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The Big Data Revolution: A Comprehensive Bibliometric Study on Management and Organizational Development with a Focus on Web of Science

Büyük Veri Devrimi: Web of Science Odaklı Yönetim ve Kurumsal Gelişim Üzerine Kapsamlı Bir Bibliyometrik Çalışma

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Abstract

The rapid advancement of technology has accentuated the pivotal role of data, particularly with the emergence of big data across various sectors. This phenomenon has garnered substantial interest among researchers, practitioners, and decision-makers alike, prompting a concerted effort to elucidate the implications of big data on organizational dynamics and managerial strategies. This research undertakes a comprehensive review of the big data literature spanning from 2011 to 2023, aiming to dissect its multifaceted influences on management paradigms and organizational behaviour. Specifically, it scrutinizes the impact of big data on decision-making processes, organizational restructuring, and broader transformative initiatives. Additionally, the study explores how strategies, organizational structures, and cultural norms associated with big data utilization contribute to reshaping the organizational landscape. At its core, this investigation seeks to unravel the transformative effects of big data on organizational evolution. A nuanced understanding of the intricate interplay between big data and organizational strategies, structures, and cultures is imperative for deciphering the mechanisms driving these transformations. The insights garnered from this inquiry are poised to inform both academic scholarship and practical endeavours, laying the groundwork for future research endeavours and strategic planning initiatives. Critical to this discourse is an appraisal of the potential benefits, risks, and sector-specific ramifications of big data analytics. Furthermore, a discerning analysis of the impact of big data adoption on organizational cultures promises invaluable insights for industry leaders. In summation, this study represents a significant scholarly endeavour aimed at deepening our comprehension of the implications of big data for organizational transformation, thereby shedding light on pertinent research avenues.

Keywords: Big data, management strategies, organizational dynamics, bibliometric analysis.

Öz

Teknolojinin hızlı ilerleyişi, özellikle de farklı sektörlerde büyük verinin ortaya çıkmasıyla birlikte, verinin kilit rolünü vurgulamıştır. Bu kavram, araştırmacılar, uygulamacılar ve karar

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vericiler arasında önemli bir ilgi uyandırmıştır. Bu durum, büyük verinin organizasyonel dinamikler ve yönetimsel stratejiler üzerindeki etkilerini aydınlatmaya yönelik kararlı bir çaba başlatmıştır. Bu araştırma, 2011'den 2023'e kadar uzanan büyük veri literatürünün kapsamlı bir değerlendirmesini yaparak, büyük verinin yönetim paradigmaları ve organizasyonel davranışlar üzerindeki çok yönlü etkilerini incelemeyi amaçlamaktadır. Özellikle, büyük verinin karar alma süreçleri, organizasyonel yeniden yapılanma ve daha geniş dönüşümsel girişimler üzerindeki etkilerini gözden geçirmektedir. Ayrıca, büyük veri kullanımıyla ilişkilendirilen stratejilerin, organizasyonel yapıların ve kültürel normların, organizasyonel peyzajı yeniden şekillendirmede nasıl katkı sağladığını keşfetmesi amaçlanmıştır. Bu araştırmanın temelinde, büyük verinin örgütsel evrim üzerindeki dönüştürücü etkilerini çözümlemek yer almaktadır. Büyük veri ile örgütsel stratejiler, yapılar ve kültürler arasındaki karmaşık etkileşimin nüanslı bir şekilde anlaşılması, bu dönüşümleri yönlendiren mekanizmaları çözümlemek için hayati öneme sahiptir. Bu araştırmadan elde edilen içgörüler, akademik çalışmaları ve pratik uygulamaları bilgilendirerek, gelecekteki araştırma çabalarının ve stratejik planlama girişimlerinin temelini oluşturacaktır. Bu tartışma için kritik olan, büyük veri analitiğinin potansiyel faydaları, riskleri ve sektöre özgü sonuçlarıdır. Ayrıca, büyük veri kullanımının organizasyonel kültürler üzerindeki etkilerinin dikkatli bir şekilde analizi, endüstri liderleri için değerli içgörüler sunmaktadır. Sonuç olarak, bu çalışma, büyük verinin organizasyonel dönüşüm üzerindeki etkilerini derinleştirme amacı taşıyan önemli bir akademik girişimi temsil etmektedir.

Anahtar Kelimeler: Büyük veri, yönetim stratejileri, örgüt dinamikleri, bibliyometrik analiz.

Introduction

In today's rapidly evolving technological landscape, the exponential growth of digital data has led to an unprecedented accumulation of both structured and unstructured information. This era, often referred to as the 'datafication' era, highlights the pervasive nature of data dissemination across various digital platforms. Central to this paradigm shift is the concept of big data, which carries significant implications for management and organizational advancement. With growing scholarly and organizational interest, the rise of big data has spurred intensive scrutiny and analysis, necessitating a thorough examination of its consequences. This article embarks on an academic exploration, tracing the scholarly trajectory of big data from 2011 to 2023, with a keen focus on its impacts on management and organizational progress. Leveraging bibliometric analysis methodologies, this study aims to offer a comprehensive overview of the literature landscape, elucidating the transformative effects of big data on decision-making processes, organizational change, and overall transformation endeavors.

The escalating volume of data presents a concomitant array of challenges and opportunities for organizations, catalysing an imperative to extract actionable insights and value from this data deluge. Across various sectors, from banking to e-commerce, organizations are increasingly leveraging big data insights to inform strategic decision-making and augment operational efficiencies. Moreover, the integration of big data into organizational processes necessitates a critical re-evaluation of traditional management paradigms, underscoring the imperative for scholars and practitioners alike to navigate the evolving synergies between data analytics and managerial decision-making. This necessitates not only a technological adaptation but also a profound cultural and strategic realignment within organizations to remain agile and competitive in an ever-evolving landscape.

Despite the acknowledged potential of big data in enhancing decision-making efficacy, organizations grapple with the pragmatic translation of analytics into actionable strategies. This article seeks to unravel the organizational perspective on big data and its applications, shedding light on the emergent managerial paradigms and cultural shifts catalysed by the data revolution. As we traverse the theoretical underpinnings of big data, its constituent components, strategic imperatives, and analytical capabilities, it becomes

evident that big data represents not merely a technological evolution but a paradigmatic revolution necessitating a holistic reconfiguration of organizational structures and strategies. The trajectory of organizations in this data-centric milieu hinges upon their ability to adeptly navigate and integrate big data analytics into their operational fabric, fostering a symbiotic relationship between data-driven insights and organizational efficacy.

A Comprehensive Phenomena: Big Data

The significant role of big data in reshaping contemporary business paradigms is increasingly evident as organizations pivot towards data-centric strategies, recognizing its essential contribution to informed decision-making processes (Mayer-Schönberger & Cukier, 2013). The digital era, marked by the proliferation of the Internet of Things (IoT) and increased online interactivity, has led to an unprecedented surge in data generation. Effectively harnessing this vast reservoir of data can reveal intricate patterns and insights that traditional analytical methods may overlook (Kitchin, 2014). Key sectors such as e-commerce, finance, and healthcare serve as prime examples of utilizing big data's transformative potential. E-commerce giants employ sophisticated analytics to decipher consumer behaviours, enabling targeted marketing campaigns and personalized user experiences (Chen, Chiang, & Storey, 2012). Likewise, in finance, big data tools play a crucial role in forecasting market fluctuations, conducting risk assessments, and developing robust investment strategies, enhancing economic resilience (Zikopoulos & Eaton, 2011). The scope of big data's applicability continues to expand rapidly, driven by ongoing technological advancements and the evolution of data analytics algorithms. Emerging fields like augmented reality and artificial intelligence are poised to derive significant benefits from insights gleaned through big data analytics. in an era characterized by heightened interconnectivity within the business landscape, real-time analysis of extensive datasets is crucial for maintaining a competitive edge (Wang, Ramamurthy, & Wen, 2016). Overall, the undeniable role of big data in shaping the future of businesses underscores its indispensable nature. Its current manifestations highlight its transformative potential, while its future trajectory suggests a landscape where big data becomes inseparable from strategic business imperatives (Provost & Fawcett, 2013).

The advent of big data has catalysed a significant paradigm shift in business and management, leading to transformative managerial processes and innovative strategies (Akter et al., 2016). This phenomenon has attracted considerable attention in the contemporary organizational landscape due to its potential to redefine traditional managerial frameworks and business processes. Ardito et al. (2019) conducted a comprehensive bibliometric analysis aimed at evaluating the landscape of research on big data analytics within the realm of business and management. Their study provided insights into the trends, patterns, and key contributors in this rapidly evolving field, shedding light on the growing importance of big data in shaping decision-making processes and strategic initiatives in organizations worldwide.

Scholarly literature offers various interpretations of big data, but a common thread revolves around its defining characteristic: its vast volume, setting it apart from conventional datasets (Wamba et al., 2015). in today's digital era, data complexity has increased, with real-time data streams originating from diverse sources such as IoT devices, social media platforms, and smart sensors. This proliferation not only results in a significant increase in data volume but also amplifies its velocity, variety, and modes of acquisition (Kitchin, 2014). Big data manifests as structured, semi-structured, or unstructured datasets, each presenting unique challenges and opportunities for analysis and utilization (Gahi et al., 2016; Sheng et al., 2017). In organizational contexts, adept

navigation of this complex data landscape becomes imperative. As Sheng et al. (2017) aptly noted, big data encompasses a vast array of data types from heterogeneous sources, offering inherent value to businesses by driving operational efficiencies and enhancing decision-making processes. Xu and Yu (2019) undertook a thorough bibliometric analysis covering the period from 2009 to 2018 to examine the trajectory of big data research. By analyzing publication trends, citation patterns, and thematic developments, their study offered valuable insights into the evolution of big data research over the past decade, highlighting emerging areas of interest and identifying gaps for future exploration.

By harnessing the power of big data, organizations can discern non-linear patterns, derive actionable insights, and strategically position themselves in competitive markets (Sheng et al., 2017, p. 98). Moreover, the integration of big data necessitates a re-evaluation of traditional management theories, prompting scholars and practitioners alike to explore synergies between data analytics and managerial decision-making processes (Mayer-Schönberger & Cukier, 2013). The advent of big data has undeniably reshaped business and management landscapes, presenting both challenges and opportunities for organizations. Therefore, cultivating a comprehensive understanding of big data's implications for organizational success and sustainable growth is imperative.

