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Research Article

A Bibliometrics Analysis of Management Control System

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Abstract

This article examines the leading publications from 1970 to 2021, focusing on the extent and impact of management control systems. The bibliometric analysis provides information about the publication trends of articles, key authors, cited references, institutions, and countries, as the field's scopes and impacts. Additionally, this paper discusses the Management control system's knowledge structure, including prominent themes, co-citations, and bibliographic networks. Bibliographic data were collected from articles published between 1970 and 2021 from the Scopus database on July 9th, 2021. The bibliographic information for 743 documents was analyzed using an open-source analysis tool. It specifically used the bibliometrics package in the R programming language and VOS viewer. These tools generated graphical representations of bibliographic data based on their co-occurrence, co-citation, and coupling. The findings indicate that the journal is growing its publication volume and reputation in the field, with 743 research articles indexed by Scopus to date. The study also provides a comprehensive understanding of past trends and forecasts a journal's future direction.

Keywords

Bibliometric, Management Control System, Biblioshiny, R Package; VOS viewer

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Introduction

Management Control System (MCS) was originally defined based on presenting more formal, financially quantifiable information to aid managerial decision making. However, the current definition includes a greatly broader range of data (Chenhall, 2003), though scholars have issued several definitions. Traditionally, MCS is considered a passive instrument providing management information (Chenhall, 2007) on the formal routines and procedures of conserving and changing organizational activities (Simons, 1991)(J. F. Henri, 2006). This helps deal with the inherent organizational conflicts between creative innovation and achieving predictable goals (J. F. Henri, 2006). Furthermore, it aids in managing and certifying the gained and utilized resources effectively and efficiently in achieving the firm's goals (Akroyd & Maguire, 2011). Chenhall (2003) stated that the business environment, technology, organizational structure, company size, strategy, and culture contribute to the MCS's contingent factors. Moreover, consistency between contingent factors enables adaptation during changes, allowing the business to achieve performance. Simons (1995) developed an idea of opposing the management tensions among freedom, constraint, empowerment, accountability, top-down direction, bottom-up creativity, experimentation, and efficiency. These were referred to as positive and negative control systems and were likened to Chinese philosophy's yin and yang. Positive controls are related to the yang force, associated with the sun, warmth, light, motivating, rewarding, guiding, and promoting learning. Contrastingly, negative controls are related to the yin energy associated with darkness and cold. Simons identified four control levers for balancing these positive and negative forces. The two positive levers are beliefs and interactive control systems, while boundaries and diagnostic control systems are negative. This article examines the evolution and historical progression (past) and current trends (present). Additionally, it explores emerging trends and development in MCS systems research (the future). The research answers two major questions:

RQ1	The overall description and publication trend in MCS includes top-cited articles, top-ranked authors, publishing institutes and countries, and keywords.
RQ2	The conceptual structure of the scope and impact of MCS.

These questions were answered by examining the quantitative properties of citation information and Scopus publication structures. The properties represent a keyword co-occurrence network, a time overlay keyword visualization, and co-citation and bibliographies. Furthermore, this paper shows the collaboration among authors, institutes, and countries in the journals' knowledge domain structuring. This analysis assesses its contribution to MCS by identifying current and emerging research themes that aid in understanding future studies (Baker et al., 2020). The following is a breakdown of the paper's structure. The methodology is described in the next section, followed by the results and commentary. The study summarizes its contributions and shortcomings in the last section.

Research Methods

This paper quantitatively analyzes the Management Control System using international publication data from the Scopus database. This research was performed on Juli 9, 2021, using keywords "management control system*" on article titles and abstracts of the article as follow:

TITLE-ABS-KEY("management control system") AND (LIMIT-TO (SUBJAREA,"BUSI"))
This study analyzes general research trends, authors, universities, keywords, publications, citations structures, and temporal evolution. The MCS research development map was

analyzed using the bibliometric method. Additionally, bibliometric analysis data were analyzed using the Bibliometrix R package (Aria & Cuccurullo, 2017) and the VOS viewer (Van Eck & Waltman, 2010)

Results, Findings, and Discussions

Since its first issue in 1970, MCS has been published in 743 documents with an average of 32,13 citations per document. The MCS Scopus bibliometric analysis results are discussed in this section. Furthermore, this study presents the results based on research questions.

Publication Trends and General Description of MCS Articles

The first question concerns understanding the structure of MCS publication description, trends, and citation.

Table 1:
Average Citations per Year

Year	N	Mean TC per Article	Mean TC per Year	Citable Years
1970	1	1	0,0196	51
1971	3	18,33	0,3666	50
1972	0	0	0	0
1973	0	0	0	0
1974	0	0	0	0
1975	1	0	0	46
1976	1	5	0,1111111	45
1977	3	21	0,4772727	44
1978	2	14,5	0,3372093	43
1979	1	0	0	42
1980	0	0	0	0
1981	1	2	0,05	40
1982	1	2	0,0512821	39
1983	4	4	0,1052632	38
1984	2	143	3,8648649	37
1985	2	47	1,3055556	36
1986	5	48,8	1,3942857	35
1987	2	166	4,8823529	34
1988	4	56,75	1,719697	33
1989	4	10,75	0,3359375	32
1990	4	156,75	5,0564516	31
1991	5	131	4,3666667	30
1992	4	10	0,3448276	29
1993	5	21,8	0,7785714	28
1994	3	64,333333	2,382716	27
1995	3	120,66667	4,6410256	26
1996	4	56	2,24	25
1997	7	67,428571	2,8095238	24
1998	2	70	3,0434783	23
1999	10	171,9	7,8136364	22
2000	9	76,555556	3,6455026	21
2001	8	16,375	0,81875	20
2002	9	41,777778	2,1988304	19
2003	5	349,2	19,4	18
2004	12	82,333333	4,8431373	17
2005	19	68	4,25	16
2006	13	82,153846	5,4769231	15
2007	15	69	4,9285714	14
2008	22	62,909091	4,8391608	13
2009	25	72,64	6,0533333	12
2010	26	38,769231	3,5244755	11
2011	36	30,388889	3,0388889	10
2012	30	23,933333	2,6592593	9
2013	40	28,7	3,5875	8
2014	43	12,023256	1,717608	7
2015	43	18,162791	3,0271318	6
2016	57	17,77193	3,554386	5
2017	48	10,145833	2,5364583	4
2018	36	7,1666667	2,3888889	3
2019	71	4,3380282	2,1690141	2
2020	58	1,1034483	1,1034483	1
2021	34	0,2352941		0
Total	**743**			

The highest total citation per article was recorded in 2003 as 3,494, with an annual average of 19.4, indicating that the 2003 publications were the most cited on MCS. The ssecond highest citations articles were 1,719 in 1999, with an average of 7.81 per year.

