)
263	Nelson RR	1982	An evolutionary theory of economic change	*Book*	Strategy/Comp Adv	Cyert (1963); Kogut (1992)
263	Shah R	2003	Lean manufacturing: context, practice bundles, and performance	Journal of Operations Management	PI	Shah (2007); Womack (1990)
263	Zhu QH	2004	Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises	Journal of Operations Management	SC/SUS	Rao (2005); Vachon (2006)
263	Taillard E	1993	Benchmarks for basic scheduling problems	European Journal of Operational Research	Scheduling	Nawaz (1983); Tillard (1990)
262	Geoffrion AM	1974	Multicommodity distribution system design by Benders decomposition	Management Science	Logistics	Benders (2005); Erlenkotter (1978)
257	Adams J	1988	The shifting bottleneck procedure for job shop scheduling	Management Science	Scheduling	Panwalkar (1977); Tillard (1993)
255	Tompkins JA	1984	Facilities planning	*Book*	PI	De Koster (2007); Armour (1963)
255	Gerwin D	1993	Manufacturing flexibility: a strategic perspective	Management Science	Strategy/Comp Adv	Sethi (1990); Swamidass (1987)
255	Elmaghraby W	2003	Dynamic pricing in the presence of inventory considerations: Research overview, current practices, and future directions	Management Science	Pricing	Bitran (2003); Gallego (1994)
254	Daskin MS	1995	Network and discrete location: Models, algorithms, and applications	*Book*	Logistics	Shen (2003); Hakimi (1964)
254	Flynn BB	1994	A framework for quality management research and an associated measurement instrument	Journal of Operations Management	PI	Saraph (1989); Powell (1995)
254	Chopra S	2004	Supply-chain breakdown	Sloan Management Review	SC/Risk	Kleindorfer (2005); Craighead (2007)
253	Carter CR	2008	A framework of sustainable supply chain management: moving toward new theory	International J. of Physical Distribution & Logistics Mgmt.	SC/SUS	Seuring (2008); Pagell (2009)
251	Rogers EM	1983	Diffusion of innovation	*Book*	PI	Bass (1969); Dimaggio (1983)
247	Jeuland AP	1983	Managing channel profits	Marketing Science	Pricing	Weng (1995); McGuire (1983)
247	Eisenhardt KM	2000	Dynamic capabilities: What are they?	Strategic Management Journal	Strategy/Comp Adv	Teece (1997); Barney (1991)
247	Erlenkotter D	1978	A dual-based procedure for uncapacitated facility location	Operations Research	Logistics	Cornuejols (1977); Kuehn (1963)
247	Dimaggio PJ	1983	The iron cage revisited: Institutional isomorphism and collective rationality in org. fields	American Sociological Review	Org Theory	Sarkis (2011); Barney (1991)
247	Kraljic P	1983	Purchasing must become supply management	Harvard Business Review	SC/Design	Choi (2006); Weber (1991)
246	Savaskan RC	2004	Reverse channel design: the case of competing retailers	Management Science	SC/Design	Debo (2005); Ferguson (2006)
244	Galbraith JR	1973	Designing complex organizations	*Book*	Org Theory	Daft (1986); Thompson (1967)
242	Lawrence PR	1969	Organization and environment	*Book*	Org Theory	Burns (1961); Thompson (1967)
242	Swamidass PM	1987	Manufacturing strategy, environmental uncertainty and performance: a path analytic model	Management Science	Strategy/Comp Adv	Gerwin (1993); Hayes (1984)

* = co-citation frequency, co-citations for books include cites to all editions

Author Manuscript

This article is protected by copyright. All rights reserved.

Appendix B: Documents ranked in the top 50 most co-cited, by decade

1950s				1960s				1970s				1980s				1990s				2000s				2010s			
FQ	%	Author (first only)	Year	FQ	%	Author (first only)	Year	FQ	%	Author (first only)	Year	FQ	%	Author (first only)	Year	FQ	%	Author (first only)	Year	FQ	%	Author (first only)	Year	FQ	%	Author (first only)	Year
176	7%	Koopmans T	1951	55	5%	Little JDC	1961	91	11%	Conway RW	1967	12	5%	Hadley G	1963	29	6%	Baker K	1974	13	4%	Silver EA	1980	10	4%	Barney J	1991
156	5%	Whitin TM	1953	51	5%	Cobham A	1954	61	8%	Hadley G	1963	10	5%	Conway RL	1967	21	4%	Conway RL	1967	10	4%	Pinedo M	1995	6	3%	Graham RL	1979
135	5%	Hitchcock FL	1941	41	4%	Gaver DP	1962	58	3%	Srinivasan V	1972	10	5%	Wagner HM	1958	20	4%	HedleyG	1963	10	3%	Lee HL	1997	6	2%	Cachon G	2003
124	3%	Dvoretzky A	1952	39	3%	Holt CC	1960	58	3%	Wagner HM	1958	9	4%	Kleinrock L	1975	17	3%	Monden Y	1983	9	3%	Hayes RH	1984	6	3%	Dyer JH	1998
123	3%	Chandler r RE	1958	36	3%	Arrow KJ	1951	61	3%	Cox DR	1961	9	4%	Baker K	1974	17	3%	Schonberger RJ	1982	9	3%	Graham RL	1979	6	3%	Lee HL	1997
122	3%	Pipes LA	1953	34	3%	Kendall DG	1953	60	3%	Holt CC	1960	9	3%	Francis RL	1974	16	3%	Wagner HM	1958	8	3%	Hill T	1853	7	3%	Flynn BbB	2010
120	3%	Kendall DG	1953	34	3%	Miller RG	1960	62	3%	Takacs L	1962	8	3%	Peterson R	1979	16	3%	Hayes RH	1984	8	3%	Hedley G	1963	6	3%	Pinedo M	1995
114	2%	Arrow KJ	1951	33	3%	Saaty TL	1961	63	3%	Kuehn AA	1963	8	3%	Erlenkotter D	1978	15	3%	Kleinrock k L	1975	8	2%	Womack JP	1900	6	3%	Zipkin PH	2000
114	2%	Dantzig GB	1954	32	3%	Brown RG	1959	74	3%	Glover F	1974	8	3%	Eilon S	1971	15	3%	French S	1982	8	2%	Porter ME	1980	6	3%	Cachon GP	2005
113	2%	Jacobs W	1954	32	2%	Takacs L	1962	70	3%	Revelle C	1970	8	3%	Orlicky J	1975	14	3%	Baker KR	1990	7	2%	Porter ME	1985	5	3%	Frohlich MT	2001
112	2%	Orden A	1956	31	2%	Kelley JE	1961	68	2%	Bellmore M	1968	8	2%	Cyert RM	1963	14	3%	Bodin L	1983	7	2%	Wagner HM	1958	5	3%	Seuring S	2008
111	2%	Jackson RRP	1954	31	2%	Scarf H	1963	63	2%	Little JDC	1963	8	2%	Clarke G	1964	14	3%	Porter ME	1985	7	2%	Monden Y	1983	4	3%	Teece DJ	1997
110	2%	Dvoretzky A	1952	31	2%	Burke PJ	1956	58	2%	March JG	1958	8	2%	Hakimi SL	1964	13	2%	Porter ME	1980	7	2%	Barney J	1991	4	2%	Fisher ML	1997
109	2%	Cahn AS	1948	31	2%	Cox DR	1961	62	2%	Held M	1968	8	2%	Geoffrion AM	1974	13	2%	Womack JP	1900	7	2%	Zipkin PH	2000	4	2%	Tomlin B	2006
109	2%	Lighthill MJ	1955	30	2%	Gaver DP	1959	66	2%	Efroymson MA	1966	8	2%	Bodin L	1983	13	2%	Johnson SM	1954	7	2%	Fisher ML	1997	4	2%	Williams on OE	1985
108	2%	Reuschel l A	1950	30	2%	Keilson J	1960	74	2%	Geoffrion AM	1974	8	2%	Porter ME	1980	13	2%	Schonberger RJ	1986	7	2%	Hopp WJ	1996	4	2%	Silver EA	1998
107	2%	Bailey NTJ	1954	30	2%	Kendall DG	1951	61	2%	Little JDC	1961	8	2%	Silver EA	1973	13	2%	Hax AC	1984	7	2%	Christoph er M	1992	4	2%	Tang CS	2006
107	2%	Burke PJ	1956	30	2%	Lomnicki ZA	1965	65	2%	Lin S	1965	8	2%	Holt CC	1960	13	2%	Graham RL	1979	7	2%	Williams on OE	1985	4	2%	Wernerfelt B	1984
107	2%	Kendall DG	1951	29	2%	Muth J	1963	74	2%	Francis RL	1974	8	2%	Handler GY	1979	13	2%	Hall R	1983	7	2%	Baker KR	1974	4	2%	Mentzer JT	2001
106	2%	Leavitt HJ	1954	29	2%	Ford LR	1957	69	2%	Zangwill WI	1969	8	2%	Lin S	1973	13	2%	Lawler EL	1985	7	2%	Williams on OE	1975	4	2%	Lee HL	2000
106	2%	Manne AS	1956	28	2%	Wagner HM	1958	65	2%	Prabhu NU	1965	8	2%	Held M	1970	12	2%	Gross D	1985	7	2%	Chen F	2001	4	2%	Chen IJ	2004
106	2%	Modigliani F	1955	28	2%	Takacs L	1955	70	2%	Ackoff RI	1970	8	2%	Thompson n J	1967	12	2%	Hill T	1985	6	2%	Lee HL	2000	4	2%	Kleindorfer er PR	2005
105	1%	Holt CC	1955	28	2%	Takacs L	1964	66	2%	Hillier F	1966	8	2%	March JG	1958	12	2%	Francis RL	1974	6	2%	Conway RL	1967	4	2%	Srivastava a SK	2007
104	1%	Ford LR	1957	28	2%	White H	1958	73	2%	Srinivasan V	1972	8	2%	Lin S	1965	12	2%	Lenstra JK	1977	6	2%	Simchi-Levi D	2000	4	2%	Porter ME	1985