Contemporary discussions on big data identify several critical dimensions that differentiate it from conventional data paradigms. McAfee and Brynjolfsson (2012), alongside Laney (2001), emphasize three primary differentiators: volume, velocity, and variety, forming a foundational framework in big data discourse (Chen et al., 2012). Additionally, Oracle (2012) and Forrester (2012) underscore the business value inherent in big data, while White (2012) introduces the dimension of veracity, contributing to a comprehensive framework. Further enriching this discourse, Seddon and Currie (2017) introduce variability and visualization, offering a nuanced seven-dimensional perspective on big data. Volume, as a hallmark of big data, encapsulates the vast magnitude of data collected from diverse sources (O'Leary, 2013). for example, the daily accumulation of substantial data through digital platforms like e-commerce sites, social media, and sensor networks highlights the volume facet of big data (Lee, 2017).

Velocity pertains to the speed of data collection and dissemination, crucial for real-time or near-real-time analysis (Russom, 2011). Organizations can integrate real-time data analysis with traditional temporal data slices, ensuring precision, particularly in time-sensitive sectors like banking and logistics (Demchenko et al., 2013; Gartner, 2013). Variety underscores the diversity in data structures, emphasizing the multitude of sources from which big data can be sourced, whether structured or unstructured (George et al., 2016). This diversity enables synthesizing insights from heterogeneous data sources and formats (Russom, 2011; O'Leary, 2013). Value revolves around extracting actionable insights from the extensive volume of big data, enhancing decision-making processes and organizational strategies (Kaur & Sood, 2017). Veracity concerns the credibility, consistency, accessibility, and transparency of big data, essential in the digital milieu to ensure data quality and security (Demchenko et al., 2013; Marr, 2014). Liu et al. (2020) conducted an in-depth bibliometric analysis to provide a comprehensive overview of the research landscape in the field of big data. Their study not only identified influential authors, institutions, and countries but also explored thematic clusters and interdisciplinary connections, offering a holistic understanding of the multifaceted nature of big data research and its implications across various domains. Sahoo (2022) conducted a meticulous bibliometric analysis focusing on research pertaining to big data analytics in the manufacturing sector, within the broader context of business management. By synthesizing existing literature and identifying key research themes, Sahoo's study

provided valuable insights into the role of big data analytics in enhancing operational efficiency, optimizing supply chain processes, and driving innovation in the manufacturing industry variability, primarily associated with unstructured datasets, implies dynamic data interpretation, varying based on source or context (Seddon & Currie, 2017). Visualization emphasizes the interpretive power of data through advanced computational methodologies like artificial intelligence and machine learning, facilitating exploratory data analysis, informed decision-making, and effective communication (Chiera & Korolkiewicz, 2017). These seven dimensions offers comprehensive lens to comprehend and harness the potential of big data in diverse organizational contexts. in the rapidly evolving technological landscape, the competitive essence of the business world is undergoing transformative shifts, driven by vast troves of data harvested from myriad sensors (Ebner et al., 2014). However, merely accessing this data is insufficient; strategic positioning within a business framework to extract tangible value is imperative (Drucker, 1999). The necessity for big data digital strategies in the corporate realm extends beyond exploiting data for effectiveness to gaining a competitive edge. Embracing the promise of big data demands a cultural metamorphosis aligning with this new information epoch, transcending mere technological pivot (Schein, 1985). in dynamic market conditions, organizations must create adaptive structures to harness sustainable strategic value, necessitating continuous recalibration, integration, and reconfiguration of resources (Karimi & Walter, 2015).

Adapting with consciousness and efficacy, as elucidated by Mintzberg's insights on decision-making processes, becomes crucial. Big data represents a potent force shaping the future trajectory of businesses, empowering organizations to craft proactive strategies and swiftly adapt to market changes (Senge, 1990). Leveraging big data across diverse sectors, including retail, logistics, finance, and defence, highlights its strategic imperative in domains like strategic planning and customer profiling (Anandarajan et al., 2012). Effective leadership is pivotal in harnessing data-driven strategic insights and fostering intra-organizational communication and teamwork (Yukl, 2010). in summary, the upheaval brought about by big data in the business domain spans organizational, strategic, and cultural facets, necessitating a comprehensive approach encompassing technological, organizational, and strategic adaptability for businesses to capitalize on emerging opportunities.

Methodology

The evolution of the concept of big data within the literature of organization and management, and its integration into the business world, has become a subject of considerable interest. With rapid technological advancements in the modern era, the significance of big data in various aspects of business, from decision-making processes to organizational transformations, has become increasingly apparent. This study aims to comprehensively explore the trajectory of the big data concept within the organization and management literature. to methodically structure this research, we have utilized bibliometric analysis technique. Bibliometric analysis was employed to quantitatively assess the development of the big data concept in organization and management literature. Through this analysis, we examined the frequency of publications on big data, identified key studies contributing to the literature, highlighted prominent authors in the field, and assessed the citations garnered by these authors.

Furthermore, this analysis helped identify the most active academic journals publishing research on big data and determine the most used terms related to big data in the business and management fields. This analysis delved into the advantages big data offers in organizational transformation, its role in decision-making, potential risks

associated with it, and the sectors where its influence is most pronounced. Employing these two methodological approaches in tandem enables a comprehensive evaluation of the place of big data in organization and management literature, both quantitatively and qualitatively. The research questions for this study were meticulously crafted to provide a thorough understanding of the role and implications of big data in organization and management literature. for the bibliometric analysis, our inquiries were primarily quantitative and aimed to sketch a broad landscape of the literature:

- In which years and how often has research on big data been produced in the field of business and management?
- Which studies have had the most impact on the literature?
- Who are the most influential authors working on big data in business and management?
- Which academic journals publish research on big data in business and management?
- Who are the authors with the highest number of citations in the field of business and management literature?
- What are the concepts that are frequently used in the academic environment in the fields of business and management regarding big data?

These questions collectively provide a holistic understanding of big data's footprint in organization and management literature, spanning both its quantitative growth and qualitative implications.

Bibliometric Analysis

Bibliometric methods use a quantitative approach to describe, evaluate, and monitor published research. Kalantari et al. (2017) employed a bibliometric approach to track trends in big data research, aiming to identify emerging topics, influential authors, and evolving research methodologies. Their study facilitated a deeper understanding of the dynamics shaping the field of big data, informing researchers and practitioners about current trends and future directions for research and innovation.

Ismayilova's (date unknown) bibliometric analysis contributed to the understanding of big data research by examining key trends, prominent authors, and thematic clusters within the literature. Although the specific details of the analysis are not provided, Ismayilova's work likely offers valuable insights into the evolution and impact of big data research in various domains. Bibliometric analysis is one of the qualitative and quantitative analysis methods used to evaluate the effects of individual researchers, research groups, countries, institutions, or journals. Bibliometric methods can guide the researcher's work by allowing researchers to explore the literature before they start reading and by showing the most effective studies. It can reveal the number of articles in a certain time period as well as how much a study has affected the studies done after it. Additionally, through citations, collaborations, and references, it enables researchers to base their findings on bibliographic data produced by other researchers working in their field of study. The bibliometric analysis method is performed for performance analysis and science mapping purposes. Performance analysis represents the evaluation of research and publications by researchers and organizations. Science mapping, on the other hand, aims to reveal the structure and dynamics of the science field. Science mapping uses the bibliometric method to examine the relationship between disciplines, fields, experts, and articles. in short, science mapping is a common intersection of

classification and visualization. It aims to present the connections between the structural elements of the literature such as articles, authors, journals, words (Zupic and Cater, 2015).

Data collection, selection, and analysis

This study aims to investigate the concept of big data within the context of business and management literature. The literature review utilized the Web of Science database, conducting a search using the keyword "big data," resulting in a substantial yield of 140,889 results. The study scope was refined by establishing specific criteria aligned with the research objectives. Afterwards, the articles were chosen as the preferred document type for inclusion, with the Web of Science Category designated as "Business or Management," and the Web of Science Index narrowed down to "Social Sciences Citation Index (SSCI) or Emerging Sources Citation Index (ESCI)." From this pool, 983 studies were carefully selected for inclusion, with particular attention paid to works within the field of management sciences. Additionally, utilizing the Excel 2021 version, tables presented in subsequent sections were diligently prepared, enhancing the depth and rigor of the study's findings.

Bibliometric analysis was subsequently conducted utilizing the Biblioshiny software, allowing for a comprehensive exploration of the dataset comprising these 983 studies. This analytical approach facilitated the systematic investigation of publication trends, citation patterns, and thematic developments pertinent to the domain of big data in business and management literature.

Main information about data sample

Upon examination of the 983 studies, it is evident that they span the years from 2011 to 2023. These studies, conducted over a 12-year period, are distributed across 261 distinct sources. The analysis reveals a total of 46,655 references within these studies. Notably, the average number of references per study stands at 41.94, indicating a robust foundation of scholarly literature upon which these works build. Furthermore, the collective effort of 2,584 authors contributes to the discourse on this subject. Of particular interest is the observation that 42.22% of these studies involve international collaboration, underscoring the global nature of research in this field. Additionally, upon closer examination of the dataset, it becomes apparent that a diverse range of national studies contributes to the body of literature, reflecting the interdisciplinary and cross-cultural nature of scholarly inquiry into the concept of big data in business and management.

Table 1. Main Information About Data Sample

Description	Results	Description	Results
Timespan	2011-2023	Authors	2584
Sources	261	Authors of single authored docs	94
Documents	983	Single-authored docs	105
Annual Growth Rate %	42.22	Co-Authors per Doc	3.19
Document Average Age	3.21	International co-authorships %	42.22
Average citations per doc	41.94	Article	904
References	46655	Article; book chapter	1
Keywords Plus	1624	Article; early access	71
Author's Keywords	2887	Article; proceedings paper	5

Article; retracted publication	2	

Note. Table created by Author on Biblioshiny Software.

Historical development of research field

When the field is evaluated over the data set that is the subject of the research, the development of the field over the years is an effective factor in showing the importance of the existing literature. Figure 1 shows the number of studies on "big data" by year.

