



# GLOBAL RESEARCH TREND AND FUTURISTIC RESEARCH DIRECTION VISUALIZATION OF WORKING CAPITAL MANAGEMENT USING BIBLIOMETRIC ANALYSIS

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## Abstract

**Purpose** – The purpose of this research is to undertake a bibliometric analysis of working capital management. The study examines papers from time period 1974-2023 and performed performance analysis, co-citation analysis, bibliographic coupling and scientific mapping.

**Design/methodology/approach** – The study examines 174 articles retrieved from the Scopus database using bibliometric analysis, performance analysis and thematic clustering. The study looked at the scientific productivity of papers, prolific authors, most influencing papers, institutions and nations, keyword co-occurrence, thematic mapping, co-citations and authorship and country collaborations. VOSviewer was used as a tool in the research to conduct the performance analysis and thematic clustering. The watchword "Working Capital Management" was used to include only English-language articles.

**Findings** – The most productive year was 2022 with 26 publications. Martínez and García- are the most protuberant authors with 708 citations. The findings of the study shows that the most influential institutions are 'The Department of Management and Finance, Faculty of Economy and Business and Department of Management and Finance, Faculty of Economics and Business, The University of Murcia, Spain with 381 & 297 citations. Among, the country analysis, Spain with 744 citations stands first of all other nations for publication on Working Capital Management. Kärri is the most productive author with 7 documents. Country-wise analysis reveals that the United States is the most productive country for Working Capital Management research with 40 documents. The authors also identified seven thematic clusters of Working Capital Management.

**Research limitations/implications** – It informs and directs researchers on the current state of study in the field of Working Capital Management. The present study has quite a few implications for Small & Medium enterprise managers, entrepreneurs, financial managers, academicians and scholars. It also outlines future research directions in this field. Present study provides an inclusive acquaintance about the working capital management till date.

**Originality/value** – This is the first study which provides the performance analysis and scientific mapping of the all published documents on working capital management between the time periods 1974-2023

**Keywords:** Working Capital Management, Bibliometric analysis, Co-citation analysis, Bibliographic coupling.

## INTRODUCTION

The financial performance of an organization is impacted by working capital management (WCM), which calls for sound administration to poise out performance and theminmise the risk of not paying bills on time (Wambia & Jagongo, 2020). The effectiveness of WCM practices and the financial features of business organizations determine the financial health and activities of its businesses (Pham, 2013; Pratap Singh & Kumar, 2014). Working capital management refers to an act of meeting the short-term financial obligation of a firm (Ganesan, 2007; Godswill et al., 2018). WCM focuses primarily on decision-making



concerning the number & pattern of the current assets & current liabilities in a business (Mansoori and Muhammad, 2012). Raising working capital management effectiveness is seen to be a useful strategy for enhancing financial standings as well as the sales and profitability of a business organization. Due to the greater percentage of current assets, lesser liquidity, unsteady cash flows, & dependence on short-term loans business organizations need to pay special consideration to the supervision and monitoring of working capital (Peel et al., 2000; Howorth and Westhead, 2003, Afrifa, 2013). Many organizations (businesses) take longer to turn inventory into sales and collect unpaid debts and take a little time to pay off the account payables (Jacinta, 2011). An increasing number of scholars are exploring the fast developments in Working capital management as its practices across diverse industries. Working capital management significantly improves average total assets in the healthcare industry (Harsh, 2014).

(Asareet. Al. Narrates that nonetheless, WCM research in the Construction industry is still in its initial stages. When managing operational working capital as part of Supply chain finance, it's important to strike a balance between releasing cash that is already committed, which boosts profitability, and reducing risks brought on by having insufficient operational working capital (Marttonen et al., 2013). There is enormous literature highlighting the relationship between WCM practices & financial performance of companies or industries (Mandipa & Sibindi, 2022; Ren et al., 2019; Wasiuzzaman & Arumugam, 2013) (Nguyen et al., 2016) described in a study on selected listed companies on the Vietnamese Stock Exchange that Working Capital Management can assist businesses with short-term responsibilities and increase efficiency by strengthening the credit and supply chains, but it has nothing to do with the profitability of the selected companies.

Another study states that stock management practices affect SMEs' financial performance, managers must employ effective stock management practices as a strategy to mend their financial performance so as to endure in the ambiguous business environment (Hamza et al., 2015). Due to their greater proportion of current assets, worse liquidity, unsteady cash flows, and dependence on short-term loans compared to large companies, Small and Medium Enterprises (SMEs) need to pay extraordinary attention to the supervision and monitoring of working capital (Peel et al., 2000; Howorth and Westhead, 2003, Afrifa, 2013). The management of working capital and fixed assets, which have a significant impact on a company's profitability, must be done optimally by the Indian hotel industry if it is to increase profitability. Hotel owners must therefore effectively manage their working capital (Bansal & Khosla, 2020).

However, Working capital management has a huge relevance in dealing business operations (Lina Warrad & Rania Al Omari, 2015; Prasad, Sivasankaran, et al., 2019; Sahoo & Thakur, 2022). The study reveals that working capital investments & finance practices effects profitability to huge extent. The study advises accountants to acquire both accounting and finance knowledge and abilities to boost business profitability. It is suggested that the true effectiveness of the operational working capital-modified cash conversion cycle should be used which takes into account the current items (Talonpoika et al., 2014). In addition to short-term financial planning, business managers need to have efficient short-term planning processes for managing cash, accounts receivable, inventory, and working capital (Almomani et al., 2021; Bansal & Khosla, 2020; Nguyen et al., 2016; Pham, 2013).

Businesses must have effective short-term planning procedures, including those for managing cash, accounts receivable, inventory, and working capital, as well as short-term financial planning (Almomani et al., 2021; Nguyen et al., 2016; Pham, 2013). However, the financial



managers or owners should assess the consequences of these components on the company's operations and decisions in WCM practices to see if they influence effectiveness of financial management and performance (Mardones, 2022; Pham, 2013). Managers spend a significant amount of time managing working capital. It deals with the daily decisions that managers take to make certain the efficient operation of the business (Nyeadi et al., 2018). There have been varying degrees of advancements in working capital management across various businesses (Boisjoly et al., 2020). Working capital managers are typically thought of as passive participants in significant corporate decisions (Ramiah, Zhao, Moosa, & Graham, 2016). Due to the nature of the industry, specific financial measures better reflect the effects of changing working capital management policies.

In the healthcare business, working capital management has a significant positive effect on average total assets (Harsh, 2014). The most important obstacles to Supply chain finance are poor cash flow management and disruptions in working capital management (Sahoo & Thakur, 2022). The business can design strategy for long-term borrowing in order to expand or possibly to investing in newfangled initiatives when the firm has high working capital efficiency since it reduces the demand for borrowed funds in the short term (Prasad, Narayanasamy, et al., 2019). The managers have to use effective stock management practices as a strategy to enhance their financial performance and subsist in the unstable business climate since stock management does have an impact on SMEs' financial performance (Hamza et al., 2015).

The fascination of working capital management in business has molded interest in researchers. Researchers have also underwritten this area by studying different dimensions of working capital management. Rendering to the Scopus database, the paramount study on working capital management was conducted in 1982. Prior studies on working capital management have focused on firm value & profitability whereas there is a lesser amount of data/literature available on SMEs, trade credit, financial constraints, etc. Therefore there is an urge need to conduct a bibliometric study on working capital management. The study shall provide an understanding of the research development in working capital management and allow scholars to demeanor a study on the omitted elements of working capital management.

