



“Knowledge management in banking: A bibliometric literature review”

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KNOWLEDGE MANAGEMENT IN BANKING: A BIBLIOMETRIC LITERATURE REVIEW

Abstract

This bibliometric study examines publication trends, influential works, authorship networks, conceptual themes, and future directions in knowledge management research within the banking sector over the past three decades. Data were collected from a total of 443 scholarly publications written in English and indexed in Scopus. The data collection period spanned from 1994 to 2023. Quantitative bibliometric analysis techniques were employed, which involved the use of temporal visualization to examine publication and citation patterns, mapping co-authorship networks, and clustering high-frequency keywords. The results suggest a consistent rise in research interest and output as time progresses. Influential publications have proposed various models and frameworks for knowledge management, risk analysis, and organizational change. The majority of prolific authors were primarily of European descent, and it is worth noting that the Journal of Knowledge Management held the position as the most influential publication venue. The core research focus encompassed various areas such as knowledge for competitive advantage, intellectual capital measurement, knowledge-performance links, customer relationship management, and knowledge management technologies. The research has evolved to encompass digital transformation, sustainability, automation, and analytics. Proposed future directions include an examination of the role of knowledge management in ensuring continuity during crises, the facilitation of risk management through knowledge systems, and the development of decision support based on knowledge. This study offers valuable insights into the development of knowledge management research in the banking sector, although it is limited to English sources in Scopus.

Keywords

business continuity, decision support systems, digital transformation, intellectual capital, publication trends, risk management, visualization

JEL Classification G21, D83

INTRODUCTION

In the intricate and dynamic realm of banking, the implementation of efficient knowledge management has become an essential requirement for financial institutions to ensure secure and streamlined operations. Banks perform vital economic functions by serving as intermediaries between depositors and borrowers, enabling transactions and offering growth capital (IMF, 2023). Nevertheless, the fundamental characteristics of the banking sector also render financial institutions susceptible to various risks that necessitate effective management. These risks encompass credit defaults, market volatilities, operational breakdowns, liquidity deficiencies, and the looming possibility of insolvency (Rahman, 2017). The global financial crisis that occurred in 2008 brought to light the significant consequences that arise when risks are inadequately comprehended and managed (Power, 2009). The insufficiency of risk modeling and the lack of effective knowledge sharing among experts in the banking sector resulted in significant vulnerability to mortgage-backed securities, ultimately necessitating extensive financial rescues. Therefore, by leveraging their proficiency in acquiring information pertaining to various risks and employing this



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knowledge prudently, financial institutions can reduce uncertainties and strengthen their ability to withstand adverse events (Pakhchanyan, 2016).

Academic investigation into the field of knowledge management holds significant importance in the progression of frameworks, models, and empirical evidence that inform and shape banking practices. The understanding of bank knowledge processes and risk management has been enhanced by various disciplines, including finance, economics, information systems, and operations research (Qi et al., 2023). Scholarly contributions have been derived from both advanced economies that possess well-established banking systems and emerging markets that are in the process of developing their financial sectors (Moral-Muñoz et al., 2020). However, the extensive and widely scattered corpus of literature presents a significant difficulty for scholars and practitioners in acquiring a comprehensive understanding. The utilization of quantitative bibliometric techniques holds significant value in the analysis of scholarly work, as it allows for the identification of patterns and the revelation of structures, relationships, and advancements within a specific research domain (Donthu et al., 2021). This paper utilizes bibliometric analysis to examine publication trends, influential works, authorship networks, conceptual themes, and potential areas for future research in the field of banking knowledge management over the course of the last forty years. The findings acquired will aid scholars in discerning influential research and areas that have not been extensively explored for further examination (Ellegaard & Wallin, 2015). The research findings will emphasize the relevance of specific studies in enhancing risk management practices for professionals in the banking industry. Policymakers have the ability to employ an evidence-based analysis of existing knowledge in order to formulate regulations that effectively foster resilience within banking systems.

1. LITERATURE REVIEW

Knowledge management has emerged as a crucial strategic priority for organizations aiming to harness the potential of knowledge-based resources and capabilities. According to recent scholarly literature, knowledge management encompasses a series of interconnected processes that strive to optimize the value obtained from intellectual capital (Hussinki et al., 2017). The core knowledge management processes encompass various activities. These activities involve identifying the expertise possessed by individuals and groups, capturing valuable insights and experiences in easily accessible repositories, disseminating knowledge through technology-based systems and interpersonal networks, utilizing knowledge to improve decision-making and foster innovation, and fostering organizational learning and collaboration to generate new knowledge (Donate & Sánchez de Pablo, 2015).

To be able to successfully implement knowledge management, organizations must focus on cultivating a supportive culture, investing in technological infrastructure, and developing appropriate motivational incentives. Quantifying the value and impact of knowledge-based assets is crucial

for effectively monitoring the efficacy of knowledge management practices (Kianto et al., 2017). Effective knowledge management enables organizations to drive performance improvements, sustain innovation pipelines, accelerate individual and collective learning, and respond adaptively to dynamic market conditions (Martelo-Landroguez & Cegarra-Navarro, 2014).

Knowledge management has become a crucial strategic priority in the banking sector due to the significant impact it has on performance, innovation, and risk management outcomes. This is because expertise, information flows, and organizational learning all play vital roles in driving these outcomes. A significant amount of scholarly literature has been dedicated to examining knowledge management practices, capabilities, determinants, and impacts, particularly within the context of financial institutions. This section presents a synthesis of the key themes, theories, models, and empirical findings that have emerged from academic research on the management of knowledge-based resources and capabilities in the banking industry.