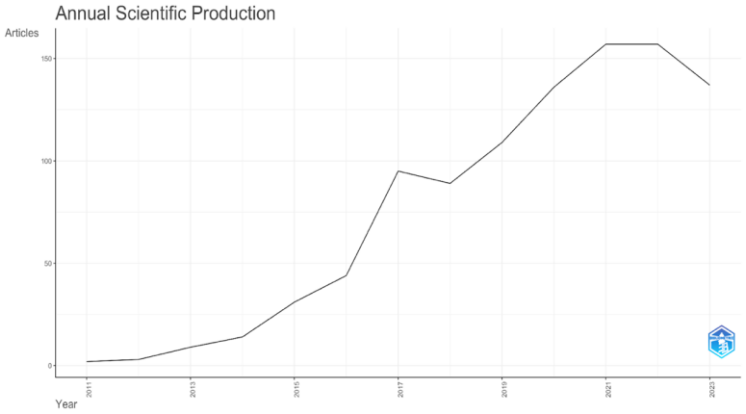

Figure 1. Number of Works Published Annually Between 2011-2023

Figure 1 is examined, it is seen that between the years of 2011-2012, researchers focused on big data in the field of business and management with less. After 2013, an increasing curve is observed in the development rate of the area. It is seen that two studies, which were published in 2012 and had the highest number of citations in the data set, were published in 2012. It is also seen that these two studies have a very positive effect on the development of the research field.

The number of publications increasing year by year is in line with the development of big data technology and the investments made. As shown in Figure 2, the concept of big data in the literature has gained popularity in the perspective of business and management as of 2012 and this popularity continues today. in the following sections, the approach of the literature to the concept of big data and trending topics will be examined in the study.

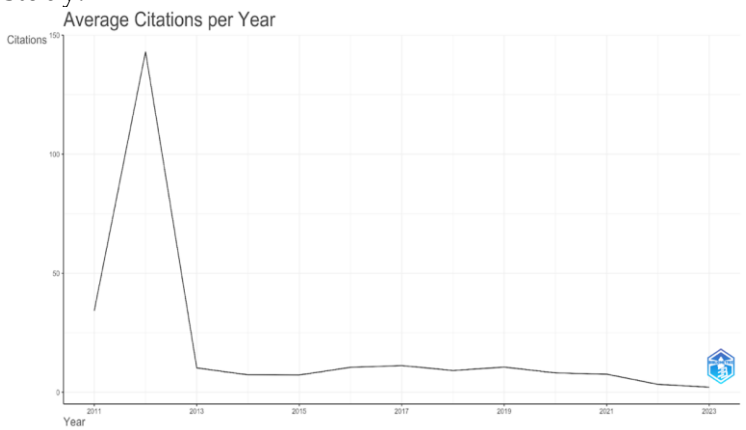

Figure 2. Average Citation per Year

It is seen that 2 studies had a very high citation rate between 2011 and 2013. When the studies between these years are examined, Chen's (2012) "Business Intelligence and Analytics: from Big Data to Big Impact", McAfee and Brynjolfsson (2012), "Strategy & Competition Big Data: The Management Revolution" came to the fore and the research area increased its popularity in the literature.

Most relevant authors

The researchers who have published in the concept of big data, the number of studies and the institutions that the authors are affiliated with are given in Table 2. Table 2 presents the names of researchers who have published in the field of big data, the number of their articles, and their affiliations. The table aims to identify the most influential researchers in the field of big data and their respective institutions. The most noteworthy aspect is that researchers such as Bag, Gupta, and Gunasekaran have each published 10 articles. These researchers have made significant contributions to the field of big data and have had a substantial impact on its development. Furthermore, the fact that these researchers are affiliated with different institutions from various countries indicates the widespread international interest in the field of big data, which is actively researched across diverse scientific communities. Therefore, researchers like Bag, Gupta, and Gunasekaran emerge as leading figures in the field of big data.

Table 2. Top 10 Authors and Affiliations'

Authors	Number of Articles	Author's Affiliation
Bag	10	Institute of Management Technology, India
Gupta	10	Neoma Business School, France
Gunasekaran	10	Penn State Harrisburg, USA
Akter	8	University of Wollongong, Australia
Dubey	8	Liverpool John Moores University, United Kingdom
Khan	8	University of Aberdeen Business School King's College, United Kingdom
Krogstie	8	Norwegian University of Science & Technology, Norway
Kumar	8	EMLYON Business School, France
Mikalef	8	Norwegian University of Science & Technology,Norway
Wamba	8	TBS Education, France

Note. Table created by Author on Biblioshiny Software.

Authors' Production over Time are given in Figure 3. When the figure and the table are examined together, information about the publication performances of the authors as well as the number of publications can be obtained.

Figure 3. Authors' Production over Time

The lines in Figure 3 show the productivity of the authors over time. Accordingly, Bag 2016-2023 and Khan 2017-2022 have the longest publication performance. The large round shapes on the lines show how many publications the authors made in the relevant year. The increase in the darkness of the circles shows the total number of citations by years. Gunasekaran, Wamba and Childe published two separate publications in 2017, and the total number of citations given annually to these publications is 165.29. These three authors have conducted significant and impactful research in the field of big data. For instance, Gunasekaran's paper titled "Big data and predictive analytics for supply chain and organizational performance" (2017) and Wamba's paper titled "Big data analytics and firm performance: Effects of dynamic capabilities" (2017) are some examples of important research in the field. These papers may have had a significant impact on the literature on big data and could be frequently cited by other researchers. Similarly, Childe may have contributed to the field with a significant paper such as "Big data analytics in supply chain management: A state-of-the-art literature review" (2017), which could be widely referenced by other researchers. Therefore, the fact that these three authors each

published two papers in 2017, and these papers received a high number of citations, indicates the importance and impact of their research in the field of big data.

3.1.5 Countries' production over time

Figure 4 displays the production of publications by various countries over time, spanning from 2011 to 2023. The figure presents the ranking of countries based on the quantity of publications they have contributed to the field. Leading countries in this ranking include the USA, China, United Kingdom, and India. Notably, there has been a significant proportional increase in the number of publications since 2015, indicating a notable surge in scholarly output within the field during that period.

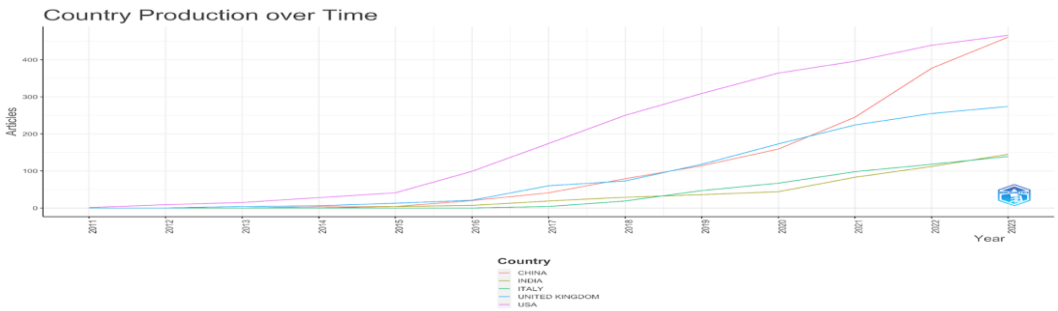

Figure 4. Countries' Production over Time

Most relevant sources

The landscape of big data research is vast, with numerous journals contributing to the discourse. However, certain journals have emerged as pivotal platforms, publishing a significant portion of research articles on this topic. Table 3 enumerates the top ten journals that have been particularly influential in advancing big data research. Leading the list is "Technological Forecasting and Social Change" with 79 articles, accounting for approximately 8.04% of the selected publications. This is followed by "Journal of Business Research" and "Journal of Enterprise Information Management", contributing 4.78% and 3.26% respectively. Other notable mentions include "Business Process Management Journal", "Management Decision", and "Information & Management", each showcasing their commitment to fostering research in the big data domain.

Table 3. Most Relevant Source

Sources	Articles	%	Local Citations
Technological Forecasting and Social Change	79	8,03662258	235
Journal of Business Research	47	4,78128179	284
Journal of Enterprise Information Management	32	3,25534079	131
Business Process Management Journal	27	2,74669379	194
Management Decision	27	2,74669379	103
Information & Management	25	2,54323499	98
Journal of Organizational and End User Computing	23	2,3397762	103

Industrial Marketing Management	21	2,1363174	61
IEEE Transactions on Engineering Management	18	1,8311292	127
International Journal of Logistics Management	16	1,6276704	103

Note. Table created by Author on Biblioshiny Software.

The prominence of these journals underscores their role in shaping the narrative of big data in the academic sphere. Engaging with articles from these sources provides researchers with insights into the most current trends, challenges, and solutions in the field.

Most cited articles

Examining the citation numbers of the studies in the data set is beneficial to identify the studies that have a high impact on the literature. It is possible to talk about global and local citation numbers to examine this impact. Global citation count refers to the total number of citations received by a study and can be obtained directly in the WoS database. Local citation also reveals the studies with the highest citation rate among the references of the studies included in the data set because of bibliometric analysis. The following articles represent those with 10 highest citation counts.

- Chen, H. C. (2012). Business intelligence and analytics: From big data to big impact. MIS Quarterly, 36(4), 1165–1188.
- McAfee, A. (2012). Big data: The management revolution. Harvard Business Review, 90(10), 60-68.
- LaValle, S. (2011). Big data, analytics and the path from insights to value. MIT Sloan Management Review, 52(2), 21-32.
- Wamba, S. F. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. Journal of Business Research, 70, 356-365.
- Sivarajah, U. (2017). Critical analysis of Big Data challenges and analytical methods. Journal of Business Research, 70, 263-286.
- Waller, M. A. (2013). Data science, predictive analytics, and big data: A revolution that will transform supply chain design and management. Journal of Business Logistics, 34(2), 77-84.
- Erevelles, S. (2016). Big Data consumer analytics and the transformation of marketing. Journal of Business Research, 69(2), 897-904.
- Wang, Y. C. (2018). Big data analytics: Understanding its capabilities and potential benefits for healthcare organizations. Technological Forecasting and Social Change, 126, 3-13.
- Gupta, M. (2016). Toward the development of a big data analytics capability. Information & Management, 53(8), 1049-1064.
- Gunasekaran, A. (2017). Big data and predictive analytics for supply chain and organizational performance. Journal of Business Research, 70, 308-317.