Given the implication of working capital management, we employ bibliometric analysis to make available a observation of the prevailing literature on this field (Ahmad et al., 2022; Baños-Caballero et al., 2010a; Sahoo & Thakur, 2022; Talonpoika et al., 2014; Torrès & Thurik, 2018). The bibliometric review permits researcher to pinpoint the basis and theme of working capital management (Boţoc & Anton, 2017; Ganesan, 2007; Godswill et al., 2018; Morshed, 2020; Ramiah, Zhao, Moosa, Graham, et al., 2016). The bibliographic coupling and co-citation analysis helps apprehend the thematic structure and familiarity of working capital management. Additionally, co-occurrence and confluence analysis facilitate us to grasp the research trends and research trend in working capital management (Afrifa, 2013; Lefebvre, 2022; Prasad, Narayanasamy, et al., 2019; Ramiah et al., 2014).

The present study intend to persuade the scholars by imparting a better considerate knowledge of the maximum prevalent and prominent works on working capital management and countenance them to conduct excellent future research in this field (Amponsah-Kwatiah & Asiamah, 2020; Baños-Caballero et al., 2010a; Pratap Singh & Kumar, 2014). It may also permit scholars to recognize publication trends, research progression, and dominant publications which will guide reserachers to recognize the research area in the paramount way. The academician and scholars shall also get a superior understanding of the utmost common thematic clusters, and contemporaneous research trends on working capital management (Baud & Durand, 2012; Johnson & Soenen, 2003; Rashid et al., 2020; Talonpoika et al., 2014). It also



make available numerous benefits to the business when attempting to deploy working capital management practices for their business elevations. All the same, it shall also add to the developments of working capital management to unearth novel information and findings (Ahmad et al., 2022; Dalci & Ozyapici, 2018; Morshed, 2020; Pratap Singh & Kumar, 2014; Torrès & Thurik, 2018). Effective Working capital management practices by different industries are quiet less consequently, the future research guidelines acknowledged through the existing study in this area shall provide more than a few prospects and intend to also make available elucidations to deal with numerous working capital management. (Baños-Caballero et al., 2010a; Lina Warrad & Rania Al Omari, 2015; Torrès & Thurik, 2018)

## 2.1 Defining Working Capital Management

The financial incomes that businesses necessitate to preserve their current short-term daily operations are known as working capital (WC) (Viswanath et al., 2018). In academic research on working capital management and supply chain effectiveness, the modified cash conversion cycle (CCC) is frequently utilized. It demonstrates the astonishing extent to which operational working capital in businesses that get advance payments is efficient (Talonpoika et al., 2014). (Boisjoly et al., 2020) a study states that aggressive working capital practices and continuous improvement programs on accounts receivable turnover, inventory turnover, and days payables have significant long-term effects on transportation & Communication sector.

## 2.2 WCM Practices: A Strategic Advantage

(Sawarni et al., 2021) explains the performance of the firms is ominously wedged by WCM effectiveness. Two important viewpoints have been used to analyze WC in the WCM literature i.e. the static view and the operational cycle idea (Richards and Laughlin, 1980). As per Pass and Pike (2007), a poorly managed WC could, in the worst instance, cause serious under performance and insolvency. On the other hand, effective WC management can position a business for increased strategic advantage and value development. Position measurement, activity measurement, and leverage measurement are three categories for the many aspects utilized to comprehend WC (Smith and Begemann, 1997). Focusing on the current asset and liability portion of the balance sheet, the static perspective or position measurement interprets working capital (WC) as either net working capital, which is current assets less current liabilities, or as the current ratio. There are diverse studies conducted across various industry sectors (Boisjoly et al., 2020; Sahoo & Thakur, 2022; Talonpoika et al., 2014; Torrès & Thurik, 2018). (DeLoof, 2003) illustrates the benefit of a lenient credit policy in the form of sales stimulation due to clients' access to a longer amount of time to evaluate the quality of the product and simple access to affordable financing for product acquisition

## Background of Working Capital Management

The previous works demonstrate that the main attention in corporate finance was on long-term financial decisions which cover aspects of capital budgeting, capital structure & dividends etc. Nevertheless, the concentration in working capital management has augmented during the last two decades (Lyroudi and Lazaridis, 2000) (Nobanee et al., 2011). The prime objective of working capital management is to achieve the firm's current accounts to accomplish a looked-for balance between profitability and risk (Ricci & Di Vito, 2000). Corporate finance emphasizes on investment and financing decisions. On the other hand, the finance literature has given slight contemplation to working capital management (WCM) (Ramiah et al., 2014; Ramiah, Zhao, Moosa, & Graham, 2016). The exercise of more belligerent working capital management policies upsurges a firm's cost-effectiveness (Pais & Gama, 2015). Working capital management is among the most imperative decisions for all firms. Working capital management can solidly affect enterprises' liquidity, profitability, and

solvency(Lin & Wang, 2021). Firms with extra growth prospects, and firms with advanced leverage, investment in fixed assets, and return on assets have a more aggressive working capital policy(Baños-Caballero et al., 2010b)(García-Teruel & Martínez-Solano, 2007a).The efficient management of working capital refers to the management of current assets and current liabilities which governs positive corporate profitability(Farooq et al., 2023).The relation between the firm’s cash conversion cycle and its profitability was examined using dynamic panel data analysis for a sample of Japanese firms for the period from 1990 to 2004. The outcome of the study depicts a robust negative relation between the length of the firm’s cash conversion cycle and its profitability for all companies except for consumer goods companies and services companies(Nobanee et al., 2011).(Jahfer, 2015) investigated the effects of working capital management on the profitability of manufacturing companies in Sri Lanka for the period 2008 to 2013. The study reveals a significant negative relationship between accounts payable and profitability which is consistent with the view that less profitable firms wait longer to pay their bills.(García-Teruel & Martínez-Solano, 2007a)explains that the “cost of financing harms firms’ CCCs” The results also suggest that better access to capital markets for firms may upsurge their investment in working capital.(Yilmaz & Nobanee, 2023) shows that firm characteristics such as operating cash flow, sales growth rate, operating profit margin, firm size and tangibility affect CCC cash conversion cycle specifically across the MENA countries i.e. “Middle East and North Africa”.(Lin & Wang, 2021)describes significant implications for enterprise managers, signifying managers to develop WCM and to grasp prospects in the improvement of non-state-owned economy. Working capital management necessitates vigilant consideration from corporate managers for the reason that it has an imperative role in corporate stability(Farooq et al., 2023).

### 3. BIBLIOMETRIC RESEARCH METHOD

#### 3.1 Outlining the apposite search term

Defining the suitable exploration terms in present research, the lexicon used is working capital management. To make certain if all components of working capital management were enclosed in this research, it was obligatory to take account of the keywords connected with each area. Table 1 confirms the keywords used for “Scopus data extraction and document selections”. Upon piloting an initial search of imperative related papers, the writers derived up with these terms. The working capital management terms are “working capital management”, “working capital management practices”, “cash conversion cycle”, & “small business”, etc.

