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Behavioural supply chain management: evolving human frontiers in supply chains with bibliometric analysis

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Abstract: This paper conducts a comprehensive bibliometric analysis of behavioural supply chain management (BSCM) literature over two decades, focusing on human factors' role in supply chain dynamics. It synthesises scholarly articles and conference papers to track the field's evolution, identify influential works, and spotlight emerging trends. The findings emphasise a growing acknowledgment of human decision-making, biases, and social dynamics in shaping supply chain efficiency and resilience. By integrating behavioural sciences, BSCM challenges traditional rational decision-making assumptions, offering a deeper understanding of supply chain complexities. Utilising Scopus's tools and BIBLIOSHINY software, the study employs advanced data representation techniques to map citation networks, influential authors, and thematic clusters in BSCM literature. Results indicate a post-2020 surge in research output, with significant international collaborations across academic disciplines. Visual aids like keyword maps illuminate prevalent topics and evolving research areas. Network visualisation reveals dense research hubs and collaborative patterns within the field. This analysis provides a systematic overview of BSCM's intellectual journey, advocating for future

research merging human behaviour with technological advancements through an interdisciplinary framework drawing from psychology, sociology, and organisational behaviour.

Keywords: behavioural supply chain management; BSCM; human factors; bibliometric analysis; collaboration.

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1 Introduction

Behavioural supply chain management (BSCM) has emerged as a pivotal area of study, addressing the complex interactions and decisions made by individuals and groups within the supply chain network (Loch and Wu, 2007). Unlike traditional models that often assume rational and predictable decision-making, BSCM acknowledges the nuances of human behaviour, including biases, heuristics, and social dynamics (Habtu and Mezgobo,

2024). This nuanced understanding is critical as human decisions significantly impact supply chain efficiency, resilience, and competitiveness (Scorch et al., 2017).

The integration of behavioural sciences into supply chain management (SCM) offers a richer, more nuanced understanding of supply chain dynamics, challenging the assumption of rationality that underpins much of classical supply chain theory (Kalanick et al., 2011). For instance, the study of psychological biases and decision-making heuristics reveals how these factors can lead to suboptimal outcomes, such as overstocking or under-preparedness for supply chain disruptions (Loch and Wu, 2007). Furthermore, social dynamics, including power relations and trust between supply chain partners, play a crucial role in shaping collaborative efforts and information sharing practices (Scorch et al., 2017).

This paper aims to explore the human factor in supply chains through a bibliometric analysis, tracing the field's development and identifying key themes and gaps in the literature (Iftikhar et al., 2024). By analysing a wide array of sources, including scholarly articles, conference papers, and industry reports, this study seeks to map the intellectual landscape of BSCM, highlighting influential works and emergent trends (Kalanick et al., 2011). Such an analysis not only contributes to a deeper understanding of how human behaviours impact SCM but also identifies avenues for future research, particularly in areas where the interplay of human factors and technological advancements might redefine supply chain practices (Eckerd et al., 2013).

Moreover, by integrating insights from adjacent fields such as psychology, sociology, and organisational behaviour, this research endeavours to construct a multidisciplinary framework for BSCM, offering new perspectives and methodologies to address the complexities of human factors in supply chains (Knemeyer and Naylor, 2011). SCM has undergone significant transformation over the decades (Meriton et al., 2021). Initially focused on logistics and operational efficiency, the field has expanded to embrace strategic, collaborative, and sustainability elements, reflecting broader economic, environmental, and social considerations (Gligor and Autry, 2012). The integration of behavioural sciences into SCM is a testament to the field's evolution, recognising the unpredictability and complexity introduced by human factors (Davis et al., 2014). This paradigm shift acknowledges that beyond the quantitative aspects of SCM, qualitative factors like stakeholder relationships, decision-making dynamics, and behavioural economics play critical roles in shaping supply chain outcomes (Scorch et al., 2017).

Behavioural factors in SCM have gained prominence, underscoring the impact of human behaviours on supply chain performance and resilience (Loch and Wu, 2007). Trust and communication are foundational to effective supply chain collaboration, influencing the willingness of partners to share information and manage risks collectively (Scorch et al., 2017; Akhavan and Philsoophian, 2023). Decision-making under uncertainty, amplified by global challenges such as market volatility and supply disruptions, necessitates a better understanding of heuristics and biases influencing supply chain managers (Nham et al., 2024). Additionally, organisational culture plays a pivotal role in shaping the adoption of sustainable and ethical supply chain practices, reflecting a shift towards more socially responsible business operations (Katsikopoulos and Gigerenzer, 2013).

Bibliometric analysis serves as a powerful tool in SCM research, offering a systematic method to review and analyse the extensive body of literature within the field (Luo et al., 2022). Through citation analysis, co-word analysis, and network mapping, researchers can identify the development of the field, key contributors, influential

publications, and emerging research (Sutar et al., 2024). This methodological approach not only elucidates the intellectual structure of SCM research but also guides scholars and practitioners towards areas ripe for future exploration and development (Gameiro and Satolo, 2023).

2 Rationale of the study

BSCM is an important area of study because it looks at how human factors like decision-making, biases, and social interactions affect supply chains. Traditional supply chain models often overlook these human elements, assuming people always make logical choices, which can lead to inefficiencies and vulnerabilities. BSCM acknowledges the complexities and unpredictability of human behaviour, which can significantly impact supply chain efficiency and resilience. This study aims to fill the gap in understanding these human influences by conducting a thorough review of BSCM literature from the past 20 years. It will identify key trends, influential works, and areas that need more research. The goal is to provide a clear picture of how BSCM has evolved and to suggest future research directions that combine human behaviour insights with new technologies to improve SCM.