Three Fields Plot

Three elements are depicted in the three-field plot, including a list of journal names, authors, and topics. The journals' names are listed first, followed by the authors' names, and then each author is linked to the subject of their publication. Furthermore, these three elements are connected via gray linkages to illustrate their relationship. Each rectangle size on the lists shows the number of papers on that element, with journals being the first element on the left. Scopus indexed eighteen journals, with 'Accounting, Organizations, and Society' having the most publications. It is depicted with a purple rectangle linked with several other journals. The middle element contains the authors' names. Authors of the published articles in recognized journals are associated with the primary elements. This plot includes a list of the top twenty authors, with a rectangle size indicating the number of papers written by each author. In this plot, Otley, Sutton, and Hoque Z rectangles have the same size. The third element comprises the most frequent topic-related keywords. Each topic is associated with authors with the most publications on the subject. There are eighteen keyword topics, including MCS, Control, Levers of Control, Performance Measurement, public sector, Balanced Scorecard, Risk Management, Innovation, Strategy, and Budgeting.

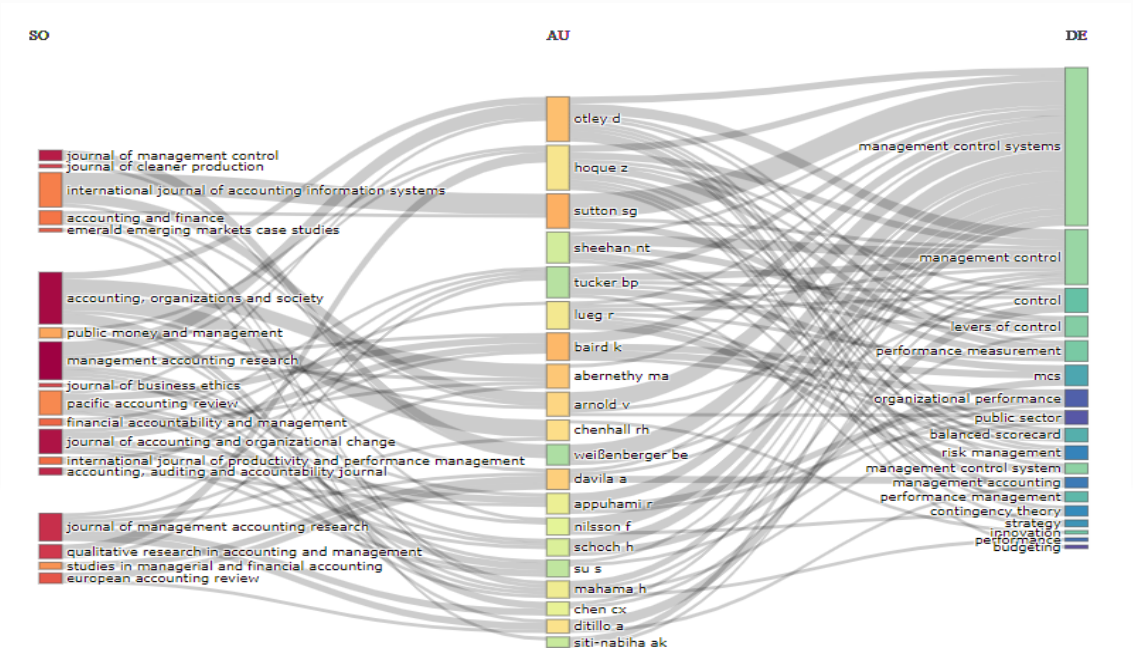


Figure 1: Three Fields Plot

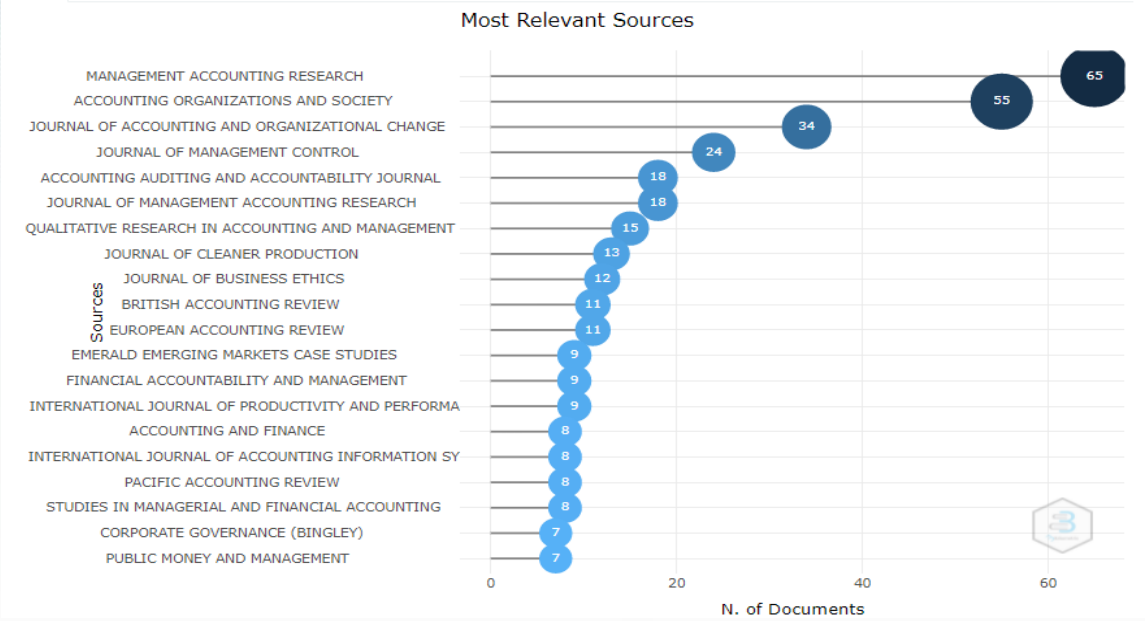


Figure 2 : Most Relevant Sources

The chart depicts the papers published by each journal according to their relevance to Management Accounting Research. Moreover, the data shows the top journals and documents published, ranging from 0 to 65.

