

SCHOLARLY TRENDS AND EMERGING THEMES IN ONLINE DISPUTE RESOLUTION: A BIBLIOMETRIC ANALYSIS

* NOR 'ADHA AB HAMID,¹ NORZIAH OTHMAN,² NURHAYATI AB
GHANI³, TUAN NURHAFIZA RAJA AB AZIZ⁴

^{1,3,4} FACULTY OF SYARIAH AND LAW UNIVERSITI ISLAM SELANGOR (UIS) 43000 KAJANG, SELANGOR,
MALAYSIA.

² FACULTY OF ECONOMICS, ACCOUNTANCY AND MANAGEMENT UNIVERSITI ISLAM SELANGOR (UIS)
43000 KAJANG, SELANGOR, MALAYSIA

Abstract

This study conducts a bibliometric analysis to explore the academic landscape of Online Dispute Resolution (ODR), focusing on research trends, influential contributions and emerging themes from 2020 to 2025. Using the Scopus database, 196 journal articles published in English across subject areas such as sociology, business, economics and psychology were analysed. The results reveal a steady growth in research output, highlighting increasing global interest in ODR technologies and practices. Key research areas include technology integration in dispute resolution, cross-border mediation and the role of artificial intelligence in enhancing procedural efficiency. Citation analysis identified seminal works on AI-powered ODR platforms and legal frameworks for cross-jurisdictional disputes as highly influential. Keyword co-occurrence analysis highlighted themes such as “digital mediation,” “access to justice,” and “cybersecurity.” The findings also point to a rising emphasis on integrating advanced technologies into ODR systems, reflecting the field's dynamic evolution. However, limitations of this study include reliance on a single database and exclusion of non-English literature, potentially limiting the scope of the findings. Future research should explore underrepresented themes such as cultural sensitivity in ODR, its application in emerging economies and the ethical implications of AI-driven dispute resolution. These areas offer valuable opportunities to enhance both the theoretical understanding and practical applications of ODR in the modern digital era.

Keywords: Bibliometric analysis, Digital, Dispute, Legal frameworks, ODR.

INTRODUCTION

Online Dispute Resolution (ODR) is an innovative approach to resolving disputes that leverages digital technology to facilitate the resolution of conflicts outside traditional courtrooms. Emerging as a response to the increasing digitization of society and the limitations of conventional dispute resolution mechanisms, ODR offers a flexible, efficient and cost-effective alternative for addressing disputes, particularly in areas such as e-commerce, consumer complaints and cross-border conflicts. By utilizing platforms that incorporate tools like video conferencing, artificial intelligence and automated negotiation systems, ODR aims to make justice more accessible, especially for individuals and businesses that may find traditional litigation prohibitively expensive or time-consuming. Its growing relevance is underscored by its adoption in various sectors, including financial services, healthcare and online marketplaces.

Despite its potential, ODR faces several challenges that have been highlighted in recent scholarly discussions. One critical issue is the lack of consistent legal frameworks and standards governing ODR processes, which can lead to disparities of how disputes are handled across jurisdictions. This is particularly problematic in cross-border disputes, where differing national regulations may create confusion or undermine the enforceability of ODR outcomes. Recent studies, such as those by Rabinovich-Einy and Katsh (2019), emphasize the need for international cooperation to develop harmonized guidelines that ensure fairness, transparency and accountability in ODR systems. Without such frameworks, there is a risk that ODR could perpetuate existing inequalities or fail to provide equitable solutions for all parties involved.

Another pressing concern is the ethical and practical implications of integrating advanced technologies like artificial intelligence (AI) into ODR platforms. While AI-driven tools can enhance efficiency by automating routine tasks and predicting case outcomes, they also raise questions about bias, transparency and the loss of human oversight. For instance, research by Hibah (2022) highlights the potential for algorithmic bias to disproportionately affect marginalized groups, particularly when AI systems are trained on datasets that reflect historical inequalities. Recent works, such as those by Rule (2020), call for interdisciplinary research that combines legal, technological and sociological perspectives to address gaps in understanding how ODR operates in practice. By addressing these challenges and fostering collaboration among stakeholders, ODR has the potential to transform dispute resolution, making it more inclusive and adaptable to the demands of the digital age.

However, achieving this vision will require ongoing efforts to address the ethical, legal and technical issues that currently limit its effectiveness.