Foundational theories have conceptualized knowledge in banking as a strategically significant in-

tangible asset that can generate value creation and competitive advantages when effectively leveraged (Kok, 2007). Knowledge-based perspectives suggest that banks, as knowledge-intensive service firms, have the potential to generate economic value by effectively leveraging knowledge-based resources (Sharma & Goswami, 2009). Taxonomies are used to distinguish between different aspects of knowledge, including knowledge stocks, intra-organizational knowledge flows, and the strategic architecture necessary for knowledge management (Bolisani & Oltramari, 2012). Conceptual frameworks are used to categorize important dimensions of knowledge in the banking industry. These dimensions include human capital, structural capital, customer capital, process capital, innovation capital, and cultural capital (Al-Khoury et al., 2022). Developing rigorous measurement models to quantify multifaceted intangible knowledge assets has been a significant research focus (Cabrita & Bontis, 2008). Scholars have also delineated alternative knowledge strategies. They distinguish between codification approaches, which involve systematically storing knowledge, and personalization approaches, which focus on sharing knowledge between individuals (Hansen et al., 2005). In banking contexts, foundational theories have established knowledge-based resources as sources of strategic value creation.

One prominent area of research has focused on identifying the factors that contribute to effective knowledge management. This research stream often utilizes quantitative modeling and statistical analysis techniques to investigate these determinants. Several studies have examined the connections between knowledge sharing activities and different aspects of organizational culture (Li et al., 2013). These studies have discovered that flexibility and collaboration within an organization are factors that promote increased exchange of expertise. The cultivation of trust and the provision of motivational incentives, such as recognition, have been empirically shown to enhance the willingness to share expertise (Akhavan et al., 2015). Leadership styles also have an impact on the success of knowledge management, as evidenced by a positive correlation between transformational leadership approaches and knowledge management success (Noruzy et al., 2013). Yu et al. (2013) have found that the quality of IT infra-

structure, management support, and rewards play a crucial role in the successful implementation of knowledge management in the banking sector. Examining the multifactorial determinants provides insights into the necessary managerial actions required to foster organizational conditions conducive to smooth knowledge flows.

The investigation of outcomes related to knowledge management is currently a significant focus of research. This study aims to uncover performance connections through empirical analysis. Rigorous studies have shown that information sharing has a positive impact on banks' operational efficiency, risk management capabilities, and decision quality (du Plessis, 2005). Mondal and Ghosh (2012) revealed that knowledge management capabilities have a direct impact on financial performance in the banking industry. Scholars have established a connection between knowledge management practices and increased new product development and intellectual property creation within banks (Naqshbandi & Jasimuddin, 2018). In their study on small and medium enterprises (SMEs), Wei Chong et al. (2011) found that a knowledge sharing culture and the use of technology were factors that contributed to enhanced adaptive performance. The synthesis of the accumulating findings suggests that investing in expertise exchange and collective learning can provide tangible benefits in terms of performance, innovation, and adaptability for banks.

The objective of this research is to employ bibliometric techniques to examine publication trends, influential works, authorship networks, conceptual themes, and potential areas for future research in the domain of banking knowledge management over the course of the last four decades.

2. METHOD

This study utilizes a meticulous bibliometric approach to quantitatively examine patterns within the scholarly literature pertaining to knowledge management in the banking sector. Bibliometrics is a methodological approach that involves the application of statistical analysis to scholarly publications. Its purpose is to uncover insights regarding the historical progression, productivity trends, and

intellectual framework within a specific scientific domain (Ellegaard & Wallin, 2015). Bibliometric reviews utilize quantitative analysis of publication and citation data, authorships, and keywords to identify influential contributors, explore interrelationships among works, identify thematic concentrations, and trace evolutionary trajectories (Moral-Munoz et al., 2019). Bibliometric mapping is a valuable tool for knowledge-based disciplines such as banking, as it offers valuable guidance in navigating the extensive literature within the field.

The relevant publications corpus was methodically obtained from the Scopus database, which was chosen for its comprehensive coverage across multiple disciplines, comprising more than 90 million entries. A Boolean search strategy was implemented by utilizing the following query: (TITLE-ABS-KEY (“knowledge management”, “banking”) AND (LIMIT-TO (LANGUAGE, “English”))). The present study conducted a comprehensive search to identify articles written in the English language that encompassed titles, abstracts, or author-supplied keywords pertaining to the domains of knowledge management and banking. The selected time frame was restricted to the years 1994–2023 to concentrate on contemporary scholarly works. A total of 443 publications were obtained through this process to form the corpus.

Table 1. Document type for the 443 publications related to knowledge management in banking research

ID	Document type	Documents
1	Conference Paper	217
2	Article	171
3	Conference Review	32
4	Book Chapter	11
5	Review	8
6	Book	4
Total		443

The preponderance of studies are conference papers (Table 1), comprising 217 of 443 studies (or 49%). This indicates that conferences are a popular venue for researchers to present their most recent knowledge management in the banking industry findings. With 171 studies, journal articles are the second most prevalent document type. Together, conference papers and articles account for 88% of all research output on this topic, reflecting the emphasis on disseminating new research through

peer-reviewed publications. Comparatively fewer studies have been published as book chapters (11), conference reviews (32) reviews (8), and books (4). It appears that academic monographs have not been a focus of publication on this particular topic, based on the small number of books available. The prevalence of conference papers and journal articles indicates active ongoing research on knowledge management in banking, with researchers favoring these document types to disseminate their work via academic forums and channels.