Table 2:
Most Cited Article from 1970-2021

R	Article	Author	Journal	YoP	TC
1	Management control systems design within its organizational context: findings from contingency-based research and directions for the future	Chenhall RH	Accounting, Organizations, and Society	2003	1.365
2	Performance management: a framework for management control systems research	David Otley	Management Accounting Research	1999	831
3	Management control systems as a package—Opportunities, challenges, and research directions	Teemu Malmi, David A. Brown	Management Accounting Research	2008	619
4	The design and use of performance management systems: An extended framework for analysis	Ferreiraa, Otley	Management Accounting Research	2009	513
5	Management control systems and strategy: A resource-based perspective	Henri JF	Accounting, Organizations, and Society	2005	501
6	The Role Of Management Control Systems In Creating Competitive Advantage: New Perspectives*	Simons R	Accounting, Organizations and Society	1991	482

7	The effects of the interactive use of management control systems on product innovation	Bisbe, Otley	Accounting, Organizations and Society	2003	431
8	Strategic Orientation And Top Management Attention To Control Systems	Simons R	Strategic Management Journal	1991	355
9	The role of budgets in organizations facing strategic change: an exploratory study	Abernethy, Brownell	Accounting, Organizations, and Society	1999	326
10	An empirical study on the drivers of management control systems' design in new product development	Davilla T	Accounting, Organizations, and Society	2000	319
11	Management accounting as practice	Ahrens, T., & Chapman, C. S	Accounting, Organizations, and Society	2007	296
12	Management control systems and trust in outsourcing relationships	Langfield-Smith, K., & Smith, D	Management Accounting Research	2003	279
13	Identifying and using critical success factors	Leidecker, J. K., & Bruno, A. V.	Long Range Planning	1984	274
14	Eco-control: The influence of management control systems on environmental and economic performance	Henri, J.-F., & Journeault, M	Accounting, Organizations, and Society	2010	272
15	The impact of manufacturing flexibility on management control system design.	Abernethy, M. A., & Lillis, A. M.	Accounting, Organizations, and Society	1995	263

Source(s): Scopus database, R = Rank, TC = Total Citations, YoP = Year of publication

Key Authors and Their Citation Structure

This study evaluated the impact of each journal published on MCS by calculating their h-indices based on their quantity and relevance, as illustrated in the bar chart in Figure. 2. This chart also depicts the journals' impact via the shade of blue, with darker blue indicating higher-impact journals. Table 3 shows the top-ranked authors, indicating that Otley from Lancaster University, UK, is the most cited author with a score of 2.137, h-index of 6, and 8 documents. In contrast, Sutton from the University of Technology, Australia, is the most productive with 10 documents, while Abernethy from the University of Melbourne, Australia has the highest h-index score of 7. Furthermore, Australian and UK university authors dominate the list of top publishers. The citation structure of the top publishing authors is in Table 2:

R	Author	Affiliation	NP	PY start	TC	H index	G index	M index	Number of articles				
									>100	>50	>20	>10	<10
1	OTLEY D	Lancaster University, United Kingdom	8	1999	2137	6	8	0,261	5	0	0	1	2
2	CHENHALL RH	Monash University, Australia	6	2003	1747	6	6	0,316	2	4	0	0	0
3	ABERNETHY MA	University of Melbourne, Australia	7	1991	1034	7	7	0,226	4	1	1	0	1
4	SIMONS R	Harvard University, United States	3	1990	838	2	3	0,063	2	0	0	0	1
5	HENRI J-F	Université Laval, Canada	3	2006	796	3	3	0,188	2	0	1	0	0
6	BROWN DA	University of Technology, Australia	4	2008	656	4	4	0,286	1	0	0	2	1
7	MALMI T	Helsinki School of Economics, Finland	2	2008	625	2	2	0,143	1	0	0	0	1
8	BROWNELL P	University of Melbourne, Australia	2	1997	546	2	2	0,08	2	0	0	0	0
9	FERREIRA A	Monash University, Australia	2	2009	524	2	2	0,154	1	0	0	1	2
10	DAVILA T	University of Navarra, Spain	3	2000	489	3	3	0,136	2	0	0	1	0
11	DAVILA A	University of Navarra, Spain	6	2007	453	6	6	0,4	3	0	1	2	1
12	BISBE J	Universitat Ramon Llull., Barcelona	2	2004	449	2	2	0,111	1	0	0	1	0
13	SMITH D	University of Queensland, Australia	4	2003	428	4	4	0,211	2	0	1	0	1
14	FOSTER G	Stanford University	4	2007	425	4	4	0,267	3	0	1	0	0
15	LANGFIELD-SMITH K	Monash University, Australia	2	2003	406	2	2	0,105	2	0	0	0	0
16	NEIMARK M	Baruch College, City University of New York, United States	2	1986	368	2	2	0,056	2	0	0	0	0
17	TINKER T	Baruch College, City University of New York, United States	2	1986	368	2	2	0,056	2	0	0	0	0
18	HOPPER T	The University of Manchester, United Kingdom	2	1994	360	2	2	0,071	2	0	0	0	0
19	MUNDY J	University of Greenwich, United Kingdom	2	2010	352	2	2	0,167	2	0	0	0	0
20	SUTTON SG	University of Central Florida, United States	10	2011	315	6	10	0,545	1	1	3	0	5
21	AHRENS T	University, Al Ain, United Arab Emirates	2	2007	307	2	2	0,133	1	0	0	1	0
22	CHAPMAN CS	University of Oxford, United Kingdom	1	2007	296	1	1	0,067	1	0	0	0	0
23	JOURNEAULT M	Université Laval, Québec, Canada	2	2010	295	2	2	0,167	1	0	1	0	0
24	GORDON LA	University of Maryland, United States	3	1992	289	3	3	0,1	1	1	1	1	0
25	BRUNO AV	University of Santa Clara, United States	1	1984	274	1	1	0,026	1	0	0	0	0

Note(s) : R = Rank; NP: Total publication; TC: Total citations; h:h-index;>100,>50,>20,>10,<10: Number of articles with at least 100, 50, 20, 10 and less than 10 citations respectively

Table 3. Most productive authors and the citation structure

Trend Topics

Topics emerge according to the keyword frequency in this MCS research. These are the most frequent topics used, as shown in the following timeline. Frequently used keywords are higher up, while their appearance points are depicted in the timeline.