Author Manuscript

This article is protected by copyright. All rights reserved.

3	1%	Terborgh GW	1949
3	1%	Arrow KJ	1958
3	1%	Palm C	1947
3	1%	Charnes A	1953
3	1%	Bailey NTJ	1952
3	1%	Cobham A	1954
3	1%	Bavelas A	1948
3	1%	Flood MM	1953
3	1%	Hoffman AJ	1954
3	1%	Luchak G	1956
3	1%	Bellman R	1956
3	1%	Richards PI	1956
3	1%	Ashcroft H	1950
3	1%	Taylor J	1954
3	1%	Gaver DP	1954
3	1%	Koopman BO	1953
3	1%	Dantzig G	1954
3	1%	Kendall DG	1951
3	1%	Bavelas A	1950
3	1%	Ford LR	1956
3	1%	Holley JL	1954
3	1%	Jackson JR	1957
3	1%	Morse PM	1954
3	1%	Cobham A	1955
3	1%	Jackson RRP	1956
3	1%	Leontief WW	1951

8	2%	March JG	1958
8	2%	Giglio RJ	1964
8	2%	Karlin S	1960
8	2%	Hadley TM	1963
8	2%	Charnes A	1958
8	2%	Lanchester FW	1916
8	2%	Johnson SM	1954
7	2%	Holt CC	1955
7	2%	Scarf H	1960
7	2%	Whitin TM	1957
7	2%	Herman R	1959
7	2%	Dantzig GB	1951
7	2%	Karlin S	1958
7	2%	Veinott AF	1962
7	2%	Modigliani F	1955
7	2%	Weiss GH	1962
7	2%	Kuehn AA	1963
7	2%	Holt CC	1956
7	2%	Phipps TE	1956
7	2%	Baumol WJ	1958
7	2%	Bellman R	1955

16	2%	Held M	1970
16	2%	Brown RG	1967
16	2%	Johnson SM	1954
16	2%	Held M	1971
16	2%	Larson RC	1972
15	2%	Glover F	1972
15	2%	Hakimi SL	1964
15	2%	Gilmore PC	1961
15	2%	Francis RL	1974
14	2%	Sherbrooke CC	1968
14	2%	Cobham A	1954
14	2%	Smith WE	1956
14	2%	Nahmias S	1975
14	2%	Burns T	1961
14	2%	Johnson SM	1954
14	2%	Nugent CE	1968
14	2%	Buffa ES	1968
14	2%	Baker KR	1974

39	2%	Bradley GH	1977
35	2%	Pierskalla WP	1976
35	2%	Lawrence P	1967
35	2%	Buffa ES	1972
35	2%	Elmaghraby SE	1978
35	2%	Brown RG	1967
33	1%	Baskett F	1975
33	1%	Manne AS	1958
33	1%	Held M	1971
32	1%	Cooper RB	1972
32	1%	Kuehn AA	1963
32	1%	Crowston WB	1973
32	1%	Muckstadt JA	1973
31	1%	Zangwill WI	1969
31	1%	Chandler AD	1962
31	1%	Rinnooy Kan A	1976
31	1%	Larson RC	1974
30	1%	Silver EA	1985
30	1%	Whitt W	1983
30	1%	Newell A	1972
30	1%	Hakimi SL	1965
30	1%	Fisher ML	1981
29	1%	Lenstra JK	1977
29	1%	Clark AJ	1960
29	1%	Nugent CE	1968

93	2%	King JR	1980
92	2%	Lin S	1973
92	2%	Erlenkotter D	1978
85	2%	Blackstone JH	1982
85	2%	Elmaghraby SE	1978
85	2%	Adams J	1988
84	2%	Porteus EL	1986
81	2%	Karmarkar US	1987
80	1%	Panwalkar SS	1977
80	1%	Vollman TE	1988
79	1%	Johnson LA	1974
77	1%	King JR	1982
76	1%	Cheng TCE	1989
76	1%	Hammer M	1993
75	1%	Whitt W	1983
75	1%	Buzacott JA	1993
74	1%	Rinnooy Kan A	1976
73	1%	Lin S	1965
72	1%	Hayes RH	1988
71	1%	Clarke G	1964
71	1%	Stecke KE	1983
71	1%	Garey MR	1976
71	1%	Baker KR	1984
70	1%	Williamson OE	1985
70	1%	Clark AJ	1960
70	1%	Thompson JD	1967

145	2%	Nawaz M	1983
144	2%	Lenstra JK	1977
143	2%	Clark AJ	1960
143	2%	Johnson SM	1954
140	2%	Teece DJ	1997
138	2%	Wernerfelt B	1984
136	2%	Cachon GP	2000
136	2%	Sethi AK	1990
134	2%	Clarke G	1964
132	1%	Lee HL	1997
131	1%	Nahmias S	1989
128	1%	Fleischmann M	1997
128	1%	Prahalad CK	1990
125	1%	Petruzzi NC	1999
125	1%	Chopra S	2001
124	1%	Schonberger RJ	1986
124	1%	Gallego G	1994
124	1%	Pasternack BA	1985
123	1%	Miller JG	1994
123	1%	Garey MR	1976
123	1%	Daskin MS	1995
122	1%	Flynn BB	1994
122	1%	Clark KB	1991
122	1%	Schonberger RJ	1982
119	1%	Vollman TE	1997
119	1%	Nelson RR	1982

256	2%	Cohen WM	1990
255	2%	Solomon MM	1987
250	2%	Carter CR	2008
248	2%	Chopra S	2004
244	2%	Zhu QH	2004
242	2%	Clarke G	1964
240	2%	Lariviere MA	2001
234	2%	Womack JP	1991
229	2%	Talluri KT	2005
228	2%	Wagner HM	1958
228	2%	Chopra S	2004
225	2%	Shah R	2003
219	2%	Williamson OE	1975
217	2%	Ropke S	2006
217	2%	Sousa R	2008
217	2%	Lee HL	1997
216	2%	Kleindorfer PR	2005
215	2%	Pfeffer J	1978
214	2%	Savaskan RC	2004
210	2%	Melo MT	2009
209	1%	Schweitzer ME	2000
208	1%	Eisenhardt KM	2000
203	1%	Cachon GP	2000
202	1%	Craighead CW	2007
200	1%	Yano CA	1995
199	1%	Vachon S	2008

Author Manuscript

This article is protected by copyright. All rights reserved.