The bibliographic data, which encompassed titles, authors, publication years, abstracts, citations, author keywords, and references, were extracted. The process of data preprocessing and cleansing was conducted in order to prepare the records for analysis. The authors imported the consolidated dataset into the VOSviewer software for the purpose of conducting bibliometric analysis and generating visualizations (van Eck & Waltman, 2017). Co-occurrence networks were constructed to visualize and analyze patterns of collaboration among authors, academic journals, institutional affiliations, and the productivity of different countries. Temporal algorithms were utilized to analyze and visualize the patterns of publication and citation trends over a specific time period. The process of high-frequency keyword clustering provided a clear understanding of the prominent conceptual domains. The combination of multidimensional indicators offers valuable insights into the changing structure and key themes that define current research on knowledge management in the banking sector.

3. RESULTS AND DISCUSSION

3.1. Trends in knowledge management in banking research and production

As shown in Table 2, research interest and output on knowledge management in banking have increased over time, albeit with some fluctuations. Three documents were published during the 1990s; this number decreased to zero from 1994 to 1999. Publication output began to increase in the 2000s; from 2000 to 2004, eight documents were published. The quantity of publications ex-

hibited a consistent upward trend over the course of the 2000s, culminating in a significant surge to 46 in 2009. There was a consistent level of publication output from 2009 to 2013, which suggests an emerging scholarly focus on this subject matter. From 2017 to 2021, the quantity of publications increased once more, following a decline from 2014 to 2016. The number of documents decreased to sixteen in 2022, but is anticipated to increase to seventeen in 2023.

Publication output increased over time, indicating a rise in knowledge management research activity in banking. The growth suggests this has become an important research area, presumably due to knowledge management’s relevance for improving banking operations and competitiveness.

Similarly, citation patterns increased, but with greater variability. There were significant surges in citations in 1999, 2004, 2008, and 2009, indicating that these publications were influential. The variances suggest that some studies were significantly more influential than others. From 2009 to 2021, citations remained significant but experienced annual fluctuations. The decline in citations in 2022 may be attributed to the fact that the recent publications have not yet accumulated a significant number of citations.

In the past three decades, publication and citation data indicate a growing research interest in knowledge management in banking. The output of publications increased consistently, while citations fluctuated more but rose overall. The ac-

cumulation of citations indicates that this topic has become a well-established research field, with active scholarship that is having an impact. Knowledge management research and practice are likely to continue assisting in enhancing banking performance.

3.2. Most cited works in banking knowledge management research

Fill (2012) has 17 citations, making it the most-cited publication (Table 3). This paper proposed the use of semantically annotated models to represent the impact of risks on business activities and analyze the effects of risks on processes. Tsui et al. (2014), with 35 citations, is the second most cited. It presented a knowledge-based algorithm for automatically extracting intellectual capital information from unstructured data, such as financial reports. Olavarría-Jaraba et al. (2018) comes in at number three with 32 citations. This study analyzed how market orientation, knowledge management, and relationship investment improve relationship quality and customer relationship propensity. Imran et al. (2016), with 38 citations, is the fourth-most-cited publication. Imran et al. (2016) investigated the indirect effects of knowledge management strategies on organizational change via organizational learning and change readiness.

The best papers proposed models, frameworks, and algorithms for extracting knowledge, assessing risks, identifying value, and promoting orga-

Table 2. Publications and citations of research on the knowledge management in banking

ID	Year	Documents	Citations	ID	Year	Documents	Citations
1	1994	2	18	15	2011	30	149
2	1997	1	74	16	2012	8	49
3	1999	1	512	17	2013	25	321
4	2000	1	79	18	2014	20	237
5	2001	3	69	19	2015	19	109
6	2002	2	26	20	2016	15	253
7	2003	8	30	21	2017	16	83
8	2004	4	315	22	2018	29	335
9	2005	8	173	23	2019	30	249
10	2006	11	43	24	2020	34	180
11	2007	13	92	25	2021	29	169
12	2008	25	535	26	2022	16	31
13	2009	46	555	27	2023	17	10
14	2010	30	265	Total		443	4961