Table 4. Global Citation and Local Citation Analysis (First 10 Article)

Article	Total Citations	TC per Year	Local Citations
Chen Hc, 2012, Mis Quart	2593	216,08	235

Mcafee A, 2012, Harvard Bus Rev	2218	184,83	284
Lavalle S, 2011, Mit Sloan Manage Rev	891	68,54	131
Wamba Sf, 2017, J Bus Res	854	122,00	194
Sivarajah U, 2017, J Bus Res	831	118,71	103
Waller Ma, 2013, J Bus Logist	679	61,73	98
Erevelles S, 2016, J Bus Res	578	72,25	103
Wang Yc, 2018, Technol Forecast Soc	577	96,17	61
Gupta M, 2016, Inform Manage-Amster	540	67,50	127
Gunasekaran A, 2017, J Bus Res	517	73,86	103

Note. Table created by Author on Biblioshiny Software.

The cited articles cover a wide range of topics within the realm of big data analytics and its implications across various industries. Chen (2012) explores the transformative potential of business intelligence and analytics, emphasizing the shift towards leveraging big data for significant impact. McAfee (2012) discusses the management revolution catalysed by big data, highlighting its role in reshaping organizational strategies. LaValle (2011) delves into the journey from data insights to tangible value, stressing the importance of analytics in decision-making processes. Wamba (2017) investigates the effects of dynamic capabilities on firm performance in the context of big data analytics. Sivarajah (2017) critically analyses the challenges and analytical methods associated with big data. Waller (2013) focuses on the transformative role of predictive analytics and big data in supply chain management. Erevelles (2016) explores the consumer-centric transformation driven by big data analytics in marketing. Wang (2018) sheds light on the potential benefits of big data analytics in healthcare organizations. Gupta (2016) contributes to the understanding of developing big data analytics capabilities within organizations. Gunasekaran (2017) examines the application of big data and predictive analytics for enhancing supply chain and organizational performance. These articles collectively underscore the profound impact of big data analytics on business strategies, organizational performance, and industry transformation.

Lotka law

Lotka's Law, named after Alfred J. Lotka, is a foundational bibliometric principle that describes the frequency distribution of scientific productivity. It postulates that the number of authors publishing a certain number of articles is inversely proportional to the square of the number of articles (Lotka, 1926). in simpler terms, a small fraction of authors produces a majority of the publications, whereas a larger group of authors contribute only sporadically.

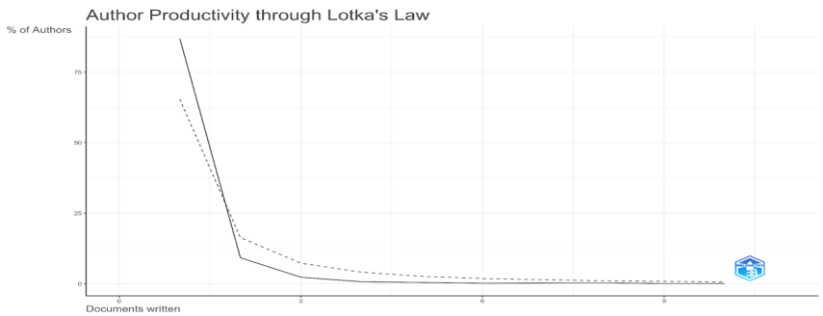

Figure 5. Lotka's Law

In the context of our analysis presented in Table 5, the data corroborates the assertions of Lotka's Law. A vast majority (approximately 86.8%) of authors have a singular publication, emphasizing the skewed distribution of productivity. As we

progress to authors with more publications, their proportion diminishes sharply, with only 9.2% having two documents and a mere 0.023% with three.

This phenomenon, observed across various disciplines, underscores the challenges and disparities in academic publishing. While some researchers may have the resources, collaborations, and expertise to produce a larger body of work, many others face obstacles that limit their output (Egghe, 2005). Understanding these patterns, as described by Lotka's Law and other bibliometric principles, provides valuable insights into the dynamics of scientific research and its dissemination (Price, 1976).

Table 5. Lotka Law

Documents written	N. of Authors	Proportion of Authors
1	2244	0,868
2	238	0,092
3	59	0,023
4	18	0,007
5	11	0,004
6	4	0,002
8	7	0,003
9	1	0
10	2	0,001

Note. Table created by Author on Biblioshiny Software.

Most frequent keywords

Keywords are very important for analysing the literature and establishing the conceptual structure. Authors prefer the most appropriate keywords to determine the orientation and boundaries of their work. With keywords plus in Table 6, it contributes to the formation of the conceptual structure and provides additional data for the analysis.

Table 6. Authors' Keywords and Keyword Plus (Top 10)

No	Authors' Keywords	Occurrences	Keywords Plus	Occurrences
1	big data	508	management	207
2	big data analytics	175	impact	165
3	analytics	32	performance	137
4	artificial intelligence	23	data analytics	135
5	business intelligence	22	firm performance	130
6	firm performance	22	challenges	109
7	sustainability	22	predictive analytics	104
8	supply chain management	21	model	93
9	innovation	20	information	91
10	knowledge management	20	innovation	83

Note. Table created by Author on Biblioshiny Software.

As Figure 6 shows, the literature has dealt with the concept of big data in different fields with different authors' keywords between the years 2011-2023. It is also seen that areas such as decision making, and management have been studied frequently and for a long time in the literature.

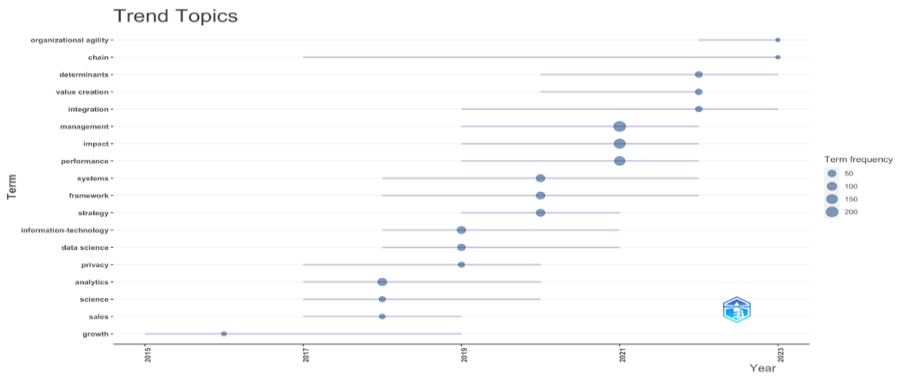

Figure 6. Trend Topics

Keywords such as big data, analytics, and business performance frequently co-occur with management, impact, artificial intelligence, data analytics, and firm performance. Additionally, terms like sustainability, predictive analytics, and supply chain management carry significant emphasis. Innovation and knowledge management are increasingly pivotal in the realm of big data.

Conceptual framework

The conceptual framework is the section in which the key concepts used in the studies and the relationships between these concepts are presented in a pattern from general to specific, and the relevant concepts are defined, and their boundaries drawn for that study. A conceptual framework can also include different concepts, relationships between concepts and data in the literature in a study (Maxwell, 2004). in fact, the conceptual framework is a solid structure that reveals the ideas of the work and the relationship between these ideas and the relationship of these ideas with the work from a holistic perspective (Jabareen, 2009).

Co-occurrence network

Co-occurrence networks provide a visual and analytical representation of how terms or concepts frequently appear together in a given body of literature. By analysing the co-occurrence of keywords, we can uncover patterns of association and deduce potential relationships between various themes (van Eck & Waltman, 2010).

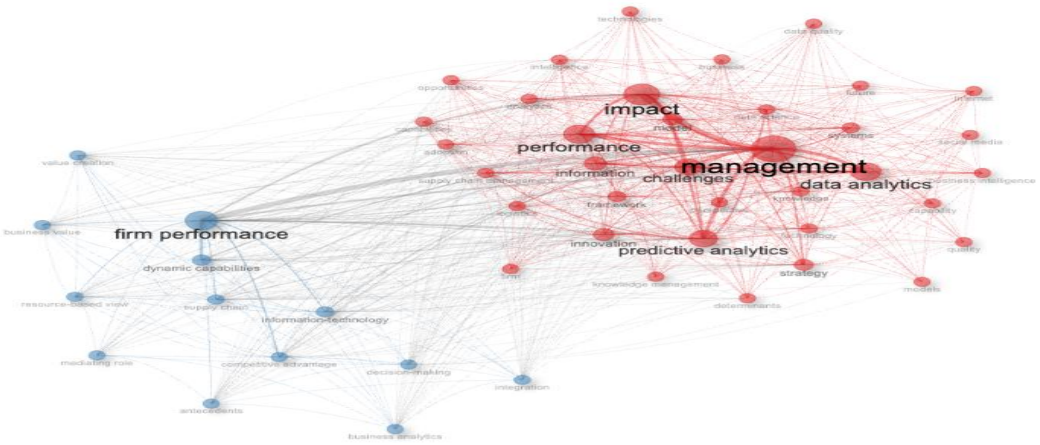

Figure 7. Co-occurence Network

Table 7 showcases the prominent keywords within two primary clusters, alongside their betweenness centrality values. in Cluster 1, "management" emerges as the most

central keyword with a betweenness value of 64.31, suggesting its pivotal role in bridging diverse themes. Similarly, in Cluster 2, "firm performance" holds a central position with a betweenness value of 33.59. The co-occurrence patterns indicate that themes related to "data analytics", "predictive analytics", and "performance" in Cluster 1 are closely intertwined with "firm performance" and "information-technology" in Cluster 2.

Table 7. Keywords' Plus Co-occurence Analysis (Top 20 Keywords)

Cluster 1	Betweenness	Cluster 2	Betweenness
management	64,31338368	firm performance	33,59560795
impact	36,84337021	information-technology	4,744335759
performance	28,40273756	dynamic capabilities	3,726238389
data analytics	25,00417452	supply chain	4,559259261
challenges	18,25656872	competitive advantage	2,320703188
predictive analytics	21,41611744	decision-making	1,760019956
model	6,036019673	resource-based view	1,907211067
information	12,3487241	business value	0,805198337
innovation	9,647347928	value creation	0,171847366
analytics	3,43522482	integration	0,677000977

Note. Table created by Author on Biblioshiny Software.

The significance of these co-occurrence patterns underscores the interplay of management strategies, technological integration, and firm performance in the realm of big data research. Understanding these connections paves the way for a more holistic interpretation of the evolving research landscape (Chen, 2017).

In essence, the co-occurrence network, as depicted in Table 7, is not just a static representation of data points but a dynamic reflection of the big data research field's pulse. It encapsulates the evolution of the field, marking the convergence of managerial insight with technological innovation, and aligning them with the empirical realities of firm performance. This interconnected web of keywords thus offers a roadmap for navigating the complex landscape of big data research, with implications for future scholarly endeavours and practical applications alike.