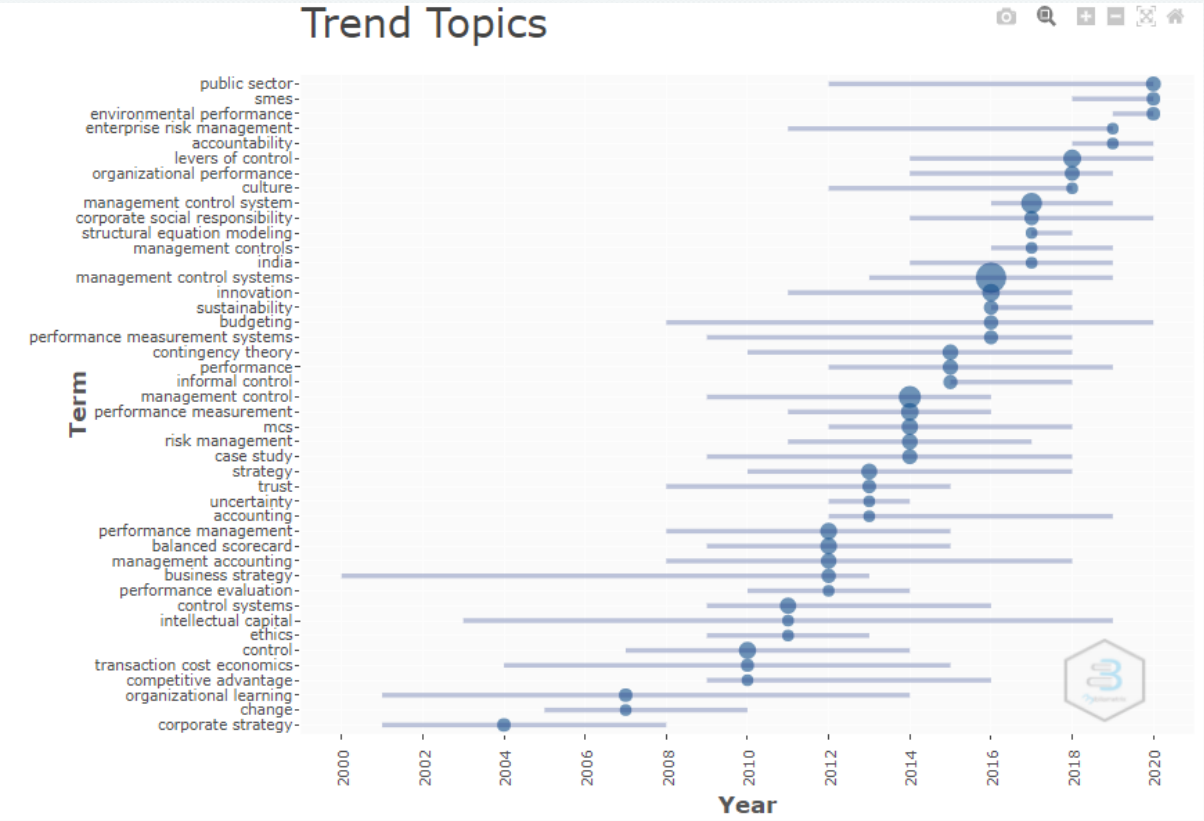


Figure 3: Topic Timeline

Topic development experienced rapid growth from 2000. The timeline shows that the oldest topic used since 2000 is business strategy. Between 2002 and 2003, organization learning, intellectual capital, and corporate strategy began emerging. Budget, performance measurement, balanced scorecard, performance evaluation, ethics, and competitive advantage attracted scholarly interest between 2008 and 2010. Risk management, innovation, and enterprise risk management began to explore MCS topics in 2011. Between 2012 and 2014, culture, corporate social responsibility, and organization performance were popular in MCS research. From 2016, sustainability, environmental performance, and SMEs became increasingly popular.

Thematic Map

This study analyzed a thematic map by dividing it into four theme quadrants based on density and centrality, as depicted in the image to the right. The themes in the upper right quadrant should be developed and studied further due to their high density and centrality. In contrast, a specific, rare, but highly developmental theme with high density and low centrality is in the upper left quadrant. Furthermore, themes with a downward trend are in the lower-left quadrant, while fundamental themes with a high centrality but low density are in the lower right quadrant. The timeline shows that innovation, control levers, sustainability, corporate social responsibility, organizational culture, and environmental performance topics in the upper-right quadrant are most potent for further research.