Bibliometric analysis serves as a powerful tool for mapping the academic landscape, providing valuable insights into research productivity, citation networks and the thematic development of ODR-related studies. This method is particularly useful for identifying emerging trends, key scholarly contributions and gaps in existing literature, allowing researchers and practitioners to build upon a structured body of knowledge. Despite the growing interest in ODR practices, much of the existing literature remains largely descriptive or conceptual, lacking a comprehensive quantitative analysis of scholarly output. As a result, there is a limited understanding of academic trends, core thematic areas and the most influential contributors in the field. Furthermore, the absence of bibliometric studies in this area restricts the ability to assess the development and impact of ODR-related research systematically.

Bridging this gap is essential for advancing the discipline and providing clearer directions for future studies, particularly in exploring under-researched yet critical aspects of ODR. Conducting bibliometric analyses can help establish a more structured research agenda, ensuring that emerging challenges and opportunities within the field are effectively addressed.

This study aims to conduct a comprehensive bibliometric analysis of scholarly literature on ODR practices. Specifically, it examines key contributors to ODR research, including authors, journals and institutions, while also identifying prominent keywords and citation patterns that highlight influential works and thematic priorities. By shedding light on underexplored areas and emerging trends in ODR literature, this study seeks to uncover potential directions for future research. Ultimately, it aims to establish a structured framework in understanding the current landscape of ODR research and guiding its future development.