Most local cited references

The analysis of the Most Local Cited References within a specific corpus is instrumental in discerning the core works that have significantly influenced a field of study. As illustrated by Figure 8, which represents the "Most Local Cited References (Top 10 Articles)," the visualization portrays a hierarchy of influential works within the dataset comprising 983 studies and a total of 46,655 bibliographic references.

Figure 8 indicates that the publication by McAfee (2012) in Harvard Business Review is the most locally cited work, highlighting its pivotal role in informing the discourse on big data within the realms of business and management. Its prominence, evidenced by a substantial margin of local citations, underscores its fundamental impact and broad acceptance as a key reference within the dataset.

Following McAfee, the article by Chen (2012) in MIS Quarterly is identified as the second most influential, with a significant citation count, which reflects the article's vital insights into the management information systems perspective on big data. The number of local citations serves as a testament to the work's sustained relevance and its significant contribution to the scholarly dialogue.

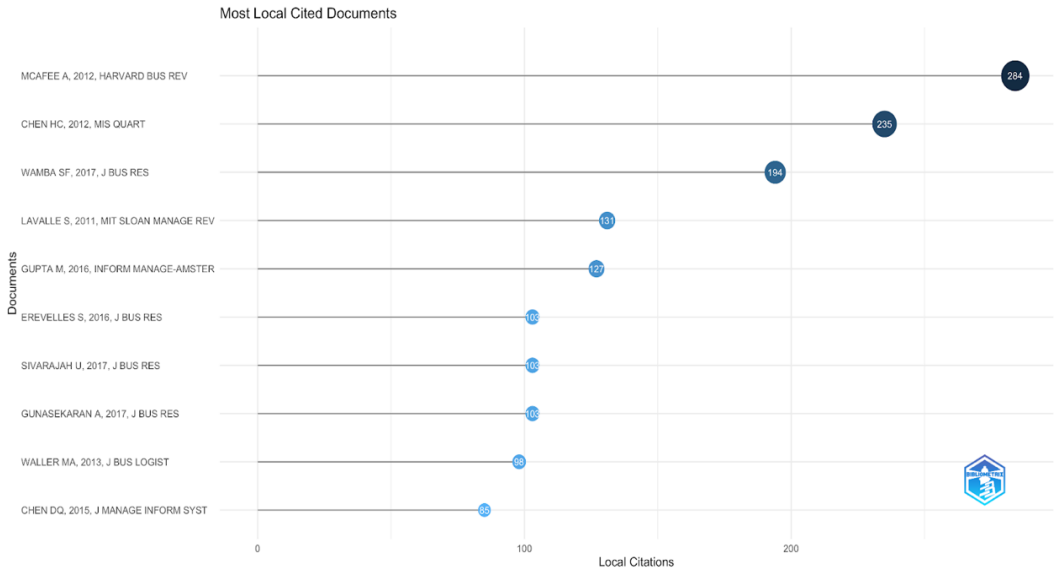

Figure 8. Most Local Cited References (Top 10 Article)

Subsequent entries in the figure, such as works by Wamba (2017), Lavallee (2011), and Gupta (2016), further exemplify significant contributions to the field, with their local citation counts mirroring the frequency with which these studies are invoked in subsequent research. The local citation counts for each document, as denoted by the size of the circles, not only quantifies their relative influence but also signifies their role in the academic community's collective understanding of big data. The visualization encapsulates the intellectual lineage and the scaffolding of research within the domain, with the top-cited documents forming the backbone of the field's literature. These works are pivotal, providing the empirical and theoretical bases from which current and future research can evolve.

In conclusion, the local citation analysis presented in Figure 8 offers a compelling narrative of scholarly impact, highlighting key articles that serve as the cornerstones of big data research within the dataset. The visualization underscores the importance of these works in advancing the conversation and shaping the trajectory of the field.

Co-citation analysis

Journals co-citation network

The "Journals Co-citation Network," as detailed in Table 8, "Journals Co-citation Analysis and Betweenness Scores," provides an intricate map of the scholarly landscape in the domain of big data within business and management. The table delineates clusters of journals, signifying thematic concentrations, and highlights their respective betweenness centrality scores, which indicate the influence and connectivity of each journal within the field.

In Cluster 1, Journal of Business Research exhibits a notable betweenness centrality, illustrating its role as a key conduit through which diverse research themes converge. International Journal of Information Management and MIS Quarterly possess significant centrality scores as well, marking them as integral in disseminating research that spans across the technical and managerial aspects of big data. Cluster 2 is dominated by International Journal of Production Economics, which, with its high betweenness centrality, indicates its pivotal role in connecting research on economic aspects of production with the broader big data conversation. Technological Forecasting and Social Change also commands a central position, aligning future technological trends with social

implications. In Cluster 3, Tourism Management and International Journal of Hospitality Management show lower betweenness centrality compared to those in the other clusters but are nonetheless influential within their specialized fields, suggesting focused yet impactful research networks.

Table 8. Journals Co-citation Analysis and Betweenness Scores

Cluster 1	Betweenness	Cluster 2	Betweenness	Cluster 3	Betweenness
j bus res	25,837859004	int j prod econ	92,3769236	tourism manage	2,96485135
int j inform manage	17,835537119	technol forecast soc	51,8134045	int j hosp manag	2,02176603
mis quart	15,160540202	int j prod res	31,1097262	int j contemp hosp m	1,05671486
inform manage-amster	12,572997112	manage decis	27,5005407		
harvard bus rev	11,841766411	int j oper prod man	20,9837936		
strategic manage j	8,607983453	eur j oper res	17,4836181		
j manage inform syst	8,131770967	j oper manag	16,605365		
ind market manag	7,077671591	j clean prod	15,8100322		
decis support syst	6,988007605	ind manage data syst	13,0368808		
j manages	6,297608792	j bus logist	12,5396924		

Note. Table created by Author on Biblioshiny Software

In Figure 9, the co-citation network reflects not just the volume of research output but also the collaborative and interdisciplinary nature of the literature. The betweenness scores shed light on the journals that act as critical junctions, bringing together varied research streams and fostering a comprehensive dialogue across multiple facets of big data.

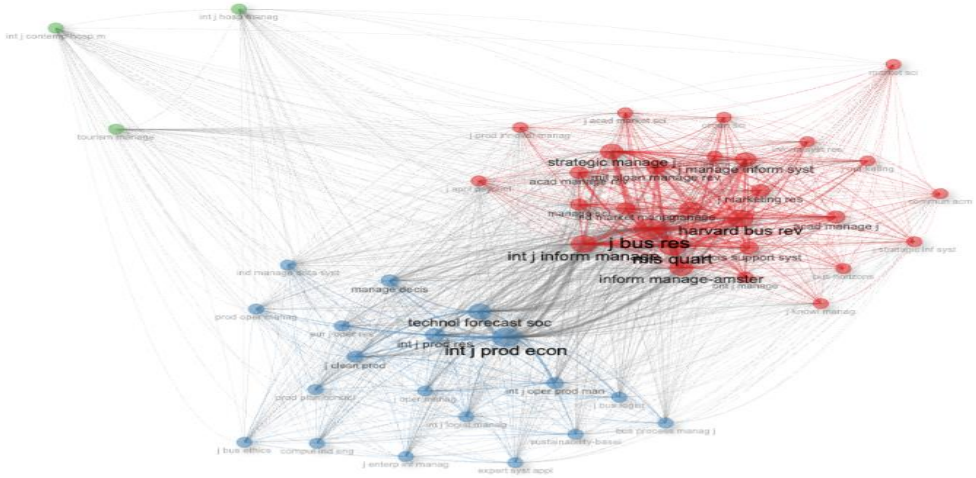

Figure 9. Journals Co-citation Network

The analysis of this network underscores the importance of these journals in shaping the academic conversation and driving the evolution of big data's application in

business and management. It reveals a dynamic ecosystem of knowledge exchange where these journals play a vital role in advancing understanding and informing practice.

Authors co-citation network

In the academic landscape, the author co-citation network analysis serves as a strategic tool for unveiling the intellectual structure of a field. Table 9 and Figure 10 presents a bifurcated view of prominent authors across two distinct clusters within the business and management aspects of big data.

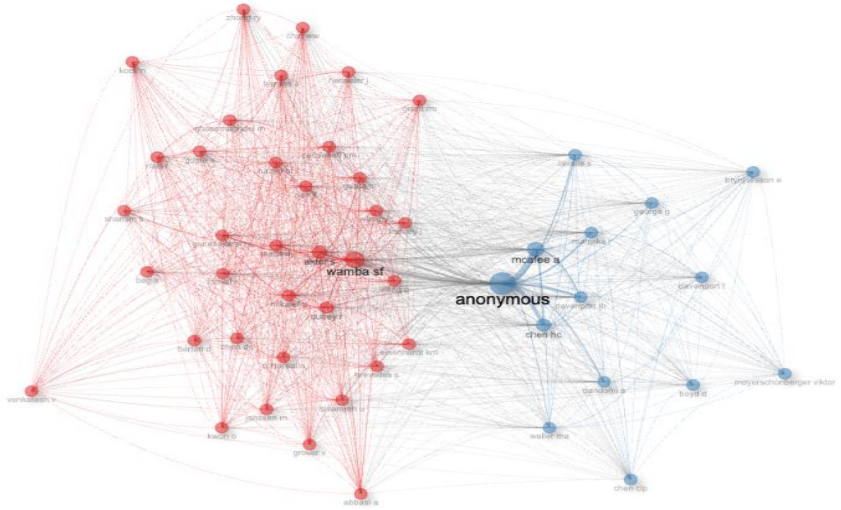

Figure 10. Authors Co-citation Network

Cluster 1 features Wamba SF as a central node, as indicated by a high betweenness score of 23,168.91. This score signifies Wamba's influential role in the network, acting as a bridge connecting various themes and discussions within the field. The presence of authors such as Mikalef P, Dubey R, Akter S, Teece DJ, and others, with their respective betweenness scores, demonstrates the intricate web of intellectual contributions that form the backbone of the big data discourse.