**Table 1. Article inclusion and exclusion criteria**

Selection criteria	Scopus	
	Exclude	Include
Database: “Scopus” Date of Search: “24 April 2023” Period of Publication: 1974-2023 Search Term: “Working capital management”	-	682
Subject area: “Subject area: “Business, management and accounting”, “Economics, econometrics and finance”, “Social sciences”, and “Arts and humanities””	125	557
Document type: “Articles” and “Reviews”	45	512
Language screening: “Include documents published in English only”	8	504
Erroneous records screening: “Include documents with valid author information only”	5	499



Quality screening: Include documents in journals ranked “A*”, “A”, or “B” in the “Australian Business Deans Council (ABDC)” 2023 Journal Quality List only	325	174
Paper has been reduced to A*”, “A”, or “B” in the “Australian Business”	174	174

### 3.2 Data collection

The Database: “Scopus” was used to extract the relevant data for the study. The Publication of data for the study is extracted from the period 1974-2023. The Search Term “Working Capital Management” To arrive at the final total of 174 articles in Table 1, we used a thorough approach. The phrase "Working Capital Management" was used to include only English-language articles from a variety of disciplines, as shown in Table 1.). The researcher used both quality & quantitative measures to extract the accurate data for analysis. The documents included for analysis are “Articles” and “Reviews” which include documents published in English only. The quality screening is done which extracts documents that are published in journals ranked “A\*”, “A”, or “B” in the Australian Business Deans Council (ABDC) 2023. Since Scopus has a sizable number of double-blind peer-reviewed papers published in high-impact factor journals, it was used to gather the data (Groff et al., 2020).

There are numerous steps to clean & organize the final data. As suggested by Zupic and Cater (2015) and Donthu et al. (2021) the bibliographic and bibliometric data are used for the visualization and interpretation of the results. For better analysis and results, the researchers cleaned up numerous terms included in the article's "titles, abstracts, and keywords" using the "natural language processing" function offered by the VOSviewer software. Finally, a lot of these cleansing techniques help achieve consistency in terms of theme evaluation. The research papers included in this study have been chosen from Australian Business categories A\*, A, or B only.

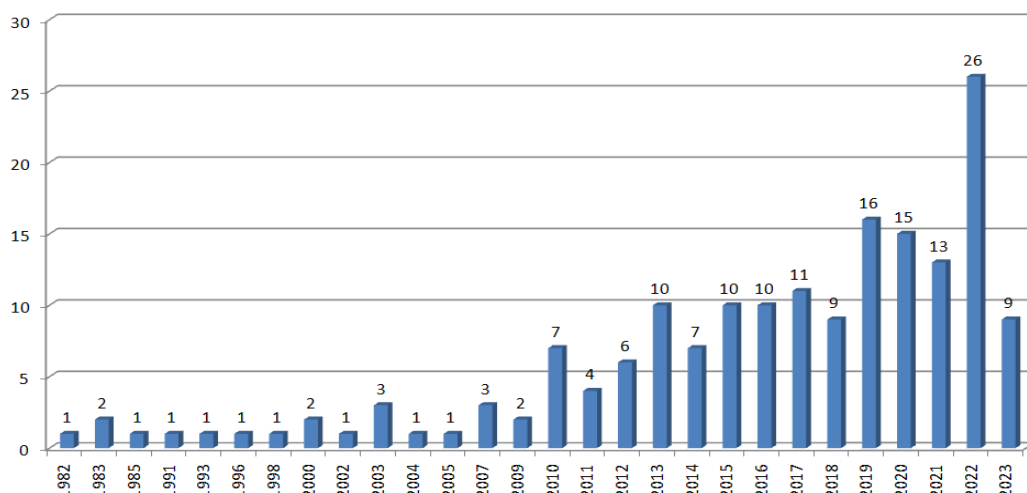
### 3.3 Selecting the technique for analysis

Selecting the analytical methods Bibliometric analysis is a collection of tools that uses quantitative approaches to analyze and evaluate text and information (Mishra et al., 2018; Goyal and Kumar, 2021). Using this method, it is possible to extract fresh data from literature reviews that can be added to the existing study (Suominen et al., 2016; Groff et al., 2020). To do this, it is necessary to establish and publish biographies on a particular topic, identify patterns within a research area, and assess research works that serve as a guide to know the state of research (Gao et al., 2021; Hossain et al., 2022). To examine the information on biographic data by authors, citations, bibliographic coupling, co-citations, and co-word analysis, researchers utilize bibliometric analysis approaches Donthu et al. (2021).

## 4. FINDINGS

### 4.1 Performance analysis:

Figure 1 exemplifies the publication drifts in the area of working capital management. 2022 was the most fruitful year yet the journey of research in this domain was instigated by Philippatos and Christofi (1982). The initial trends indicate the use of working capital management practices. Garc a-Teruel and Mart nez-Solano (2007) have conducted a study on working capital and SMEs as a research theme for the very first time. 2010 was the year when the attractiveness of working capital management began and since 2022, their rate of production every year has significantly increased. Inclusive, observing at the present-day trend, the study in this dominion shall upsurge in the coming years.



**Figure1. Publication Trends of Working Capital Management**

#### 4.2 Prominent authors, organizations, and countries for Working Capital Management research.

TC	Author	TP	TC	Institution	TP	TC	Country	TP
708	Martínez-Solano P.	4	381	university of Murcia, Spain	1	744	Spain	8
708	García-Teruel J.	4	297	university of Murcia, Spain	2	662	United States	40
327	Baños-Caballero S.	3	203	university of Surrey, UK	1	560	United Kingdom	16
203	Petmezas D.	1	203	University of Cattolica Del Sacrocuore, Italy	1	319	Germany	6
203	Croci e.	1	154	University of Vaasa, Finland	1	313	Finland	10
203	Aktas N.	1	154	Nordea Bank, Finland	1	271	India	20
197	Hofmann E.	3	154	University of Stockholm, Sweden	1	238	Sweden	3
183	Kieschnick R.	3	150	Copenhagen Business School, Denmark	1	205	Italy	2
180	Graham M.	2	150	University of St.Gallen, Switzerland	1	197	Switzerland	3
158	Howorth C.	2	145	University of Texas, US	1	182	Jordan	6
154	Engqvist J.	1	145	University of Georgia, US	1	171	Canada	10
154	Nikkinen J.	1	145	University of Pennsylvania, US	1	154	China	8
150	Kotzab H.	1	112	University of German Jordanian, Jordan	1	150	Denmark	1
145	Laplante M.	1	111	University of Paris 13, France	1	137	Australia	10
145	Moussawi R.	1	111	International Business School Paris, France	1	129	France	4
143	Kärri T.	7	99	Coimbrasul group of schools, Portugal	1	107	Portugal	3
122	Pirttilä M.	5	99	University of Coimbra, Portugal	1	96	United Arab Emirates	12
112	Abuzayed B.	1	86	University of Nottingham, UK	1	82	Israel	3
111	Baud C.	1	81	University of London Metropolitan, UK	1	71	Qatar	3
111	Durand C.	1	81	University of Purdue, US	1	67	Norway	2

**Note(s): TC=total citation , TP=total number of article(s) publications**

The above Table 2 indicates the most significant & persuasive authors, institutions, and countries for working capital management. Martínez and García- are the most prominent authors with 708 citations & have published 4– 4 research papers followed by Caballero author with 327 citations & have published 3 research papers. Likewise, the most influential institutions are ‘The Department of Management and Finance, Faculty of Economy and Business and Department of Management and Finance, Faculty of Economics and Business, The University of Murcia, Spain with 381 & 297 citations and 1 & 2 publications respectively. ‘Surrey Business School, University of Surrey, Guildford, Surrey, United Kingdom with 203 citations and 1 document publication. Equally, the leading & dominant country for the publication of ‘Working Capital Management‘ is Spain with 744 citations from 8 documents followed by the USA with 662 citations from 40 documents. Moreover, the table depicts that Kärri is the most productive author with 7 documents. Country-wise analysis reveals that the United States is the most productive country for Working Capital Management research with 40 documents published followed by India with 20 documents published.