					1 1 1 19 9 % Gerwin D 93	

Appendix C: Documents ranked in the top 100 most co-cited, by 5-year period: 2000-2019

2000-2004			2005-2009			2010-2014			2015-2019		
FQ	Author (first only)	Year	FQ	Author (first only)	Year	FQ	Author (first only)	Year	FQ	Author (first only)	Year
156	Hayes RH	1984	248	Silver EA	1998	275	Pinedo M	1995	305	Barney J	1991
150	Silver EA	1998	224	Pinedo M	1995	275	Barney J	1991	284	Cachon GP	2003
145	Pinedo M	1995	221	Lee HL	1997	241	Graham RL	1979	264	Flynn BB	2010
132	Hill T	1975	177	Zipkin PH	2000	223	Lee HL	1997	227	Seuring S	2008
116	Monden Y	1983	164	Graham RL	1979	201	Silver EA	1998	224	Pinedo M	2012
114	Womack JP	1990	143	Barney J	1991	191	Dyer JH	1998	220	Graham RL	1979
109	Lee HL	1997	134	Hopp WJ	1996	187	Zipkin PH	2000	215	Dyer JH	1998
103	Hadley G	1963	132	Wagner HM	1958	184	Fisher ML	1997	212	Cachon GP	2005
103	Porter ME	1985	129	Christopher M	1998	181	Frohlich MT	2001	186	Tomlin B	2006
100	Graham RL	1979	126	Fisher ML	1997	168	Teece DJ	1997	181	Teece DJ	1997
96	Porter ME	1980	122	Hadley	1963	166	Williamson OE	1985	177	Lee HL	1997
94	Baker KR	1974	122	Williamson OE	1985	154	Porter ME	1985	176	Zipkin PH	2000
93	Conway RL	1967	121	Porter ME	1985	153	Lee HL	2000	176	Frohlich MT	2001
83	Wagner HM	1958	118	Chen F	2000	150	Cachon GP	2005	160	Fisher ML	1997
80	Schonberger RJ	1982	118	Hayes RH	1984	148	Talluri KT	2004	157	Ropke S	2006
79	Schonberger RJ	1986	115	Lee HL	2000	147	Womack JP	1990	157	Tang CS	2006
78	Christopher M	1992	115	Porter ME	1980	146	Chopra S	2004	157	Carter CR	2008
75	Hopp WJ	1996	107	Cachon GP	2000	142	Wernerfelt B	1984	154	Petruzzi NC	1999
73	Johnson S M	1954	107	Simchi-Levi D	2000	141	Chen IJ	2004	151	Kleindorfer PR	2005
73	Williamson OE	1985	106	Petruzzi NC	1999	137	Mentzer JT	2001	147	Mentzer JT	2001
71	Lenstra JK	1977	106	Womack JP	1990	137	Srivastava SK	2007	144	Savaskan RC	2004
68	Flynn BB	1994	102	Chopra S	2001	136	Petruzzi NC	1999	143	Wernerfelt B	1984
68	Sethi AK	1990	100	Hill T	1975	133	Christopher M	2005	140	Lariviere MA	2001
68	Barney J	1991	99	Teece DJ	1997	133	Cohen WM	1990	136	Williamson OE	1985
67	Williamson OE	1975	91	Pasternack BA	1985	133	Tang CS	2006	136	Cao M	2011
67	Swamidass PM	1987	91	Monden Y	1998	132	Cachon GP	2003	135	Solomon MM	1987
66	Clark KB	1991	90	Clarke G	1964	131	Williamson OE	1975	135	Chiang WYK	2003
66	Prahalad CK	1990	90	Nawaz M	1983	124	Cachon GP	2000	133	Zhu QH	2004
64	Nahmias S	1989	90	Frohlich MT	2001	123	Seuring S	2008	133	Guide VDR	2009
63	Nelson RR	1982	90	Williamson OE	1975	122	Wagner HM	1958	131	Pagell M	2009
61	Clark AJ	1960	88	Lee HL	1997	120	Solomon MM	1987	130	Clarke G	1964
61	Miller JG	1994	87	Gallego G	1994	117	Allahverdi A	2008	130	Chopra S	2004
60	Gerwin D	1993	82	Clark AJ	1960	116	Hadley G	1963	129	Christopher M	2004
60	Wernerfelt B	1984	82	Daskin MS	1995	116	Lee HL	1997	126	Srivastava SK	2007
59	Spearman ML	1990	82	Dyer JH	1998	114	Flynn BB	2010	125	Schweitzer ME	2000
58	Hammer M	1993	81	Fleischmann M	1997	113	Kleindorfer PR	2005	125	Sousa R	2008
57	Thompson J	1967	78	Potts CN	2000	112	Hopp WJ	2000	124	Melo MT	2009
56	Ferdows K	1990	78	Wernerfelt B	1984	112	Clarke G	1964	123	Cohen WM	1990
56	Lawler EL	1993	77	Mcgill JI	1999	111	Zhu QH	2004	123	Chen IJ	2004
55	Cohen WM	1990	77	Gavirneni S	1999	108	Porter ME	1980	123	Craighead CW	2007
55	Baker KR	1990	74	Allahverdi A	1999	106	Shah R	2003	122	Altay N	2006
55	Nawaz M	1983	74	Baker K R	1974	106	Vickery SK	2003	122	Kleindorfer PR	2005
54	Porteus EL	1986	73	Lenstra JK	1977	106	Tomlin B	2006	121	Dimaggio PJ	1983
54	Senge PM	1990	73	Tirole J	1988	106	Hayes RH	1984	119	Shah R	2003
54	Garey MR	1976	72	Weng ZK	1995	103	Clark AJ	1960	119	Sarkis J	2011
54	Hayes RH	1988	72	Solomon MM	1987	102	Gans N	2003	116	De Koster R	2007
53	Adams J	1988	71	Vollmann TE	1997	101	Chen F	2000	115	Govindan K	2015
50	Deming W	1986	71	Yano CA	1995	101	Prahalad CK	1990	115	Vachon S	2008
50	Powell TC	1995	71	Lariviere MA	2001	100	Lariviere MA	2001	112	Lee HL	2000
48	Vollmann TE	1997	70	Johnson SM	1954	99	Eisenhardt KM	2000	112	Wong CY	2011
48	Saraph JV	1989	70	Thomas DJ	1996	98	Pasternack BA	1985	112	Hendricks KB	2005
47	Fleischmann M	1997	69	Banerjee A	1986	98	Chopra S	2004	111	Yano CA	1995
47	Cyert RM	1963	69	Elmaghraby W	2003	97	Kraljic P	1983	109	Eisenhardt KM	2000
47	Vickery SK	1993	69	Black F	1973	94	Kleindorfer PR	2005	107	Cachon GP	2001
46	Tompkins JA	1993	69	Garey MR	1976	94	Simchi-Levi D	2003	106	Wagner HM	1958
46	Hall NG	1996	69	Brucker P	2001	93	Carter CR	2008	106	Ho W	2010
45	Fisher M	1996	69	Cachon GP	2005	93	Rao P	2005	105	Braunscheidel MJ	2009
44	Dantzig GB	1963	68	Gans N	2003	92	Fleischmann M	1997	105	Porter ME	1985
44	Clarke G	1964	68	Tsay AA	1999	92	Sousa R	2008	104	Miller CE	1960
44	Lee HL	1997	68	Sethi AK	1990	90	March JG	1991	104	Mussa M	1978
43	Morton TE	1993	67	Nahmias S	2001	89	Yano CA	1995	104	Choi TY	2006
43	Weber CA	1991	67	Emmons H	1998	89	Glover F	1989	104	Carter CR	2011
42	Weng ZK	1995	66	Khouja M	1999	88	Coase RH	1937	103	Shah R	2007
42	Webster S	1995	65	Jeuland AP	1983	88	Rogers EM	1995	102	Chopra S	2013

Author Manuscript

This article is protected by copyright. All rights reserved.