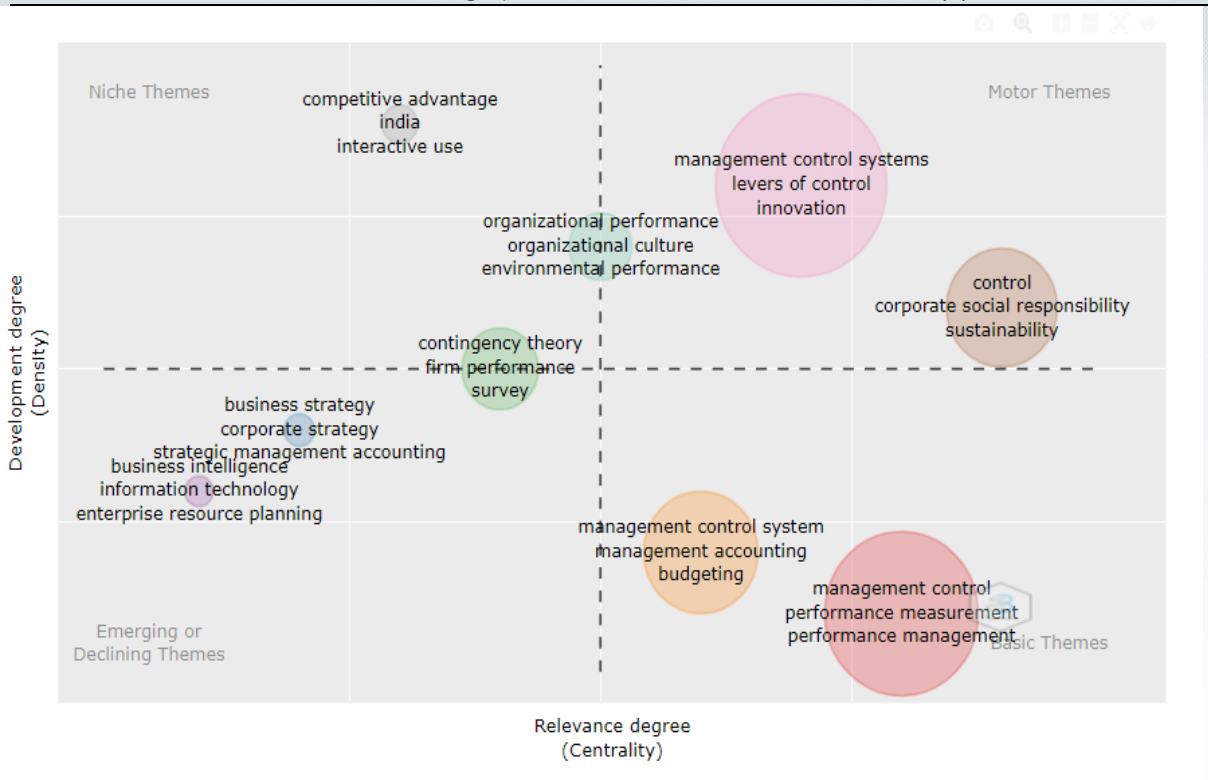


Figure 4: Thematic Map

Structure of Management Control System (MCS) Research

This study applies bibliometric and network methods using historiography based on direct pioneering or milestone research citation, author and journal co-citation analysis, and coupling (Aria & Cuccurullo, 2017).

Historiography of MCS Scopus

A historiographic map of the most prominent publications was developed to understand and visualize the MCS research progress. The map shows two distinct research streams, as shown in Figure 5. The first primarily focuses on organizational learning and MCS due to environmental change (Kloot, 1997). Organizational learning is an organization's adaptation to a changing environment. This learning could be adaptive or generative. MCS havs the potential to facilitate or obstruct organizational changes. Organizational learning comprised four major constructs: knowledge acquisition, information distribution, interpretation, and organizational memory. Moreover, MCS design may include features applicable to each construct. An appropriately designed system could also aid organizations in learning and surviving changing times. The second research stream is the role of budgets in organizations fronting strategic change (Abernethy & Brownell, 1999b). It illustrates how accounting could be a learning machine in formulating and implementing strategic changes through interactive and diagnostic classifications of MCS This implies that interactive approaches to budgeting mitigate performance disruption related to strategic changes. The third stream assessed new product development and MCS (Davila, 2000). This study examines the correlation between project uncertainty, strategy, and MCS using Galbraith's concept of uncertainty. Additionally, it examines whether these systems aid or impede product development performance, as stated in the innovation literature. The findings demonstrate the importance of project uncertainty and strategy in explaining the MCS design.

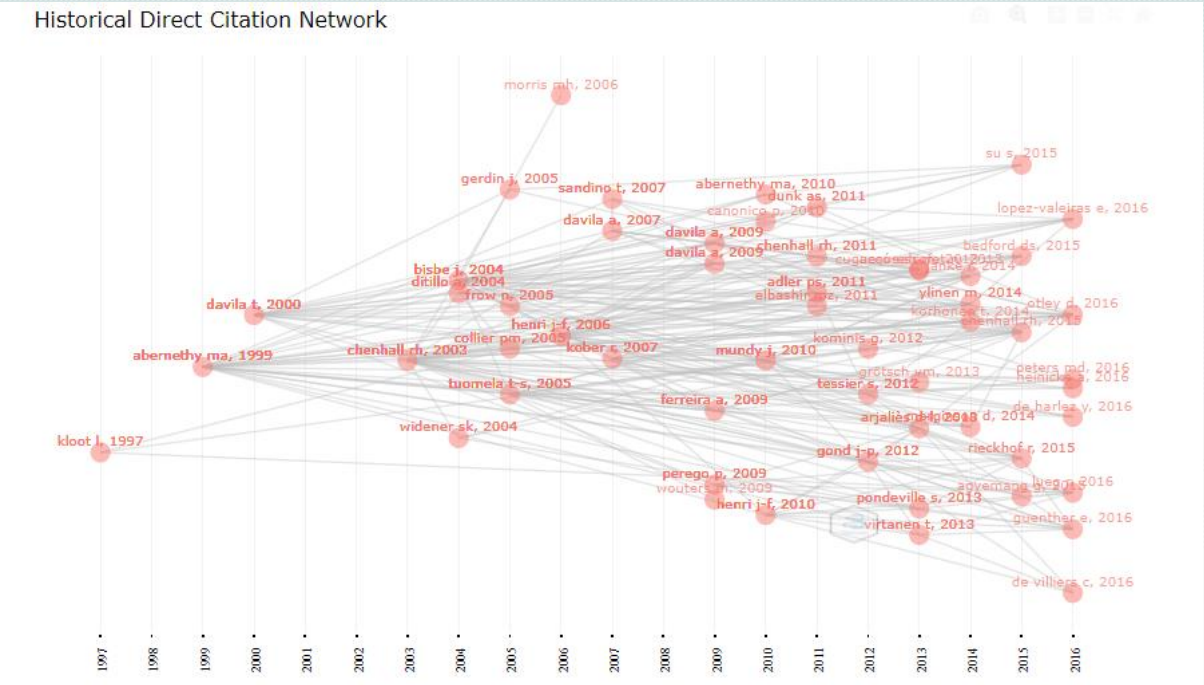


Figure 5: Historiographical Map

Co-Citation Analysis of Sources and Documents

This study advanced a co-citation network of cited journals, with 221 meetings the initial criteria of a minimum of 20 citations out of the 8,587 sources. Among these 221 sources, the Top-100 sources with maximum link strength were considered for co-citation analysis, resulting in four clusters. The first cluster (yellow) is the largest and includes Accounting, Organizations and Society, The Accounting Review, Journal of Management Accounting Research. The second (blue) is the next largest cluster, consisting of studies from Management Accounting Research, AAA Journal, Critical perspectives on accounting. The third cluster (red) includes the Journal of Knowledge Management, International Journal of Accounting Information System, and Journal of Intellectual Capital. The fourth cluster (green) consists of Strategic Management Journal, Accounting Review, and Sloan Management Review.