**TABLE 3 Most influential journals for Working Capital Management**

TC	Source	TP	FIN	ABDC	1982-1987	1988-1993	1994-1999	2000-2005	2006-2011	2012-2017	2018-2023
889	International journal of managerial finance	14	X	A					1	6	7
315	Journal of Corporate Finance	4	X	A*						3	1
235	Research in International Business and Finance	3	X	B						2	1
205	Journal of Business Logistics	2		A					1		1
170	Small Business Economics	1		A						1	
145	Review of Finance	1	X	A*						1	
133	Accounting and Finance	3	X	A					1		2
125	European Journal of Finance	4	X	A				1		2	1
115	Qualitative Research in Financial Markets	5	X	B						3	2
111	Socio-Economic Review	1		A						1	
104	Managerial Finance	9	X	B					1	2	6
89	management accounting research	2		A*				1			1
86	International Journal of Hospitality Management	2		A*						1	1
83	International journal of production economics	2		A							2
83	Journal of Business Finance & Accounting	1	X	A*	1						
74	Asian Review of Accounting	2		B					1		1
72	International Small Business Journal	1		A				1			
71	International Journal of Organizational Analysis	2		B							2
66	Review of Accounting and Finance	1	X	B						1	
65	Journal of the Operational Research Society	2		A		1			1		

### 4.3 Most influential journals for Working Capital Management

The above Table 3 represents the remarkable sources of Working Capital Management research. The most dominant source for Working Capital Management research is “The International Journal of Managerial Finance” with 889 citations and 14 publications followed



by “The Journal of Corporate Finance” with 315 citations and four publications. The topfecund journal is the “International Journal of Managerial Finance” with 14 publications followed by “Managerial Finance” with 9 publications. The most productive year is from 2018 to 2023 in the most influential journals. The most influential finance journal in Working Capital Management journal is the “International Journal of Managerial Finance” with 14 publications, and the most productive non-finance journal is “The Journal of Business Logistics ” with 205 citations and two publications. Though the research on Working Capital Management began in 1982still, there are no publications in theleading journals between 1994 and 1999

**TABLE-4 Most influential articles on working capital management**

Table 4 indicates the most cited and impactful articles in the area of working capital management. With 381 citations, the article “Effects of working capital management on SME profitability” by García-Teruel(2007) is the most influential.

Author(s)	Title	TC
García-Teruel(2007)	“Effects of working capital management on SME profitability”	381
Aktas (2015)	“Is working capital management value-enhancing? Evidence from firm performance and investments”	203
Baños-Caballero(2012)	“How does working capital management affect the profitability of Spanish SMEs?”	170
Enqvist(2014)	“The impact of working capital management on firm profitability in different business cycles: Evidence from Finland”	154
Hofmann(2010)	“A supply chain-oriented approachof working capital management”	150
Kieschnick (2013)	“Working capital management and shareholders' wealth”	145
Baños-Caballero (2010)	“Working capital management in SMEs”	127
Abuzayed(2012)	“Working capital management and firms' performance in emerging markets: The case of Jordan”	112
Baud (2012)	“Financialization, globalization and the making of profits by leading retailers”	111
Paism.(2015)	“Working capital management and SMEs profitability: Portuguese evidence”	99
Howorth(2003)	“The focus of working capital management in UK small firms”	86
Moore.s. (1983)	“An analysis of the financial management techniques currently employed by large U.S. corporations”	83
Muns (2015)	“Working capital, cash holding, and profitability of restaurant firms”	81
Ukaegbu(2014)	“The significance of working capital management in determining firm profitability: Evidence from developing economies in Africa”	81
Peel (2000)	“Late Payment and Credit Management in the Small Firm Sector: Some Empirical Evidence”	72
Afrifag (2016)	“Net working capital, cash flow and performance of UK SMEs”	66
Lyngstadaas(2016)	“Working capital management: evidence from Norway”	59
Yazdanfar(2014)	“The impact of cash conversion cycle on firm profitability: An empirical study based on Swedish data”	58
Huang (2020)	“Financing mode decision in a supply chain with financial constraint”	58
Nobanee(2011)	“Cash conversion cycle and firm's performance of Japanese firms”	57

The research insists on providing a shred of empirical evidence on the effects of working capital management on the profitability of a sample of small and medium-sized Spanish firms. The results of the study demonstrate that managers can create value by reducing their inventories and the number of days for which their accounts are outstanding. Furthermore, limiting the cash conversion cycle can alsoimprove the firm’s profitability.

With 203 citations,Aktas n. (2007), conducted the second important study on “Is working capital management value-enhancing? Evidence from firm performance and investment”.

The study discussed the value effect of working capital management (WCM) for a large sample of US firms between 1982–2011. The existence of an optimal level of working capital policy in firms helps to improve their stock and operating performance. The outcome of the study explains that corporate investment is the channel through which efficient WCM translates into superior firm performance. Specifically efficient WCM permits firms to redistribute underutilized corporate resources to higher-valued use like the funding of cash acquisitions.

#### 4.5 Top reference for working capital management

Table 5 indicates the top references of research publications for Working capital management based on local citations and their global citations. The paper authored by GARCÍA-TERUEL PJ, (2007) titled “Effects of working capital management on SME profitability” is a top reference paper with 70 local citations and 381 global citations. The local citations upon global citations ratio is 18.37. The study is adamant about offering actual data on how working capital management affects a sample of small- and medium-sized Spanish businesses' profitability. The findings of the study show that managers can increase value by lowering inventories and the number of days that accounts are past due. Additionally, reducing the cash conversion cycle might boost a company's profitability. AKTAS N, (2015) study titled “Is working capital management value-enhancing? Evidence from firm performance and investments” has the second-highest references with 42 local citations, 203 global citations, and 20.69 local upon global citations ratio. The value impact of WCM for a sizable sample of US enterprises between 1982 and 2011 was discussed in the study. The stock and operating performance of businesses are improved when working capital policies are at an acceptable level. The study's findings indicate that corporate investment is the mechanism via which effective WCM results in higher business performance. Particularly effective WCM enables businesses to reallocate unused corporate resources to more valuable uses, such as the financing of cash acquisitions.

