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Marketing and Data Privacy: A Bibliometric Analysis

Pazarlama ve Veri Gizliliği: Bibliyometrik Bir Analiz

Abstract

This study conducts a bibliometric analysis of publications related to data privacy and marketing within the Web of Science (WoS) database. Consequently, publications that include the terms "marketing" and "data privacy" in their titles, keywords, and abstracts were included in the study. The review identified 277 publications authored by 869 researchers between 2000 and 2024. The countries with the highest publications and citations are the United States, China, and the United Kingdom. Moreover, many interdisciplinary studies indicate that data privacy and marketing are intertwined from technological, social, and ethical perspectives. The findings highlight the critical role of legal regulations, technological advancements, and ethical considerations in shaping data privacy practices in marketing. Furthermore, the wide geographical distribution of these publications highlights the universality of data privacy concerns in marketing from a cultural context.

Keywords: Data Privacy, Marketing, Bibliometric Analysis

Jel Codes: M30, M31

Özet

Bu çalışma, Web of Science (WoS) veri tabanındaki veri gizliliği ve pazarlama ile ilgili yayınların bibliyometrik analizini yapmaktadır. Bu doğrultuda, başlık, anahtar kelime ve özet bölümlerinde "marketing" ve "data privacy" terimlerini içeren yayınlar çalışmaya dahil edilmiştir. İnceleme, 2000 ile 2024 yılları arasında 869 araştırmacı tarafından yazılan 277 yayını belirlemiştir. En fazla yayın ve atıf yapılan ülkeler Amerika Birleşik Devletleri, Çin ve Birleşik Krallık'tır. Ayrıca, birçok disiplinlerarası çalışma, veri gizliliği ve pazarlamanın teknolojik, sosyal ve etik açılardan iç içe geçtiğini göstermektedir. Bulgular, pazarlama uygulamalarında veri gizliliği ilkelerini şekillendirmede hukuki düzenlemelerin, teknolojik gelişmelerin ve etik hususların kritik rolünü vurgulamaktadır. Ayrıca, bu yayınların geniş coğrafi dağılımı, pazarlamada veri gizliliği endişelerinin kültürel bağlamda evrenselliğini ön plana çıkarmaktadır.

Anahtar Kelimeler: Veri Gizliliği, Pazarlama, Bibliyometrik Analiz

Jel Kodları: M30, M31

Introduction

Data privacy in marketing includes practices and policies regarding how customers' personal information is collected, used, shared, and protected. This concept has gained even more importance with the increasing concerns of consumers and the strict regulations introduced at the global level for protecting personal data (Martin and Murphy, 2017). Especially with the increase in digital marketing activities, how businesses collect and use customer data has been scrutinized with great care.

Data privacy is considered an essential element of gaining and maintaining customer trust. Consumers expect businesses to take necessary precautions to protect their personal information. These expectations are established on a legal basis by regulations such as the European Union's General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA) (Baik, 2020; Hoofnagle et al., 2019). Such regulations focus on transparency and consumer consent in data collection, storage, processing, and sharing practices. The legal dimension of marketing and data privacy is an essential aspect of this research area. Our analysis indicates that there are indeed publications in legal journals that address these issues. Notable contributions have been made by journals such as the *Computer Law & Security Review* and the *IEEE Transactions on Knowledge and Data Engineering*. These publications highlight the importance of legal frameworks and regulations in shaping data privacy practices in marketing. By incorporating legal perspectives, researchers can provide a more comprehensive understanding of the challenges and implications of data privacy in the marketing domain. This interdisciplinary approach ensures that both technological and legal considerations are addressed, leading to more robust and effective solutions.

For businesses, compliance with data privacy can be seen as more than just a legal requirement. It can also be viewed as a strategic advantage that positively affects brand image and customer loyalty (Flavián and Guinalú, 2006). Protecting customer information is an ethical responsibility and is critical to protecting businesses' reputations and complying with increasing legal obligations (López Jiménez et al., 2021). Customers trust businesses that protect their data and respect their privacy more. They are more likely to build long-term relationships with these businesses (Lauer and Deng, 2007). Therefore, establishing, implementing, and constantly reviewing data privacy policies is critical for businesses.

Data privacy strategies cover all processes related to customer data collection, use, and storage (Tene and Polonetsky, 2012). These include data minimization, limiting data retention time, robust data security measures, and developing rapid response mechanisms against data breaches (Wedel and Kannan, 2016). Additionally, giving consumers tools to control their data, such as options to manage information in their online profiles or opt out of receiving marketing communications, is an essential part of data privacy practices.

Accordingly, data privacy in marketing is a fundamental building block for a business's success in today's digital economy. Businesses must develop comprehensive and transparent data privacy policies and effectively implement these policies to meet consumers' privacy expectations and comply with legal regulations. This approach increases customer trust while minimizing potential legal risks and reputational damage. This research is designed to construct a theoretical model by conducting a bibliometric literature review on the intersection of marketing and data privacy. It accomplishes this by meticulously analyzing 277 publications identified in the Web of Science (WoS) database from 2000 to 2024, including marketing and data privacy in their titles, abstracts, or keywords.

The study seeks to address several key research questions:

RQ1: What types of documents on data privacy and marketing are cataloged in WoS?

RQ2: How are the data privacy and marketing articles distributed over time in WoS?

RQ3: What is the yearly average citation count for data privacy and marketing documents in WoS?

RQ4: How does the output of authors in the field of data privacy and marketing evolve in WoS?

RQ5: Which institutions are the leading contributors to data privacy and marketing research?

RQ6: From which countries do the most significant contributions to data privacy and marketing literature originate?

RQ7: Which countries' publications receive the most citations in data privacy and marketing?

RQ8: What are the most cited works globally in data privacy and marketing?

RQ9: What keywords are most common in the literature on data privacy and marketing in WoS?

RQ10: What collaboration networks exist among authors in the data privacy and marketing field in WoS?

The research questions were formulated to comprehensively examine the literature on marketing and data privacy and identify current trends, key contributions, and gaps in this field. The research questions allow us to analyze the distribution of marketing and data privacy studies over the years and citation analyses, international collaborations, and keyword analyses from various perspectives.