3 Methodological framework: harnessing bibliometric analysis for literature review

This study offers an in-depth look at research done on BSCM spanning 20 years, based on information from the Scopus database as of March 2024. It uses advanced techniques to analyse and visually represent the data, making use of Scopus's 'analyse search results' feature and the BIBLIOSHINY software, as explained by Perianes-Rodriguez et al. in 2016. The study gathered data until March 2024, focusing on collecting specific articles from Scopus (Muflikh et al., 2021). The search strategy utilised in this research was carefully designed and implemented using a detailed search string: (TITLE-ABS-KEY (behavioural supply chain management OR behavioural operation management) AND SUBJAREA (Social Sciences OR Business, Management and Accounting OR Economics, Econometrics and Finance) AND DOCTYPE (Article and Conference Paper) AND LANGUAGE (English) (Aria and Cuccurullo, 2017). This particular query was constructed with the intention of precisely identifying and selecting publications that specifically address BSCM or behavioural operation management. The search criteria were meticulously set to include works from targeted academic disciplines such as social sciences, business, management and accounting, and economics, econometrics and finance. Furthermore, the inclusion criteria were narrowed down to specific types of documents, namely articles and conference papers, which had to be published in English.

This strategic approach to data collection was aimed at ensuring that the dataset assembled for bibliometric analysis was not only highly relevant but also focused on the intersection of BSCM within the specified academic fields. By doing so, the research ensures a comprehensive and precise examination of the literature in these areas, facilitating a deeper understanding of BSCM's role and evolution within these disciplines over the specified period. This meticulous filtering process was crucial for acquiring a dataset that is both focused and pertinent, providing a solid foundation for conducting a

robust bibliometric analysis (Sannegadu et al., 2023; Tsoulfas et al., 2023; Wang et al., 2023; Yu et al., 2022).

This section details the methods used for the literature review and the search strategy implemented in this study. We adopted a systematic literature review (SLR) as our research methodology, following the guidelines of Xiao and Watson (2019). The preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines, as mentioned by Moher et al. (2015), offer a structured approach for conducting SLRs. The PRISMA framework provides clear protocols that help in understanding, conducting, and reporting reviews of existing literature, ensuring that these reviews are valid, reliable, and can be replicated by others (Moher, 2009). PRISMA includes a four-stage flow diagram, introduced by Liberati et al. in 2009, which aids in the selection of high-quality literature and ensures the review process is transparent. Our search strategy integrates a SLR that aims to uncover the underlying motivation for the research topic and questions. It involves applying specific screening criteria to maintain a balance between the scope and depth of the review, focusing on the core concept, and synthesising and interpreting the analysis results. Following the structure recommended by Fisch and Block (2018), this approach ensures the review is organised and thorough, covering the necessary grounds for a comprehensive understanding of the subject matter.

Figure 1 Reporting items for the SLR as per the PRISMA (see online version for colours)

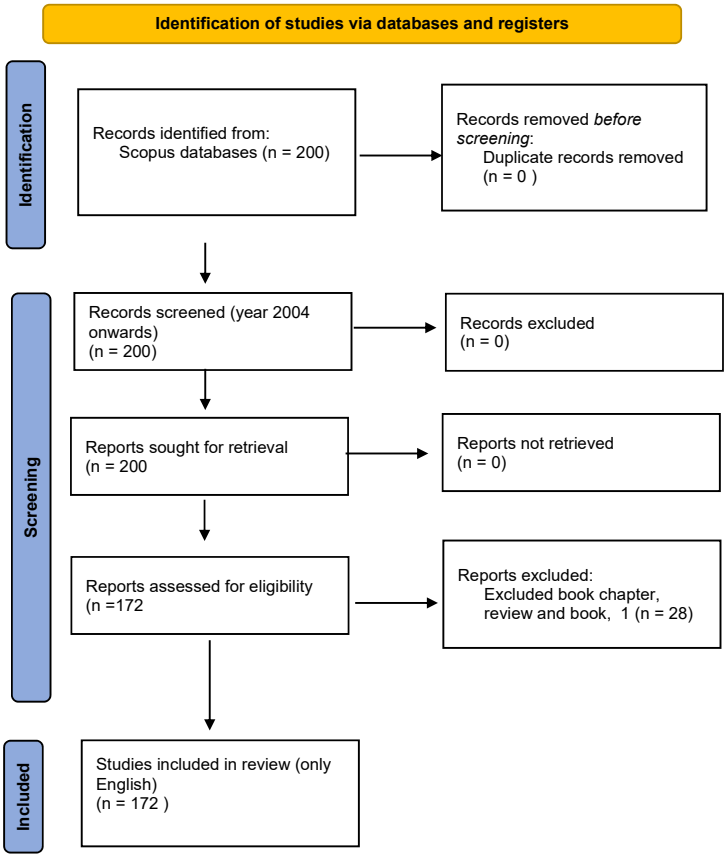


Table 1 displays the key results from the data gathered from the Scopus database, spanning the years 2005 to 2024

Table 1 Main information

Description	*Results*
Main information about data	
Timespan	2005:2024
Sources (journals, books, etc.)	78
Documents	172
Annual growth rate %	0
Document average age	6.03
Average citations per doc	28.75
References	8,772
Document contents	
Keywords plus (ID)	679
Author's keywords (DE)	553
Authors	
Authors	402
Authors of single-authored docs	12
Authors collaboration	
Single-authored docs	14
Co-authors per doc	2.93
International co-authorships %	33.14
Document types	
Article	151
Conference paper	21

This table outlines a dataset from 2005 to 2024, drawing from 78 sources to compile 172 documents, with an average citation count of 28.75 per document and totalling 8,772 references. Despite an annual growth rate of 0%, indicating a static collection size over time, the documents, on average 6.03 years old, are rich in academic discourse, evidenced by 679 Keywords Plus and 553 author's keywords. The dataset showcases a collaborative research environment, with 402 authors contributing to a predominantly multi-authored body of work (average 2.93 co-authors per document), including a significant portion of international collaborations (33.14%). The majority of the documents are articles (151), complemented by 21 conference papers, highlighting a blend of peer-reviewed and preliminary research findings across a diverse array of academic fields.