Table 3. Top 20 most cited articles in banking knowledge management research

Rank	Research	Source title	Citations	DOI
1	Fill (2012)	ECIS 2012 – Proceedings of the 20th European Conference on Information Systems	17	https://aisel.aisnet.org/ecis2012/111
2	Tsui et al. (2014)	Expert Systems with Applications	35	10.1016/j.eswa.2013.08.029
3	Olavarria-Jaraba et al. (2018)	Journal of Retailing and Consumer Services	32	10.1016/j.jretconser.2018.01.011
4	Imran et al. (2016)	Journal of Organizational Change Management	38	10.1108/JOCM-07-2015-0130
5	Al-Abdullat and Dababneh (2018)	Benchmarking	29	10.1108/BIJ-06-2016-0081
6	Angée et al. (2018)	Communications in Computer and Information Science	28	10.1007/978-3-319-95204-8_51
7	Martelo-Landroguez and Martin-Ruiz (2016)	Journal of Service Theory and Practice	11	10.1108/JSTP-06-2014-0137
8	Andi Smart et al. (2003)	Journal of Knowledge Management	16	10.1108/13673270310492949
9	Nguyen (2020)	VINE Journal of Information and Knowledge Management Systems	32	10.1108/VJIKMS-02-2019-0019
10	Abdillah et al. (2018)	Journal of International Studies	18	10.14254/2071-8330.2018/11-2/10
11	Shih et al. (2010)	Journal of Intellectual Capital	171	10.1108/14691931011013343
12	Riaz et al. (2016)	International Symposium on Empirical Software Engineering and Measurement	16	10.1145/2961111.2962599
13	Holland (2010)	Journal of Financial Regulation and Compliance	42	10.1108/13581981011033961
14	Yeow et al. (2008)	Innovation and Knowledge Management in Business Globalization: Theory and Practice – Proceedings of the 10th International Business Information Management Association Conference	33	https://ibima.org/accepted-paper/user-acceptance-of-online-banking-service-in-australia/
15	Campanella et al. (2019)	Journal of Knowledge Management	12	10.1108/JKM-11-2017-0506
16	Seabrooke and Tsingou (2021)	Global Networks	27	10.1111/glob.12286
17	Tseng et al. (2021)	International Journal of Production Economics	25	10.1016/j.ijpe.2021.108244
18	Abualoush et al. (2018)	Interdisciplinary Journal of Information, Knowledge, and Management	102	10.28945/4088
19	Fuglerud (2011)	Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)	15	10.1007/978-3-642-21672-5_49
20	Nattapol et al. (2010)	World Academy of Science, Engineering and Technology	20	https://aisel.aisnet.org/iceb2010/20

nizational change. Numerous studies were of an empirical nature, consisting of surveys of banking professionals and analyses of financial reports. The most cited articles in the field of knowledge management in the banking industry reflect the primary research interests in this area.

3.3. Leading journals in banking knowledge management research

The Journal of Knowledge Management, which received 934 total citations throughout its 10 articles, with an average of 93.4 citations per article, is the most significant journal on this subject, according to Table 4. Journal of Intellectual Capital comes in

second place with 537 total citations from just 3 articles, a remarkable average of 179 citations per article. With 345 total citations from 3 articles and an average of 115 citations per article, The Strategic Management Journal comes in third place.

Journal of Knowledge Management, Journal of Intellectual Capital, Strategic Management Journal, International Journal of Technology Management, and Journal of Business Research are the top 5 most cited journals in the field. Despite only publishing 1–10 papers on this particular topic each, these journals have a significant impact, as seen by the total number of citations they have received, which ranges from 133 to 934.

Table 4. Top 20 journals for banking knowledge management research by total citations received

Rank	Source title	Citations	Documents	Citations per Document
1	Journal of Knowledge Management	934	10	93.40
2	Journal of Intellectual Capital	537	3	179.00
3	Strategic Management Journal	345	3	115.00
4	International Journal of Technology Management	290	1	290.00
5	Journal of Business Research	133	4	33.25
6	Interdisciplinary Journal of Information, Knowledge, and Management	126	6	21.00
7	Expert Systems with Applications	109	2	54.50
8	Business Process Management Journal	95	1	95.00
9	VINE	88	4	22.00
10	Decision Support Systems	85	1	85.00
11	International Journal of Manpower	81	1	81.00
12	International Journal of Bank Marketing	79	1	79.00
13	Knowledge Management Research and Practice	78	2	39.00
14	European Planning Studies	77	1	77.00
15	Experience and Knowledge Management in Software Engineering	77	1	77.00
16	Management Research News	76	1	76.00
17	VINE Journal of Information and Knowledge Management Systems	66	3	22.00
18	International Journal of Learning and Intellectual Capital	59	1	59.00
19	Development and Change	48	1	48.00
20	IEEE Transactions on Engineering Management	47	5	9.40

In terms of overall citations and citation rate per document, the top 5 journals significantly outperform the top 20 journals. The total number of citations for the Journal of Knowledge Management is over 15 times higher than for IEEE Transactions on Engineering Management, the 20th journal. Furthermore, the top journal has 93.4 more citations per document than the 20th journal, which has 9.4 more citations per document.

The most important journals for research on knowledge management in banking are the Journal of Knowledge Management, Journal of Intellectual Capital, and Strategic Management Journal. Their high rates and number of citations attest to their importance and influence in this field of study. Comparing the top 20 journals, the top 5 journals definitely have a greater influence.

3.4. Most productive authors in banking knowledge management research

Odeh M. from the University of the West of England in the United Kingdom has the most pub-

lications on this topic (Table 5), with five. Eze U.C. from Multimedia University in Malaysia comes in second with four publications. Figueiredo E. of Guarda Polytechnic Institute in Portugal, Klimontowicz M. of University of Economics in Katowice in Poland, and Martelo-Landroguez S. of Universidad de Sevilla in Spain are tied for third place with four documents each.

There is a preponderance of European authors among the top five, with three of the five coming from universities in the United Kingdom, Portugal, and Spain. The remaining two are from Malaysian universities. In the top 10, Mexico and United Arab Emirates are also represented through authors Centeno E. from Tecnológico de Monterrey and Mehrotra A. from Amity University respectively.

European nations, particularly the United Kingdom, Portugal, and Spain, have produced the most research on knowledge management in banking based on this dataset. There are also notable contributions from Malaysian authors. Among the world's leading researchers on this topic, representation from other regions is presently more limited.