Cluster 2, on the other hand, highlights an "anonymous" author with an exceptionally high betweenness score of 313,957.05, suggesting an extensive reach across the literature. McAfee A stands out with a betweenness score of 101,984.13, reflecting his pivotal role in shaping the understanding of big data's strategic implications. Chen HC and Davenport TH, along with other authors like Manikya J, Lavalle S, and Gandomi A, contribute to a dense network of co-citations that shape the foundational constructs of big data in the business and management field

Table 9. Authors Co-citation Analysis and Betweenness Scores

Cluster 1	Betweenness	Cluster 2	Betweenness
wamba sf	23,16891533	anonymous	313,9570513
mikalef p	4,361676156	mcafee a	101,9814353
dubey r	5,699231829	chen hc	60,63906379
akter s	8,552618092	davenport th	43,17569505
teece dj	4,888900188	manyika j	29,73410336
hair jf	1,8985417	lavalle s	32,96199151
wang yc	2,697266777	gandomi a	15,00873971
ghasemaghaei m	1,265110531	waller ma	20,29246818
podsakoff pm	2,235117513	george g	9,951344783

gunasekaran a	1,33726691	boyd d	2,245498715

Note. Table created by Author on Biblioshiny Software.

The betweenness scores indicate the degree to which individual authors serve as junction points in the co-citation network, facilitating the flow of information and influencing the cohesion of research themes. These scores are critical in identifying key authors whose work transcends specific sub-domains, thereby integrating diverse research trajectories.

This co-citation analysis delineates not only the frequency with which authors are co-cited but also the significance of their work in bridging disparate research areas. It reflects a landscape where seminal works by these authors are continually engaged with, debated, and built upon, highlighting their enduring impact on the evolution of big data research. Thus, the network mapped by Table 9 is a testament to the vibrant and interconnected scholarly community that drives the ongoing discourse in business and management studies of big data.

Publications Co-citation Network

The co-citation network of publications, as represented in Table 10 and Figure 11 offers a profound view into the interconnectedness of scholarly works in the context of big data within business and management studies. The betweenness scores present in the table are indicative of the influential role certain publications have in connecting various research themes.

In Cluster 1, the article by McAfee A from 2012 stands as a central pillar, with a betweenness score of 98,772.95, which underscores its critical position within the network as a highly referenced piece bridging diverse topics. Chen HC's 2012 work also commands a significant role, as reflected by its betweenness score of 64,597.82, suggesting it plays a key role in the scholarly dialogue on big data's implications in information systems.

Cluster 2 highlights Wamba SF's 2017 publication with a betweenness score of 59,601.96, indicating its relevance in current research trends and its role in linking studies across different aspects of big data application in business. Alongside this, the works of Akter S and Gupta M from 2016 emerge as substantial contributors to the discourse, connecting various analytical and practical facets of big data research.

Table 10. Publications Co-citation Analysis and Betweenness Scores

Cluster 1	Betweenness	Cluster 2	Betweenness
mcafee a 2012	98,77295947	wamba sf 2017	59,60119656
chen hc 2012	64,59782881	akter s 2016	29,88027383
wamba sf 2015	57,76205359	gupta m 2016	22,82337504
lavalle s 2011	36,08703252	barney j 1991	21,89717992
waller ma 2013	14,84752015	fornell c 1981	11,11198883
anonymous no	0,123144429	gunasekaran a 2017	19,27646774
gandomi a 2015	11,27805507	erevelles s 2016	19,47775599
manyika j. 2011	6,644876931	podsakoff pm 2003	9,948157522
sivarajah u 2017	10,62766175	teece dj 1997	12,4543559
george g 2014	5,720509043	chen dq 2015	11,04826665

Note. Table created by Author on Biblioshiny Software.

The network depicted by the table tells a story of evolving research interests and the foundational impact of key studies. It reflects a dynamic dialogue where seminal works are co-cited frequently, suggesting their pivotal role in the conceptualization and progression of big data understanding.

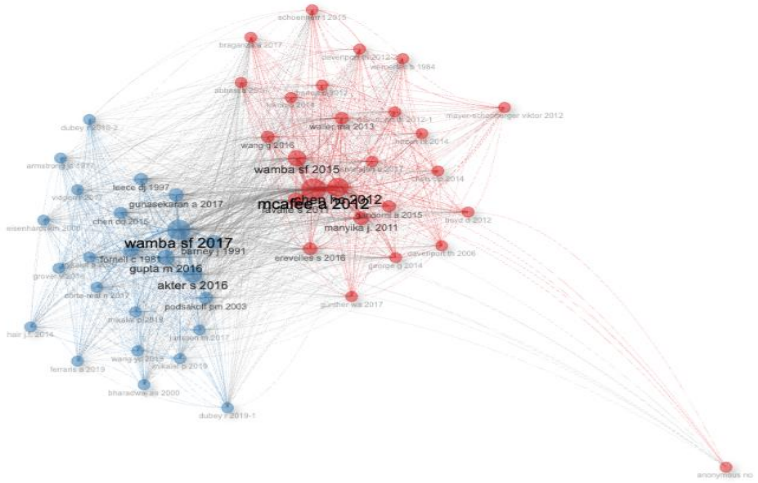

Figure 11. Publications Co-citation Network

The high betweenness scores of these publications serve as a testament to their bridging capacity, bringing together disparate research strands into a coherent narrative. The co-citation network analysis thus provides invaluable insights into how collective academic efforts have shaped the current landscape of big data research and will likely inform future scholarly inquiries. This analysis affirms the critical importance of these publications in fostering a comprehensive understanding of big data's multifaceted role in business and management.

Social framework

Most relevant affiliations

Figure 12 captures the academic institutions that are at the forefront of contributing to the literature on big data within business and management. This visualization indicates not only the volume of research output from these institutions but also their influence and prominence within the field.

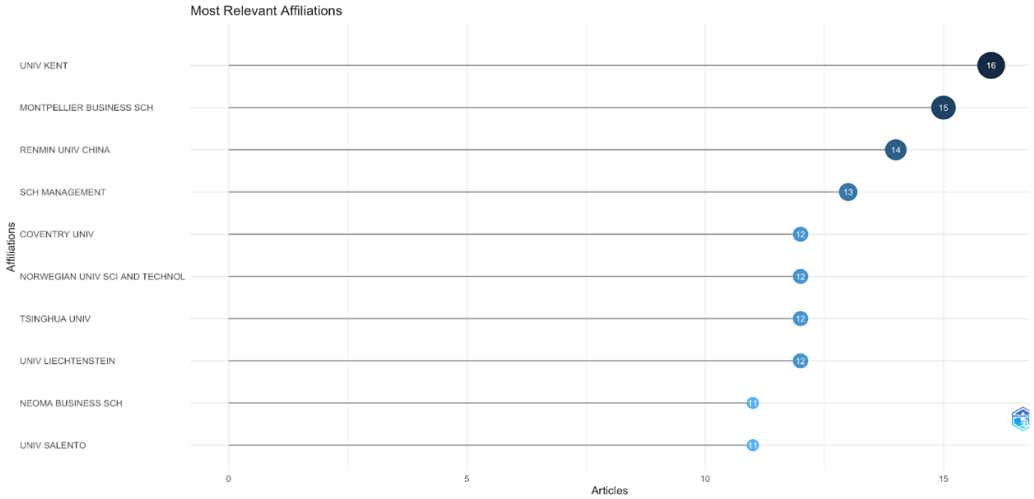

Figure 12. Most Relevant Affiliations (Top 10)

The University of Kent leads the chart, indicating a significant contribution to the body of research with 16 articles. This is closely followed by Montpellier Business School and Renmin University of China, showcasing a robust academic output with 15 and 14 articles, respectively. These figures suggest that these institutions are pivotal knowledge hubs in big data research, potentially indicating focused research programs, faculty expertise, and active engagement with this burgeoning field.

Further down the list, Tsinghua University and Coventry University, among others, display a consistent flow of scholarly work, contributing to the global discourse on big data applications and strategies in the business world. The presence of such institutions from diverse geographical locations underscores the global importance of big data research and the cross-cultural academic efforts to advance its study.

The varied number of articles across the affiliations reflects a vibrant academic community where each institution contributes uniquely to the collective understanding of big data. The diagram suggests a distribution of research interests and expertise, highlighting the interdisciplinary and collaborative nature of this research area.

In summary, the analysis of the most relevant affiliations offers insights into where influential big data research is concentrated. It paints a picture of a field that is rich in international cooperation and academic diversity, with certain institutions leading the charge in pushing the boundaries of knowledge and application in the realm of big data.

Corresponding author's countries

Table11 provides a compelling overview of the geographical distribution of contributions to the field of big data from the perspective of the corresponding authors. The table ranks countries based on the number of articles published, the count of single-country publications (SCP), multi-country collaborations (MCP), the frequency of articles, and the ratio of multi-country collaborations to total publications (MCP Ratio).

Table 11. Corresponding Author's Countries (Top 10 Countries)

Country	Articles	SCP	MCP	Freq	MCP_Ratio
China	196	131	65	0,199	0,332
USA	163	117	46	0,166	0,282
United Kingdom	106	50	56	0,108	0,528
Italy	57	28	29	0,058	0,509
India	48	31	17	0,049	0,354
France	37	8	29	0,038	0,784
Australia	31	12	19	0,032	0,613
Korea	26	19	7	0,026	0,269
Brazil	20	19	1	0,02	0,05
Spain	17	12	5	0,017	0,294

Note. Table created by Author on Biblioshiny Software

China leads the table with 196 articles, out of which 131 are SCPs and 65 are MCPs, signifying a strong domestic research output while also engaging in considerable international collaboration. The USA follows with 163 articles, where the higher MCP

ratio compared to China reflects a more collaborative approach with international peers. The United Kingdom, while having fewer total articles, shows a substantial MCP ratio of 0.528, indicating that over half of their research involves international collaborations, a testament to the globalized nature of their research endeavours. Italy and India demonstrate a balanced mix of SCP and MCP, with ratios that underscore active participation in both national and international research networks. France's data points to a particularly high rate of collaboration, as suggested by an MCP ratio of 0.784, indicating that French researchers are exceptionally engaged in global scholarly exchanges. Australia, with a smaller overall number of publications, still maintains a relatively high level of international engagement, as evidenced by its MCP ratio. Korea and Brazil present a contrast; despite a similar number of articles, Brazil's very low MCP ratio suggests a predominantly local focus in its big data research. Spain rounds out the list with the smallest number of articles but maintains a healthy balance of SCP and MCP, indicative of its active participation in the international academic community. This analysis elucidates the global landscape of big data research, highlighting the diverse approaches to scholarship across countries. It reveals the extent to which nations engage in solitary research endeavours or reach across borders to collaborate, reflecting the multifaceted nature of big data studies and the global interest.