42	Arntzen BC	1995	65	Talluri KT	2004	88	Nawaz M	1983	101	Pfeffer J	1978
41	Banerjee A	1986	64	Gilmore PC	1961	88	Cachon GP	2001	101	Lee HL	1997
41	Daskin MS	1995	64	Fisher M	1996	88	Grant RM	1996	101	Benjaafar S	2013
41	Glover F	1986	63	Cooper MC	1997	87	Carr AS	1999	100	Elmaghraby W	2003
41	Solomon MM	1987	63	Carr AS	1999	87	Eisenhardt KM	2007	100	Choi TY	2001
41	Black F	1973	62	Taillard E	1993	86	Melo MT	2009	99	Silver EA	1998
41	Nonaka I	1995	62	Prahalad CK	1990	86	Pfeffer J	1978	99	Krause DR	2007
41	Dallery Y	1992	62	Miller JG	1994	86	Gallego G	1994	98	Gallego G	1994
41	Kleinrock L	1975	61	Baker KR	1990	85	Kogut B	1992	97	Kraljic P	1983
41	Teece DJ	1997	61	Cachon GP	2001	84	Schweitzer ME	2000	97	Hendricks KB	2003
40	Bellman R	1957	59	Cohen WM	1990	84	Pisinger D	2007	97	Vachon S	2006
40	Womack JP	1996	59	Gerwin D	1993	84	Krause DR	2007	96	Aviv Y	2008
40	Brucker P	1999	59	Thierry M	1995	84	Vachon S	2006	96	Brandenburg M	2014
39	Hax AC	1984	57	Ferdows K	1990	84	Vachon S	2008	95	Tang C	2006
39	Lee HL	1986	56	Clark K B	1991	83	Lee HL	2004	94	Lee HL	2004
39	Wemmerlov U	1989	56	Nelson RR	1982	83	Kaplan RS	1992	94	Morgan RM	1994
39	Flynn BB	1995	55	Lu L	1995	83	Garey MR	1976	94	Schoenherr T	2012
39	Ahire SL	1996	55	Gendreau M	1994	83	Fisher M	1996	93	Van Wassenhove LN	2006
39	Parasuraman A	1988	55	Spengler JJ	1950	81	Elmaghraby W	2003	93	Swink M	2007
39	Gavirneni S	1999	55	Pfeffer J	1978	81	Hill TJ	1989	91	Rao P	2005
39	Simchi-Levi D	2000	55	Thompson J	1967	80	Potts CN	2000	89	Pisinger D	2007
39	Thierry M	1995	55	Conway RL	1967	80	Linton JD	2007	89	Santoso T	2005
38	Rosenblatt MJ	1986	55	Lambert DM	2000	79	Buzacott JA	1993	89	Souza GC	2013
38	Bodin L	1983	55	Donohue KL	2000	79	Cooper MC	1997	89	Grant RM	1996
38	Galbraith JR	1973	54	Federgruen A	1999	79	Taylor TA	2002	88	Williamson OE	1975
38	Francis R	1992	54	Flynn BB	1994	79	Petersen KJ	2005	88	Taylor TA	2002
38	Kolisch R	1995	54	Kleinrock L	1976	79	Swink M	2007	88	Ferguson ME	2006
38	Thomas DJ	1996	53	Bozarth CC	1999	79	Craighead CW	2007	87	Womack JP	1990
38	Lee HL	2000	53	Hill RM	1997	79	Hart SL	1995	87	Nawaz M	1983
37	Lee HL	1993	53	Goyal SK	1988	78	Thompson J	1967	87	Hendricks KB	2005
37	Monahan JP	1984	52	Porteus EL	1986	78	Tsay AA	1999	86	Nyaga GN	2010
37	Gallego G	1994	52	Hall NG	1996	78	Weber CA	1991	86	Teece DJ	2007
37	Yelle LE	1979	52	Taylor TA	2002	78	Dwyer FR	1987	86	Debo LG	2005
37	Gilmore PC	1963				77	Monden Y	1993	85	Cachon GP	2009
37	Uzsoy R	1992				77	Hendricks KB	2003	85	Linton JD	2007
37	Potts CN	2000							84	Tsay AA	2004
37	Blackstone JH	1982							84	Koufteros X	2005
37	Tirole J	1988							84	Vickery SK	2003

Appendix D: Documents ranked in the top 300 most co-cited, 2015-2019

FQ	Author (first only)	Year	Title	Source
305	Barney J	1991	Firm resources and sustained competitive advantage	Journal of Management
284	Cachon GP	2003	Supply chain coordination with contracts	Handbook of Operations Research
264	Flynn BB	2010	The impact of supply chain integration on performance: A contingency and config. approach	Journal of Operations Management
227	Seuring S	2008	From a literature review to a conceptual framework for sustainable supply chain management	Journal of Cleaner Production
224	Pinedo ML	2012	Scheduling: Theory, algorithms, and systems	*Book*
220	Graham RL	1979	Optimization and approximation in deterministic sequencing and scheduling: A survey	Annals of Discrete Mathematics
21	Dyer JH	1998	The relational view: Cooperative strategy and sources of interorganizational competitive advantage	Academy of

Author Manuscript

This article is protected by copyright. All rights reserved.

5				Management Review
2	Cachon GP	2005	Supply chain coordination with revenue-sharing contracts: strengths and limitations	Management Science
1	Tomlin B	2006	On the value of mitigation and contingency strategies for managing supply chain disruption risks	Management Science
1	Teece DJ	1997	Dynamic capabilities and strategic management	Strategic Management Journal
1	Lee HL	1997	Information distortion in a supply chain: The bullwhip effect	Management Science
1	Zipkin PH	2000	Foundations of Inventory Management	*Book*
1	Frohlich MT	2001	Arcs of integration: An international study of supply chain strategies	Journal of Operations Management
1	Fisher ML	1997	What is the right supply chain for your product?	Harvard Business Review
1	Ropke S	2006	An adaptive large neighborhood search heuristic for the pickup and delivery problem with time windows	Transportation Science
1	Tang CS	2006	Perspectives in supply chain risk management	International Journal of Production Economics
1	Carter CR	2008	A framework of sustainable supply chain management: moving toward new theory	International J. of Physical Distribution & Logistics Mgt.
1	Petruzzi NC	1999	Pricing and the newsvendor problem: A review with extensions	Operations Research
1	Kleindorfer PR	2005	Managing disruption risks in supply chains	Production & Operations Management
1	Mentzer JT	2001	Defining supply chain management	Journal of Business Logistics
1	Savaskan RC	2004	Closed-loop supply chain models with product remanufacturing	Management Science
1	Wernerfelt B	1984	A resource- based view of the firm	Strategic Management Journal
1	Lariviere MA	2001	Selling to the newsvendor: An analysis of price-only contracts	Manufacturing & Service Operations Management

Author Manuscript

This article is protected by copyright. All rights reserved.