The organization of this study is as follows: Initially, it outlines the concept of data privacy within the context of marketing as discussed in the literature. This is followed by an in-depth examination of these concepts from a marketing viewpoint. Subsequently, the methodology section describes the process of bibliometric analysis. Finally, the findings of this research are elaborated upon, highlighting the study's contributions.

1. Marketing and Data Privacy

Data privacy in marketing covers concerns about how consumers' personal information is collected and used and the measures taken to protect that information (Lee et al., 2011). Applications in this field help businesses gain customer trust and ensure that legal obligations are fulfilled. Data privacy in marketing is a legal requirement and a significant opportunity for businesses to strengthen customer relationships and improve their brand image (Malthouse et al., 2013). Meeting and exceeding customers' privacy expectations can provide a competitive advantage for businesses today.

In marketing science, understanding the dynamics between data privacy and consumer behavior is crucial, as it highlights how consumer trust, influenced by privacy practices, directly impacts purchasing decisions. Conversely, consumers' privacy concerns significantly affect their brand preferences and online activities (Kesan et al., 2015). Technological advancements, particularly in artificial intelligence and machine learning, play a pivotal role in data analysis and gathering customer insights, necessitating strict adherence to data privacy throughout these processes (Kopalle et al., 2022). Similarly, utilizing big data analytics calls for applying data privacy principles to ensure the ethical handling of large datasets. Ethical marketing strategies that prioritize data privacy enhance brand image and foster transparency and trust with consumers, necessitating the integration of privacy principles in the development of marketing campaigns (Behzadinasab et al., 2020).

Moreover, navigating the complex legal compliance landscape across various jurisdictions becomes essential as businesses strive to align their marketing practices with global data privacy laws. Establishing best practices for data management, including the secure storage, processing, and disposal of customer information, is fundamental to maintaining consumer trust (Talesh, 2018). Furthermore, empowering consumers through education about their data rights and providing them with tools to manage their privacy preferences are critical steps toward fostering an environment of respect and transparency in the digital age (Anant et al., 2020). Altogether, these considerations underline the strategic importance of data privacy in marketing, serving to protect consumer rights and enhance the overall value and integrity of businesses in a highly connected world.

Therefore, discussions about data privacy in marketing have become increasingly significant, necessitating companies to act more conscientiously and responsibly. The discourse on data privacy in marketing has intensified in recent years due to several primary reasons:

1.1. Increasing Value of Personal Data:

Personal data holds substantial value as it enables marketing strategies to be more targeted and effective. These data are utilized to understand consumer behavior, conduct segmentation, and create personalized marketing campaigns (Okorie et al., 2024).

1.2. Respect for Consumer Privacy:

Consumers have become more aware of how their personal data are being used. This heightened awareness has led to growing concerns about data privacy and increased demands for protecting personal information (Okazaki et al., 2020).

1.3. Legal Regulations and Compliance:

Stringent data protection laws, such as the GDPR enacted in various regions worldwide, have compelled companies to reassess their data collection and processing methods. These laws mandate the protection of data privacy and the safeguarding of consumer rights (Bakare et al., 2024).

1.4. Data Breaches and Security Threats:

Data breaches and cyber-attacks have occurred in recent years in major corporations, revealing that consumer data is not always secure. Such incidents have again underscored the importance of data security and privacy (Markos et al., 2023).

1.5. Trust and Reputation:

Consumer trust is crucial for the success of a brand. Companies that fail to prioritize data privacy and experience breaches risk losing reputation and customers. Therefore, the attention brands pay to data privacy is vital for long-term customer relationships (Swani et al., 2021).

1.6. Technological Advancements:

The rapid advancement of technology has diversified data collection and analysis methods. Although technologies such as artificial intelligence, big data, and machine learning have increased data collection and processing capacity, they have also raised significant privacy concerns regarding their use (Quach et al., 2022).

1.7. Ethical Issues:

Data privacy is not only a legal and technical issue but also an ethical one. Marketers must adhere to ethical standards when collecting and using consumer data. Ethical violations can result in the loss of consumer trust and damage to brand reputation (Dhirani et al., 2023).

1.8. Imbalance Between Personalization and Privacy:

Providing personalized experiences in marketing offers a significant advantage; however, such personalization can infringe upon consumer privacy. Balancing this is a significant challenge for marketers (Chen et al., 2022).

1.9. Legal Implications of Data Privacy in Marketing

Data privacy in marketing not only encompasses ethical and strategic dimensions but also significant legal implications. Compliance with regulations such as the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA) is crucial (Park, 2019). These regulations impose strict requirements on how personal data is collected, stored, and processed, which can significantly impact marketing strategies. Non-compliance can result in severe penalties and loss of consumer trust (Quach et al., 2022).

1.10. Technological Innovations and Data Privacy

Advancements in technology, particularly in artificial intelligence (AI), machine learning, and big data, have transformed how businesses collect and analyze customer data. While these technologies offer powerful tools for personalized marketing, they also raise significant privacy concerns. Ensuring that data privacy principles are integrated into these technologies is critical for maintaining consumer trust and complying with legal requirements (Okorie et al., 2024).

1.11. Ethical Issues in Data Privacy

Beyond legal and technological aspects, data privacy in marketing involves substantial ethical considerations. Marketers must navigate the balance between personalization and privacy, ensuring that data collection practices respect consumer autonomy and transparency. Ethical marketing strategies that prioritize data privacy can enhance brand image and foster long-term consumer relationships (Kumar & Suthar, 2024).

Data privacy in marketing is essential. Protecting customers' personal information has become vital in gaining and maintaining consumer trust. As modern marketing strategies primarily rely on personal data, managing this data securely and ethically represents both an obligation and a competitive advantage for businesses. Enhancing customer trust strengthens brand loyalty, avoids legal sanctions, and protects the company's reputation. Therefore, while data privacy shapes the ethical and legal framework of marketing activities, it also offers opportunities for strengthening customer relationships and business development.

2. Methodology

This study investigates the intersection of marketing and data privacy within the marketing discipline. It employs a descriptive research approach aimed at detailing a particular event, phenomenon, or situation by describing its inherent characteristics, as defined by Donthu et al. (2021). The data for this study were sourced from the Web of Science (WoS) database, which serves as a

reliable resource for conducting citation analysis. The analysis was performed using the Bibliometrix package and Biblioshiny application in R Studio, utilizing the R programming language. This bibliometric analysis tool is advantageous for research purposes, enabling the discovery of new knowledge, conceptual progressions, data volumes, citation networks, and the identification of trends among researchers, institutions, or countries over time, according to Aria and Cuccurullo (2017).