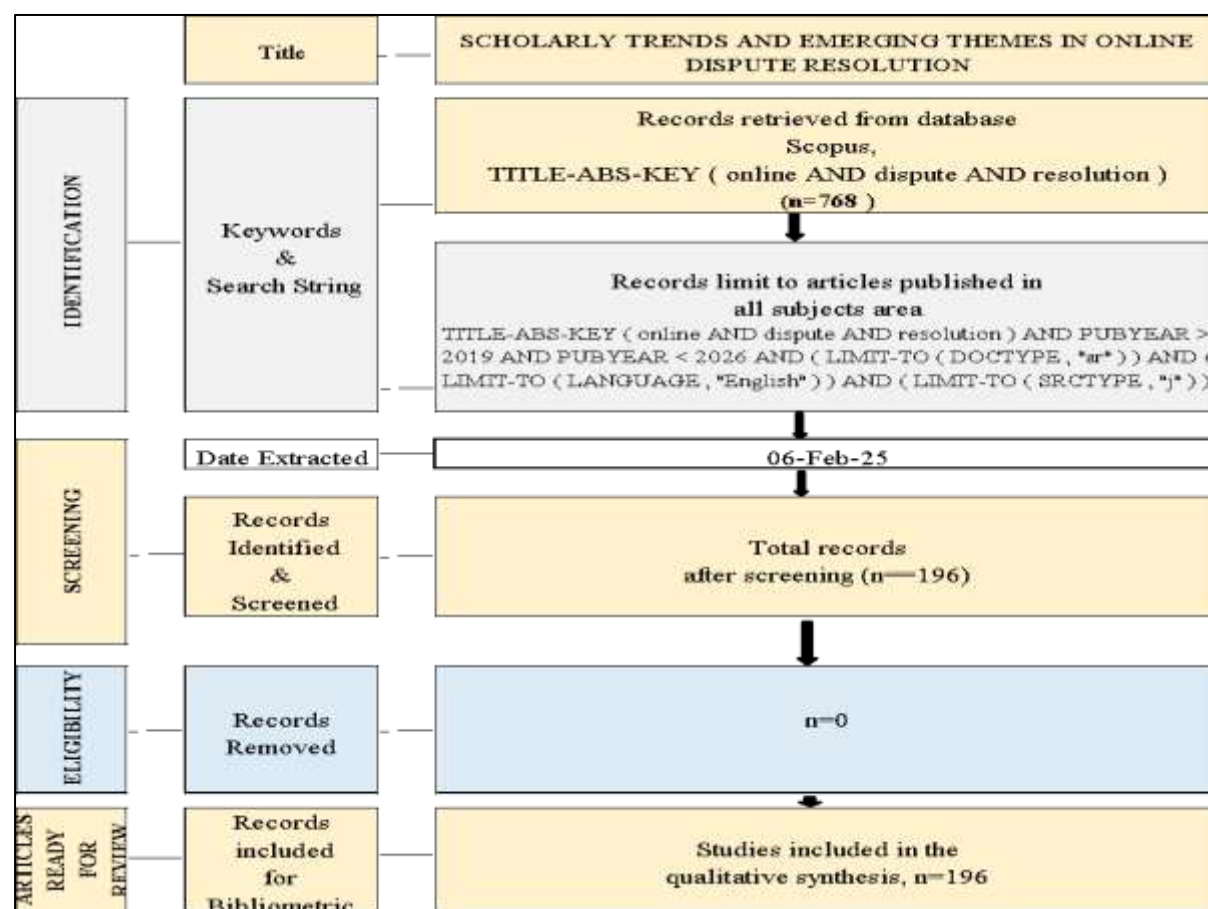
METHODOLOGY

The term "bibliometrics" was first introduced by Alan Pritchard in 1969 in his pioneering work *Statistical Bibliography or Bibliometric* (Pritchard, 1969; Andres, 2009; Gingras, 2016). Since then, bibliometric analysis has been widely adopted to map the intellectual structure of various knowledge domains. This method offers a systematic approach to examining the evolution and composition of a scholarly field (White & McCain, 1998). In this study, a bibliometric analysis is conducted to quantitatively assess scholarly publications related to Online Dispute Resolution (ODR), using Scopus as the primary data source. Scopus was selected for three main reasons: first, its stringent indexing criteria ensure the inclusion of high-quality and relevant documents; second, its extensive coverage of the social sciences and educational research domains surpasses that of Web of Science (Hallinger & Nguyen, 2020); and third, its advanced bibliographic data export capabilities outperform those of Google Scholar, making it an ideal choice for bibliometric studies (White & McCain, 1998).

To compile the bibliometric dataset, an advanced search query was conducted in Scopus using the following string: `TITLE-ABS-KEY ( online AND dispute AND resolution ) AND PUBYEAR > 2019 AND PUBYEAR < 2026 AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( SRCTYPE , "j" ) )`. The search was performed on February 6, 2025, at 9:09 a.m., targeting journal articles published between 2020 and 2025 to capture the most recent trends and advancements in ODR research. To ensure relevance, only journal articles written in English were included, while other document types such as conference papers, book chapters and non-English publications were excluded. Although this selection process helps maintain focus, it may also limit the inclusion of potentially significant studies published in other languages or formats.

This study follows the guidelines of the Modified Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework for search and selection procedures (Zakaria et al., 2020). The collected dataset was analysed using descriptive statistics, citation analysis and co-citation analysis. These methods were employed to identify publication trends, leading authors, highly cited works and emerging themes in ODR research. Additionally, bibliometric tools were utilized to visualize the structural composition of the research field and examine its thematic evolution, as recommended by Zupic and Čater (2015).

Figure 1. Flow Diagram of the Search Strategy



Source: Modified from PRISMA (Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009)

RESULT

196 documents were gathered for this study from the Scopus database. Data frequencies based on the total number of papers published, including the yearly trend, the most active journals, the most prolific countries and the most prolific author in the study area, were calculated using descriptive analysis. Regarding the citation analysis, Harzing's Publish or Perish software was used to gather information on citation metrics and the most well-known scholarly works on the research topic. Additionally, VOSViewer software was used to analyse bibliometric meta-data for co-authorship, bibliographic coupling, keyword co-occurrence and citation. The quantity of shared resources determines the links between items like publications, journals and authors in bibliographic coupling. A table or network visualization map is used to display the analysis's findings.