1	William	19	The economic institutions of capitalism: firms, markets, relational contracting	*Book*
3	son OE	85		
6				
1	Cao M	20	Supply chain collaboration: Impact on collaborative advantage and firm performance	Journal
3		11		of
6				Operatio
				ns
				Manage
				ment
1	Solomo	19	Algorithms for the vehicle routing and scheduling problems with time window constraints	Operatio
3	n MM	87		ns
5				Research
1	Chiang	20	Direct marketing, indirect profits: A strategic analysis of dual-channel supply-chain design	Manage
3	WYK	03		ment
5				Science
1	Guide	20	OR FORUM—The evolution of closed-loop supply chain research	Operatio
3	VDR	09		ns
3				Research
1	Zhu QH	20	Relationships between operational practices and performance among early adopters of green supply	Journal
3		04	chain management practices in Chinese manufacturing enterprises	of
3				Operatio
				ns
				Manage
				ment
1	Pagell	20	Building a more complete theory of sustainable supply chain management using case studies of 10	Journal
3	M	09	exemplars	of
1				Supply
				Chain
				Manage
				ment
1	Clarke	19	Scheduling of vehicles from a central depot to a number of delivery points	Operatio
3	G	64		ns
0				Research
1	Chopra	20	Supply-chain breakdown	Sloan
3	S	04		Manage
0				ment
				Review
1	Christop	20	Building the resilient supply chain	Internati
2	her M	04		onal
9				Journal
				of
				Logistics
				Manage
				ment
1	Srivasta	20	Green supply- chain management: a state- of- the- art literature review	Internati
2	va SK	07		onal
6				Journal
				of
				Manage
				ment
				Review
1	Schweit	20	Decision bias in the newsvendor problem with a known demand distribution: Experimental evidence	Manage
2	zer ME	00		ment
5				Science
1	Sousa R	20	Contingency research in operations management practices	Journal
2		08		of
5				Operatio
				ns
				Manage
				ment
1	Melo	20	Facility location and supply chain management–A review	European
2	MT	09		Journal
4				of
				Operatio
				nal
				Research
1	Cohen	19	Absorptive capacity: A new perspective on learning and innovation	Administ
2	WM	90		rative
3				Science
				Quarterly
1	Chen IJ	20	Towards a theory of supply chain management: the constructs and measurements	Journal
2		04		of
3				Operatio

Author Manuscript

This article is protected by copyright. All rights reserved.

				ns Manage ment
1	Craighe ad CW	20 07	The severity of supply chain disruptions: design characteristics and mitigation capabilities	Decision Sciences
1	Altay N	20 06	OR/MS research in disaster operations management	European Journal of Operatio nal Research
1	Kleindo rfer PR	20 05	Sustainable operations management	Producti on & Operatio ns Manage ment
1	Dimagg io PJ	19 83	The iron cage revisited: Institutional isomorphism and collective rationality in org. fields	America n Sociologi cal Review
1	Shah R	20 03	A review of modeling approaches for sustainable supply chain management	Journal of Operatio ns Manage ment
1	Sarkis J	20 11	An organizational theoretic review of green supply chain management literature	Internati onal Journal of Producti on Economi cs
1	De Koster R	20 07	Design and control of warehouse order picking: A literature review	European Journal of Operatio nal Research
1	Govinda n K	20 15	Reverse logistics and closed-loop supply chain: A comprehensive review to explore the future	European Journal of Operatio nal Research
1	Vachon S	20 08	Environmental management and manufacturing performance: The role of collaboration in the supply chain	Internati onal Journal of Producti on Economi cs
1	Lee HL	20 00	The value of information sharing in a two-level supply chain	Manage ment Science
1	Wong CY	20 11	The contingency effects of environmental uncertainty on the relationship between supply chain integration and operational performance	Journal of Operatio ns Manage ment
1	Hendric ks KB	20 05	An empirical analysis of the effect of supply chain disruptions on long- run stock price performance and equity risk of the firm	Producti on & Operatio ns Manage ment
1	Yano	19	Lot sizing with random yields: A review	Operatio

Author Manuscript

This article is protected by copyright. All rights reserved.

1	CA	95		ns
1	Eisenha	20	Dynamic capabilities: What are they?	Research Strategic
0	rdt KM	00		Manage
9				ment Journal
1	Cachon	20	Contracting to assure supply: How to share demand forecasts in a supply chain	Manage
0	GP	01		ment
7				Science
1	Wagner	19	Dynamic version of the economic lot size model	Manage
0	HM	58		ment
6				Science
1	Ho W	20	Multi-criteria decision making approaches for supplier evaluation and selection: A literature review	European
0		10		Journal
6				of Operatio nal Research
1	Braunsc	20	The organizational antecedents of a firm's supply chain agility for risk mitigation and response	Journal
0	heidel	09		of
5	MJ			Operatio ns Manage ment
1	Porter	19	Competitive advantage: creating and sustaining superior performance	*Book*
0	ME	85		
5				
1	Miller	19	Integer programming formulation of traveling salesman problems	Journal
0	CE	60		of the
4				ACM
1	Mussa	19	Monopoly and product quality	Journal
0	M	78		of
4				Economi c Theory
1	Choi	20	The supply base and its complexity: Implications for transaction costs, risks, responsiveness, and	Journal
0	TY	06	innovation	of
4				Operatio ns Manage ment
1	Carter	20	Sustainable supply chain management: evolution and future directions	Internati
0	CR	11		onal J. of
4				Physical Distributi on & Logistics Mgt.
1	Shah R	20	Defining and developing measures of lean production	Journal
0		07		of
3				Operatio ns Manage ment
1	Chopra	20	Supply Chain Management	Supply
0	S	13		Chain
2				Manage ment-An Internati onal J.
1	Pfeffer J	19	The external control of organizations: A resource dependence perspective	*Book*
0		78		
1				
1	Lee HL	19	The bullwhip effect in supply chains	Sloan
0		97		Manage
1				ment Review
1	Benjaaf	20	Carbon footprint and the management of supply chains: Insights from simple models	IEEE
0	ar S	13		Transacti
1				ons on Automati on Science and

Author Manuscript

This article is protected by copyright. All rights reserved.

10	Elmaghraby W	2003	Dynamic pricing in the presence of inventory considerations: Research overview, current practices, and future directions	Engineering Management Science
10	Choi TY	2001	Supply networks and complex adaptive systems: control versus emergence	Journal of Operations Management
99	Silver EA	1998	Inventory management and production planning and scheduling	*Book*
99	Krause DR	2007	The relationships between supplier development, commitment, social capital accumulation and performance improvement	Journal of Operations Management
98	Gallego G	1994	Optimal dynamic pricing of inventories with stochastic demand over finite horizons	Management Science
97	Kraljic P	1983	Purchasing must become supply management	Harvard Business Review
97	Hendricks KB	2003	The effect of supply chain glitches on shareholder wealth	Journal of Operations Management
97	Vachon S	2006	Extending green practices across the supply chain: the impact of upstream and downstream integration	International Journal of Operations & Production Management
96	Aviv Y	2008	Optimal pricing of seasonal products in the presence of forward-looking consumers	Manufacturing & Service Operations Management
96	Brandenburg M	2014	Quantitative models for sustainable supply chain management: Developments and directions	European Journal of Operational Research
95	Tang C	2006	Robust strategies for mitigating supply chain disruptions	International Journal of Logistics - Research & Applications
94	Lee HL	2004	The triple-A supply chain	Harvard Business Review
94	Morgan RM	1994	The commitment-trust theory of relationship marketing	Journal of Marketing
94	Schoenherr T	2012	Revisiting the arcs of integration: Cross-validations and extensions	Journal of

Author Manuscript

This article is protected by copyright. All rights reserved.

				Operations Management
93	Van Wassenhove LN	2006	Humanitarian aid logistics: supply chain management in high gear	Journal of the Operational Research Society
93	Swink M	2007	Managing beyond the factory walls: effects of four types of strategic integration on manufacturing plant performance	Journal of Operations Management
91	Rao P	2005	Do green supply chains lead to competitiveness and economic performance?	International Journal of Operations & Production Management
89	Pisinger D	2007	A general heuristic for vehicle routing problems	Computers & Operations Research
89	Santoso T	2005	A stochastic programming approach for supply chain network design under uncertainty	European Journal of Operational Research
89	Souza GC	2013	Closed- loop supply chains: a critical review, and future research	Decision Sciences
89	Grant RM	1996	Toward a knowledge- based theory of the firm	Strategic Management Journal
88	Williamson OE	1975	Markets and hierarchies	*Book*
88	Taylor TA	2002	Supply chain coordination under channel rebates with sales effort effects	Management Science
88	Ferguson ME	2006	The effect of competition on recovery strategies	Production & Operations Management
88	Womack JP	1990	Machine that changed the world	*Book*
87	Nawaz M	1983	A heuristic algorithm for the m-machine, n-job flow-shop sequencing problem	Omega
87	Hendricks KB	2005	Association between supply chain glitches and operating performance	Management Science
86	Nyaga GN	2010	Examining supply chain relationships: do buyer and supplier perspectives on collaborative relationships differ?	Journal of Operations Management
86	Teece DJ	2007	Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance	Strategic Management Journal
86	Debo LG	2005	Market segmentation and product technology selection for remanufacturable products	Management

Author Manuscript

This article is protected by copyright. All rights reserved.