The scope of this research encompasses articles identified by searching for the keyword combination "marketing AND data privacy" in the title, keywords, and abstract sections within the WoS database from 2000 to 2024. This database search was conducted in February 2024. The results include data up to February 2024, as the year is still ongoing. The study's findings offer insights into the analyzed publications, including their distribution over the years, the level of activity by country, keywords, citation frequencies, and more, all illustrated graphically.

3. Findings

3.1. General Findings Regarding Publications

Studies on marketing and data privacy registered in the WoS database have been published by 869 authors in 216 different sources between 2000 and 2024, as seen in Table 1. The main findings and characteristics of a bibliometric analysis conducted on marketing and data privacy literature spanning from 2000 to 2024 are detailed as follows. The analysis encompassed 277 documents, including articles, book chapters, and proceedings papers, derived from 216 sources such as journals and books. The dataset exhibited an annual growth rate of 1.7% in publications, with the average document age being approximately 4.31 years. Each document received 23.9 citations on average, contributing to 14,115 references across the dataset. From a content perspective, 528 Keywords Plus (ID) and 1,185 author's keywords (DE) were identified, highlighting the diverse topics covered. The research community involved 869 authors, with 39 of them having published single-authored documents. There were 41 single-authored documents, and the average number of co-authors per document was 3.58, indicating a collaborative trend in this field.

Furthermore, 35.02% of the documents involved international co-authorships, demonstrating the global nature of research collaborations. Articles were the most prevalent among the document types, with 262 instances, followed by book chapters and proceedings papers, numbering 8 and 7, respectively. This overview reflects the dynamic and collaborative effort within the scholarly community to explore the intersection of marketing and data privacy over the analyzed period.

Table 1: **Main Information about Publications**

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2000:2024
Sources (Journals, Books, etc)	216
Documents	277
Annual Growth Rate %	1,7
Document Average Age	4,31
Average citations per doc	23,9
References	14115
DOCUMENT CONTENTS	
Keywords Plus (ID)	528
Author's Keywords (DE)	1185
AUTHORS	
Authors	869
Authors of single-authored docs	39
AUTHORS COLLABORATION	
Single-authored docs	41
Co-Authors per Doc	3,58
International co-authorships %	35,02
DOCUMENT TYPES	
Article	262
Book chapter	8
Proceedings paper	7

3.2. Publications over the Years

The analysis illustrates the distribution of academic publications on the topics of marketing and data privacy from 2000 to 2024, organized by year. At first glance, it's evident that research in these areas has significantly increased over time. Starting with just 2 articles in 2000, the number of publications rose to 50 by 2021 and peaked at 54 in 2023. This increase demonstrates a growing interest in marketing and data privacy topics and the rising importance of research in these fields.

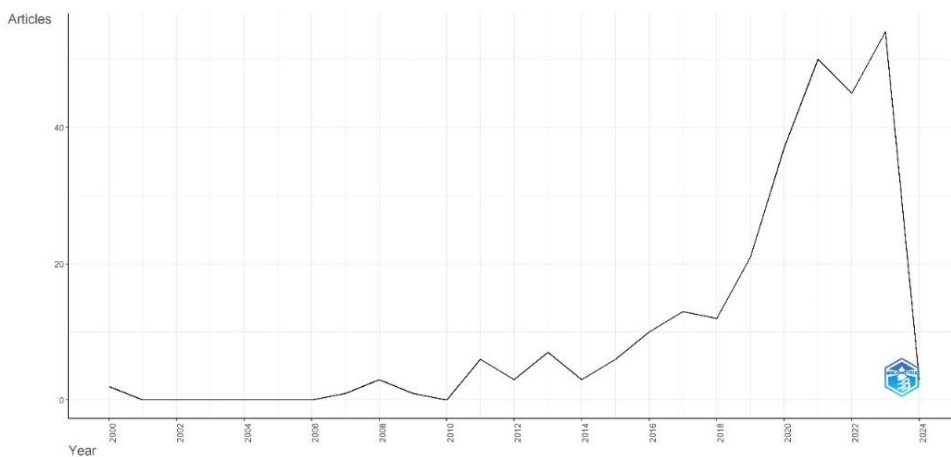
The absence of publications from 2001 to 2005 may indicate that the subject attracted relatively less attention in academic circles during this period. However, from 2007 onwards, particularly after

2011, a noticeable increase in the number of publications is observed. This trend can be associated with growing concerns over data privacy amid the expansion of big data, online marketing, social media, and mobile applications.

The period from 2016 to 2023 marks an even more pronounced acceleration in the number of publications. The surge in publications after 2019 suggests that the digital transformation in marketing activities has created new challenges and discussions around data privacy. Regulations like the GDPR, coming into effect during this period, could have significantly increased awareness and research needs in the field of data privacy.

The three articles listed for 2024 indicate that the year has not yet been completed, suggesting that the number could increase by year-end. Overall, the dataset highlights an upward trend in research on marketing and data privacy, emphasizing these areas as significant topics for future academic work. This trend signals that data privacy will continue to be a central issue in marketing strategies, driven by ongoing technological advancements and the continuous evolution of consumer behaviors.

Figure 1: **Annual Publications**



3.3. Average Citations Per Year

Table 2 presents the "Average Citations Per Year" for marketing and data privacy publications from 2000 to 2024. The table includes four columns: the year of publication, the mean total citations per article (MeanTCperArt), the number of publications in that year (N), the average citations per year (MeanTCperYear), and the number of years since publication (CitableYears).

3.3.1. Highly Cited Early Works

Publications from 2000 and 2007 have significantly high average citations per year, with 3.88 and 7.39, respectively, despite being some of the earliest works in the dataset. This suggests that these early publications have been foundational or highly influential in marketing and data privacy.

3.3.2. Peak Citations in 2015

2015 stands out remarkably with an average of 308.67 total citations per article and an impressive 30.87 average citations per year, despite being relatively recent with only ten citable years. This indicates that the works from 2015 have been exceptionally well-received and cited, suggesting they may have introduced significant advancements or critical insights into the field.