#### 4.6 Knowledge foundation of working capital management through co-citation analysis

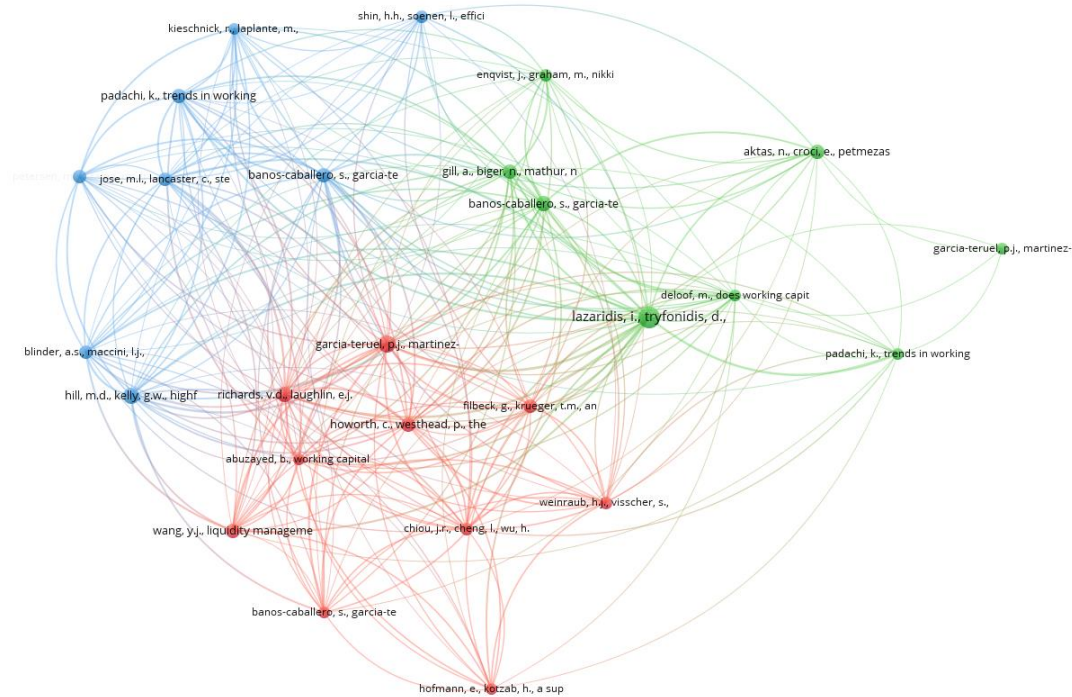
The semantic relationship of co-cited reference uncovered by co-citation analysis shows the field's knowledge underpinning (Donthu et al, 2021 and Small, 1973) Figure 2 presented the co-citation map of reference mentioned at least eight times by article in the review corpus. Lazaridis, Tryfonidis, Martinez-Solano, and Garcia-Teruel have highly cited the work of a particular area of working capital management and profitability (Green nodes). Similarly, Richards, Laughlin, Howorth, and Westhead (red nodes) have highly cited the work of a particular area of working capital management. Similarly, Shin, Padachi and Soenen (blue nodes)

LC	Document	Title	GC	LC/GC Ratio (%)	Normalized Local Citations	Normalized Global Citations
70	Garcia-Teruel PJ, 2007, Int J Manage Finan	Effects of working capital management on SME profitability	381	18.37	2.92	2.92
42	Aktas N, 2015, J Corp Financ	Is working capital management value-enhancing? Evidence from firm performance and investments	203	20.69	5.06	4.44
37	Kieschnick R, 2013, Rev FINANC	Working capital management and shareholders' wealth	145	25.52	5.61	4.45
37	Baños-Caballero, 2012, Small Bus Econ	How does working capital management affect the	170	21.76	3.36	2.22

		profitability of Spanish SMEs?				
32	Baños-Caballero S, 2010, Account Financ	Working capital management in SMEs	127	25.20	4.67	2.85
28	Enqvist J, 2014, Res Int Bus Financ	The impact of working capital management on firm profitability in different business cycles: Evidence from Finland	154	18.18	2.65	2.63
26	Abuzayed B, 2012, Int J Manage Finan	Working capital management and firms' performance in emerging markets: The case of Jordan	112	23.21	2.36	1.46
19	HOWORTH C, 2003, Manage Account Res	The focus of working capital management in UK small firms	86	22.09	2.48	1.83
15	Pais MA, 2015, Int J ManageFinan	Working Capital Management and SMEs Profitability: Portuguese evidence	99	15.15	1.81	2.17
13	Gill AS, 2013, MangeFinanc	The impact of corporate governance on working capital management efficiency of American manufacturing firms	47	27.66	1.97	1.44
12	NOBANEH H, 2011, Asian Rev Account	Cash conversion cycle and firm's performance of Japanese firms	57	21.05	3.69	2.75
12	Lyngstadaas H, 2016, Int J ManageFinans	Working capital management: evidence from Norway	59	20.34	2.67	2.35
12	Hofmann E, 2010, J Bus Logist	A supply chain-oriented approach of working capital management	150	8.00	1.75	3.37
12	Pratap Singh H, 2014, Qual Res Finan Market	Working capital management: a literature review and research agenda	47	25.53	1.14	0.80
12	Ukaegbu B, 2014, Res Int Bus Finan	The significance of working capital management in determining firm profitability: Evidence from developing economies in Africa	81	14.81	1.14	1.38
11	Wasiuzzamam S, 2015, Int J Manage Finan	Working capital and firm value in an emerging market	44	25.00	1.33	0.96
11	Peel MJ, 2000, Int Small Bus J	Late Payment and Credit Management in the Small Firm Sector: Some Empirical Evidence	72	15.28	1.83	1.78
10	Yazdanfar D, 2014, Int J ManageFinan	The impact of cash conversion cycle on firm profitability: An empirical study based on Swedish data	58	17.24	0.95	0.99

10	Boisjoly RP, 2020, J Bus Res	Working capital management: Financial and valuation impacts	55	18.18	3.85	2.73
9	Talonpoika A-M, 2016, Int J Manage Finan	Defined strategies for financial working capital management	20	45.00	2.00	0.80

**Table 6- Co Citation Network Based On References**



A cited reference and a semantic cluster of references based on theme similarity are presented by three nodes. Co-citations are presented by links between nodes. The degree of co-citation is shown by the size of the Slink. Thick size shows more co-citation among them.

#### 4.7 Thematic and influence structure analysis through bibliographic coupling

Through bibliographic coupling, the above table shows the theme clusters of Working capital management. Working capital management and Firm Profitability, the value-enhancing influence of Working Capital Management, Corporate Governance and Working capital management, Supply chain Management and Working capital management, Working capital management and SMEs, Working capital management and Small Business, and Behavioral Finance and Working capital management are the seven topic groupings. In the Table, the significant articles of each cluster are also included. The seven groups cover every aspect of Working capital management, such as the behavioral finance approach to working capital management, the effects of working capital management, the impact of corporate governance on working capital management, and Working capital management during the global financial crisis.

Cluster 1 includes research on Working capital management and Firm Profitability. (Enqvist et al., 2014) did a study titled “The impact of working capital management on firm profitability in different business cycles: Evidence from Finland”. In the study, researcher examine the role of business cycles on the working capital-profitability relationship using a sample of Finnish-

listed companies over 18 years. The study demonstrates that active working capital management matters and, thus, should be included in firms' financial planning. (Abuzayed, 2012) examine the effect of working capital management on firms' performance. Using robust estimation techniques this study found that profitability is affected positively with the cash conversion cycle. This study suggested that policymakers in emerging markets need to motivate and encourage managers and shareholders to pay more attention to working capital by improving investors' awareness and improving information transparency. Pais, M.A. and Gama, P.M. (2015) described empirical evidence on the effects of working capital management on the profitability of small and medium-sized Portuguese firms. Results indicate that a reduction in the inventories held and in the number of days that firms take to settle their commercial liabilities and collect payments from their customers are associated with higher corporate profitability.