Table 5. The 20 most cited banking knowledge management researchers

Rank	Author	Documents	Affiliation	Country
1	Odeh, M.	5	University of the West of England	United Kingdom
2	Eze, U.C.	4	Multimedia University	Malaysia
3	Figueiredo, E.	4	Guarda Polytechnic Institute	Portugal
4	Klimontowicz, M.	4	University of Economics in Katowice	Poland
5	Martelo-Landroguez, S.	4	Universidad de Sevilla, Seville	Spain
6	Mehrotra, A.	4	Amity University	United Arab Emirates
7	Pais, L.	4	University of Coimbra	Portugal
8	Thambiah, S.	4	Multimedia University	Malaysia
9	Cambra-Fierro, J.J.	3	University Pablo de Olavide	Spain
10	Cegarra-Navarro, J.G.	3	Universidad Politécnica de Cartagena	Spain
11	Centeno, E.	3	Tecnológico de Monterrey	Mexico
12	Cepeda-Carrión, G.	3	Universidad de Sevilla	Spain
13	Chong, C.W.	3	Multimedia University	Malaysia
14	Deniz, O.	3	Yapi Kredi Technology	Turkey
15	Do Rosário Cabrita, M.	3	Universidade Nova de Lisboa	Portugal
16	Goulding, J.S.	3	University of Salford	United Kingdom
17	Ivan, M.V.	3	Oil and Gas University of Ploiești Romania	Romania
18	Kridan, A.B.	3	University of Salford	United Kingdom
19	Lai, K.P.	3	Multimedia University	Malaysia
20	Mónico, L.	3	University of Coimbra	Portugal

3.5. Most influential countries in banking knowledge management research

The United States stands as the prominent leader in the field of knowledge management research in the banking sector, boasting an impressive 858 citations and 31 documents. This exceeds the number of citations of the next highest country, the United Kingdom, which had 794 citations and 34 documents, by more than double. After the top two countries, there is a noticeable decline in citations and documents for Portugal, which ranks third with 451 citations and 13 documents. The top 5 countries include Taiwan, which has 420 citations and 13 documents, and Spain, with 376 citations and 18 documents.

Table 6 illustrates the prominent role of the United States and United Kingdom in conducting research on knowledge management in the banking sector. Additionally, Portugal, Taiwan, and Spain have emerged as noteworthy contributors in this field. The significant disparity between the top two countries and the remaining three in the top five highlights the dominant position maintained by the United States and the United Kingdom. Although several other countries managed to secure a spot in the top 20, it is important to note that their output was significantly smaller in comparison, leaving them considerably behind the productivity levels of the leading nations. This statement implies that the United States and the United Kingdom are currently the primary centers of research on this topic.

Table 6. Research output in banking knowledge management for the top 20 nations according to citations

Rank	Country	Documents	Citations	Rank	Country	Documents	Citations
1	United States	31	858	11	Germany	8	188
2	United Kingdom	34	794	12	Iran	11	182
3	Portugal	13	451	13	Italy	14	167
4	Taiwan	13	420	14	United Arab Emirates	14	124
5	Spain	18	376	15	India	21	93
6	Australia	18	368	16	Pakistan	12	86
7	Greece	9	363	17	France	11	82
8	Canada	6	303	18	Indonesia	22	79
9	Jordan	14	202	19	China	13	78
10	Malaysia	39	199	20	Mexico	4	70

3.6. Most influential affiliations

Multimedia University is at the top of the list, having published 13 documents (Table 7). This signifies their significant influence in the field of research on knowledge management in the banking sector. Universidad de Sevilla and Amity University follow closely behind, with 8 and 7 documents respectively. The prominent inclusion of these universities in the top 5 underscores the noteworthy contributions made by institutions in Malaysia and Spain to the field of knowledge management research.

Upon examining the top 20 affiliations, it is evident that there is a diverse representation of universities from various countries such as Jordan, Romania, the UK, Italy, Mexico, Iran, Indonesia, and Tunisia. However, it is worth noting that both Malaysia and Spain have a notable presence in the top 20, with each country being represented by four universities. The University of Malaya, ranked 8th, and Universiti Teknologi Malaysia, ranked 25th, from Malaysia, showcase the country's prowess in this particular research field. In addition, it is worth noting that the top 20 list includes two universities from Spain, namely Universidad Politecnica de Cartagena and Universidad Pablo de Olavide.

Multimedia University from Malaysia is at the forefront of knowledge management research in the banking sector, as evidenced by the significant number of published documents. Spanish institutions are also prominently represented in the top 20 rankings. However, the inclusion of universities from various countries suggests a growing global interest in these rankings.

However, beyond the top five, research output appears to be more evenly distributed among institutions.