8 5	Cachon GP	20 09	Purchasing, pricing, and quick response in the presence of strategic consumers	Science Management
8 5	Linton JD	20 07	Sustainable supply chains: An introduction	Science Journal of Operations Management
8 4	Tsay AA	20 04	Channel conflict and coordination in the e- commerce age	Production & Operations Management
8 4	Koufteros X	20 05	Internal and external integration for product development: the contingency effects of uncertainty, equivocality, and platform strategy	Decision Sciences
8 4	Vickery SK	20 03	The effects of an integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships	Journal of Operations Management
8 3	Petersen KJ	20 05	Supplier integration into new product development: coordinating product, process and supply chain design	Journal of Operations Management
8 2	Balcik B	20 08	Facility location in humanitarian relief	International Journal of Logistics
8 2	Ernst AT	20 04	Staff scheduling and rostering: A review of applications, methods and models	European Journal of Operational Research
8 2	Atasu A	20 08	Remanufacturing as a marketing strategy	Management Science
8 2	Naor P	19 69	The regulation of queue size by levying tolls	Econometrica
8 2	Pagell M	20 04	Understanding the factors that enable and inhibit the integration of operations, purchasing and logistics	Journal of Operations Management
8 2	Ponomarov SY	20 09	Understanding the concept of supply chain resilience	International Journal of Logistics Management
8 1	Dantzig GB	19 59	The truck dispatching problem	Management Science
8 1	Talluri KT	20 04	The theory and practice of revenue management	*Book*
8 1	Lee HL	20 02	Aligning supply chain strategies with product uncertainties	California Management Review
8 1	Paulraj A	20 08	Inter-organizational communication as a relational competency: Antecedents and performance outcomes in collaborative buyer–supplier relationships	Journal of Operations

Author Manuscript

This article is protected by copyright. All rights reserved.

				Management
80	Khouja M	1999	The single-period (news-vendor) problem: literature review and suggestions for future research	Omega
80	Choi SC	1991	Price competition in a channel structure with a common retailer	Marketing Science
80	Talluri K	2004	Revenue management under a general discrete choice model of consumer behavior	Management Science
80	Ferrer G	2006	Managing new and remanufactured products	Management Science
80	March JG	1991	Exploration and exploitation in organizational learning	Organization Science
80	Zhao XD	2011	The impact of internal integration and relationship commitment on external integration	Journal of Operations Management
80	Sheffi Y	2005	A supply chain view of the resilient enterprise	Sloan Management Review
80	Skinner W	1969	Manufacturing-missing link in corporate strategy	Harvard Business Review
80	Hart SL	1995	A natural-resource-based view of the firm	Academy of Management Review
79	Dada M	2007	A newsvendor's procurement problem when suppliers are unreliable	Manufacturing & Service Operations Management
79	Rawls CG	2010	Pre-positioning of emergency supplies for disaster response	Transportation Research Part B: Methodological
79	Jensen MC	1976	Theory of the firm: Managerial behavior, agency costs and ownership structure	Journal of Financial Economics
79	Poppo L	2002	Do formal contracts and relational governance function as substitutes or complements?	Strategic Management Journal
79	Zhao XD	2008	The impact of power and relationship commitment on the integration between manufacturers and customers in a supply chain	Journal of Operations Management
79	Cachon GP	2000	Supply chain inventory management and the value of shared information	Management Science
78	Bektas T	2011	The pollution-routing problem	Transportation Research Part B: Methodological
78	Shaw P	1998	Using constraint programming and local search methods to solve vehicle routing problems	Lecture Notes in

Author Manuscript

This article is protected by copyright. All rights reserved.

78	Taillard E	1993	Benchmarks for basic scheduling problems	Computer Science European Journal of Operational Research
77	Galindo G	2013	Review of recent developments in OR/MS research in disaster operations management	European Journal of Operational Research
77	Liu Q	2008	Strategic capacity rationing to induce early purchases	Management Science
77	Su XM	2008	Strategic customer behavior, commitment, and supply chain performance	Management Science
77	Li Sh	2006	The impact of supply chain management practices on competitive advantage and organizational performance	Omega
77	Juttner U	2003	Supply chain risk management: outlining an agenda for future research	International Journal of Logistics - Research & Applications
76	Hines P	2004	Learning to evolve: A review of contemporary lean thinking	International Journal of Operations & Production Management
76	Van Den Bergh J	2013	Personnel scheduling: A literature review	European Journal of Operational Research
76	Garey MR	1976	The complexity of flowshop and jobshop scheduling	Mathematics of Operations Research
76	Chen F	2000	Quantifying the bullwhip effect in a simple supply chain: The impact of forecasting, lead times, and information	Management Science
76	Rosenzweig ED	2003	The influence of an integration strategy on competitive capabilities and business performance: an exploratory study of consumer products manufacturers	Journal of Operations Management
76	Pagell M	2014	Why research in sustainable supply chain management should have no future	Journal of Supply Chain Management
75	Krass D	2013	The relationships between supplier development, commitment, social capital accumulation and performance improvement	Production & Operations Manage

Author Manuscript

This article is protected by copyright. All rights reserved.

				ment
75	Wu ZH	2011	Balancing priorities: Decision-making in sustainable supply chain management	Journal of Operations Management
73	Federgruen A	1999	Combined pricing and inventory control under uncertainty	Operations Research
73	Granovetter M	1985	Economic action and social structure: The problem of embeddedness	American Journal of Sociology
73	Tang O	2011	Identifying risk issues and research advancements in supply chain risk management	International Journal of Production Economics
72	Su XM	2007	Intertemporal pricing with strategic customer behavior	Management Science
72	Babich V	2007	Competition and diversification effects in supply chains with supplier default risk	Manufacturing & Service Operations Management
72	Heckmann I	2015	A critical review on supply chain risk–Definition, measure and modeling	Omega
72	Sodhi MS	2012	Researchers' perspectives on supply chain risk management	Production & Operations Management
72	Klassen RD	2012	Social issues in supply chains: Capabilities link responsibility, risk (opportunity), and performance	International Journal of Production Economics
71	Clark AJ	1960	Optimal policies for a multi-echelon inventory problem	Management Science
71	Cooper MC	1997	Supply chain management: more than a new name for logistics	International Journal of Logistics Management
71	Gunasekaran A	2004	A framework for supply chain performance measurement	International Journal of Production Economics
71	Prajogo D	2012	Supply chain integration and performance: The effects of long-term relationships, information technology and sharing, and logistics integration	International Journal of Production

Author Manuscript

This article is protected by copyright. All rights reserved.

71	Tang C	2008	The power of flexibility for mitigating supply chain risks	International Journal of Production Economics
71	Seuring S	2013	A review of modeling approaches for sustainable supply chain management	Decision Support System
71	Nahapiet J	1998	Social capital, intellectual capital, and the organizational advantage	Academy of Management Review
70	Coelho LC	2014	Thirty years of inventory routing	Transportation Science
70	Singh N	1984	Price and quantity competition in a differentiated duopoly	The RAND Journal of Economics
70	Klibi W	2010	The design of robust value-creating supply chain networks: a critical review	European Journal of Operational Research
70	Lambert DM	2000	Issues in supply chain management	Industrial Marketing Management
70	Barratt M	2004	Understanding the meaning of collaboration in the supply chain	Supply Chain Management-An International J.
70	Christopher M	2004	Mitigating supply chain risk through improved confidence	International J. of Physical Distribution & Logistics Mgt.
70	Tsay AA	2000	Channel dynamics under price and service competition	Manufacturing & Service Operations Management
70	Kogut B	1992	Knowledge of the firm, combinative capabilities, and the replication of technology	Organization Science
69	Steenken D	2004	Container terminal operation and operations research-a classification and literature review	OR Spectrum
69	Alumur S	2008	Network hub location problems: The state of the art	European Journal of Operational Research
69	Berbeglia G	2007	Static pickup and delivery problems: A classification scheme and survey	TOP
69	Black F	1973	The pricing of options and corporate liabilities	Journal of

Author Manuscript

This article is protected by copyright. All rights reserved.