3.3.3. Declining Citations in Recent Years

There is a noticeable decline in the average citations per year for more recent publications, particularly from 2020 onwards. The average citations drop to as low as 0.56 by 2023 and slightly increase to 1.33 by 2024, although the latter is based on only one citable year. This trend could be attributed to the shorter time frame available for these publications to be cited and the ongoing saturation of the field with new research, making it harder for individual works to stand out.

3.3.4. Varied Citation Trends

The fluctuation in the mean total citations per article and the average citations per year across different years highlights the dynamic nature of research impact in the field. For example, a sharp increase in citations for articles published in 2015 contrasts with relatively modest citation rates in other years, reflecting the varying influence of research over time.

3.3.5. Increasing Publications Over Time

The number of publications (N) shows an increasing trend, peaking at 54 in 2023. This growing research volume underscores the expanding interest and ongoing development within marketing and data privacy.

The table reflects the evolving landscape of marketing and data privacy research, indicating periods of significant influence and shifts in research focus over time. The high citation rates for specific years suggest the introduction of groundbreaking work, while the overall increase in publications highlights the field's growing relevance and expansion. The recent decline in average

citations per year for newer publications may suggest the need for time to assess their impact or indicate the increasing challenge for new research to achieve prominence in a rapidly expanding field.

Table 2: Average Citations Per Year

Year	MeanTCperArt	N	MeanTCperYear	CitableYears
2000	97	2,00	3,88	25
2007	133	1,00	7,39	18
2008	79,33	3,00	4,67	17
2009	0	1,00	0,00	16
2011	13,17	6,00	0,94	14
2012	4,67	3,00	0,36	13
2013	8,86	7,00	0,74	12
2014	43,67	3,00	3,97	11
2015	308,67	6,00	30,87	10
2016	38,6	10,00	4,29	9
2017	36,15	13,00	4,52	8
2018	30,5	12,00	4,36	7
2019	44,57	21,00	7,43	6
2020	15,89	37,00	3,18	5
2021	13,94	50,00	3,48	4
2022	9,07	45,00	3,02	3
2023	1,13	54,00	0,56	2
2024	1,33	3,00	1,33	1

3.4. Most Relevant Sources

According to Table 3, the top three journals with the most publications on marketing and data privacy are IEEE Access with 11 articles, Applied Energy with six articles, and Energy alongside IEEE Internet of Things Journal, each with five articles. This indicates a strong emphasis on the intersection of technology, energy, and data privacy within the marketing discipline. Analyzing Table 3 for marketing and data privacy publications from 2000 to 2024 using bibliometric methods in R provides a comprehensive overview of the critical journals and outlets contributing to this field. Table 3 showcases a diverse range of sources, indicating a broad interest and interdisciplinary approach to the study of marketing and data privacy.

3.4.1. Interdisciplinary Focus

The presence of journals from various disciplines, such as IEEE Access, Applied Energy, and IEEE Internet of Things Journal, underscores the interdisciplinary nature of research in marketing and data privacy. This reflects the integration of technological, legal, and energy-related perspectives in addressing data privacy issues within marketing.

3.4.2. Leading Sources

IEEE Access, with 11 articles, emerges as the top source, highlighting the significant impact of technology and engineering research on the marketing and data privacy discourse. This is followed by Applied Energy and journals focusing on the Internet of Things and computer law, which further indicates the technological underpinnings of current data privacy concerns.

3.4.3. Specialized Research Areas

The table reveals specialized research areas within the broader marketing and data privacy fields, as seen in publications like Computer Law & Security Review and IEEE Transactions on Knowledge and Data Engineering. This suggests a strong focus on data privacy's legal and technical aspects in marketing.

3.4.4. Emerging Trends

Various sources, including those focused on sustainable energy and smart grids, point to emerging trends in marketing and data privacy research. These trends likely reflect the growing importance of data privacy in the context of energy consumption, innovative technology, and the Internet of Things.

3.4.5. Global Research Contributions

The diversity of journals, from IEEE Transactions to Business Horizons and the Journal of Research in Interactive Marketing, indicates global research contributions and a multifaceted approach to studying marketing and data privacy. This encompasses contributions from the fields of law, information systems, engineering, and marketing itself.

Overall, Table 3 highlights the dynamic and evolving nature of marketing and data privacy research, marked by interdisciplinary contributions and the influence of technological advancements. The wide array of journals involved underscores the complexity of data privacy issues in marketing, necessitating insights from various fields to address the challenges and opportunities presented by digital technologies and regulatory changes.

Table 3: **Most Relevant Sources**

Sources	Articles
IEEE ACCESS	11
APPLIED ENERGY	6
ENERGY	5
IEEE INTERNET OF THINGS JOURNAL	5
COMPUTER LAW & SECURITY REVIEW	4
IEEE TRANSACTIONS ON KNOWLEDGE AND DATA ENGINEERING	4
IEEE TRANSACTIONS ON POWER SYSTEMS	4
BUSINESS HORIZONS	3
IEEE TRANSACTIONS ON SMART GRID	3
JOURNAL OF RESEARCH IN INTERACTIVE MARKETING	3
SUSTAINABILITY	3

3.5. Authors' Production over Time

Figure 2 provides an insightful overview of prolific authors' publication frequency, total citations (TC), and average annual citations (TCpY). A closer analysis reveals several key observations:

3.5.1. Active Authors

Authors such as CHEN Y, IRIA J, LI F, and LI Y show repeated contributions over multiple years, indicating their ongoing research focus on marketing and data privacy. Their consistent output over time highlights a sustained interest and evolving expertise in the intersection of these fields.

3.5.2. Citation Impact

Figure 2 showcases significant variations in citation impact, with some authors achieving high total citations for their work in specific years. For example, YU J's work in 2018 and 2019 has garnered exceptionally high citations, indicating influential research contributions during these years. Similarly, REN J's 2020 publication stands out with 134 total citations, reflecting a notable impact in the field.

3.5.3. Emerging Contributions

The presence of publications from recent years, such as 2022 and 2023, with authors like IRIA J and ZHANG Y, suggests new and emerging contributions to the literature. Although some of these newer publications have lower total citations, this is likely due to the shorter time available for citation accumulation.