4 Analytical review of selected research studies

The section is complemented by an effort to map the bibliometric landscape, offering a two-fold approach to understanding the field. This involves a meticulous analysis of

chosen research papers, focusing on their methodologies, results, and contributions to the broader academic discussion.

4.1 Map the bibliometric landscape

We undertake a bibliometric analysis to visualise the relationships and trends within the existing literature. By mapping the bibliometric landscape, we aim to uncover the network of citations, key authors, influential papers, and thematic clusters that define the domain. This dual approach not only deepens our comprehension of individual studies but also provides a macroscopic view of the field's development, emerging trends, and potential areas for future inquiry.

Figure 2 Annual production (see online version for colours)

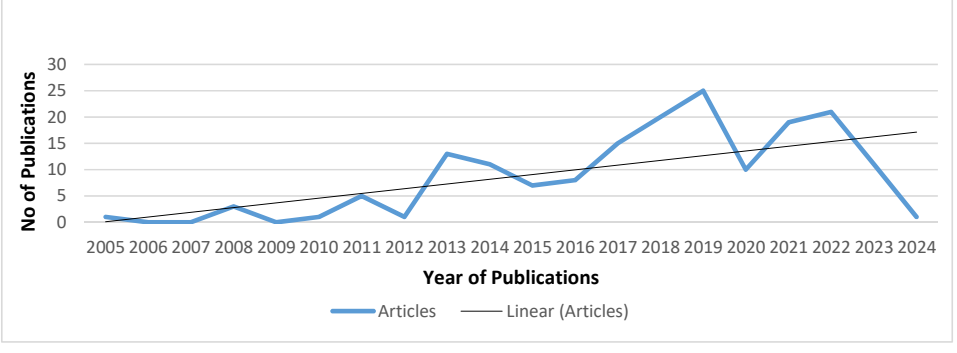


Table 2 Most relevant authors

Element	*h_index*	*g_index*	*m_index*	*TC*	*NP*	*PY_start*
Davis, A.M.	4	4	0.364	154	4	2014
Du, S.	4	5	0.571	50	5	2018
Katok, E.	4	4	0.235	574	4	2008
Netessine, S.	4	4	0.364	217	4	2014
Voigt, G.	4	5	0.5	37	5	2017
Wu, Y.	4	4	0.2	364	4	2005
Amit, R.K.	3	3	0.5	46	3	2019
Cao, B-B.	3	3	0.375	21	3	2017
Chen, J.	3	3	0.5	24	3	2019
Fan, Z-P.	3	4	0.333	47	4	2016
Feng, X.	3	4	0.6	29	4	2020
Johnsen, L.C.	3	3	0.5	29	3	2019
Li, J.	3	4	0.273	29	4	2014

The graph titled annual production shows the number of articles published each year from 2005 to 2024. Initially, the number of publications remains relatively stable with a slight fluctuating trend. Around 2017, there is a notable increase in the volume of articles published, which escalates dramatically after 2020, peaking sharply in 2023 before a

substantial dip in 2024. The sharp peak in publications in 2023 followed by a substantial dip in 2024 can be attributed to the timing of data collection. The data for this analysis was gathered in early 2024, resulting in a lower count for that year as many publications are either still in progress or have not yet been indexed. This early collection captures only a partial dataset for 2024, reflecting fewer publications compared to the complete data of previous years. Therefore, the observed dip is not indicative of a decline in research activity but rather a consequence of the incomplete data for the year 2024. The linear trend line, representing the overall trend across the years, indicates a general increase in publications over time. This suggests that, despite year-to-year variations, there is an overall upward trajectory in the number of articles produced, with the most significant growth occurring in the latter part of the observed timespan.

Table 2 presents the most relevant authors based on several bibliometric indicators including h-index, g-index, m-index, total citations (TC), number of publications (NP), and the starting year of publication (PY_start). Among the listed authors, each with an h-index of 3 or 4, notable figures include Davis, A.M., Du, S., Katok, E., Netessine, S., Voigt, G., and Wu, Y., who demonstrate consistent performance across these metrics. Notably, Katok, E. has the highest total citations (574) despite a lower g-index and m-index, indicating significant impact despite potentially fewer highly cited papers. Moreover, authors such as Amit, R.K., Cao, B-B. and Chen, J., though lower in total citations and h-index, show promising trends in recent years, as evidenced by their relatively higher g-index and m-index values compared to their publication counts. This table offers insights into the scholarly impact and productivity of these authors within their respective fields, providing a basis for further exploration of their research contributions and influence.