Cluster 2 includes research related to the value-enhancing influence of Working Capital Management. (Aktas et al., 2015) states that the firms that converge to that optimal level, either by increasing or decreasing their investment in working capital, improve their stock and operating performance over the subsequent period. The study pinpoints the fact that efficient WCM allows firms to redeploy underutilized corporate resources to higher-valued use, such as the funding of cash acquisitions. (Kieschnick et al., 2013) in a study elaborates on the relationship between corporate working capital management and shareholders' wealth. The results of the study depict that the incremental dollar invested in net operating working capital is worth less than the incremental dollar held in cash for the average firm. However, the valuation of the incremental dollar invested in net operating working capital is significantly influenced by a firm's future sales expectations, debt load, financial constraints, and bankruptcy risk. (Johnson & Soenen, 2003) investigate which factors discriminate between financially successful and less successful companies. Financial success is measured using three different methods, i.e., the Sharpe ratio, Jensen's alpha, and EVA. The study explains that large profitable firms with efficient working capital management and a certain degree of uniqueness regarding their business are the most successful companies.

Theme	Author(s)	Title	TC
Working capital management and Firm Profitability	Enqvist , Graham and Nikkinen (2014)	“The impact of working capital management on firm profitability in different business cycles: Evidence from Finland”	154
	Abuzayed(2012)	“Working capital management and firms' performance in emerging markets: The case of Jordan”	112
	Pais and Gama.(2015)	“Working capital management and SMEs profitability: Portuguese evidence”	99
value-enhancing influence of Working Capital Management	Aktas , CrociandPetmezas(2015)	“Is working capital management value-enhancing? Evidence from firm performance and investments”	203
	Kieschnick, Laplante and Moussawi(2013)	“Working capital management and shareholders' wealth”	145
	Johnson andSoenen.(2003)	“Indicators of successful companies”	54

Corporate Governance and Working capital management	Gill and Biger (2013)	“The impact of corporate governance on working capital management efficiency of American manufacturing firms”	47
	BoÈoc and Anton(2017)	“Is profitability driven by working capital management? evidence for high-growth firms from emerging Europe”	35
	ZeidanandShapir(2017)	“Cash conversion cycle and value-enhancing operations: Theory and evidence for a free lunch”	35
Supply chain Management and Working capital management	Hofmann and Kotzab (2010)	“A SUPPLY CHAIN-ORIENTED APPROACH OF WORKING CAPITAL MANAGEMENT”	150
	Huang, Yang and Tu (2020)	“Financing mode decision in a supply chain with financial constraint”	58
	Lind , PirttilÃ¤, Viskari , Schupp and KÃ¤rri(2012)	“Working capital management in the automotive industry: Financial value chain analysis”	55
Working capital management and SMEs	GarcÃ­a-Teruel P.J., MartÃ­nez-Solano P.2007	“Effects of working capital management on SME profitability”	381
	BaÃ±os-Caballero S., GarcÃ­a-Teruel P.J., MartÃ­nez-Solano P.2012	“How does working capital management affect the profitability of Spanish SMEs?”	170
	BaÃ±os-Caballero S., GarcÃ­a-Teruel P.J., MartÃ­nez-Solano P.2010	“Working capital management in SMEs”	127
Working capital management and Small Business	Baud and Durand (2012)	“Financialization, globalization and the making of profits by leading retailers”	111
	Howorth and Westhead (2003)	“The focus of working capital management in UK small firms”	86
	Peel, Wilson, Howorth (2000)	“Late Payment and Credit Management in the Small Firm Sector: Some Empirical Evidence”	72
Behavioural Finance and Working capital management	Boisjoly, Conine, Jr and McDonald(2020)	“Working capital management: Financial and valuation impacts”	55
	Ramiah,Zhao, Moosa, and Graham(2016)	“A behavioural finance approach to working capital management”	26
	Ramiah V, Zhao, and Moosa(2014)	“Working capital management during the global financial crisis: the Australian experience”	22

Cluster 3 is concerned with the studies that revolve around the concept of Corporate Governance and Working capital management. Gill and Biger (2013) “The impact of corporate governance on working capital management efficiency of American manufacturing firms has



indicated that corporate governance plays some role in improving the efficiency of working capital management. This study presents some relevant factors that can improve the efficiency of working capital management, and in particular on the association between several features of corporate governance and the efficiency of working capital management.(Boțoc & Anton, 2017) examine the relationship between working capital management and firm profitability. The study highlights the importance of short-term financial decisions in enhancing profitability, with significant implications for academics and practitioners.(Zeidan & Shapiro, 2017) highlights the point that the empirical literature shows that firms overinvest in working capital and that these investments are economically inefficient. The results state that reductions in the cash conversion cycle should increase shareholder value.

Cluster 4 includes research on Supply chain Management and Working capital management. (Hofmann & Kotzab, 2010) has illustrated the role of payment terms for working capital improvements in supply chains. The study proposes a collaborative working capital management approach is proposed, by which the cash-to-cash cycles of companies with the lowest weighted average cost of capital (WACC) should be extended, while companies with higher financing costs are relieved by a shortened cash-to-cash cycle.(Huang et al., 2020) has narrated that supply chain finance (SCF) has become a promising solutions to alleviate SMEs' financing problem. supply chain finance (SCF) has become a promising solutions to alleviate SMEs' financing problem, which takes advantage of supply chain integrity and relies on core enterprises to promote SMEs' financing. (Lind et al., 2012) has used Financial value chain analysis to examine working capital management by cycle times in the value chain of the automotive industrythe change in cycle times of working capital is followed mainly by the change in cycle time of inventories. the company that seeks to reduce its working capital at the expense of its value chain partners does not become more competitive, because competition is rather a value chain against a value chain than a company against companies.

Cluster 5 is concerned with Working capital management and SMEs.(García-Teruel& Martínez-Solano, 2007)paper is to provide empirical evidence on the effects of working capital management on the profitability of a sample of small and medium-sized Spanish firms. The results of the study demonstrate that managers can create value by reducing their inventories and the number of days for which their accounts are outstanding. Moreover, shortening the cash conversion cycle also improves the firm's profitability.(Baños-Caballero et al., 2012)analyzes the relationship between working capital management and profitability for small and medium-sized enterprises (SMEs).The outcome of this study reveals a non-monotonic (concave) relationship between working capital level and firm profitability, which indicates that SMEs have an optimal working capital level that maximizes their profitability. (Baños-Caballero et al., 2010b) has analyzed the determinants of the Cash Conversion Cycle (CCC) for small- and medium-sized firms. It has been found that these firms have a target CCC length to which they attempt to converge and that they try to adjust to their target quickly. The results also show that it is longer for older firms and companies with greater cash flows.