3.5.4. Highly Cited Authors

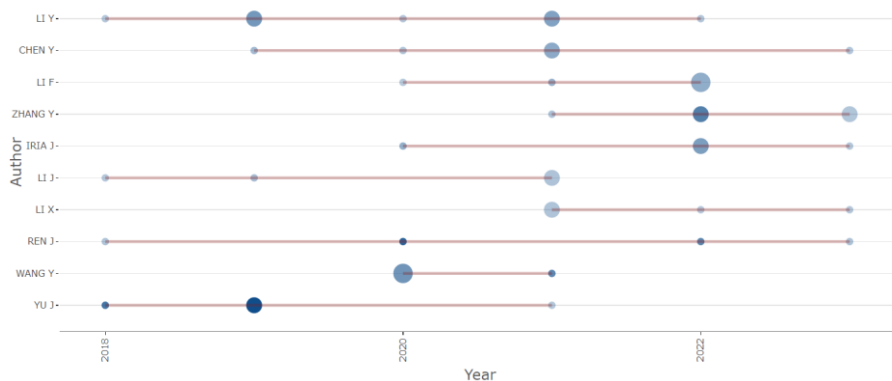
Authors like YU J and WANG Y have demonstrated significant citation impact, indicating their research's relevance and the attention it has received from the academic community. Their work, particularly in the earlier years of their publication record, has achieved high citations per year, underscoring the value and influence of their contributions.

3.5.5. Variability in Citations Over Time

Figure 2 illustrates the variability in authors' citation rates over time, with some years showing higher average citations per year for specific authors. This could reflect the evolving nature of the research topics, the quality of the research contributions, or changes in the authors' research focus.

Overall, Figure 2 highlights various researchers' dynamic contributions to marketing and data privacy. It showcases who the active and influential authors are and how their research impact evolves over time. The data points to a vibrant and continuously developing study area, with specific authors leading the discourse through their impactful and frequently cited work.

Figure 2: Authors' Production over Time



3.6. Most Relevant Affiliations

Figure 3 showcases a diverse and global representation of academic and research institutions contributing significantly to this field. Here are some notable insights:

3.6.1. Leading Institutions

Georgetown University has the highest number of articles (12), indicating its prominent role in advancing marketing and data privacy research. This is closely followed by Shanghai Jiao Tong University and the University of British Columbia, each contributing ten articles, highlighting their intense focus and expertise in these areas.

3.6.2. Global Spread

The figure reflects a global spread of institutions from various continents, underscoring the worldwide interest and collaborative efforts in researching marketing and data privacy. This includes universities from North America, Asia, Europe, and Australia, demonstrating the global nature of data privacy issues in marketing.

3.6.3. Interdisciplinary Research

The presence of diverse universities specializing in different fields, such as technology (e.g., Tsinghua University), law (e.g., Georgetown University), and business (e.g., University of British Columbia), points to the interdisciplinary approach taken towards research in marketing and data privacy. This suggests that effective solutions and insights come from a cross-section of disciplines.

3.6.4. High Research Activity

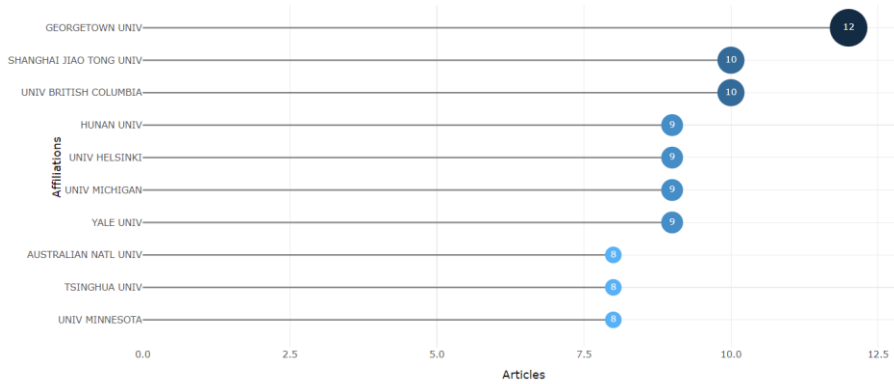
Institutions like Hunan University, the University of Helsinki, and Yale University, each with nine articles, alongside others with significant contributions, indicate high research activity and a deep interest in the intersection of marketing and data privacy. This suggests a robust academic engagement with the challenges and opportunities presented by data privacy in marketing.

3.6.5. Emerging and Established Contributors

The list includes a mix of established research powerhouses and emerging contributors, highlighting this field's dynamic and evolving research landscape. For example, newer contributors like Xidian University and the National University of Singapore show a growing interest and capacity to contribute to this domain.

Overall, Figure 3 highlights the significance of marketing and data privacy research across various academic and research institutions worldwide. The contributions of these institutions not only advance the academic discourse but also have practical implications for businesses, policymakers, and society at large, addressing the complexities of data privacy in the digital age of marketing.

Figure 3: Most Relevant Affiliations



3.7. Corresponding Author's Countries

Figure 4 and Table 4 provide the number, ratio, and frequencies of publications according to the country and the status of single-country publications (SCP) and multiple-country publications (MCP). They reveal significant insights into global research contributions in these areas. Highlighting key outcomes:

3.7.1. Dominant Contributions

The United States leads with 71 articles, demonstrating its prominent role in marketing and data privacy research. This is followed by China with 57 articles, underscoring the country's significant contribution and interest in this research domain. The United Kingdom ranks third with 17 articles, highlighting its substantial input in the field.

3.7.2. Collaboration Patterns

China's high MCP ratio (0.509) indicates a strong tendency towards international collaborations in this research area. Conversely, countries like India and Germany show a lower MCP ratio, suggesting a preference for domestic collaborations or single-country research efforts.