Table 3 Most relevant journals/sources

Sources	*Articles*
Production and Operations Management	19
International Journal of Production Research	16
Management Science	10
Manufacturing and Service Operations Management	8
International Journal of Operations and Production Management	7
Journal of Operations Management	6
Journal of Supply Chain Management	5
Annals of Operations Research	4
Decision Sciences	4
Transportation Research Part E: Logistics and Transportation Review	4
European Journal of Operational Research	3
IEEE International Conference on Industrial Engineering and Engineering Management	3
IFAC-Papersonline	3
International Journal of Logistics Systems and Management	3
International Journal of Production Economics	3
Journal of Business Economics	3
Journal of the Operational Research Society	3

Table 3 titled most relevant journals/sources lists the frequency of articles from various prominent journals within the fields of production and operations management. Production and operations management leads the table with 19 articles, followed by the *International Journal of Production Research* with 16, and *Management Science* with 10. Other significant contributors include *Manufacturing and Service Operations Management* with eight publications and the *International Journal of Operations and Production Management* with 7. The presence of journals such as *Journal of Operations Management*, *Journal of Supply Chain Management*, and various others with fewer publications indicates a broad interest and contribution to these fields across a range of specialised sources. The diversity of journals suggests a multidisciplinary interest in operations and production research, and the frequency of articles can imply the prominence and influence of these journals within the academic community.

Table 4 Key relevant publications

Paper	*DOI*	*TC*	*TC/Y*	*N/TC*
Bolton, G.E. and Katok, E. *Manuf. Serv. Oper. Manage.*	10.1287/msom.1060.0190	272	16.00	2.31
Katok, E. and Pavlov, V. (2013) *J. Oper. Manage.*	10.1016/j.jom.2013.01.001	213	17.75	3.04
Ho, T-H. et al. (2014) *Prod. Oper. Manage.*	10.1111/poms.12064	206	18.73	3.10
Sony, M. and Naik, S. (2020) *Technol. Soc.*	10.1016/j.techsoc.2020.101248	202	40.40	7.40
Ren, Y. and Croson, R. (2013) *Manage. Sci.*	10.1287/mnsc.2013.1715	185	15.42	2.64
Tan, T.F. and Netessine, S. (2014) *Manage. Sci.*	10.1287/mnsc.2014.1950	168	15.27	2.53
Ho, T-H. et al. (2010) *Manage. Sci.*	10.1287/mnsc.1100.1225	163	10.87	1.00
Duhadway et al. (2019) *Ann. Oper. Res.*	10.1007/s10479-017-2452-0	148	24.67	8.94
de Koster, R.B.M. et al. (2011) *J. Oper. Manage.*	10.1016/j.jom.2011.06.005	148	10.57	1.59
Frazzon, E.M. et al. (2013) *Procedia CIRP*	10.1016/j.procir.2013.05.009	141	11.75	2.01
Loch, C.H. and Wu, Y. (2007) *Found Trends Technol. Inf. Oper. Manage.*	10.1561/0200000009	107	5.35	1.00
Kalanick, B. et al. (2011) *Manage. Sci.*	10.1287/mnsc.1110.1318	104	7.43	1.12
Eckerd, S. et al. (2013) *J. Oper. Manage.*	10.1016/j.jom.2013.06.003	93	7.75	1.33
Gligor, D.M. and Autry, C.W. (2012) *J. Supply Chain Manage.*	10.1111/j.1745-493X.2011.03240.x	93	7.15	1.00
Scorch, T. et al. (2017) *Int. J. Phys. Distrib. Logist. Manage.*	10.1108/IJPDLM-10-2015-0268	89	11.13	4.10
Feng, T. et al. (2011) *Omega*	10.1016/j.omega.2010.02.003	83	5.93	0.89

Table 4 Key relevant publications (continued)

Paper	*DOI*	*TC*	*TC/Y*	*N/TC*
Knemeyer, A.M. and Naylor, R.W. (2011) *J. Bus. Logist*.	10.1111/j.0000-0000.2011.01025.x	81	5.79	0.87
Davis, A.M. et al. (2014) *Manage. Sci-a*	10.1287/mnsc.2014.1940	74	6.73	1.12
Lee, Y.S. et al. (2018) *Prod. Oper. Manage.*	10.1111/poms.12841	72	10.29	2.80
De Vries et al. (2016) *Int. J. Prod. Res.*	10.1080/00207543.2015.1064184	69	7.67	2.94
Riedl et al. (2013) *J. Oper. Manage.*	10.1016/j.jom.2012.10.003	65	5.42	0.93
Wu and Chen (2014) *Prod. Oper. Manage.*	10.1111/poms.12057	65	5.91	0.98
Bitran et al. (2008) *Manuf. SERV. Oper. Manage.*	10.1287/msom.1060.0147	61	3.59	0.52
Katsikopoulos and Gigerenzer (2013) *J. Supply Chain Manage.*	10.1111/j.1745-493x.2012.03285.x	60	5.00	0.86
Duhadway et al. (2018) *J. Supply Chain Manage.*	10.1111/jscm.12182	57	8.14	2.21
Lau et al. (2014) *Decis. Support Syst.*	10.1016/j.dss.2012.12.041	52	4.73	0.78

Table 4, titled key relevant publications, presents a selection of significant papers within a certain research field, along with their digital object identifiers (DOIs), total citations (TC), citations per year (TC/Y), and normalised citation score (N/TC). The table is led by Bolton, G.E.'s 2008 publication in *Manufacturing and Service Operations Management* with 272 citations, averaging 16 citations per year and a normalised citation score of 2.31. Katok, E.'s 2013 paper in *Journal of Operations Management* and Ho, T-H.'s 2014 paper in *Production and Operations Management* also show high impact with 213 and 206 citations respectively, and higher than average yearly citations. Notably, Sony, M.'s 2020 publication in *Technology and Society* stands out with an exceptional 40.40 citations per year, indicating rapid recognition in the field post-publication. Overall, the table suggests a well-cited body of literature with several highly influential publications that have shaped research discourse significantly, as inferred from their citation metrics.