3.7. Keyword analysis

“Knowledge Management” is the most frequently occurring keyword, appearing 343 times (Table 8). The central topic being studied in research on banking is “knowledge management,” as indicated. The frequent use of this term highlights the significance of effectively managing knowledge as a strategic resource within the banking industry. The keyword “Banking” is the second most common, appearing 63 times. In addition to the terms “Banking Industry,” “Banking Sectors,” and “Banking Services,” there is a notable focus on the application of “knowledge management” within the banking domain. This statement emphasizes that banks are actively exploring strategies to utilize knowledge to obtain a competitive edge. “Intellectual Capital” is the fourth most frequently used keyword, appearing 38 times. This concept highlights the importance of employees’ knowledge and expertise. The study of “intellectual capital” demonstrates a clear emphasis on the management and quantification of the human knowledge assets within banks. It is recognized that the knowledge of workers is a key driver of performance. “Competition” is mentioned 37 times, making it the fifth most frequently used keyword. Research is currently investigating how banks can utilize “knowledge management” to maintain their competitiveness, along with other concepts such as “Competitive Advantage” and “Sustainable Competitive Advantages”. Knowledge is widely recognized as a key factor that distinguishes winners from losers in the marketplace.

Table 7. Top 20 affiliations in terms of significant contributions

Rank	Affiliation	Documents	Rank	Affiliation	Documents
1	Multimedia University	13	11	The Hong Kong Polytechnic University	4
2	Universidad de Sevilla	8	12	Universidad Politecnica de Cartagena	4
3	Amity University	7	13	Universidade de Coimbra	4
4	University of the West of England	6	14	Instituto Politecnico da Guarda	4
5	Universitatea Petrol-Gaze din Ploiesti	6	15	University of Economics in Katowice	4
6	The University of Jordan	6	16	Universidade Nova de Lisboa	4
7	Bucharest University of Economic Studies	6	17	Faculdade de Psicologia e de Ciências da Educação	4
8	Universiti Malaya	5	18	Univerzita Hradec Králové	3
9	Bina Nusantara University	5	19	Universitã IULM	3
10	Universitatea Dunarea de Jos din Galati	4	20	Goethe-Universität Frankfurt am Main	3

Table 8. Top 20 search terms for the study of bank knowledge management

Rank	Keyword	Occurrences	Rank	Keyword	Occurrences
1	Knowledge Management	343	11	Commerce	27
2	Banking	63	12	Information Management	22
3	Banking Industry	41	13	Information Technology	22
4	Intellectual Capital	38	14	Human Resource Management	21
5	Competition	37	15	Banking Sector	20
6	Knowledge Based Systems	34	16	Finance	20
7	Surveys	34	17	Information Systems	19
8	Sales	32	18	Industry	18
9	Electronic Commerce	31	19	Knowledge Acquisition	18
10	Banking Sectors	30	20	Data Mining	17

The keyword analysis reveals a focus on primary research interests centered around the strategic management of knowledge, intellectual capital, and information within the banking industry. The objective is to enhance competitiveness, efficiency, innovation, and customer service. The examination of both the human and technological aspects of managing knowledge assets is crucial for banks to achieve success.

3.8. Evolution of research on bank knowledge management

Prior to 2010, knowledge management research in banking was primarily concerned with foundational topics such as knowledge sharing, knowledge retention, and fundamental applications of knowledge management in banking operations. Examining how knowledge management could support functions such as training, process documentation, and organizational learning to increase efficiency and productivity was the subject of numerous studies.

From 2010 to 2015, research expanded to include a greater variety of complex topics due to technological and analytic advances. Studies analyzed the social and human aspects of knowledge management and their effects on performance. Other papers investigated novel technology applications for knowledge management in banking, such as semantic tools, agent-based systems, social computing, and smartphones.

Since the year 2020, prominent knowledge management research topics have been aligned with emerging banking priority areas, such as digital transformation, sustainability, and advanced technologies. Studies have looked at how knowl-

edge management, digital banking adoption, process automation, and data-driven decision making contribute to sustainable development. In addition, there has been a rise in interest in intellectual capital management and the utilization of AI, machine learning, and big data analytics to improve knowledge flows and risk management.

Over the past three decades, knowledge management research in the banking industry has expanded to include a broader range of complex topics while adapting to new industry trends and technologies. Recent research illustrates the digital, sustainable, and data-driven future priorities of institutions.

“Customer Relationship Management in Banking” comprises Cluster 1 (Red). This cluster centers around keywords pertaining to the management of customer relationships, satisfaction, and service within the banking sector. It encompasses terms such as “customer relationship management,” “customer satisfaction,” “marketing,” “sales,” and “retail banking.” This proposes a study on the potential use of knowledge management by banks to enhance customer engagement.

“Knowledge Management for Competitive Advantage” is Cluster 2 (Green). The cluster highlights keywords such as “competitive advantage,” “innovation,” “knowledge sharing,” and “knowledge transfer,” suggesting a strong emphasis on the role of knowledge management in enabling banks to gain strategic advantages over their competitors. Research typically focuses on examining knowledge processes that have the potential to enhance innovation and facilitate organizational learning.