Results & Discussion

Exploring the role of big data in organization and management represents a multifaceted inquiry into the evolving dynamics of modern business practices. This chapter aims to provide a comprehensive analysis of findings derived from bibliometric analyses, two distinct yet complementary research methodologies. in the dynamic realm of academic research, methodologies play a pivotal role in shaping scholarly discourse. Bibliometric review serves as beacons, illuminating various facets of big data within organizational and management literature.

Bibliometric analysis offers a quantitative overview, mapping the expansive landscape of big data research within organization and management. It serves as a macroscopic lens, capturing the developmental trajectory, key contributors, and foundational publications that have shaped discourse in this field. This approach helps understand the structural dynamics of academic research, illustrating how themes and ideas have evolved over time. It focuses on extracting deeper insights from textual content, uncovering underlying themes, narratives, and conceptual frameworks that define practical and theoretical applications of big data in organizations. This analysis enriches understanding by revealing nuanced perspectives and interpretations that have emerged in scholarly discussions.

When juxtaposed, these methodologies provide complementary insights. Bibliometric analysis sheds light on the broader scholarly landscape, spotlighting seminal works, influential contributors, and evolving dynamics of academic interest over time. The synthesis of these methodologies presents a holistic view of the current state and potential future directions of big data research in organization and management. It allows identification of commonalities and divergences in academic discourse, offering a balanced perspective that combines bibliometric findings analysis depth.

Within this study, harmonization of insights from both analyses unveils a layered understanding of big data's position and influence in organizational and management literature. It underscores the compatible relationship between qualitative and quantitative research methods, each reinforcing the other. This unification, drawing from strengths of both methodologies, presents a comprehensive view that is greater than the sum of its

parts. The interplay of these methodologies also points towards an emerging trend: the need for interdisciplinary approaches to capture complex subjects. As big data continues to shape industries and academic pursuits, synthesis of diverse research methods remains paramount in unveiling its multifaceted dimensions and potential trajectories. The methodological lens profoundly influences depth, breadth, and nuances of findings. Both represent different ways of knowing and understanding subject matter, offering a comprehensive, nuanced view.

The bibliometric analysis provides a granular examination of academic landscape surrounding big data in business and management contexts. Based on a curated dataset of 983 studies, it offers in-depth quantitative perspective on evolution, key contributors, and thematic foci in this field. Selection process ensured relevance and precision of dataset for analysis. A pivotal aspect emerging from bibliometric analysis is the profound impact of big data on organizational decision-making processes. Highlighting seminal works of Davenport and Patil (2012), it underscores transition from intuition-based to data-driven decision-making. Additionally, work of Bughin, Chui, and Manyika (2010) illuminates' role of big data in driving organizational change, affecting both structural and cultural dimensions within businesses. Citation analysis reveals patterns underscoring prominence and influence of specific works. Studies by Chen (2012) in MIS Quarterly and McAfee (2012) in Harvard Business Review are highly cited, indicating substantial impact on academic and practical understanding of big data. High citation rates reflect recognition and validation of these works among scholars and practitioners. Aligning with Lotka's Law, analysis uncovers skewed distribution of academic productivity in field. Striking 86.8% of authors contributed only one publication, illustrating challenges and disparities in academic publishing. This pattern offers insight into dynamics within field, highlighting issues related to research funding, collaboration, and publishing accessibility. It explores thematic richness, highlighting implications, challenges, and transformative potential of big data. Themes like 'Information-Based Decisions,' 'Collaboration & Teamwork,' and 'Operational Efficiency' receive considerable attention, reflecting big data's multifaceted influence. Analysis also brings to light challenges and risks associated with big data, such as 'Integration and Compliance,' 'Data Quality and Accuracy,' and 'Lack of Skills and Expertise.' Despite extensive coverage of big data's impact, gaps in literature, like ethical and privacy implications and effects on small and medium-sized enterprises, are identified, indicating areas for future research.

The synthesis of bibliometric analyses provides a nuanced understanding of the role of big data in organization and management. It sheds light on its transformative impact on decision-making processes, organizational structures, and business models, while also highlighting practical hurdles organizations face in effectively leveraging big data. Together, these analyses offer a holistic view, ensuring a comprehensive exploration of big data in organizational and management literature. This exploration underscores the urgency of interdisciplinary engagement to remain at the forefront of transformations. Insights not only contribute significantly to academic literature but also provide practical guidance for organizations navigating the complexities of the data-driven era. They lay the foundation for future research, guiding the exploration of big data's evolving role in organizational and management practices.

The rapid evolution of big data and its technologies presents fertile ground for in-depth studies. One key area ripe for exploration is the impact of artificial intelligence and machine learning on big data analytics within organizations. Understanding how these advanced technologies alter data analysis and decision-making processes across various industries could provide critical insights. Another vital research direction is the

integration of big data into organizational culture and processes. Investigating challenges and strategies for embedding a data-driven mindset across different organizational levels could shed light on fostering a culture that effectively utilizes big data. Furthermore, the ethical implications of big data usage in organizational settings warrant extensive exploration. Research can delve into developing robust ethical frameworks and best practices to ensure responsible use of big data in managerial and organizational decision-making. Long-term impacts of big data initiatives on organizational performance and competitive advantage are also worthy of investigation. Comparative studies across sectors can identify patterns and divergences in the effectiveness of big data strategies. Additionally, exploring the role of big data in enhancing customer experiences and engagement presents promising opportunities. Investigating how organizations leverage big data to understand customer behaviour and predict trends can drive satisfaction and loyalty. Moreover, studying how big data contributes to sustainable business practices and social responsibility can enhance transparency in business operations.

In conclusion, the exploration of big data within organizational and management studies offers a treasure trove of research opportunities. The findings and insights gathered pave the way for future studies and guide organizational practices in an increasingly digitalized world. As scholars and practitioners navigate this dynamic landscape, interdisciplinary engagement and rigorous inquiry will remain essential for unlocking the full potential of big data in organizational contexts. Regarding the specific studies mentioned, Ardito et al. (2019) focus on big data analytics for business and management, providing insights into research trends and patterns in this area. Xu and Yu (2019) conduct a comprehensive bibliometric analysis covering a decade of big data research, aiming to track research trends and identify emerging areas of interest. Similarly, Liu et al. (2020) provide an analysis of the research landscape of big data, highlighting key themes and trends in the literature.

In contrast, Sahoo (2022) narrows the focus to big data analytics in manufacturing, offering a detailed examination of research within the realm of business management. This study provides specific insights into how big data analytics is being applied within the manufacturing sector, potentially offering unique perspectives and methodologies compared to broader studies. Kalantari et al. (2017) take a broader approach, employing a bibliometric approach to track trends in big data research across various domains. While they may not delve deeply into specific applications like manufacturing, their analysis offers a high-level view of the overall trajectory of big data research, which can complement the more focused studies. The study by Ismayilova (2017) appears to be a conference paper, and its content may not be readily available. However, assuming it aligns with the other studies, it likely contributes to the understanding of big data research trends, potentially offering unique insights or methodologies.

Conclusion

The synthesis of bibliometric analysis unveils nuanced understanding of big data's role in organization and management. It offers insights into transformative impact on decision-making processes, organizational structures, and business models. This study offers a comprehensive understanding of big data's profound impact on organizational and management practices. By employing bibliometric review, we have unveiled the intricate dynamics of big data, ranging from its transformative potential to the challenges it presents. Through our analysis, we have observed a fundamental shift towards data-driven decision-making, wherein organizations increasingly rely on big data insights to inform strategic choices and operational efficiency. This shift underscores the importance

of embracing data literacy and cultivating a culture of collaboration and innovation within organizations.

Moreover, our study highlights the critical role of ethical considerations in the utilization of big data. As organizations harness vast amounts of data, it becomes imperative to establish robust ethical frameworks to ensure responsible data usage and safeguard against potential risks such as privacy breaches and algorithmic biases. Looking ahead, our findings pave the way for future research endeavours aimed at exploring emerging trends and addressing persistent challenges in the realm of big data. By delving deeper into areas such as the integration of artificial intelligence, the impact on organizational culture, and the ethical implications, researchers can further enhance our understanding of big data's transformative potential. Ultimately, our study underscores the importance of embracing innovation and interdisciplinary collaboration to leverage big data effectively. By staying abreast of evolving trends and adopting best practices, organizations can harness the power of big data to drive strategic decision-making, foster innovation, and achieve sustainable growth in an increasingly data-driven world. in addition to the insights highlighted in our study, there are several key considerations and implications that merit further exploration and discussion:

Interdisciplinary Collaboration: As the field of big data continues to evolve, there is a growing need for interdisciplinary collaboration. Researchers from diverse domains such as computer science, business management, sociology, and ethics must come together to address the multifaceted challenges and opportunities presented by big data. Collaborative efforts can lead to holistic solutions that encompass technical advancements, ethical considerations, and organizational best practices.

Organizational Resilience: The ability of organizations to adapt and thrive in the face of uncertainty is crucial in the era of big data. Future research could focus on understanding how organizations develop resilience strategies to navigate the complexities of data-driven environments. This includes exploring adaptive leadership practices, agile organizational structures, and strategic decision-making processes that enable organizations to leverage big data effectively while mitigating risks.

Ethical Governance: Ethical considerations surrounding big data usage are paramount in ensuring trust, transparency, and accountability. Further research is needed to develop comprehensive ethical frameworks that address the ethical implications of data collection, storage, analysis, and dissemination. This includes examining issues such as privacy, consent, fairness, and bias in the context of big data applications across different industries and sectors.

Education and Training: With the increasing reliance on big data in organizational decision-making, there is a growing demand for skilled professionals who can harness the power of data effectively. Future research could explore innovative approaches to education and training in the field of data science, analytics, and data-driven decision-making. This includes developing curriculum standards, certification programs, and experiential learning opportunities to equip individuals with the necessary skills and competencies to succeed in a data-driven world.

Socioeconomic Impacts: Big data has far-reaching socioeconomic implications that extend beyond individual organizations. Future research could investigate how big data technologies and practices influence economic development, social inequality, and policymaking. This includes examining the role of big data in shaping market dynamics, employment trends, and regulatory frameworks to ensure equitable access to data resources and opportunities for all stakeholders.

In conclusion, the study of big data within the context of organization and management represents a dynamic and multifaceted research domain. By continuing to explore emerging trends, address persistent challenges, and foster interdisciplinary collaboration, researchers can contribute to a deeper understanding of big data's transformative potential and its implications for organizations, society, and the future of work.