4.2 Geographical mapping of countries

The pie chart illustrates the proportion of contributions from various countries to a specific production, presumably in the context of scholarly research or industrial output. The USA leads with 27% of the production, followed by China at 23%, and Germany at 15%. These three countries make up a significant majority of the production, indicating their dominant roles in this sector. Other countries such as India, the Netherlands, Italy, and the UK contribute 4% each, while smaller fractions are attributed to Singapore, Brazil, Canada, Switzerland, and Turkey. The visual spread of contributions highlights the geographical distribution of production activity, with a clear concentration in the

USA and China, reflecting their substantial influence and capacity in the field being examined.

Figure 3 Countries production (see online version for colours)

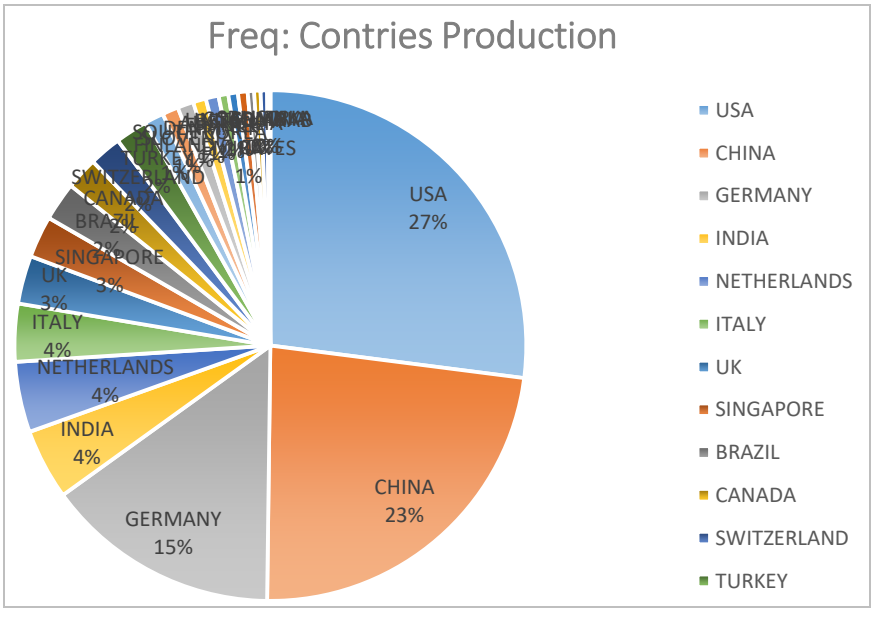


Table 5 Countries with the most citations

Country	*TC*	*Average article citations*
USA	1,600	55.20
Germany	301	15.10
China	281	10.00
Netherlands	265	44.20
Namibia	202	202.00
Brazil	146	48.70
France	107	53.50
Denmark	96	48.00
UK	85	17.00
India	74	10.60
Korea	72	36.00
Singapore	68	22.70
United Arab Emirates	38	12.70

The table illustrates the citation impact and average article citations of various countries in academic research. The USA leads with a total citation count of 1,600 and an average of 55.20 citations per article, indicating its strong research output and influence. Following closely is the Netherlands with 265 total citations and a notably high average of 44.20 citations per article. Namibia stands out with the highest average article citations

at 202.00, albeit with a lower total citation count of 202, suggesting a smaller but highly impactful scholarly output. Other notable contributors include Brazil, France, and Denmark, all exhibiting relatively high average article citations, indicating significant impact despite lower total citation counts. Conversely, while countries like China and India have lower average article citations, they demonstrate considerable total citation counts, highlighting their substantial research output and growing influence in the academic landscape.

4.3 Key themes, trends, and shifts in the focus of scholarly research

This figure appears to be a bi-dimensional plot from a bibliometric analysis, likely representing a co-occurrence network of keywords from scientific literature. The horizontal axis (Dim 1) and vertical axis (Dim 2) represent the dimensions extracted from the data, possibly through a technique such as multidimensional scaling or principal component analysis. Keywords that are closely related in the literature are plotted near each other. For instance, supply chain coordination is closely related to inventory management, suggesting these topics are often discussed together in the research field. Large nodes, like behavioural operations management, suggest a higher occurrence of the term, which means it is a prevalent topic in the analysed literature. The spread of the terms along the axes indicates how the themes vary in relation to each other, with terms on the far right like 'cognitive biases' and 'pro-environmental behaviour' potentially representing emerging or distinct areas of research focus.

This figure, typically known as a strategic diagram or quadrant analysis in bibliometric studies, maps the centrality and density of various research themes within a field. Centrality, shown on the horizontal axis, represents how integral or connected a theme is within the body of literature, often implying its maturity and foundational role. Density, on the vertical axis, indicates the internal strength of a research theme, based on the development of the research within that theme.

Themes located in the upper right quadrant, labelled as motor themes, are both well-developed and central to the field. These are mature topics with extensive research and are foundational to other research themes. In the lower right, the Basic Themes are also central but less developed, which may suggest they are established but potentially in need of further research. On the upper left, the niche themes are well-developed but less central, indicating specialised areas of research that might be significant but are not broadly connected to other research areas. Lastly, the lower left quadrant contains emerging or declining themes. These themes have low centrality and development, which could imply that they are either new and not yet fully explored or once-significant themes that are declining in importance. Research topics like cognitive bias, supply chains, and operations management in the motor themes quadrant suggest these areas are cornerstone topics with rich literature. In contrast, scheduling and restaurant operations in the emerging or declining themes quadrant could represent areas that are either losing traction or represent new, not yet fully explored frontiers.