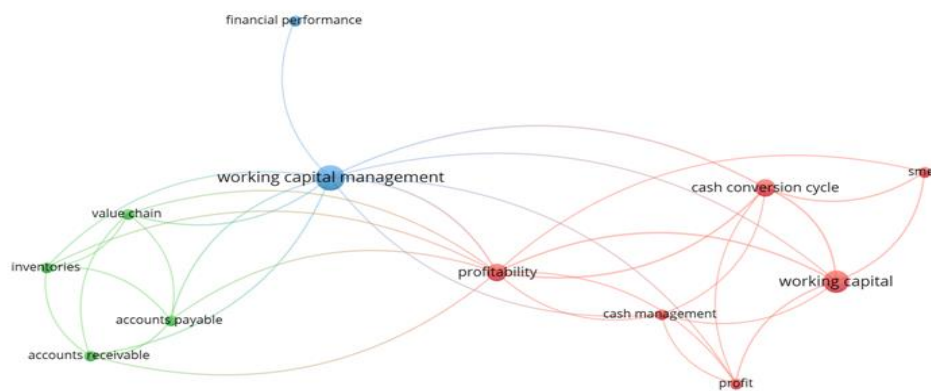
Cluster 6 encompasses the studies related to Working capital management and Small Business.(Baud & Durand, 2012) in a study that tries to examine a variety of complementary ways of making profits implemented within the industry to satisfy impatient shareholders. The study presents that factors like foreign expansion, financialization of assets, deterioration of suppliers' and workers' positions, and the use of working capital management are amongst the top ways to transform market power into financial gains.(Howorth & Westhead, 2003)discusses that small companies focus only on areas of working capital management where they expect to improve marginal returns. The difficulties of establishing causality are highlighted and implications for academics, policy-makers, and practitioners are reported.(Peel

et al., 2000) presents some facts about late payment and credit and working capital management practices of small businesses operating in the United Kingdom manufacturing sector. The results suggest that not only do small firms provide trade credit to their customers but they often find themselves providing extended trade credit. The smaller firms had a lesser late payment problem and their issues are partly associated with business size and with the life cycle of the firm.

Cluster 7 is concerned with Behavioural Finance and Working capital management where the significant contribution is from Boisjoly, Conine, Jr, and McDonald(2020), Ramiah, Zhao, Moosa, and Graham(2016) & Ramiah V, Zhao and Moosa(2014). (Boisjoly et al., 2020) examine the longitudinal impact from 01990 to 2017 of continuous improvement programs and aggressive working capital practices on accounts receivable turnover, inventory turnover, days payables outstanding, and cash conversion cycle. The results are strongest in the transportation and communications industry and weakest in financial services(Ramiah, Zhao, Moosa, & Graham, 2016) described the behavior of corporate treasurers who are involved in the decision-making process in the areas of cash, inventory, accounts receivable, accounts payable and risk management during the global financial crisis. The result depicts signs of behavioral biases among professionals. Although the biases lead to sub-optimal decisions in certain areas of working capital management (WCM), they can also be desirable attributes in other aspects of WCM(Ramiah et al., 2014) the objective of the study was to document the measures taken by Australian corporate treasurers in the areas of cash, inventory, accounts receivable, accounts payable and risk management to survive the global financial crisis. The findings of the study indicate that Australian working capital managers exhibit behavioral biases, particularly overconfidence. However, the study states that more than half of the respondents in the survey altered their working capital management practices during the crisis.

**4.8 Thematic trends of working capital management**

Extending on the underpinning and topic provided by co-citation analysis and bibliographic coupling, we analysis thematic tendencies in working capital management studies using co-occurrence analysis. Authors’ keyword are used for co-occurrence analysis. Those keyword are subjected to a chronological filter to identify the topic development of working capital management issues that feature in at least three articles in our review crops figure 3-6 depict this theme progression.



Note(s): Red nodes =cash conversion cycle and profitability, Blue nodes= working capital and firm performance, Green nodes= components of working capital and value chain



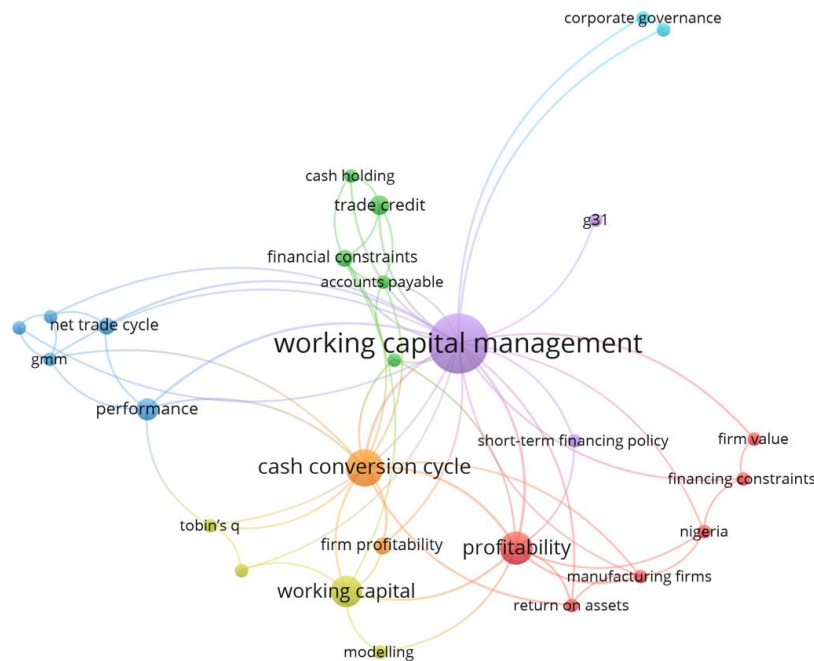
**Influential topic in the period of 1982-2012**

The study conducted on the theme of working capital management between 1982 and 2012 was focused on profitability and cash conversion cycle (red nodes). Research in the same period highlights firm performance (Blue nodes) and components of working capital and value chain (Green nodes). It is the initial phase of working capital management

**Influential topic in the period of 2013-2018**

The study conducted from 2013 to 2018 on working capital management concentrated on themes such as profitability and firm value (red nodes), working capital management and short-term financing (purple nodes), corporate governance and net trade cycle (blue nodes), cash conversion cycle and firm profitability (orange nodes) and Financial constraints and trade credit (green nodes)

This indicates that working capital management research in the period had grown and become the wider theme for the research.