3.7.3. Diverse Global Participation

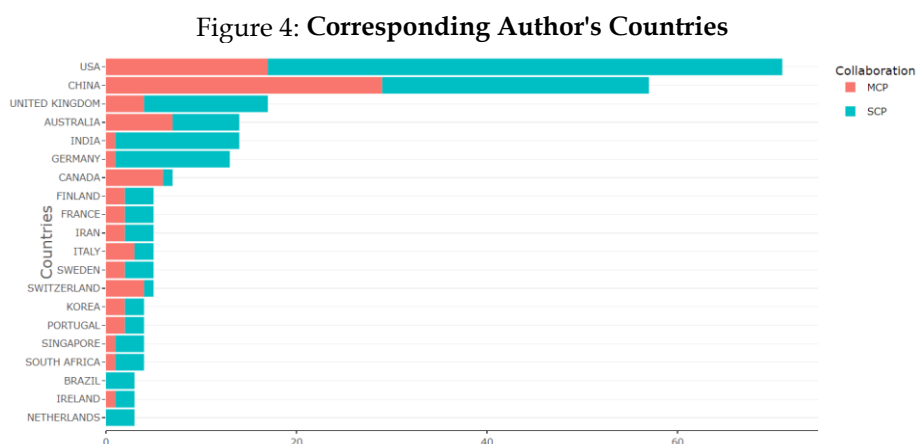
Figure 4 and Table 4 showcase contributions from a wide range of countries, indicating a global interest in marketing and data privacy research. Countries like Australia, Canada, and those in Europe (e.g., Germany, Finland, and France) have made notable contributions, reflecting the worldwide relevance of these topics.

3.7.4. High International Collaboration in Some Countries

Canada's high MCP ratio (0.857) and Switzerland's (0.800) suggest that a significant portion of their research in this area involves international collaboration, which could be indicative of the global nature of data privacy issues and the cross-border expertise required to address them.

3.7.5. Emerging Contributors

Countries like Iran, Italy, Sweden, and South Korea, each contributing with a balanced mix of single and multiple-country publications, highlight the growing interest and diversification of research contributions across different regions.



This analysis underscores the importance of international collaboration in advancing marketing and data privacy discourse. It reflects the diversity of contributors across continents and the varying degrees of collaborative and independent research efforts among different nations. The data points to a vibrant and globally engaged research community, with significant contributions from leading research nations and emerging contributors, indicating a broad interest in the challenges and opportunities presented by data privacy in the marketing field.

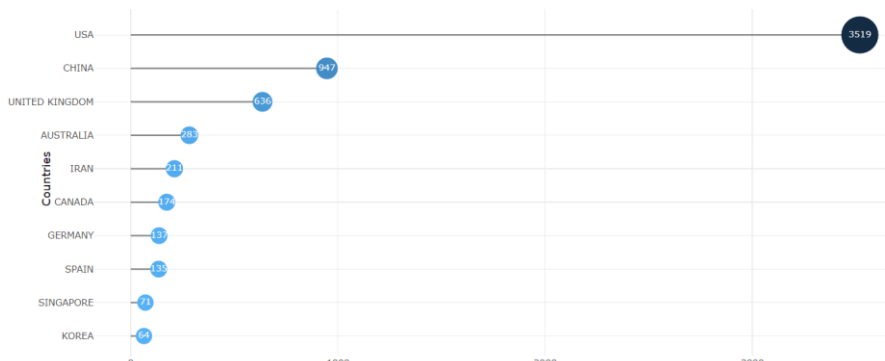
Table 4: Corresponding Author's Countries

Country	Articles	SCP	MCP	Freq	MCP_Ratio
USA	71	54	17	0,256	0,239
CHINA	57	28	29	0,206	0,509
UNITED KINGDOM	17	13	4	0,061	0,235
AUSTRALIA	14	7	7	0,051	0,5
INDIA	14	13	1	0,051	0,071
GERMANY	13	12	1	0,047	0,077
CANADA	7	1	6	0,025	0,857
FINLAND	5	3	2	0,018	0,4
FRANCE	5	3	2	0,018	0,4
IRAN	5	3	2	0,018	0,4

3.8. Most Cited Countries

The USA leads significantly in total citations (TC) with 3519 citations and an average of 49.60 per article. This indicates the substantial impact and influence of research from the USA in marketing and data privacy. Following the USA, China and the United Kingdom also show substantial contributions, with total citations of 947 and 636, respectively. However, the average citations per article for China (16.60) are lower than the UK (37.40), suggesting that while both countries are prolific in their output, the UK's research might have a broader impact on average. Iran and Australia also have higher average article citations of 42.20 and 20.20, respectively. This highlights the significant impact of research contributions.

Figure 5: Most Cited Countries



3.9. Most Globally Cited Documents

The paper published in *Transportation Research Part A: Policy and Practice* stands out with an impressive 1,700 total citations and an average of 170 citations per year, showcasing its pivotal role in shaping discussions around transportation's intersection with data privacy and marketing. The normalized citation count further emphasizes its broad impact. The list includes a variety of journals, indicating that research on marketing and data privacy spans multiple disciplines, from *IEEE Transactions on Power Systems* to *The Journal of the Academy of Marketing Science*. This multidisciplinary approach highlights the complex and intertwined nature of data privacy issues within marketing strategies and technological advancements.

Papers from recent years, like Morstyn T (2019) and Cai Z (2019), with high annual citation rates, suggest that the interest in marketing and data privacy remains robust and evolving. Topics such as power systems and industrial informatics suggest a growing focus on data privacy's practical and systemic implications in the technological and energy sectors. The documents originate from diverse countries, indicating a global interest and contribution to marketing and data privacy research. This diversity underscores the universal relevance of data privacy concerns across different regulatory and cultural contexts.

Authors like Martin KD and Yang P, with their highly cited works in prestigious journals, have significantly contributed to the literature, influencing subsequent research and policy discussions. Their work demonstrates the ongoing evolution of thought leadership in this area.

Overall, Table 5 reveals that research on marketing and data privacy is vibrant, diverse, and of significant interest across various academic and practical domains. The high citation counts reflect the relevance and urgency of addressing data privacy in the digital age, highlighting key contributions that have shaped the field and will likely continue to influence future directions in marketing strategies, policy formulation, and technological innovation.