Publications by Year

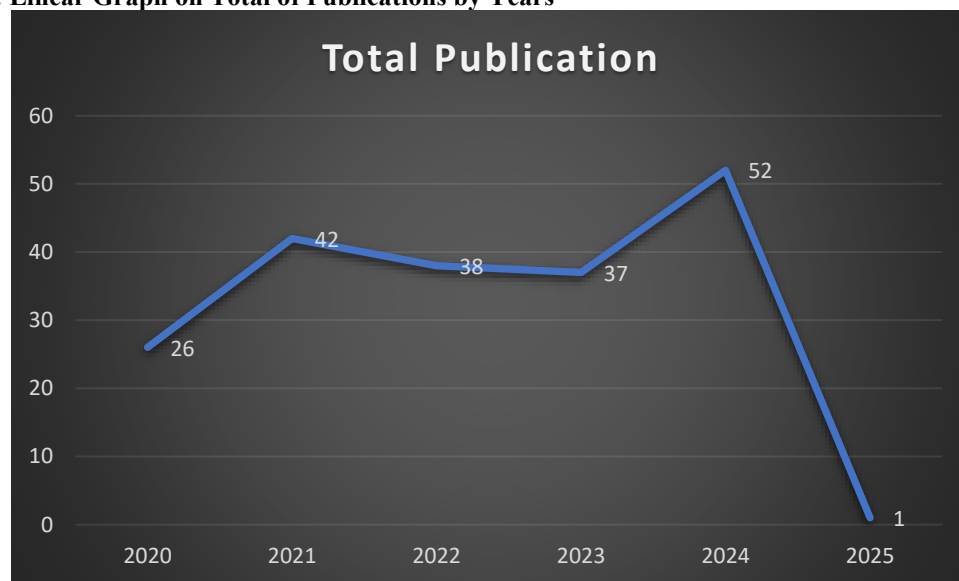
Table 1: Total Publications by Years

Year	TP
2025	1
2024	52
2023	37
2022	38
2021	42
2020	26

The total publications by year illustrate the trends in scholarly output related to the study area from 2020 to 2025. The data in Table 1 presents the total number of publications (TP) from 2020 to 2025, highlighting fluctuations in scholarly output over the years. The highest number of publications was recorded in 2024, with 52 publications,

suggesting a peak in research productivity. This was followed by a steady trend in 2021 (42), 2022 (38), and 2023 (37), indicating a relatively stable research output in these years.

Figure 2: Linear Graph on Total of Publications by Years



However, a noticeable dip occurred in 2020, with only 26 publications, which may be attributed to disruptions caused by the COVID-19 pandemic, affecting academic and research activities. Interestingly, the sharp rise in 2024 could indicate increased research funding, policy changes, or heightened interest in certain academic fields. Meanwhile, the single publication in 2025 is likely due to the fact that the year has only just begun and more publications are expected as the year progresses. This trend suggests that research output may continue to fluctuate based on external factors such as institutional priorities, funding availability and global academic trends.

Citation Network Analysis

To address the most influential publications on halal practices through a bibliometric lens, citation metrics were analysed to identify key works driving academic discourse in the field. Citation networks of 196 publications were examined using Harzing's Publish or Perish and VOSViewer tools to perform centrality analyses and visualize the relationships between articles. Table 2 summarizes the citation metrics for the analysed publications. As shown in the data, the 196 publications on online dispute resolution generated a total of 840 citations over six years. The average number of citations per year was 168, with each document receiving an average of 4.29 citations.

Table 2: Citation Metrix

Metrics	Data
Papers	196
Number of Citations	840
Years	6
Citations per Year	168
Citations per Paper	4.29
Cites_Author	435.48
Papers_Author	119.72
Authors_Paper	2.24
h_index	16
g_index	23

The h-index of 16 indicates that 16 papers have been cited at least 16 times, while the g-index of 23 demonstrates that the most highly cited papers significantly elevate the overall impact of the field. The Cites_Author value of 435.48 suggests substantial contributions from individual researchers, while the Papers_Author value of 119.72 reflects active scholarly engagement in this domain. Additionally, the Authors_Paper ratio of 2.24 implies a collaborative research culture, where multiple authors contribute to each study. These citation metrics highlight the increasing academic influence of online dispute resolution research, emphasizing its relevance and growing impact within the scholarly community.

The citation analysis of the listed articles (Table 3) reveals key trends in the academic discourse on online dispute resolution (ODR), artificial intelligence in justice and arbitration. The highest-cited work, Arbitration Chambers and Trust in Technology by Ferreira et al. (2022) from the USA, has received 40 citations, indicating its significant influence in the field. Other highly cited works include Online Dispute Resolution and the Future of Justice by

Rule (2020), with 27 citations, and Civil Courts and COVID-19: Challenges and Responses by Mahdzir, N. (2020) from Australia, with 21 citations. These works highlight the increasing attention to technology-driven dispute resolution mechanisms, particularly in the context of the COVID-19 pandemic and advancements in artificial intelligence (AI). Notably, the USA has produced multiple influential publications, suggesting its dominance in shaping discussions around legal technology and dispute resolution frameworks.