69	Schmenner RW	1998	On theory in operations management	Journal of Operations Management
69	Cayirli T	2003	Outpatient scheduling in health care: A review of literature	Production & Operations Management
69	Bozarth CC	2009	The impact of supply chain complexity on manufacturing plant performance	Journal of Operations Management
69	Cai GS	2010	Channel selection and coordination in dual-channel supply chains	Journal of Retailing
69	Christopher M	2000	The agile supply chain: Competing in volatile markets	Industrial Marketing Management
69	Tsay AA	1999	The quantity flexibility contract and supplier-customer incentives	Management Science
69	Williamson OE	2008	Outsourcing: Transaction cost economics and supply chain management	Journal of Supply Chain Management
69	Devaraj S	2007	Impact of eBusiness technologies on operational performance: The role of production information integration in the supply chain	Journal of Operations Management
69	Wang YM	2010	Mitigating supply risk: Dual sourcing or process improvement?	Manufacturing & Service Operations Management
69	Yu HS	2009	Single or dual sourcing: decision-making in the presence of supply chain disruption risks	Omega
69	Bai C	2010	Integrating sustainability into supplier selection with grey system and rough set methodologies	International Journal of Production Economics
69	Tang CS	2012	Research advances in environmentally and socially sustainable operations	European Journal of Operational Research
69	Van Mieghem JA	2003	Commissioned paper: Capacity mgt., investment, & hedging: Review and recent developments	Manufacturing & Service Operations Management

Author Manuscript

This article is protected by copyright. All rights reserved.

6 8	Christiansen M	2013	Ship routing and scheduling in the new millennium	European Journal of Operational Research
6 8	Ohno T	1988	Toyota production system: Beyond large-scale production	*Book*
6 8	Hassin R	2003	To queue or not to queue: Equilibrium behavior in queueing systems	*Book*
6 8	Gupta D	2008	Appointment scheduling in health care: Challenges and opportunities	IIE Transactions
6 8	Waller MA	2013	Data science, predictive analytics, and big data: A revolution that will transform supply chain design and management	Journal of Business Logistics
6 8	Villena VH	2011	The dark side of buyer–supplier relationships: A social capital perspective	Journal of Operations Management
6 8	Ha AY	2008	Contracting and information sharing under supply chain competition	Management Science
6 8	Cachon GP	2004	The allocation of inv. risk in a supply chain: Push, pull, & advance-purchase discount contracts	Management Science
6 8	Sarkis J	2010	Stakeholder pressure and the adoption of environmental practices: The mediating effect of training	Journal of Operations Management
6 7	Buzacott JA	2004	Inventory management with asset-based financing	Management Science
6 7	Mete HO	2010	Stochastic optimization of medical supply location and distribution in disaster management	International Journal of Production Economics
6 7	Baldacci R	2011	New route relaxation and pricing strategies for the vehicle routing problem	Operations Research
6 7	Allahverdi A	2008	A survey of scheduling problems with setup times or costs	European Journal of Operational Research
6 7	Stank TP	2001	Supply chain collaboration and logistical service performance	Journal of Business Logistics
6 7	Wagner SM	2008	An empirical examination of supply chain performance along several dimensions of risk	Journal of Business Logistics
6 7	Chaabane A	2012	Design of sustainable supply chains under the emission trading scheme	International Journal of Production Economics
6 6	Goyal SK	2001	Recent trends in modeling of deteriorating inventory	European Journal

Author Manuscript

This article is protected by copyright. All rights reserved.

				of Operational Research
6	Nahmias S	1982	Perishable inventory theory: A review	Operations Research
6	Jeuland AP	1983	Managing channel profits	Marketing Science
6	Battaia O	2013	A taxonomy of line balancing problems and their solution approaches	International Journal of Production Economics
6	Choi TY	2002	Unveiling the structure of supply networks: case studies in Honda, Acura, and Daimler Chrysler	Journal of Operations Management
6	Ketchen DJ	2007	Bridging organization theory and supply chain management: The case of best value supply chains	Journal of Operations Management
6	Kouvelis P	2012	Financing the newsvendor: supplier vs. bank, and the structure of optimal trade credit contracts	Operations Research
6	Bakker M	2012	Review of inventory systems with deterioration since 2001	European Journal of Operational Research
6	Hua GW	2011	Managing carbon footprints in inventory management	International Journal of Production Economics
6	Porteus EL	2002	Foundations of stochastic inventory theory	*Book*
6	Campbell JF	2012	Twenty-five years of hub location research	Transportation Science
6	Dekker R	2012	Operations research for green logistics–An overview of aspects, issues, contributions and challenges	European Journal of Operational Research
6	Demir E	2012	An adaptive large neighborhood search heuristic for the pollution-routing problem	European Journal of Operational Research
6	Gino F	2008	Toward a theory of behavioral operations	Manufacturing & Service Operations Management
6	Galbraith JR	1973	Designing complex organizations	*Book*

Author Manuscript

This article is protected by copyright. All rights reserved.

6 5	Spengler JJ	1950	Vertical integration and antitrust policy	Journal of Political Economy
6 5	Cattani K	2006	Boiling frogs: Pricing strategies for a manufacturer adding a direct channel that competes with the traditional channel	Production & Operations Management
6 5	Beamon BM	1999	Measuring supply chain performance	International Journal of Operations & Production Management
6 5	Bode C	2011	Understanding responses to supply chain disruptions: Insights from information processing and resource dependence perspectives	Academy of Management Journal
6 4	Paterson C	2011	Inventory models with lateral transshipments: A review	European Journal of Operational Research
6 4	Kim Y	2011	Structural investigation of supply networks: A social network analysis approach	Journal of Operations Management
6 4	Dwyer FR	1987	Developing buyer-seller relationships	Journal of Marketing
6 4	Zhu Q	2007	The moderating effects of institutional pressures on emergent green supply chain practices and performance	International Journal of Production Research
6 4	Carter CR	2015	Toward the theory of the supply chain	Journal of Supply Chain Management
6 4	Hayes RH	1984	Restoring our competitive edge: competing through manufacturing	*Book*
6 4	Porter ME	1980	Competitive strategy: Techniques for analyzing industries and competition	*Book*
6 4	Swafford PM	2006	The antecedents of supply chain agility of a firm: scale development and model testing	Journal of Operations Management
6 3	Su XM	2008	Bounded rationality in newsvendor models	Manufacturing & Service Operations Management
6 3	Jordan WC	1995	Principles on the benefits of manufacturing process flexibility	Management

Author Manuscript

This article is protected by copyright. All rights reserved.

63	Savaskan RC	2006	Reverse channel design: the case of competing retailers	Management Science
63	Uzzi B	1997	Social structure and competition in interfirm networks: The paradox of embeddedness	Administrative Science Quarterly
63	Benton WC	2005	The influence of power driven buyer/seller relationships on supply chain satisfaction	Journal of Operations Management
63	Chen IJ	2004	Strategic purchasing, supply management, and firm performance	Journal of Operations Management
62	Andersson H	2010	Industrial aspects and literature survey: Fleet Composition and routing	Computers & Operations Research
62	Pillac V	2013	A review of dynamic vehicle routing problems	European Journal of Operational Research
62	Fehr E	1999	A theory of fairness, competition, and cooperation	The Quarterly Journal of Economics
62	Naylor JB	1999	Leagility: Integrating the lean and agile manufacturing paradigms in the total supply chain	International Journal of Production Economics
62	Gans N	2003	Telephone call centers: Tutorial, review, and research prospects	Manufacturing & Service Operations Management
62	Cardoen B	2010	Operating room planning and scheduling: A literature review	European Journal of Operational Research
62	Balcik B	2010	Coordination in humanitarian relief chains: Practices, challenges and opportunities	International Journal of Production Economics
62	Cui TH	2007	Fairness and channel coordination	Management Science
62	Yang ZB	2009	Supply disruptions, asymmetric information, and a backup production option	Management Science
62	Vargo	2010	Evolving to a new dominant logic for marketing	Journal

Author Manuscript

This article is protected by copyright. All rights reserved.