Figure 4 Keyword co-occurrence map (see online version for colours)

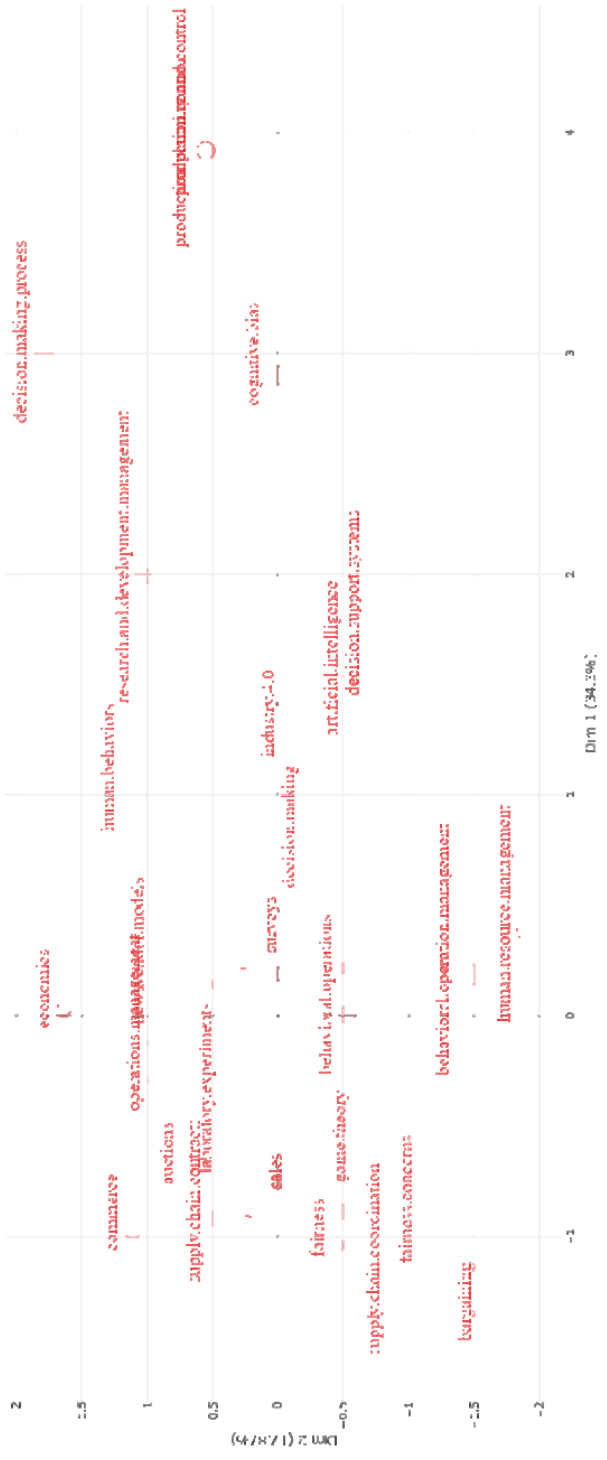


Figure 5 Strategic diagram (see online version for colours)

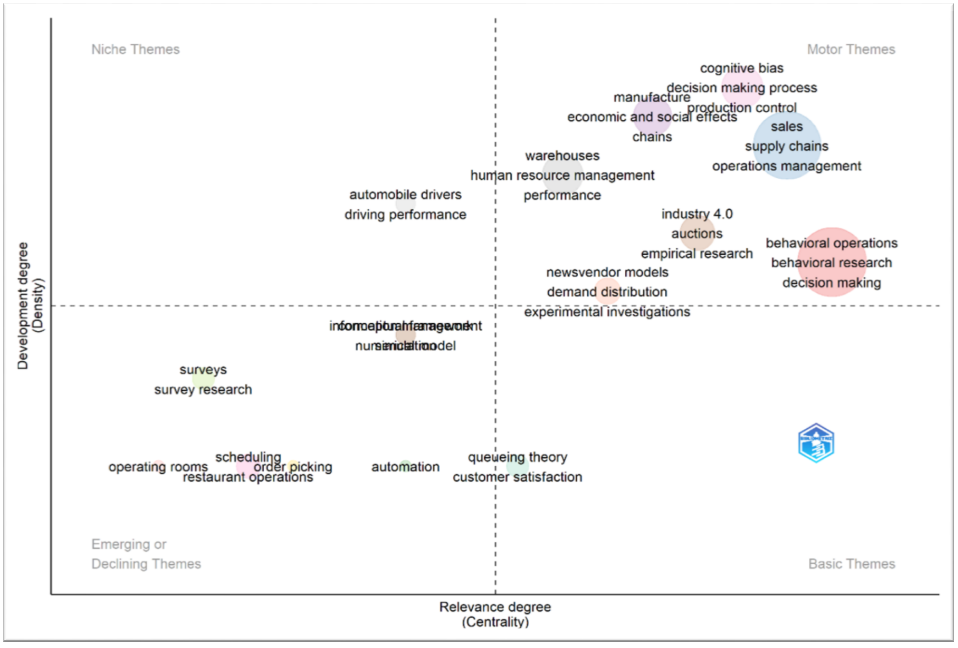
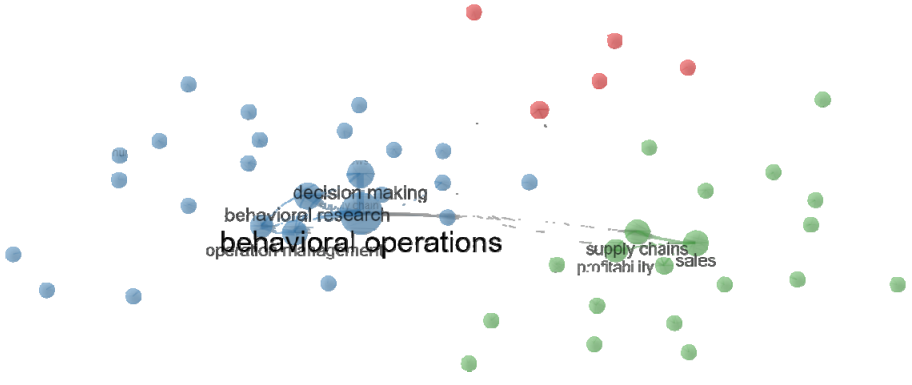