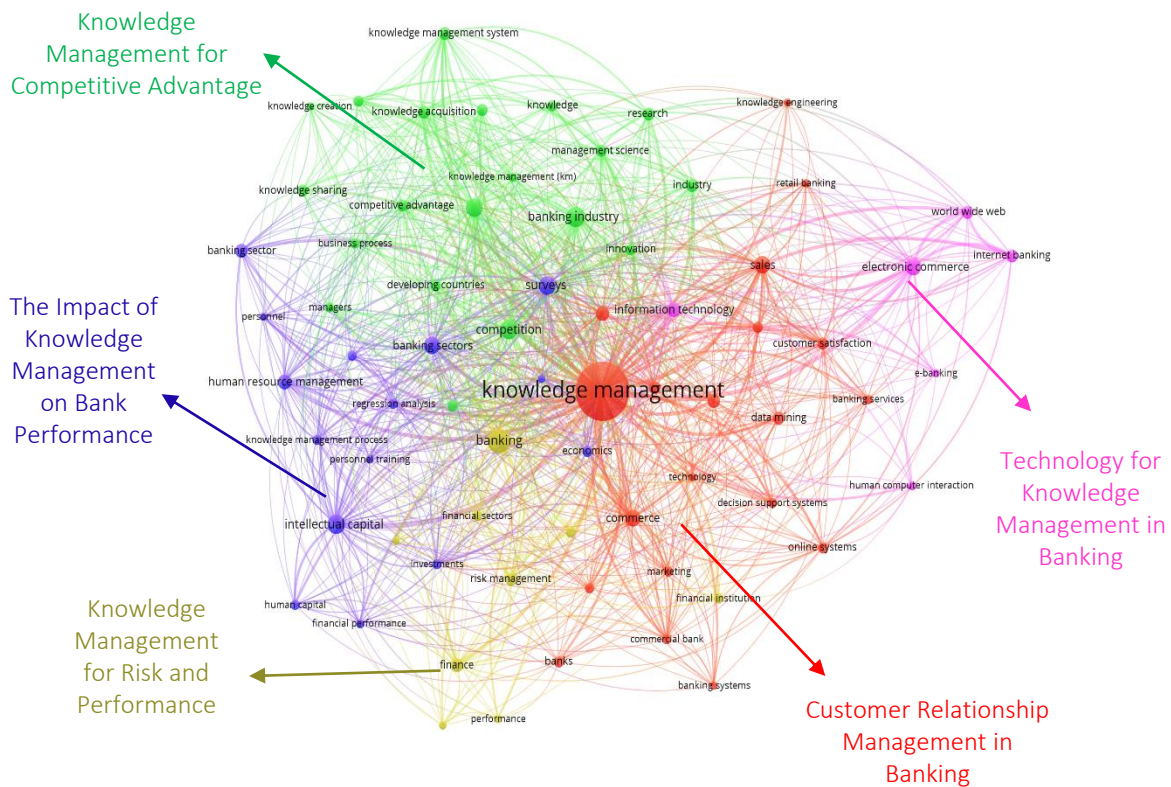


Figure 1. Keyword co-occurrence network in bank knowledge management publications

“The impact of knowledge management on bank performance” is Cluster 3 (Blue). This cluster focuses on analyzing the relationship between knowledge management strategies and measurable bank outcomes, such as business performance, financial performance, investments, and organizational performance. Studies typically aim to assess the contribution of human capital and intellectual capital to performance.

“Knowledge Management for Risk and Performance” comprises Cluster 4 (Yellow). The cluster appears to revolve around the topics of risk assessment, risk management, organizational learning, and performance. It explores how banks utilize knowledge to improve their performance while effectively managing risks. Research likely explores knowledge management approaches that support data-driven decision making.

“Technology for Knowledge Management in Banking” is Cluster 5 (Purple). The technology focus is evident in this cluster, as indicated by the presence of terms such as “e-banking,” “internet banking,” and “human-computer interaction.”

Studies likely focus on examining how information systems, artificial intelligence, and various other technologies can facilitate and enhance the implementation of effective knowledge management practices within the banking industry.

The clusters showcase research interests in the application of knowledge management across various banking functions, ranging from customer service to risk mitigation. The studies aim to assist banks in enhancing their competitive advantage, performance, and innovation by leveraging strategic knowledge processes and technologies.

3.9. Future of research trends on bank knowledge management

This section will introduce three potential future research avenues on the topic of finance knowledge management. The specific research subjects are as follows (Table 9):

- 1) The role of knowledge management in ensuring business continuity during pandemics, including an analysis of how banks can leverage

knowledge systems and processes to facilitate remote work and knowledge retention during disruptions.

- 2) Risk management by means of knowledge management systems, with a focus on risk identification, evaluation, and mitigation.
- 3) Knowledge-based decision support systems in banking, examining how knowledge-based systems can enhance human decision-making and adapt to changing conditions.

The role of knowledge management in ensuring business continuity during pandemics: The significance of this research topic on the role of knowledge management in ensuring business continuity during pandemics cannot be overstated. How banks can leverage knowledge management systems and processes to enable remote

work, knowledge retention strategies to preserve organizational knowledge during disruption, balancing knowledge sharing and information security, identifying tacit knowledge at risk, and learning from pandemics to build resilience are the main topics of the research questions. Assefa et al. (2014), Strønen (2020), and Chatzoglou and Vraimaki (2009) demonstrate the significance of knowledge exchange in banks, particularly during financial crises, as well as how digitalization can facilitate knowledge management. These provide an essential foundation for future research on the function of knowledge management in ensuring the continuity of banking operations.