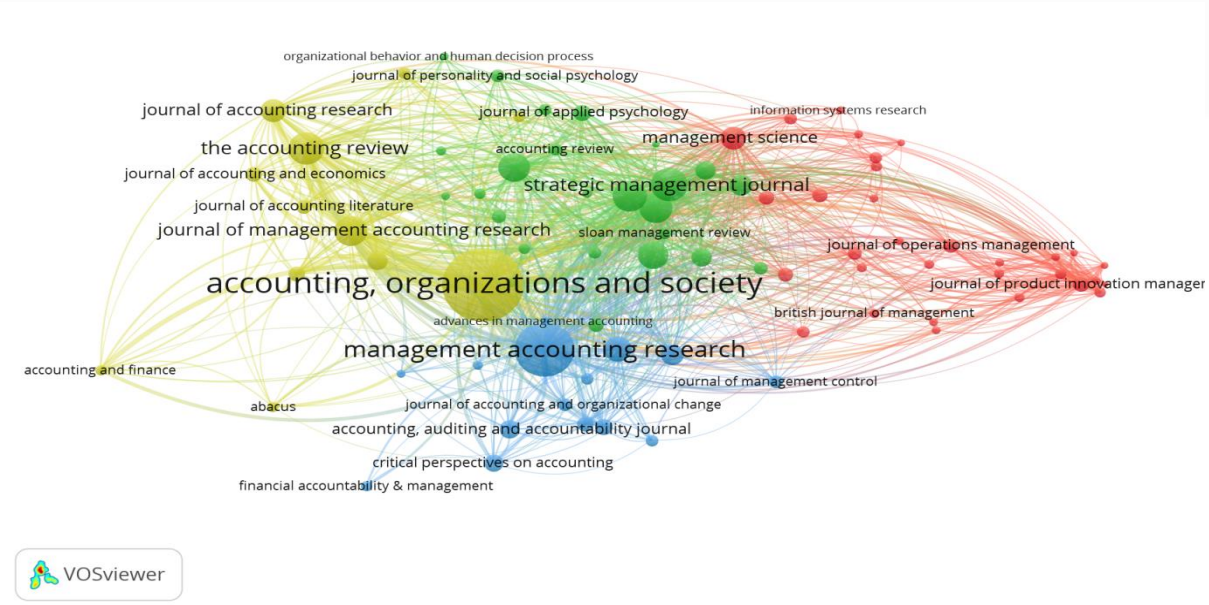


Figure 6: Co-Citation Network of Top 100 Linked Sources

There are 5 highest total citation journals, including Accounting, Organizations, and Society (7.696), Management Accounting Research (6.210), Strategic Management Journal (535), Accounting Review (346), and Accounting, Auditing and Accountability Journal (339).

Bibliographic Coupling Among Authors Writing on MCS Research

The next step was to create a network of bibliographic couplings. Two bibliographically related units would share some of the references (Eck and Waltman, 2014). Therefore, two bibliographic networks were constructed using authors and documents as the unit of analysis units, as shown in Figure 6 and Figure 7, respectively. For the bibliographic network of 1,463 authors, the top 100 with a maximum link strength were examined. This generated a network with five clusters having 4,948 links and 152,654 total link strengths, as shown in Figure 7. Cluster one (red color nodes on the left side of the network) is the largest and includes 29 authors. They mainly focus on leadership (Abernethy et al., 2010), the role of budget (Abernethy & Brownell, 1999b), performance management (Otley, 1999), new product development (Davila, 2000), and the role of innovation (Chenhall & Moers, 2015). Cluster two (green color nodes) is the second-largest and includes 28 authors. Their main focus is on institutional pressures for sustainability (Chaminda Wijethilake, Rahat Munir, 2017), uncertainty and knowledge complexity (Ditillo, 2004), and organizational commitment (Kleine & Weißenberger, 2014). Cluster three (blue color nodes) is the third largest and includes 18 authors. They mainly focus on forecast type (disaggregated or aggregated) and performance-based incentives (present or absent) (Chen et al., 2015). Also, they write on flexible culture and control levers (Heinicke et al., 2016) and environmental MCS (Rötzel et al., 2019). Cluster four (yellow color nodes) includes 14 authors mainly focusing on management innovation (Baird et al., 2019) and organizational life cycle perspective (Su et al., 2017). Cluster five (purple color nodes) includes 11 authors with a focus on business intelligence (Elbashir et al., 2011)(Elbashir et al., 2013), socialization and performance (Mahama, 2006), enterprise risk management (Arnold et al., 2011) and enterprise resources planning (Kallunki et al., 2011).