Table 3: Top 10 Highly Cited Publications

No.	Authors	Title	Country	Year	Cites
1	Ferreira et al.	Arbitration chambers and trust in technology.....	USA	2022	40
2	Rule	Online dispute resolution and the future of justice....	USA	2020	27
3	Mahdzir, N.	Civil courts and COVID-19: Challenges and....	Australia	2020	21
4	Ferreira et al.	Online Sports Betting in Brazil ...	USA	2022	18
5	Hibah	The role of Artificial Intelligence in Online ...	Saudi Arabia	2022	18
6	Zelevnikow	Using Artificial Intelligence to provide ...	Australia	2021	18
7	Wing et al.	Designing Ethical Online Dispute Resolution ...	USA	2021	18
8	Llamas Covarrubias	Different types of government	Mexico	2021	15
9	Aouidef, Ast, & Deffains	Decentralized Justice: A Comparative Analysis ...	France	2021	14
10	Schmitz	Measuring access to justice..	USA	2020	13

The citation distribution also highlights the relevance of recent research, particularly from 2020 to 2022, with most articles receiving between 13 and 40 citations. Ferreira et al. appear twice on the list, with their second work, Online Sports Betting in Brazil (2022), cited 18 times, reinforcing their expertise in legal frameworks involving technology. Similarly, The Role of Artificial Intelligence in Online Dispute Resolution by Hibah (2022) from Saudi Arabia and Using Artificial Intelligence to Provide Legal Solutions by Zelevnikow (2021) from Australia both received 18 citations, emphasizing the growing scholarly interest in AI applications in legal settings. Additionally, Wing et al. (2021) contributed to this discourse with their work on Designing Ethical Online Dispute Resolution, which also received 18 citations, suggesting an increasing focus on ethical considerations in ODR. These citation patterns indicate that AI and ethics in dispute resolution are emerging as central themes in legal technology research.

From a geographical perspective, the USA leads in scholarly output, contributing four articles, including works by Rule, Ferreira et al., Schmitz and Wing et al. Australia follows with two publications by Mahdzir and Zelevnikow, both of which explore AI and digital transformation in legal proceedings. France, Mexico and Saudi Arabia have each produced one cited publication, demonstrating a global interest in digital legal frameworks and dispute resolution. The study by Aouidef, Ast and Deffains (2021) from France on Decentralized Justice: A Comparative Analysis (14 citations) underscores the comparative legal perspectives emerging in ODR. Similarly, Different Types of Government Approaches to Digital Dispute Resolution by Llamas Covarrubias (2021) from Mexico, with 15 citations, suggests an international effort to examine governance models for digital dispute resolution. These contributions highlight a growing global consensus on the importance of technology-driven justice systems.

Overall, the citation data indicates that research on ODR, AI in legal systems and arbitration is gaining traction, particularly in response to technological advancements and the need for efficient justice systems. The USA remains the dominant contributor, reflecting its leading role in shaping discourse on legal technology, but contributions from Australia, Europe and emerging economies like Saudi Arabia and Mexico suggest an increasingly diversified research landscape. Ethical considerations, AI integration and decentralized justice mechanisms are among the key themes shaping contemporary legal scholarship. The relatively high citation counts of recent articles further suggest that this field is evolving rapidly, with growing interest from scholars worldwide.

Keywords and Co-occurrence Analysis

The analysis of the top seven keywords in Online Dispute Resolution (ODR) research highlights key thematic areas shaping scholarly discourse in this field. The most frequently used keyword, Online Dispute Resolution (49 publications, 25%) reflects the prominence of digital dispute resolution mechanisms in legal and commercial settings. This high occurrence underscores the increasing reliance on technology-driven platforms to resolve conflicts efficiently. Dispute Resolution (32 publications, 16.3%) follows as the second most common keyword, encompassing both traditional and modern mechanisms of resolving disputes, including litigation, arbitration and digital solutions. Meanwhile, Alternative Dispute Resolution (21 publications, 10.7%) and Mediation (21 publications, 10.7%) further emphasize the ongoing interest in non-litigious approaches to conflict resolution. These keywords suggest that scholars are exploring how ODR integrates with conventional ADR mechanisms, particularly mediation, which remains a widely accepted method for dispute resolution across various legal and business contexts.