Figure 6 Collaboration network (see online version for colours)



This figure represents a network visualisation, commonly referred to as a bibliometric network or a scientific collaboration network. It is used to illustrate the relationships and connections between different entities, which could be authors, institutions, or topics within a particular field of study. In this network, the nodes (represented by coloured dots) could signify individual researchers, research papers, or keywords, depending on the context of the analysis. The size of a node often indicates the importance or weight of that entity, such as the number of publications for an author or the frequency of a keyword. The lines connecting the nodes, known as edges, represent the relationships or collaborations between them. The thickness of the lines may indicate the strength or frequency of the collaboration or connection. Clusters of nodes (such as the blue and

green groupings) suggest areas of concentrated activity or research subfields where there is significant interaction or commonality. For example, a dense cluster of green nodes labelled supply chains suggests a substantial amount of research activity focused on this topic, with many connections indicating a well-developed subfield. In contrast, isolated nodes would indicate less collaboration or fewer connections within the field. The colours might represent different types or categories of entities or the different years or periods in the development of the field, showing how the focus of research has evolved over time. This network diagram is a valuable tool for understanding the structure and dynamics of scientific research, indicating key players or central themes, and how they interrelate within the broader field.

5 Finding of the study

The study presents a comprehensive bibliometric analysis of BSCM, spotlighting the significant role of human factors in supply chain dynamics. Spanning two decades, the research compiles a robust dataset from Scopus, focusing on articles and conference papers in English from the domains of social sciences, business management and accounting, and economics, econometrics, and finance. The findings underscore the integration of behavioural sciences in SCM, indicating an evolved understanding that challenges classical theories underpinned by rational decision-making. Key themes such as decision-making, risk management, collaboration, and technology emerge, pointing to a nuanced tapestry within BSCM.

Significant trends show a growing prominence of behavioural factors, highlighting the impact of human behaviour on supply chain performance and resilience. The study reveals an increasing volume of publications, especially post-2020, suggesting a surging interest in BSCM. A collaborative research environment is evidenced, with substantial international collaborations. Journals such as *Production and Operations Management* and *International Journal of Production Research* are among the most cited sources, indicating the relevance and impact of research in these outlets.

Through a series of figures, the study visually represents the bibliometric landscape. The keyword co-occurrence map identifies behavioural operations management and supply chains as prevalent topics, with new areas like cognitive biases emerging. The strategic diagram highlights motor themes like cognitive bias and operations management as mature, central topics, while emerging or declining themes point to areas like scheduling and restaurant operations as either nascent or waning in scholarly focus.

The word cloud visual summarises the key terms, with the larger words indicating a higher prominence within the research corpus, such as behavioural operations and decision making. The collaboration network figure demonstrates the interconnectedness and collaborative dynamics within the field, with clusters indicating concentrated areas of research activity.

The study provides a methodical and comprehensive view of BSCM's intellectual evolution, highlighting influential works, authors, and sources. It also underscores the importance of understanding human factors in supply chain dynamics and suggests avenues for future research, particularly at the intersection of human behaviour and technological advancements. This holistic understanding aids in constructing a multidisciplinary framework that can be instrumental for both scholars and practitioners in navigating the complexities of BSCM.

6 Discussion

The integration of behavioural sciences with SCM has indeed transformed the landscape of research in this field. Traditional supply chain models often focused solely on efficiency and optimisation, neglecting the complexities introduced by human behaviour. However, with the incorporation of behavioural elements such as trust, communication, and human error, researchers have begun to recognise the significance of considering the human factor as a dynamic component within supply chain systems. This shift aligns with the findings of various scholarly works in the area. For instance, Mukharjee (2022) argue that traditional SCM approaches are inadequate in capturing the intricacies of human behaviour, necessitating a paradigm shift towards more holistic frameworks that incorporate behavioural insights. Similarly, Han et al. (2020) emphasise the importance of trust and communication in supply chain relationships, highlighting their role in mitigating disruptions and enhancing collaboration.

Moreover, the strategic diagram and word cloud analysis in our study provide valuable insights into the current state of BSCM research. By identifying both mature motor themes and emerging or declining themes, researchers can prioritise areas for further investigation and innovation. This approach mirrors the recommendations of scholars like Calatayud et al. (2019), who advocate for a proactive approach to identifying and addressing emerging trends in SCM. Furthermore, the global nature of BSCM research underscores its universal applicability and relevance. While countries like the USA and China lead in research output, contributions from a diverse range of countries indicate the widespread interest in BSCM principles worldwide. This aligns with the arguments put forth by Fernandez et al. (2018), who emphasise the importance of cross-cultural perspectives in SCM research.