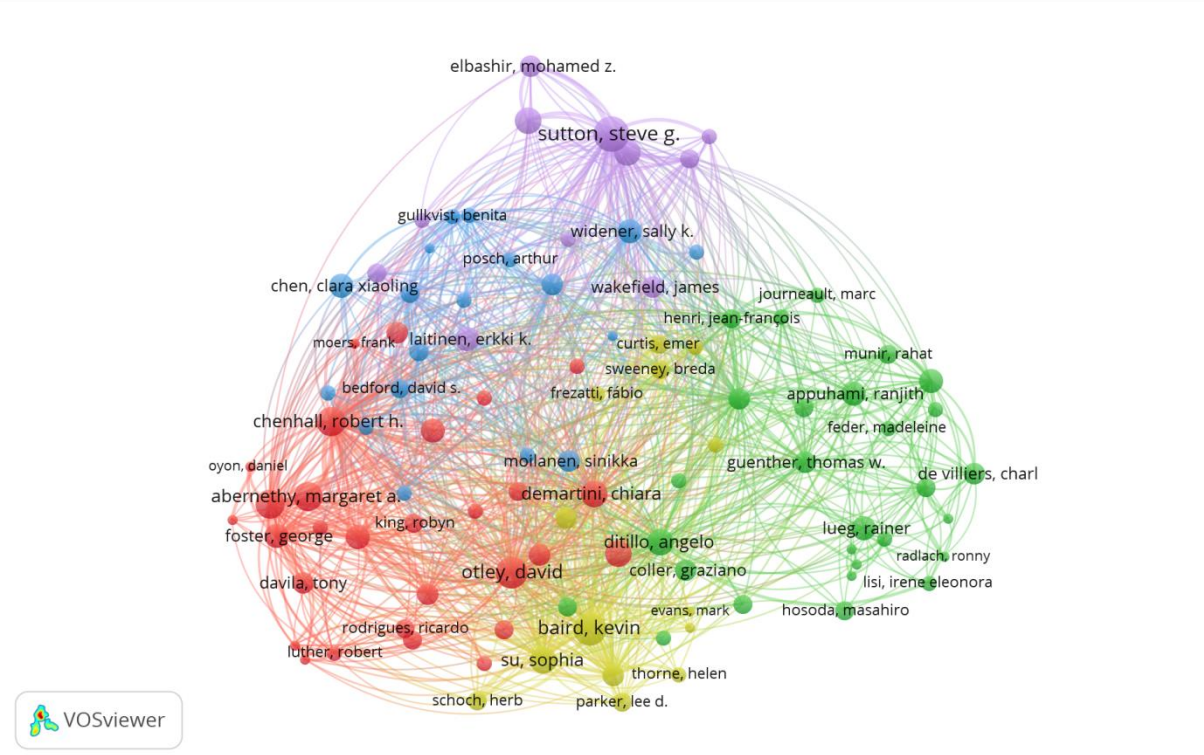


Figure 7: Bibliographic Author Coupling

The next step bibliographically coupled the published documents using the top 100 articles with maximum link strength and at least 20 citations from 873 publications. The coupling generated a four-cluster network (Figure 8) with 4,487 links and a total link strength of 19,423. Cluster one (red color nodes) is the largest and develops 36 documents. This cluster is denoted by Arjaliès & Mundy

(2013), which examined CSR Strategy with levers of control. The result showed the role of the control levers in enabling managers to identify and manage threats and opportunities associated with CSR strategy. This way, they form risk management processes that support organizations in attaining strategic objectives. Another seminal work examined the effect of MCS on innovation (Ylinen & Gullkvist, 2014), while Chenhall et al. (2011) explored the relationship between innovation, strategy, and MCS. In this case, MCS comprises controls, including social networking, organic innovation, and formal controls. The studies proposed a path model where product differentiation is connected with an increase in innovation and MCS dimension. Organic innovative culture and formal controls are direct pathways to innovation, while social networking has an indirect effect. Cluster two (green color nodes) includes 30 authors and is represented by Ferreira & Otley (2009), which developed a performance management system framework. The study combined the Otley Performance Management Framework and the Simons levers of control framework. Another seminal work in this cluster is sustainability control system (Gond et al., 2012), which explored the combinations of modes of integration and diagnostic vs. interactive uses of control systems. They proposed a typology of sustainability integration within strategy through management control. Cluster three (blue color nodes) includes 19 authors and is represented by Chenhall (2003), which explored MCS contingency. This cluster also develops proactive environmental strategy, information system, or formal MCS (Pondeville et al., 2013). Cluster four (yellow color nodes) includes 15 authors, focusing on MCS and strategy (J. F. Henri, 2006) (Kober et al., 2007), eco-control (J.-F. Henri & Journeault, 2010), product innovation (Bisbe & Otley, 2004) and the role of budget (Abernethy & Brownell, 1999a).

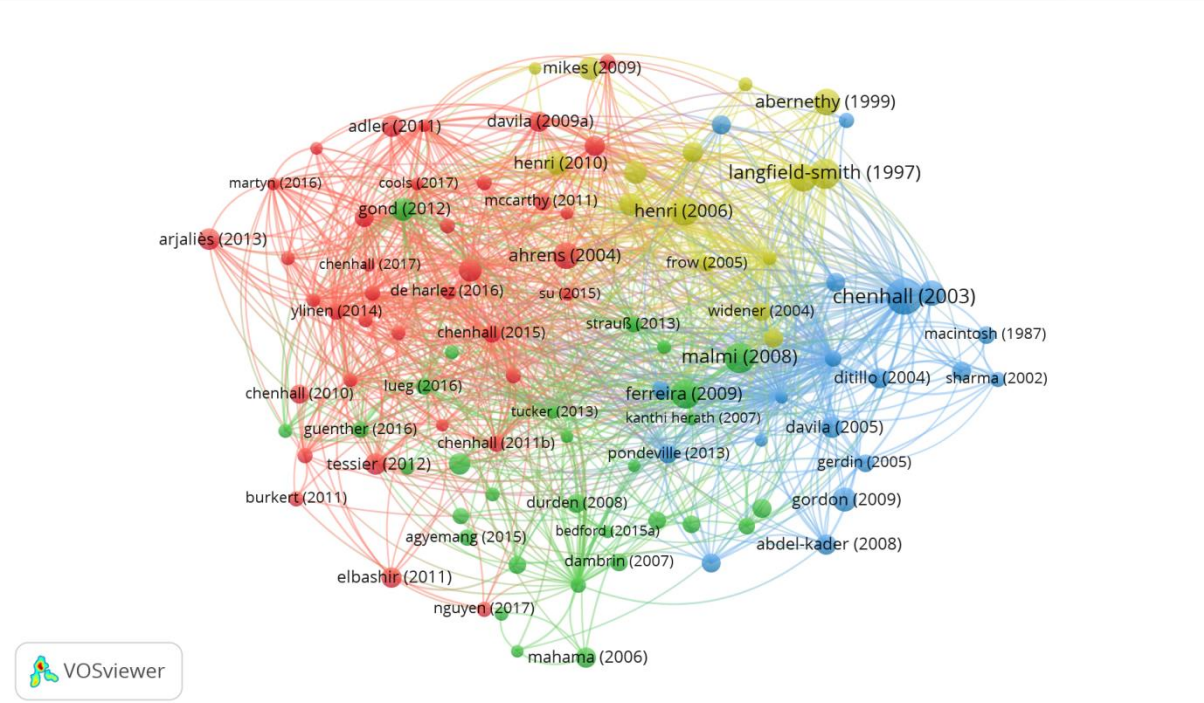
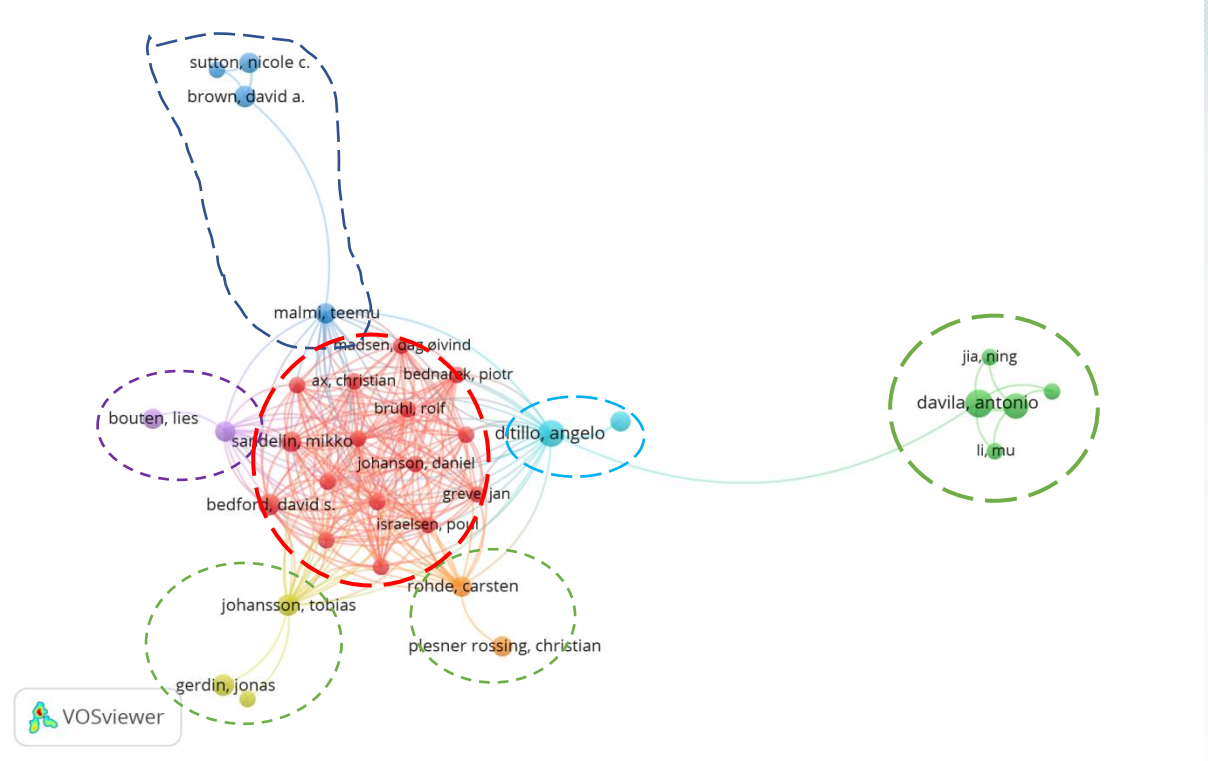