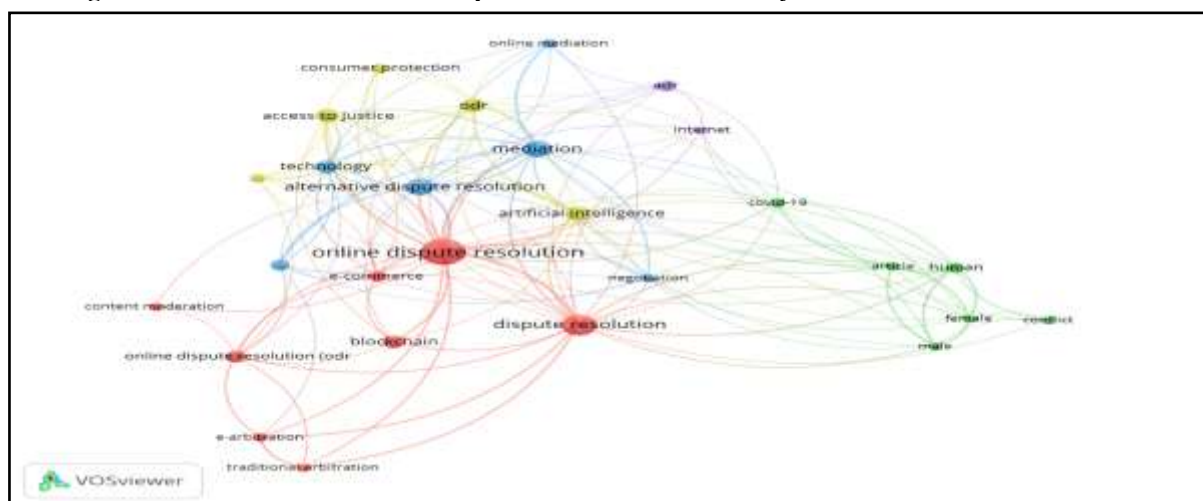
Table 4: Top Keywords

Author Keywords	Total Publications (TP)	Percentage (%)
Online Dispute Resolution	49	25
Dispute Resolution	32	16.3
Alternative Dispute Resolution	21	10.7
Mediation	21	10.7
Artificial Intelligence	15	7.7
Access To Justice	14	7.14
ODR	14	7.14

Emerging technological and social justice aspects in ODR research are reflected in keywords such as Artificial Intelligence (15 publications, 7.7%) and Access to Justice (14 publications, 7.14%). AI's growing role in legal decision-making and automated dispute resolution processes has sparked discussions on efficiency, fairness and ethical considerations in digital justice systems. Meanwhile, Access to Justice highlights the social impact of ODR, focusing on how digital dispute resolution tools can improve fairness, inclusivity and affordability in legal proceedings. The keyword ODR (14 publications, 7.14%) further indicates a trend in research explicitly focusing on the technical, legal and ethical dimensions of online dispute resolution as a specialized field. The keyword distribution suggests a balanced mix of technological, procedural and justice-related concerns, reinforcing that ODR is not only about efficiency but also about enhancing fairness and inclusivity in the legal system.

In this study, the VOSviewer program was employed to perform a term co-occurrence analysis, creating a network visualization map (Figure 3) based on the keywords extracted from publications related to ODR research. To ensure robust analysis, a term needed to appear at least 10 times in the titles and abstracts of the publications to be included in the map. The minimum number of occurrences per term was set at three and fractional counting was applied to balance the influence of frequently occurring terms. Out of the dataset, 108 keywords met these criteria, representing a variety of themes within the research field.