2	SL	04		of Marketing
6 2	Oliva R	20 03	Managing the transition from products to services	International Journal of Service Industry Management
6 1	Wang HZ	20 02	A survey of maintenance policies of deteriorating systems	European Journal of Operational Research
6 1	Tompkins JA	20 03	Facilities Planning	*Book*
6 1	Leuschner R	20 13	A meta- analysis of supply chain integration and firm performance	Journal of Supply Chain Management
6 1	Hassini E	20 12	A literature review and a case study of sustainable supply chains with a focus on metrics	International Journal of Production Economics
6 1	Reuter C	20 10	Sustainable global supplier management: the role of dynamic capabilities in achieving competitive advantage	Journal of Supply Chain Management
6 1	Simchi-Levi D	20 08	Designing and managing the supply chain	*Book*
6 0	Bolton GE	20 08	Learning by doing in the newsvendor problem: A laboratory investigation of the role of experience and feedback	Manufacturing & Service Operations Management
6 0	Stahlbock R	20 08	Operations research at container terminals: a literature update	OR Spectrum
6 0	Erdogan S	20 12	A green vehicle routing problem	Transportation Research Part B: Methodological
6 0	Gu JX	20 10	Research on warehouse design and performance evaluation: A comprehensive review	European Journal of Operational Research
6 0	Wang YZ	20 04	Channel performance under consignment contract with revenue sharing	Management Science
6 0	Bitran G	20 03	An overview of pricing models for revenue management	Manufacturing & Service Operations Management
6	Hazen	20	Data quality for data science, predictive analytics, and big data in supply chain management: An	Internati

Author Manuscript

This article is protected by copyright. All rights reserved.

0	BT	14	introduction to the problem and suggestions for research and applications	onal Journal of Production Economics
6 0	Croson R	20 06	Behavioral causes of the bullwhip effect and the observed value of inventory information	Management Science
6 0	Narasimhan R	20 02	Effect of supply chain integration on the relationship between diversification and performance: evidence from Japanese and Korean firms	Journal of Operations Management
5 9	Bierwirth C	20 10	A survey of berth allocation and quay crane scheduling problems in container terminals	European Journal of Operational Research
5 9	Ozdamar L	20 04	Emergency logistics planning in natural disasters	Annals of Operations Research
5 9	Gu JX	20 07	Research on warehouse operation: A comprehensive review	European Journal of Operational Research
5 9	Nonaka I	19 94	A dynamic theory of organizational knowledge creation	Organization Science
5 9	Ferdows K	19 90	Lasting improvements in manufacturing performance: in search of a new theory	Journal of Operations Management
5 9	Bernstein F	20 05	Decentralized supply chains with competing retailers under demand uncertainty	Management Science
5 9	Li LD	20 02	Information sharing in a supply chain with horizontal competition	Management Science
5 9	Van Der Vaart T	20 08	A critical review of survey-based research in supply chain integration	International Journal of Production Economics
5 9	Gunasekaran A	20 01	Performance measures and metrics in a supply chain environment	International Journal of Operations & Production Management
5 9	Christopher M	20 11	" Supply Chain 2.0": managing supply chains in the era of turbulence	International J. of Physical Distribution & Logistics Mgt.

Author Manuscript

This article is protected by copyright. All rights reserved.

5 8	Caunhye AM	2012	Optimization models in emergency logistics: A literature review	Socio-Economic Planning Sciences
5 8	Feillet D	2004	An exact algorithm for the elementary shortest path problem with resource constraints: Application to some vehicle routing problems	Networks
5 8	Corbett CJ	2004	Designing Supply Contracts: Contract Type and Information Asymmetry	Management Science
5 8	Dyer JH	2000	Creating and managing a high- performance knowledge- sharing network: the Toyota case	Strategic Management Journal
5 8	Modi SB	2007	Supplier development: Improving supplier performance through knowledge transfer	Journal of Operations Management
5 8	Das A	2006	Supplier integration—finding an optimal configuration	Journal of Operations Management
5 8	Brandon-Jones E	2014	A contingent resource- based perspective of supply chain resilience and robustness	Journal of Supply Chain Management
5 8	Juttner U	2011	Supply chain resilience in the global financial crisis: an empirical study	Supply Chain Management-An International J.
5 8	Manuj I	2008	Global supply chain risk management	Journal of Business Logistics
5 8	Pettit TJ	2010	Ensuring supply chain resilience: development of a conceptual framework	Journal of Business Logistics
5 8	Awaysheh A	2010	The impact of supply chain structure on the use of supplier socially responsible practices	International Journal of Operations & Production Management
5 8	Cachon GP	2011	The value of fast fashion: Quick response, enhanced design, and strategic consumer behavior	Management Science
5 8	Iyer AV	1997	Quick response in manufacturer-retailer channels	Management Science
5 8	Klassen RD	1996	The impact of environmental management on firm performance	Management Science
5 7	Owen SH	1998	Strategic facility location: A review	European Journal of Operational Research
5 7	Fleischmann M	1997	Quantitative models for reverse logistics: A review	European Journal

Author Manuscript

This article is protected by copyright. All rights reserved.

of Operational Research

5 7 Lin S 19 73 An effective heuristic algorithm for the traveling-salesman problem Operations Research

5 7 Tushman ML 19 78 Information processing as an integrating concept in organizational design. Academy of Management Review

5 7 Hastie T 20 01 The elements of statistical learning *Book*

5 7 Ha AY 20 11 Sharing demand information in competing supply chains with production diseconomies Management Science

5 7 Koufteros XA 20 07 "Black-box" and "gray-box" supplier integration in product development: Antecedents, consequences and the moderating role of firm size Journal of Operations Management

5 7 Ho W 20 15 Supply chain risk management: a literature review International Journal of Production Research

5 7 Tate WL 20 10 Corporate social responsibility reports: a thematic analysis related to supply chain management Journal of Supply Chain Management

5 7 Majumder P 20 01 Competition in remanufacturing Production & Operations Management

5 7 Gimenez C 20 12 Sustainable operations: Their impact on the triple bottom line International Journal of Production Economics

5 6 Hopp WJ 20 08 Factory Physics: Foundation Of Manufacturing Management *Book*

5 6 Bertsimas D 20 06 A robust optimization approach to inventory theory Operations Research

5 6 Holguin-Veras J 20 12 On the unique features of post-disaster humanitarian logistics Journal of Operations Management

5 6 Klose A 20 05 Facility location models for distribution system design European Journal of Operational Research

5 6 Prodhon C 20 14 A survey of recent research on location-routing problems European Journal of Operational Research

Author Manuscript

This article is protected by copyright. All rights reserved.

5 6	Hamalainen RP	2013	On the importance of behavioral operational research: The case of understanding and communicating about dynamic systems	European Journal of Operational Research
5 6	Mcguire TW	1983	An industry equilibrium analysis of downstream vertical integration	Marketing Science
5 6	Chen HC	2012	Business intelligence and analytics: From big data to big impact	MIS Quarterly
5 6	Wamba SF	2015	How 'big data'can make big impact: Findings from a systematic review and a longitudinal case study	International Journal of Production Economics
5 6	Aissaoui N	2007	Supplier selection and order lot sizing modeling: A review	Computers & Operations Research
5 6	Zhou H	2007	Supply chain practice and information sharing	Journal of Operations Management
5 6	Li SH	2005	Development and validation of a measurement instrument for studying supply chain management practices	Journal of Operations Management
5 6	Anupindi R	1993	Diversification under supply uncertainty	Management Science
5 6	Gimenez C	2012	Extending sustainability to suppliers: a systematic literature	Supply Chain Management-An International J.
5 6	Golicic SL	2013	A meta- analysis of environmentally sustainable supply chain management practices and firm performance	Journal of Supply Chain Management
5 6	Barney JB	2012	Purchasing, supply chain management and sustained competitive advantage: The relevance of resource- based theory	Journal of Supply Chain Management
5 6	Guide VDR	2001	Managing product returns for remanufacturing	Production & Operations Management

Author Manuscript

This article is protected by copyright. All rights reserved.