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References

Akter, S., Fosso Wamba, S., Gunasekaran, A., Dubey, R., & Childe, S. J. (2016). How to Improve Firm Performance Using Big Data Analytics Capability and Business Strategy Alignment? *International Journal of Production Economics, 182,* 113-131.

Ardito, L., Scuotto, V., Del Giudice, M., & Petruzzelli, A. M. (2019). A bibliometric analysis of research on Big Data analytics for business and management. *Management Decision, 57*(8), 1993–2009.

Avolio, B. J., Walumbwa, F. O., & Weber, T. J. (2009). Leadership: Current Theories, Research, and Future Directions. *Annual Review of Psychology, 60,* 421-449.

Bughin, J., & Chui, M. (2010). The Rise of The Networked Enterprise: Web 2.0 Finds Its Payday. *Mckinsey Quarterly, (1),* 3-8.

Bughin, J., Chui, M., & Manyika, J. (2010). Clouds, Big Data, and Smart Assets: Ten Tech-Enabled Business Trends to Watch. *Mckinsey Quarterly, 56(1),* 75-86.

Chaurasia, J. (2023, July 12). Data Governance Unlocks the Impact of Analytics: Data Strategy & Insights 2023. Retrieved from Https://Www.Forrester.Com/Blogs/Data-Governance-Unlocks-The-Impact-Of-Analytics-Data-Strategy-Insights-2023/ [Erişim tarihi: 11.01.2024].

Chen, H., Chiang, R. H. L., & Storey, V. C. (2012). Business Intelligence and Analytics: from Big Data to Big Impact. *MIS Quarterly, 36(4),* 1165-1188.

Chen, M. (2017). Entrepreneurial Leadership and New Ventures: Creativity in Entrepreneurial Teams. *Creativity and Innovation Management, 26(3),* 239-250.

Chen, Y., Wang, Y., Nevo, S., Jin, J., Wang, L., & Chow, W. S. (2014). IT Capability and Organizational Performance: The Roles of Business Process Agility and Environmental Factors. *European Journal of Information Systems, 23(3),* 326-342.

Davenport, T. H. (2013). Analytics 3.0. *Harvard Business Review, 91(12),* 64-72.

Davenport, T. H. (2018). *The AI Advantage: How to Put the Artificial Intelligence Revolution to Work.* MIT Press.

Davenport, T. H., & Patil, D. J. (2012). Data Scientist: The Sexiest Job of the 21st Century. *Harvard Business Review, 90(10),* 70-76.

Egghe, L. (2005). Power Laws in the Information Production Process: Lotkaian Informetrics. Elsevier.

Elo, S., & Kyngäs, H. (2008). The Qualitative Content Analysis Process. *Journal of Advanced Nursing, 62(1),* 107-115.

Erevelles, S., Fukawa, N., & Swayne, L. (2016). Big Data Consumer Analytics and The Transformation of Marketing. *Journal of Business Research, 69(2),* 897-904.

Gahi, Y., Guennoun, Z., & Moussaid, L. (2016). Big Data Management: Challenges, Approaches, Tools, and Their Limitations. *International Journal of Cloud Applications and Computing, 6(2),* 1-20.

Gartner. (2023). Gartner Identifies the Top 10 Data and Analytics Trends for 2023. Retrieved from Https://Www.Gartner.Com/En/Newsroom/Press-Releases/2023-05-09-Gartner-Identifies-The-Top-Ten-Data-And-Analytics-Trends-For-20230 [Erişim tarihi: 03.01.2024].

Gunasekaran, A., Papadopoulos, T., Dubey, R., Wamba, S. F., Childe, S. J., Hazen, B., & Akter, S. (2017). Big Data and Predictive Analytics for Supply Chain and Organizational Performance. *Journal of Business Research, 70,* 308-317.

Gupta, M., & George, J. F. (2016). Toward The Development of a Big Data Analytics Capability. *Information & Management, 53(8),* 1049-1064.

Grant, A. M. (2016). *Originals: How Non-Conformists Move the World.* Viking.

Grant, R. M. (2016). *Contemporary Strategy Analysis: Text and Cases Edition.* John Wiley & Sons.

Henke, N., Libarikian, A., & Wiseman, B. (2016, October 28). Straight Talk About Big Data. Retrieved from Https://Www.Mckinsey.Com/Capabilities/Mckinsey-Digital/Our-Insights/Straight-Talk-About-Big-Data [Erişim tarihi: 23.12.2023].

Hopkins, B. (2016, March 9). Think You Want to Be "Data-Driven"? Insight Is the New Data. Retrieved from Https://Www.Forrester.Com/Blogs/16-03-09-Think_You_Want_To_Be_Data_Driven_Insight_Is_The_New_Data/ [Erişim tarihi: 24.01.2024].

Ismayilova, N. (2017). Bibliometric Analysis of Big Data Research. [Conference paper]. Retrieved from https://ict.az/uploads/konfrans/biq_data/1-14_Nigar_Ismayilova_Bibliometric_Analysis_of_Big_Data_ResearchSON.pdf [Erişim tarihi: 23.01.2024].

Jabareen, Y. (2009). Building A Conceptual Framework: Philosophy, Definitions, and Procedure. *International Journal of Qualitative Methods, 8(4),* 49-62.

Kalantari, A., Kamsin, A., Kamaruddin, H. S., et al. (2017). A bibliometric approach to tracking big data research trends. *Journal of Big Data, 4*, 30.

Kallinikos, J., & Constantiou, I. D. (2015). New Games, New Rules: Big Data and The Changing Context of Strategy. *Journal of Information Technology, 30(1),* 44-57.

Kitchin, R. (2014). *The Data Revolution: Big Data, Open Data, Data Infrastructures and Their Consequences*. SAGE.

Lavalle, S., Lesser, E., Shockley, R., Hopkins, M. S., & Kruschwitz, N. (2011). Big Data, Analytics and The Path from Insights to Value. *MIT Sloan Management Review, 52(2),* 21-32.

Liu, X., Sun, R., Wang, S., & Wu, Y. J. (2020). The research landscape of big data: A bibliometric analysis. *Library Hi Tech, 38*(2), 367–384.

Lotka, A. J. (1926). The Frequency Distribution of Scientific Productivity. *Journal of the Washington Academy of Sciences, 16(12),* 317-323.

Mayer-Schönberger, V., & Cukier, K. (2013). *Big Data: A Revolution That Will Transform How We Live, Work, and Think*. Houghton Mifflin Harcourt.

Maxwell, J. A. (2004). *Qualitative Research Design: An Interactive Approach (2nd Ed.)*. Sage Publications.

Mcafee, A., & Brynjolfsson, E. (2012). Big Data: The Management Revolution. *Harvard Business Review, 90(10),* 60-68.

Neuman, W. L. (2006). *Social Research Methods: Qualitative and Quantitative Approaches (6th Ed.)*. Allyn & Bacon.

Neuendorf, K. A. (2016). *The Content Analysis Guidebook (2nd Ed.)*. Sage Publications.

O'Neil, C. (2016). *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Crown.

Price, D. J. D. S. (1976). A General Theory of Bibliometric and Other Cumulative Advantage Processes. *Journal of the American Society for Information Science, 27(5),* 292-306.

Sahoo, S. (2022). Big Data Analytics in Manufacturing: A Bibliometric Analysis of Research in the Field of Business Management. *International Journal of Production Research, 60*(22), 6793–6821.

Schroeck, M., Romero-Morales, D., & Van Hillegersberg, J. (2016). Predictive Analytics in Information Systems Research. *MIS Quarterly, 40(3),* 553-572.

Sheng, J., Amankwah-Amoah, J., Wang, X., & Khan, Z. (2017). A Multidisciplinary Perspective of Big Data in Management Research. *International Journal of Production Economics, 191.*

Sivarajah, U., Kamal, M. M., Irani, Z., & Weerakkody, V. (2017). Critical Analysis of Big Data Challenges and Analytical Methods. *Journal of Business Research, 70,* 263-286.

Solla Price, D. J. (1963). Little Science, Big Science. *Columbia University Press.*

Tabesh, P., Mousavidin, E., & Hasanzadeh, A. (2019). Big Data and Organizational Change: A Managerial Perspective. *Journal of Organizational Change Management, 32(4),* 397-416.

Teece, D. J. (2018). Business Models and Dynamic Capabilities. *Long Range Planning, 51(1),* 40-49.

Thusoo, A., & Sarma, J. S. (2017). *Managing and Mining Big Data.* Mcgraw-Hill Education.

Van Eck, N. J., & Waltman, L. (2010). Software Survey: Vosviewer, A Computer Program for Bibliometric Mapping. *Scientometrics, 84(2),* 523-538.

Verhoef, P. C., Kooge, E., & Walk, N. (2017). Creating Value with Big Data Analytics: Making Smarter Marketing Decisions. *Routledge.*

Waller, M. A., & Fawcett, S. E. (2013). Data Science, Predictive Analytics, and Big Data: A Revolution That Will Transform Supply Chain Design and Management. *Journal of Business Logistics, 34(2),* 77-84.

Wamba, S. F., Akter, S., Edwards, A., Chopin, G., & Gnanzou, D. (2015). How 'Big Data' Can Make Big Impact: Findings from A Systematic Review and A Longitudinal Case Study. *International Journal of Production Economics, 165,* 234-246.

Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J., Dubey, R., & Childe, S. J. (2017). Big Data Analytics and Firm Performance: Effects of Dynamic Capabilities. *Journal of Business Research, 70,* 356-365.

Wang, G., Gunasekaran, A., Ngai, E. W., & Papadopoulos, T. (2016). Big Data Analytics in Logistics and Supply Chain Management: Certain Investigations for Research and Applications. *International Journal of Production Economics, 176*, 98-110.

Wang, Y., Kung, L., & Byrd, T. A. (2018). Big Data Analytics: Understanding Its Capabilities and Potential Benefits for Healthcare Organizations. *Technological Forecasting and Social Change, 126*, 3-13.

Weill, P., & Woerner, S. L. (2015). Thriving in an Increasingly Digital Ecosystem. *MIT Sloan Management Review, 56(4)*, 27-34.

Xu, Z., & Yu, D. (2019). A Bibliometrics analysis on Big Data Research (2009–2018). Journal of Data, Information and Management, 1, 3–15.

Zupic, I., & Cater, T. (2015). Bibliometric Methods in Management and Organization. *Organizational Research Methods, 18(3),* 429-472.