Figure 3: Network Visualisation Map for Co-Occurrence of Keywords



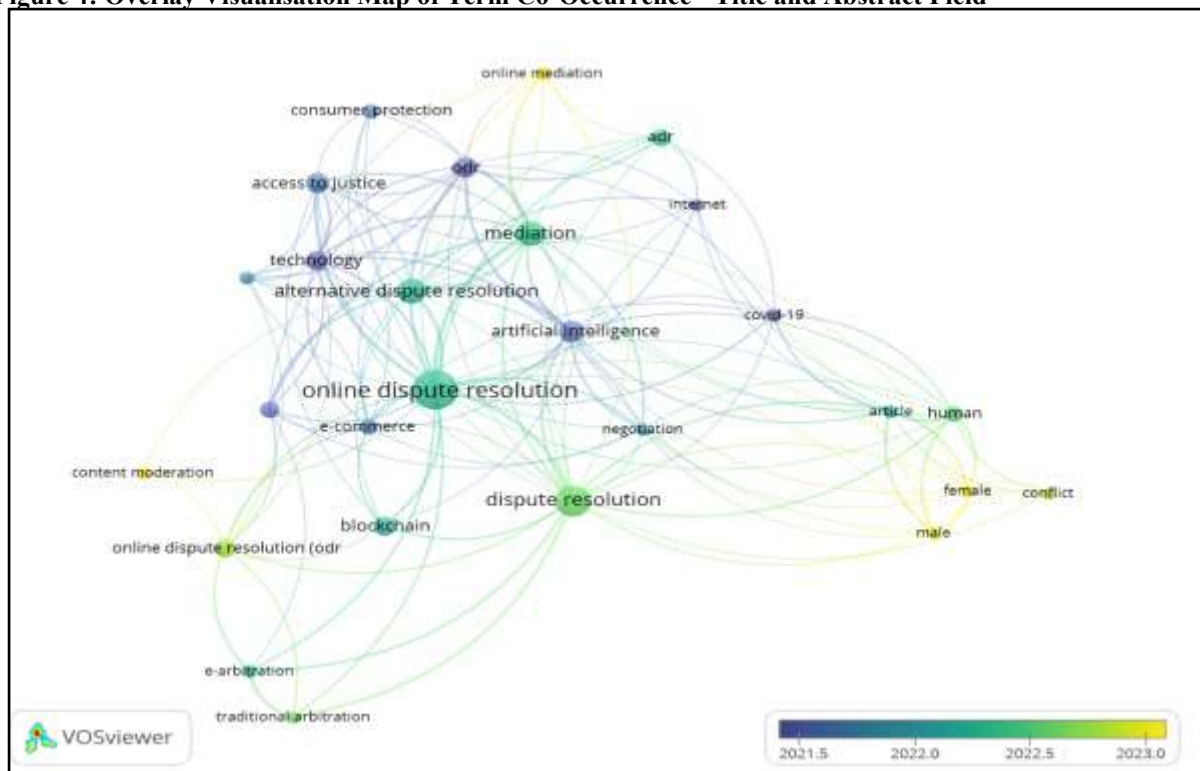
The network visualization map illustrates the interconnections between key concepts in Online Dispute Resolution (ODR), with larger circles indicating more frequently used terms and thicker lines representing stronger co-occurrence relationships. The most central and dominant keywords in the map are Online Dispute Resolution and Dispute Resolution, both of which have extensive connections with other terms, signifying their fundamental role in ODR research. These keywords are closely linked to Alternative Dispute Resolution and Mediation, highlighting the integration of ODR with traditional dispute resolution methods. Additionally, terms like e-

commerce, blockchain and e-arbitration are associated with Online Dispute Resolution, indicating the growing reliance on digital technologies and automated processes in resolving disputes, particularly in online business transactions.

Another important cluster revolves around Artificial Intelligence, Access to Justice and Technology, suggesting that scholars are focusing on the role of AI in enhancing fairness, efficiency, and inclusivity in ODR systems. The presence of terms like Consumer Protection, COVID-19 and Negotiation indicates that research is also addressing contemporary challenges, such as the impact of the pandemic on digital dispute resolution and the need for robust consumer rights mechanisms. Additionally, Conflict, Human, Male and Female appear in a separate cluster, potentially reflecting studies on the human and gendered dimensions of dispute resolution. The visualization underscores the multidisciplinary nature of ODR research, integrating law, technology, business and social justice themes to develop more effective and equitable digital dispute resolution frameworks.

The overlay map (Figure 4) generated from the keyword co-occurrence analysis provides a visual representation of trends in ODR over time (2022 to 2023), revealing the evolution of research topics and emerging themes in the field. The overlay visualization map of term co-occurrence in the title and abstract fields highlights the evolution of research trends in Online Dispute Resolution (ODR) from 2021 to 2023. The colour gradient, ranging from dark blue (older research focus) to yellow (more recent trends), illustrates the temporal progression of key terms. Central concepts such as Online Dispute Resolution and Dispute Resolution are prominent and well-connected, indicating their foundational role in this research domain. Earlier studies (darker shades) emphasize Alternative Dispute Resolution, Technology and Access to Justice, reflecting the initial focus on integrating ODR with traditional legal frameworks and ensuring fairness in digital dispute resolution mechanisms. More recent research trends (indicated by yellow hues) point towards emerging topics such as Online Mediation, Content Moderation and Artificial Intelligence. The presence of AI in newer studies suggests an increasing interest in the automation of dispute resolution processes, enhancing efficiency and accessibility. Additionally, Blockchain and E-Arbitration appear as significant terms, demonstrating the growing reliance on decentralized technologies to ensure security and transparency in digital dispute settlement. The appearance of COVID-19 as a linked term further suggests that the pandemic accelerated the adoption and innovation of ODR systems, prompting a shift towards remote dispute resolution solutions.