Looking ahead, interdisciplinary collaboration will be crucial in advancing the field of BSCM. By integrating insights from psychology, sociology, and organisational behaviour, researchers can develop more nuanced models that account for the complexities of human behaviour within supply chains (Luo et al., 2022). This interdisciplinary approach resonates with the recommendations of scholars such as Ivanov and Dolgui (2020), who advocate for a multidisciplinary perspective to address the challenges posed by Industry 4.0 technologies. Indeed, the advent of Industry 4.0 technologies presents both challenges and opportunities for BSCM research. While technologies like artificial intelligence and machine learning hold the promise of enhancing efficiency and resilience, they also introduce new complexities that must be addressed. Scholars such as Christopher (2021) highlight the need for adaptive supply chain strategies that can harness the power of these technologies while mitigating potential risks.

In conclusion, the integration of behavioural insights with technological advancements represents a critical juncture for the field of BSCM. By embracing a human-centric approach and fostering interdisciplinary collaboration, researchers can unlock new dimensions of efficiency and resilience in SCM. Our bibliometric analysis not only provides a historical overview of the field but also charts a course for future research to navigate this evolving landscape effectively.

7 Theoretical and managerial implications

The integration of behavioural sciences into SCM presents significant theoretical and managerial implications. This approach challenges traditional SCM theories by recognising the impact of human biases, heuristics, and social dynamics on supply chain performance, offering a richer and more nuanced understanding of supply chain dynamics. It underscores the complexity introduced by human factors such as trust, power relations, and communication, necessitating a shift from purely quantitative models to those that account for qualitative aspects. The interdisciplinary nature of BSCM, drawing from psychology, sociology, and organisational behaviour, fosters the development of comprehensive theoretical models that provide deeper insights into the interplay between human behaviour and supply chain operations. Emerging themes like cognitive biases and social dynamics highlight opportunities for further exploration, encouraging researchers to delve into how these factors influence supply chain resilience and efficiency.

From a managerial perspective, understanding these behavioural factors is crucial for strategic decision-making. Managers can develop strategies to mitigate the risks associated with irrational decision-making and enhance overall supply chain performance by fostering trust, transparency, and effective communication among supply chain partners. Investing in training programs to enhance behavioural competencies and leveraging Industry 4.0 technologies can further refine behavioural models and develop robust strategies. Additionally, the focus on sustainability and ethical practices requires managers to understand how behavioural factors influence the adoption of these practices, promoting a culture of sustainability and ethical responsibility. Understanding cultural differences in a globalised supply chain environment is essential for navigating international collaborations effectively. By embracing an interdisciplinary approach and leveraging technological advancements, managers and researchers can drive innovation, enhance resilience, and improve the efficiency of supply chains.

8 Conclusions

This study has provided an insightful bibliometric analysis into the evolution and intellectual structure of BSCM over the past two decades. Our findings reveal a field that is rapidly growing in depth and complexity, increasingly recognising the pivotal role of human factors in supply chain dynamics. Key themes such as decision-making, collaboration, risk management, and the integration of technology have been identified as central to the discourse within BSCM. The strategic importance of understanding human behaviour within supply chains is emphasised by the prevalence of literature on behavioural operations and decision-making. This trend reflects a shift from classical supply chain models towards more nuanced frameworks that account for irrationalities, social dynamics, and psychological biases. Our study also notes an escalation in the volume of publications related to BSCM, particularly following 2020, suggesting a heightened scholarly and practical interest in the field. This is further supported by the significant international collaborations and a variety of influential authors and journals contributing to the research landscape.

9 Future research direction

The bibliometric analysis undertaken in the current study illuminates several promising avenues for future research within the realm of BSCM. As technology continues to advance, a pivotal research trajectory involves examining the interplay between human behaviour and emerging technologies such as AI, automation, and machine learning. Investigating the real-world applications of behavioural theories through empirical research is another critical path that can validate and potentially challenge existing academic paradigms. Given the profound influence of psychological biases on decision-making, further exploration is necessary to comprehend the depth of their impact on supply chain outcomes. This could lead to the development of strategies aimed at mitigating such biases, enhancing decision-making efficacy across supply chains. Additionally, the complex social dynamics and collaboration that underpin supply chain networks demand a closer look to understand how trust, power relations, and collaborative capital drive supply chain resilience and success. The increasing concern for sustainable and ethical supply chain practices presents a fertile ground for research, particularly in understanding how behavioural factors drive the adoption of these practices. In a world of global supply chains, cross-cultural studies are essential to discern how cultural differences influence supply chain behaviours and management tactics. This is especially pertinent in the wake of global disruptions like the COVID-19 pandemic, which has underscored the need for resilient supply chain designs that take human behavioural responses into account. There is also a growing need for educational research focused on the efficacy of training programs that enhance behavioural competencies in SCM. The development of behavioural supply chain analytics represents a significant opportunity to craft sophisticated tools that can provide deeper insights into forecasting and risk management. Lastly, the integration of interdisciplinary approaches that harness insights from various fields such as psychology, sociology, and organisational behaviour could catalyse the emergence of a more nuanced and holistic understanding of BSCM. Such cross-pollination of ideas and methodologies will not only enrich the academic landscape but also offer practical insights that can revolutionise industry practices. Collectively, these research directions not only offer a roadmap for scholarly inquiry but also hold the potential to foster innovation and transformative practices in the world of SCM.

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