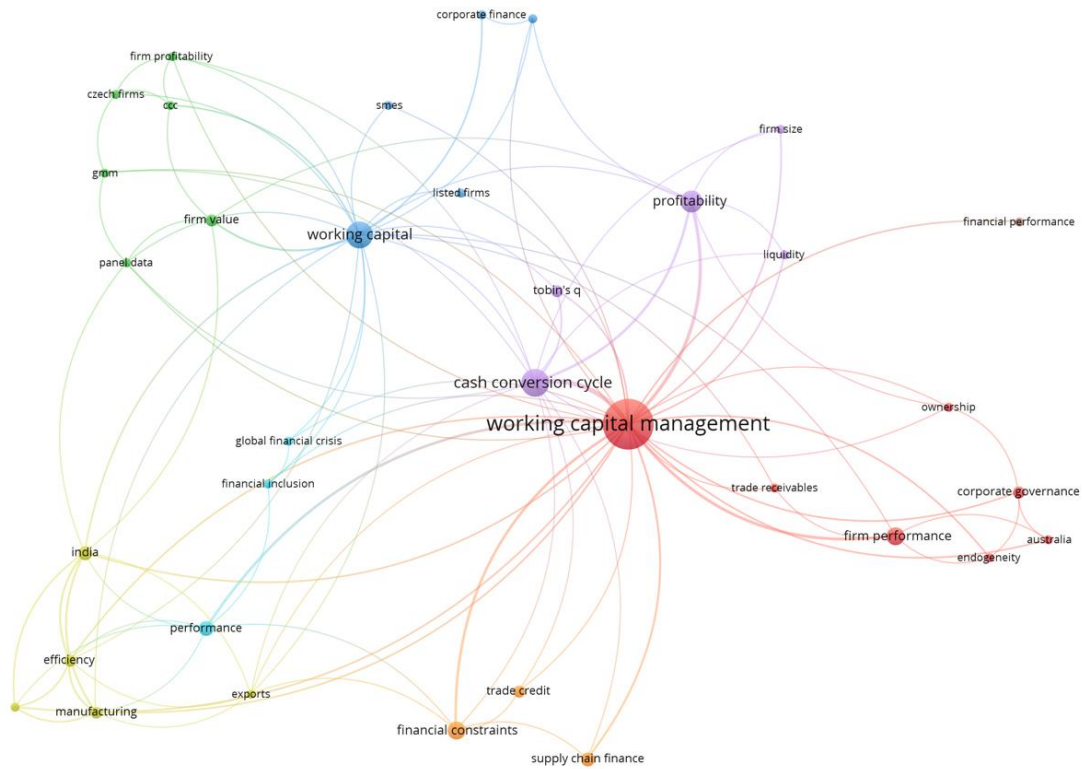


Note(s): Red nodes = profitability and firm value, Purple nodes = working capital management and short-term financing Blue nodes = corporate governance and the net trade cycle, Orange nodes = cash conversion cycle and firm profitability Green nodes = Financial constraints and trade credit

**Influential topic in the period of 2019-2023**

The study conducted from 2019 to 2023 on working capital management is concentrated on themes such as working capital management and firm performance (Red nodes). Similarly the study period includes working capital management, financial constraints, Trade credit, and supply chain finance (orange nodes); Firm value, firm profitability and CCC (Green nodes); working capital, SMEs, corporate finance (Blue nodes); working capital management, cash conversion cycle, profitability and liquidity (purple nodes); Working capital, efficiency and export (yellow nodes) and working capital, global financial crisis, financial inclusion (Navy blue).

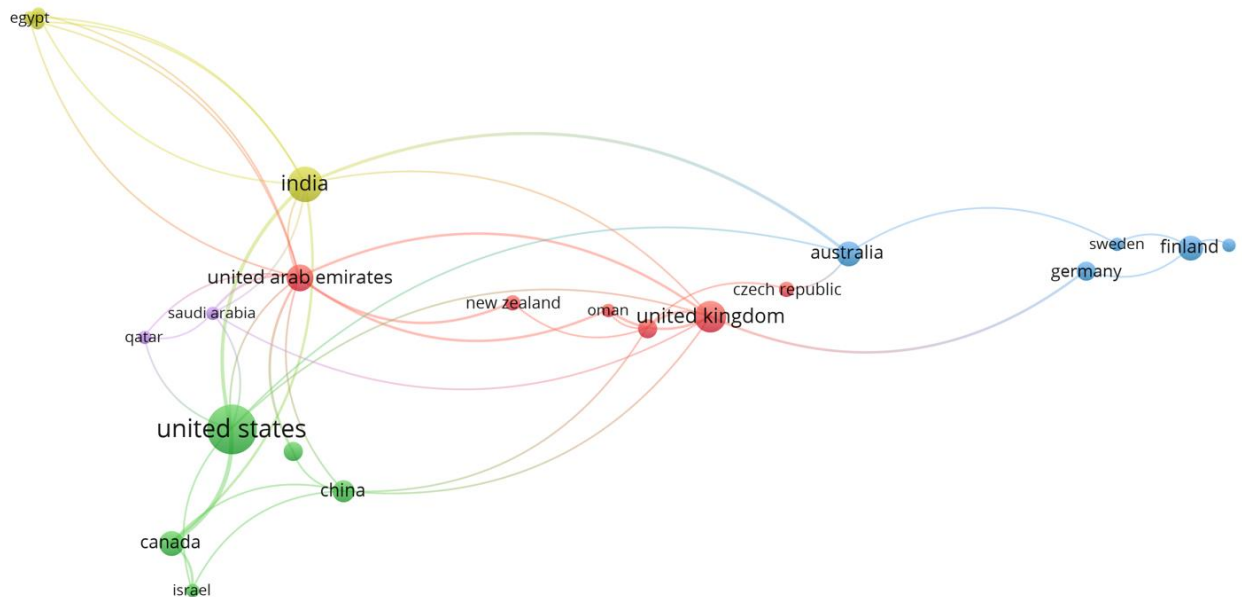
**Figure 2**



Blue nodes=Working capital and SMEs , Red nodes=working capital management and firm performance , yellow nodes=Working capital and Efficiency , orange nodes=Working capital management and financial constraints, Green nodes=Working capital and firm value, purple nodes=Working capital management and cash conversion cycle and Sky blue nodes=working capital and global financial crisis.

**Country Wise collaboration in Working Capital Management**

**Figure 3**



There are total five Country Wise collaboration in Working Capital Management. The United States has collaboration with China, Canada and Israel (Green Nodes). India has collaboration with Egypt (Yellow nodes). United Kingdom has collaboration with United Arab Emirates, Oman, Czech Republic, New Zealand (Red Codes). Qatar has collaboration with Saudi Arabia (Purple code) and lastly Australia has collaboration with Germany, Sweden & Finland (Blue Code)

### **Future Research Direction:**

Evaluating working capital management studies in a historical context is acute for determining present and future consequences. By examining relevant papers, this study may establish a baseline for the burgeoning area of working capital management, which will help future scholars to analyze the impact of working capital management and its efficiency.

A future study might look at how the most recent developments in working capital management will help the financial managers to measure the efficiency of their business. Between the period of 1982-2012, the studies were focused on profitability and cash conversion cycle. While, the study concentrated on the themes such as profitability, firm value, corporate governance and net trade cycle, Financial constraints trade credit from 2013-2018. The studies from 2019-2023 placed reliance on the theme such as working capital management, firm performance, financial constraints, supply chain finance, efficiency, export, global financial crisis and financial inclusion. Fintech is supporting businesses to enhance their supply chain and increase their financial performance by providing newfangled solutions for payment and working capital management.

### **CONCLUSION**

In addition to describing institutional scholarship strengths and citation patterns and suggesting observable co-citation networks of schools of thought, bibliometric analysis has the potential to guide collection building. The working capital management study has visualised research trends, theme development, and significant research. The largest biography database, the Scopus database, was used for data extraction and analysis. The study has outlined the themes of working capital management research for various time periods. The working capital management journey has been described in this paper and future academic research directions.

Researchers may carry out a study on the developing field of working capital management that could give policymakers and practitioners improved insights. In this approach, the current study has helped to clarify the state of the field, promising areas, and potential directions for future research in working capital management. The scope of the study is restricted to bibliometric examination of biographical information taken solely from the Scopus database. Therefore, since a number of high-caliber articles are only listed in one of them, the next analysis might be conducted using merged bibliographies data from Scopus and Web of Science. To further comprehend the research paradigm from high-quality publications, future studies may use bibliometric analysis on SSCI and ABDC-listed publications solely.

### **Implications of the study:**

The present study has several implications for financial managers, Small & Medium enterprise managers, marketers, entrepreneurs, financial manager's, academicians and scholars. They should get inclusive acquaintance about the existing studies in this area. By possessing the significant and protruding contributors of this research field and the motivation for becoming vital contributors, they can access these articles to unravel the predominant academic and



industry challenges. Moreover, it would also monitor them to identify the gap in the existing literature, and future research directions which shall assist them to conduct future studies. Likewise, it will also support the scholar to publish their work in journals with high impact factor.

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