Figure 4: Overlay Visualisation Map of Term Co-Occurrence - Title and Abstract Field



The visualization also reveals a sociological dimension, with terms such as Human, Female, Male and Conflict forming a separate cluster. This indicates that researchers have started to explore the human aspects of ODR, including gender dynamics and the psychological impact of digital mediation. The connections between Negotiation, Consumer Protection and E-Commerce reflect the practical applications of ODR in online business transactions, ensuring that disputes are resolved efficiently in digital marketplaces. Overall, the overlay visualization map provides a comprehensive overview of how ODR research has evolved, integrating legal, technological and social dimensions to address the growing complexities of digital dispute resolution.

DISCUSSION AND FUTURE AREA OF RESEARCH

The study of Online Dispute Resolution (ODR) through bibliometric analysis, including keyword analysis, citation analysis and network visualization has revealed significant trends and thematic evolutions in this field. The keyword analysis highlights the increasing prominence of technology-driven dispute resolution mechanisms, particularly the integration of Artificial Intelligence, Blockchain and Online Mediation. This shift reflects a growing reliance on automation and secure digital frameworks to enhance efficiency and trust in ODR systems. Citation analysis further underscores the interdisciplinary nature of ODR research, with key studies drawing from fields such as law, technology, business and social sciences. The network visualization demonstrates strong linkages between Dispute Resolution, Alternative Dispute Resolution and E-Arbitration, indicating a convergence of traditional and digital dispute resolution methods. Additionally, the emergence of COVID-19 in the network structure suggests that the pandemic has accelerated the adoption of digital platforms for dispute resolution.

Future research should deepen the exploration of AI-driven ODR systems, particularly in terms of ethical considerations, bias mitigation and the role of human oversight. The role of Blockchain in ensuring transparency and security in ODR processes remains an area of significant potential, warranting further investigation into its real-world applications. Additionally, the increasing focus on Content Moderation suggests the need for studies on resolving disputes in digital environments such as social media and e-commerce platforms. Researchers should also explore how legal frameworks can be adapted to accommodate these technological advancements, ensuring that ODR systems remain legally sound and internationally recognized. Beyond technology, future studies should also examine the social and psychological dimensions of ODR, particularly how users perceive and engage with digital dispute resolution mechanisms. The presence of terms such as Human, Male, Female and Conflict in the analysis suggests the importance of gender dynamics, cultural influences and negotiation behaviours in ODR outcomes. Further research is needed to assess the inclusivity and fairness of ODR processes, particularly for marginalized communities with limited digital access. Future research on Online Dispute Resolution (ODR) in e-commerce within the Malaysian context should explore several key aspects to enhance the effectiveness and accessibility of digital dispute resolution mechanisms.

First, a comparative analysis of Malaysia's ODR framework with leading global models, such as those in the European Union and China, can provide insights into best practices and areas for improvement. Given Malaysia's growing e-commerce sector, research should investigate the effectiveness of current ODR platforms in resolving disputes between consumers and online merchants, particularly in cross-border transactions. Additionally, studies should assess consumer awareness and trust in digital dispute resolution mechanisms, as consumer hesitation to use ODR may stem from concerns about fairness, security and enforceability of decisions. Finally, research should focus on the inclusivity and accessibility of ODR platforms in Malaysia, particularly for small businesses and rural consumers. While large e-commerce platforms like Shopee and Lazada offer dispute resolution services, smaller businesses may lack access to efficient ODR mechanisms. Studies should explore how government policies, legal reforms and industry collaborations can support the adoption of ODR across all levels of e-commerce. Additionally, the impact of cultural factors, digital literacy and language barriers on the effectiveness of ODR in Malaysia should be examined to ensure that dispute resolution remains fair and accessible to all Malaysians.

CONCLUSION

The rapid evolution of ODR has outpaced the development of comprehensive empirical research to evaluate its effectiveness and impact. While anecdotal evidence and case studies suggest that ODR can reduce costs and delays, there is a need for more rigorous, data-driven analyses to assess its long-term viability and scalability. Additionally, the reliance on AI may undermine the principle of party autonomy, as disputants may feel alienated or disempowered by decisions made by opaque algorithms. These issues underscore the importance of designing ODR systems that balance technological innovation with safeguards to protect users' rights and ensure procedural fairness.

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