Figure 8: Bibliographic Document Coupling

Structure of MCS Publications

This study used an author collaboration analysis previously published in MCS research. All 1,463 authors were considered and based the analysis on the maximum collaboration between 34 constituent authors.



Cluster one is the largest with 16 authors focusing on the social network and represented by Bedford, David S. Next is cluster two, the second largest with five authors. The main authors in this cluster are Davilla, Antonio, and Foster, George. Cluster three includes four authors and is represented by Brown, David A., Malmi, Teemu., and Sutton, Nicole C. The fourth cluster has three authors and is represented by Gerdin, Jonas, and. Clusters five, six, and seven have two authors each and are represented by Hoozee, Sophie, Ditillo, Angelo, and Rohde, Carsten, respectively.

Implications

This study uses a quantitative and structured literature review to examine the scope and impact of MCS. The analysis allows a reflection on the past and assists in advancing knowledge in the future. Based on the two study questions, the study identified general MCS research trends, such as the most productive authors, institutes, and countries, influential work, and citation structure. Additionally, bibliometric indicators published between 1970 and 2021 were used to answer these research questions. Data were analyzed using Bibliometrix R (Aria & Cuccurullo, 2017) in stage one to classify broad trends and provide an overview of the MCS research base. Also, a knowledge structure was developed in stage two using co-word analysis, a historiography map, and an MCS research social structure using VOS viewer (Van Eck & Waltman, 2010). The top 3 journals most published in this topic are Management Accounting Research, Accounting, Organizations and Society, and Journal of Accounting and Organization Changes. USA controls the list, followed by Australia and UK. The most productive is the University of Central Florida, United States, followed by Macquarie University, Australia, and Lancaster University, United Kingdom. Furthermore, the most influential paper of MCS is Chenhall (2003), followed by Otley (1999) and Malmi & Brown (2008). This study also contributes to the understanding of the conceptual structure of the MCS research base by a strategic diagram built using the authors' keyword co-word analysis. The analysis suggests that almost all MCS research could be structured into 13 themes. These include three general or basic themes on MCS, Performance Measurement, Budget, and one motor theme on Levers of Control, Innovation, CSR, and Sustainability. Also, there are two partial motor and peripheral themes on Organizational Culture and Environmental Performance and two peripheral themes on Competitive Advantage and Interactive Use. Another is several disappearing themes and emergence on Strategy, Business Intelligence, and ERP. This subsequent contribution helps understand the disciplinary composition of the MCS knowledge base's salient features through the intellectual publication structure. Three distinct maps or networks were created, such as the historiography map of the top 50 MCS research papers. This analysis shows that MCS research focused on three major themes: organizational learning, budgeting, and new

product development. Therefore, it aids in comprehending the evolution of the MCS knowledge base. Second, this study conducted a co-citation analysis of secondary documents to understand the intellectual foundations of the MCS research base by creating source and document co-citation networks. Third, R software was used to create a bibliographic coupling network of the most productive authors, the most influential documents, and a thematic map. This helped in understanding the future (emerging themes) of MCS. Furthermore, this analysis identified potential future MCS research topics, including sustainability, business intelligence, carbon control, and environmental MCS. These findings extend current and future MCS research. Fourth, the study demonstrated the current collaboration among publishing scholars by establishing a network of co-authors. The network shows multiple publishing teams within MCS. This may assist authors in observing previous and develop newer collaborations.

Conclusion and Limitation

This article provides a comprehensive overview of the MCS knowledge base, enabling researchers to access information about various trends, themes, and streams. However, this study analyzed only the bibliometric data associated with papers and not the full text. While it is expected that the keywords used reflect the primary document content, certain limitations may apply. Therefore, combining this review with more traditional techniques would increase the overall cost of such studies. This contribution is expected to assist management control system scholars to concentrate their efforts on future significantly impactful research.

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