1. Risk management through knowledge management systems: This topic of risk management through knowledge management systems is crucial for the banking industry. The research questions focus on how knowledge

Table 9. Three possible prospective research directions for bank knowledge management

Research Topic	Research Questions	Key Studies
The role of knowledge management in ensuring business continuity during pandemics	<ol style="list-style-type: none"> 1. How can banks leverage knowledge management systems and processes to enable remote work and operations during pandemics? 2. What knowledge retention strategies can help banks preserve organizational knowledge during times of disruption? 3. How can banks balance knowledge sharing and information security during pandemics? 4. What types of tacit knowledge are most at risk during pandemics and require explicit retention efforts? 5. How can lessons learned during pandemics be captured and incorporated into knowledge management systems to build organizational resilience? 	Assefa et al. (2014) – Proposing a knowledge management system architecture to promote knowledge sharing among employees; Strønen (2020) – Digitalization and knowledge management in large Norwegian banks and insurance companies; Chatzoglou and Vraimaki (2009) – Knowledge-sharing behavior of bank employees in Greece
Risk management through knowledge management systems	<ol style="list-style-type: none"> 1. How can knowledge management systems help in identifying, assessing, and mitigating various banking risks? 2. What are some effective ways for knowledge codification, retention and transfer especially related to risk management? 3. How can knowledge management enable proactive risk management compared to reactive approaches? 4. What individual or organizational factors inhibit knowledge sharing on risks? 5. How can lessons learned from risk events be captured and incorporated into knowledge systems? 	Fill (2012) – Analyzing the effects of risks on business processes using semantic annotations; Martelo-Landroguez and Martin-Ruiz (2016) – Uncontrolled counter-knowledge: its effects on knowledge corridors; Holland (2010) – Banks, knowledge and crisis: A case of knowledge and learning failure
Knowledge-based decision support systems in banking	<ol style="list-style-type: none"> 1. How can knowledge-based systems augment human decision making in banks? 2. What techniques like case-based reasoning, expert systems, neural networks etc. are most relevant for banking decisions? 3. How to balance automation through knowledge systems with human expertise and judgment? 4. How to ensure transparency in knowledge-based AI systems for banking decisions? 5. How can knowledge systems adapt to changing banking regulations, economic conditions etc.? 	Sen and Rajagopal (2020) – Design of Knowledge Base Model for Home Loan; Rao and Nayak (2017) – Enterprise Ontology model for tacit knowledge externalization; Thambiah et al. (2009) – An empirical analysis on Islamic retail banking adoption in Malaysia

management can aid in risk identification, assessment, and mitigation, effective approaches for risk-related knowledge codification, retention, and transfer, enabling proactive risk management through knowledge, barriers to risk knowledge sharing, and capturing lessons learned from risk events in knowledge systems. Studies by Fill (2012), Martelo-Landroguez et al. (2016), and Holland (2010) demonstrate the relationship between knowledge and bank risk management, with knowledge failures potentially contributing to risk issues and financial crises. These serve as important foundations for future research into the function of knowledge management in bank risk management.

2. Knowledge-based decision support systems in banking: Given the increasing complexity

of banking operations, this topic on knowledge-based decision support systems is significant. The research questions center on how knowledge-based systems can augment human decision-making in banks, the most applicable techniques for banking decisions, balancing knowledge system automation with human expertise, ensuring transparency in knowledge-based AI systems, and adapting knowledge systems to changing circumstances. Sen and Rajagopal (2020), Rao and Nayak (2017), and Thambiah and Santhapparaj (2011) demonstrate the application potential of knowledge systems and artificial intelligence in banking operations. These provide crucial foundations for future research on knowledge-based decision support systems for the banking industry.

CONCLUSION

The purpose of this study was to analyze publication trends, influential works, authorship networks, conceptual themes, and future research directions in the field of knowledge management in the banking sector over the past three decades. After conducting a quantitative analysis of 443 scholarly publications sourced from the Scopus database, a number of significant findings were revealed. In terms of publication trends, it is worth noting that research output and citations on this topic have shown a consistent upward trajectory since the 1990s. This indicates a clear and growing academic interest in the subject matter. The most frequently cited publications have put forth various models and frameworks that aim to effectively manage knowledge, evaluate risks, and facilitate organizational change. Prolific authors were primarily based in European countries such as the UK, Portugal, and Spain, although Malaysia also made noteworthy contributions. The *Journal of Knowledge Management*, *Journal of Intellectual Capital*, and *Strategic Management Journal* were identified as the most influential publication venues.

The results indicate that there are prominent research interests in the strategic management of knowledge for competitive advantage, measuring intellectual capital, examining the influence of knowledge management on bank performance, exploring customer relationship management, and investigating knowledge management technologies. The keyword analysis revealed a strong emphasis on fundamental concepts such as knowledge sharing, innovation, risk management, and information systems. The research topics evolved in response to emerging industry trends such as digital transformation, sustainability, automation, and data analytics. Future directions include the exploration of the role of knowledge management in guaranteeing continuity during disruptions, the implementation of risk management strategies through knowledge systems, and the utilization of knowledge-based decision support.

This bibliometric review offers a thorough quantitative analysis of the literature on knowledge management in the banking sector. The findings provide valuable insights that can inform future research by identifying influential works, active scholars, core themes, knowledge gaps, and potential new directions to explore. However, it is important to note that the analysis is limited to sources that have been indexed in the Scopus database and is further restricted to publications written in the English language. Further reviews should consider exploring additional databases, including non-English publications, and incorporating practitioner perspectives. It would also be beneficial to explore other disciplines that

are relevant to banking knowledge management. Overall, this study provides a valuable reference that consolidates the existing research on managing knowledge resources in the banking sector, highlighting its current state and evolution.

AUTHOR CONTRIBUTIONS

Conceptualization: Nguyen Minh Sang.

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Methodology: Nguyen Minh Sang.

Software: Nguyen Minh Sang.

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Writing – review & editing: Nguyen Minh Sang.

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