Table 5: Most Global Cited Documents

Paper	DOI	Total Citation	TC per Year	Normalized TC
FAGNANT DJ, 2015, TRANSP RES PT A-POLICY PRACT	10.1016/j.tra.2015.04.003	1700	170,00	5,51
MORSTYN T, 2019, IEEE TRANS POWER SYST	10.1109/TPWRS.2018.2834472	276	46,00	6,19
MARTIN KD, 2017, J ACAD MARK SCI	10.1007/s11747-016-0495-4	264	33,00	7,30
CAI Z, 2019, IEEE TRANS IND INFORM	10.1109/TII.2019.2911697	176	29,33	3,95
EBERLEIN B, 2008, GOVERNANCE-INT J POLICY ADMI	10.1111/j.1468-0491.2007.00384.x	157	9,24	1,98
HE Z, 2018, IEEE TRANS VEH TECHNOL	10.1109/TVT.2017.2738018	154	22,00	5,05
LUPTON D, 2016, WOMEN BIRTH	10.1016/j.wombi.2016.01.008	141	15,67	3,65
YANG P, 2020, IEEE ACCESS	10.1109/ACCESS.2020.3009876	134	26,80	8,43
BACH D, 2007, J EUR PUBLIC POLICY	10.1080/13501760701497659	133	7,39	1,00
LITMAN J, 2000, STANFORD LAW REV	10.2307/1229515	116	4,64	1,20

3.10. Most Frequent Words

The terms "information" (f=17) and "market" (f=17) are among the most frequently mentioned, highlighting the fundamental role of information in marketing and the centrality of market dynamics. The focus on "model" (f=16) underlines the importance of theoretical and analytical frameworks in understanding these dynamics.

3.10.1. Technological Emphasis

The significant mention of "big data" (f=11), "technology" (f=11), and "internet" (f=13) points to the critical impact of technology on marketing strategies and the necessity of addressing data privacy within digital contexts. These terms reflect the challenges and opportunities of technological advancements in data management and marketing practices.

3.10.2. Concerns Over Privacy and Security

The equal frequency of "privacy" (f=11) and "security" (f=11) terms suggests a strong focus on safeguarding consumer information, indicating the increasing awareness and regulatory emphasis on data protection within the marketing discipline.

3.10.3. Emerging and Innovative Themes

The appearance of "blockchain" (f=4), "analytics" (f=4), and "social media" (f=4) among the frequent terms signals emerging areas of interest. These areas represent new frontiers in marketing research, dealing with the security, analysis, and utilization of data and the evolving landscape of consumer engagement through digital platforms.

3.10.4. Cross-Section with Energy and Sustainability

The mention of "energy" (f=10) highlights an intriguing intersection between marketing, data privacy, and the energy sector, possibly pointing to research on consumer data privacy in the context of smart grids and renewable energy initiatives.

3.10.5. Consumer-Centric Research

The emphasis on "trust" (f=8), "online" (f=8), and "protection" (f=8) underscores the consumer-centric nature of research in this field. These terms emphasize the importance of building consumer trust, protecting personal information, and navigating the complexities of online environments in marketing strategies.

This frequency analysis reveals the multidimensional and evolving nature of marketing and data privacy research, encompassing technological, ethical, and consumer-oriented perspectives. It underscores the interplay between traditional marketing concepts and the contemporary challenges

introduced by digital transformation, highlighting the field's dynamic response to changing technologies, regulatory landscapes, and consumer expectations.

Table 6: Most Frequent Words

Words	Occurrences
information	17
market	17
model	16
internet	13
management	13
big data	11
framework	11
privacy	11
security	11
technology	11

3.11. Collaboration Network of Authors

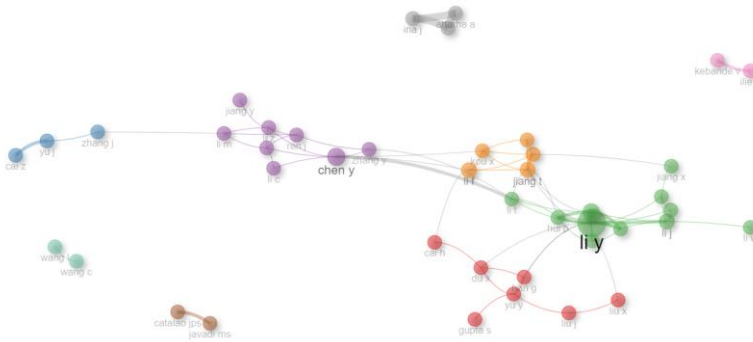
The highlights several key researchers, such as Li Y (Cluster 3, Betweenness = 218.67), Chen Y (Cluster 4, Betweenness = 185.88), and Li T (Cluster 3, Betweenness = 171.35), who play pivotal roles in bridging different parts of the collaboration network. Their high betweenness scores indicate they serve as significant connectors among various research clusters, facilitating the flow of information and collaboration across the network. Yu Y (Cluster 1, PageRank = 0.02939) and Crowcroft J (Cluster 3, PageRank = 0.04169) are identified as influential based on their PageRank scores, suggesting that they are central to the network and their work is widely recognized and built upon by others. This metric highlights authors central to disseminating knowledge within the field (see Figure 6).

Multiple clusters (ranging from 1 to 9) indicate a diverse research landscape within the marketing and data privacy domain. Each cluster may represent a specific thematic or methodological focus, illustrating the field's multifaceted nature. Closeness measures like those for Catalao JPS, Javadi MS, Ilie D, and KEBANDE V (Closeness = 1 in Clusters 6 and 7) suggest that some authors have straightforward paths to all other researchers in their cluster, potentially indicating tightly-knit subgroups or highly collaborative research teams within the broader network.

Authors with lower Betweenness but significant closeness or PageRank scores, such as Gupta S and Han G (Cluster 1), may represent emerging collaborators whose influence is growing within specific niches or new research areas in marketing and data privacy.

Overall, the "Collaboration Network" table reveals the complex and interconnected marketing and data privacy research landscape. It showcases critical individuals who significantly impact the field through their central roles in collaboration networks. Additionally, the diversity of clusters and varying levels of influence and connectivity among researchers underscore the dynamic and collaborative nature of research in this area, highlighting established leaders and rising contributors.

Figure 6: Authors Collaboration Network



CONCLUSION AND DISCUSSION

This study presents a bibliometric analysis of marketing and data privacy academic research. The data is derived from 277 publications in the Web of Science (WoS) database covering the years 2000-2024. The findings reveal a significant increase in research and the adoption of an interdisciplinary approach in this domain.

Publications on marketing and data privacy began with only two articles in 2000, peaked at 50 articles in 2021, and reached their highest level with 54 articles in 2023. This result indicates a growing interest and research activity in the field over time. The bibliometric analysis confirms the increasing importance of data privacy in marketing.

The increase in the number of publications in 2023, despite a decline in citations, can be attributed to several factors. Firstly, new publications often take time to be discovered and cited by other researchers. The works published in 2023 may not have had sufficient time to accumulate citations. Secondly, an increase in the number of publications can dilute the citations across more works, leading to a lower average number of citations per publication. Thirdly, the field of marketing

and data privacy may be reaching a saturation point, where new publications do not attract as much attention as earlier works. Lastly, the quality and impact of the publications can vary, and not all new publications may be perceived as equally influential or innovative, resulting in fewer citations.

Most publications in this field are in journals such as IEEE Access, Applied Energy, and IEEE Internet of Things Journal. These journals highlight the significance of technology in marketing and data privacy, demonstrating the topic's wide-reaching impact on interdisciplinary areas. The information about the journals publishing research on marketing and data privacy is crucial for guiding future researchers in this field. Knowing which journals are most active and influential can help researchers target their submissions to the right outlets, thereby increasing the visibility and impact of their work. This finding highlights the interdisciplinary nature of the field, with significant contributions coming from journals focused on technology, energy, law, and business. By understanding the landscape of influential journals, researchers can better navigate the publication process and contribute more effectively to the ongoing discourse in marketing and data privacy.

The United States leads with 71 publications, followed by China with 57. This result showcases global research efforts and marketing and data privacy collaborations. The analysis of the most cited countries and the countries of the relevant authors reveals substantial global contributions from the USA, China, and the United Kingdom. This global perspective underscores the universal importance of data privacy concerns across different regulatory, cultural, and economic contexts. It also highlights the importance of international collaboration in advancing research and developing best practices for data privacy in marketing. The information provided in the "Most Relevant Affiliations" section is valuable for both researchers and practitioners in the field of marketing and data privacy. For researchers, identifying the leading institutions can help in understanding where the most influential and high-impact research is being conducted. This can guide researchers in seeking potential collaborations, identifying leading experts, and targeting institutions that are at the forefront of this field. For practitioners, knowing which institutions are most active in this research area can help in finding reliable sources of knowledge, best practices, and innovative solutions to data privacy challenges in marketing. Furthermore, this information can assist in recognizing centers of excellence that can offer training, consultancy, and partnership opportunities to implement effective data privacy strategies.

High betweenness centrality scores for authors such as Li Y, Chen Y, and Li T indicate strong collaboration and networks among authors. These authors facilitate the flow of information and cooperation between different research clusters. Over time, the authors' productivity and collaboration networks analysis identifies vital researchers and institutions making significant contributions to the field. This reflects a vibrant and evolving research community led by influential and frequently cited authors and institutions.

Additionally, the frequency analysis of terms like "information," "market," "model," and "internet" illustrates the main themes and concerns within the field. This result reflects the critical role of information management, the impact of technological advancements, and the centrality of consumer privacy concerns in marketing strategies. The emphasis on terms like "big data," "security," and "internet" among the most frequently used words highlights the challenges and opportunities presented by the digital transformation of marketing practices.

This analysis demonstrates that marketing and data privacy research is dynamic and continually evolving. Technological advancements, digital transformation, and regulatory changes are the main factors shaping research in this area. Furthermore, interdisciplinary approaches and global collaborations contribute to developing more comprehensive and effective marketing and data privacy solutions. This study highlights the significant evolution of research on data privacy in marketing, its interdisciplinary nature, global contributions, and dynamic collaboration among researchers. As technological advancements and regulatory changes continue to drive data privacy as a central issue in marketing strategies, this research area is expected to remain vibrant and critically important. Data privacy has emerged as a critical issue in marketing science, profoundly affecting the relationship between companies and consumers.

Technological advancements and the evolution of regulatory frameworks shape future projections in this field. Emerging technologies such as artificial intelligence and machine learning provide more sophisticated personalized marketing strategies while increasing consumer concerns about data privacy. Growing consumer awareness and demand for data privacy compel companies to adopt more transparent, accountable, and consumer-focused data usage policies. This situation has also attracted the attention of regulatory bodies, leading to the creation of stricter data privacy laws worldwide. The noticeable increase in publications following the introduction of stringent data protection regulations such as GDPR and CCPA emphasizes the dynamic nature of this field. This result reflects growing awareness and response to technological advancements and regulatory changes in data privacy practices. In the coming years, technological advancements, evolving consumer expectations, and regulatory frameworks will significantly change marketing strategies. Innovations such as blockchain technology have the potential to enhance data privacy and security, empowering consumers with greater control over their data while deepening the trust relationship between companies and consumers. These technologies also enable companies to develop effective marketing strategies that respect consumer privacy preferences.

The findings identify vital researchers, institutions, and countries playing crucial roles in developing marketing strategies and data privacy policies. Therefore, this orientation provides a critical foundation for future research and highlights potential collaboration opportunities that could contribute to advancements in this field. Research in marketing and data privacy holds excellent importance both academically and practically. This study is essential for addressing the challenges and opportunities of the digital age and provides significant insights that will guide future work in these

areas. Thus, the study offers a different perspective in responding to the challenges and opportunities brought by the digital age and provides essential insights that will continue to guide future work in this field.

In conclusion, future projections on data privacy will be shaped by the interaction between technology and regulatory frameworks. Companies and regulatory bodies must adapt to meet consumer demands for data privacy, leading to more incredible innovation and transparency in marketing practices. These dynamics can create an ecosystem that protects consumer rights while enabling companies to develop effective marketing strategies.

While this bibliometric analysis is comprehensive, several limitations must be considered. Firstly, the data source is limited to the WoS database. Although WoS is a reputable and widely used database, it does not cover all academic publications. Including other databases such as Scopus, Google Scholar, or IEEE Xplore could provide a more comprehensive view of the literature. Furthermore, this study does not consider publications in languages other than English, which risks overlooking contributions from non-English research. Including multilingual databases could mitigate this limitation.

Moreover, this study relies heavily on citation metrics to measure the impact and significance of publications. However, citation counts do not always accurately reflect the quality or impact of the research.

Addressing these limitations in future research could provide a more comprehensive and detailed understanding of marketing and data privacy. Including additional databases, extending the time frame, and considering multilingual publications could build upon these analytical findings and further enrich this field.

ETHICAL STATEMENT

The author(s) declare that all processes of the study comply with research and publication ethics, adhering to ethical standards and principles of scientific citation.

The study does not require ethical permission.

AUTHOR CONTRIBUTIONS

The study is a single-authored research, and the author's contribution rate is 100%.

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CONFLICT OF INTEREST

There is no conflict of interest regarding this study.

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