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Social Media As A Catalyst For Future Terrorist Recruitment: A Bibliometric Analysis of Emerging Trends And Countermeasures

May May Maysarah⊠ iD
Defense Science, Republic of Indonesia Defense University, Indonesia

Reyhan Fakhreja⊠ iD
Public Administration, UIN Sunan Gunung Djati, Indonesia

Asep Adang Supriyadi⊠ iD
Sensing Technology, Faculty of Science and Technology, Republic of
Indonesia Defense University, Indonesia

⊠ Corresponding email: meysarah265@gmail.com

Abstract

This study addresses the growing challenge of terrorist recruitment and radicalization via social media by mapping scholarly activity and thematic evolution in this field. Its objective is to identify publication trends and key research themes related to digital extremism from 2015 to 2025. We conducted a bibliometric analysis of 416 Scopus-indexed articles, employing VOSviewer and Bibliometrix to generate co-occurrence networks and thematic evolution maps. Results reveal a marked increase in research output since 2017 peaking in 2020 amid heightened online engagement during the COVID-19 pandemic and a geographic concentration of authorship in the United States and the United Kingdom, with limited contributions from regions most affected by terrorism, such as the Middle East and Southeast Asia. Thematic analysis indicates a shift from early studies on propaganda dissemination (2015–2018) to advanced examinations of algorithmic radicalization, AI-enabled recruitment, encrypted coordination, and emerging threats like deepfake propaganda (2019–2025). We conclude that effective countermeasures require proactive, multidisciplinary strategies, including community-based interventions targeting socio-psychological vulnerabilities, cross-platform regulatory cooperation, and AI-driven content moderation. This framework underscores the necessity of integrating technological, psychological, and policy perspectives to counter evolving digital radicalization.
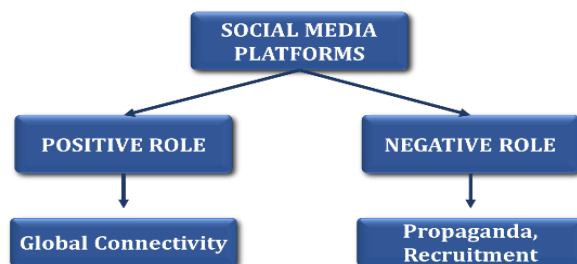
I. Introduction

In the 21st century's digital era, social media serves as a dual-purpose tool employed by extremist groups to propagate ideologies and recruit followers, simultaneously altering global interconnectedness [1].

FIGURE 1. Dual role of social media in terrorism: Connectivity vs. exploitation.

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[1] Gabriel Weimann, "When the Theatre of Terror Emerged," *Israel Affairs* 28, no. 4 (2022): 553–72, https://doi.org/10.1080/13537121.2022.2087999; Ryan Scrivens, Paul Gill, and Maura Conway, "The Role of the Internet in Facilitating Violent Extremism and Terrorism: Suggestions for Progressing Research," in *The Palgrave Handbook of International Cybercrime and Cyberdeviance* (School of Criminal Justice, Michigan State University, East Lansing, MI, United States: Palgrave Macmillan, 2020), 1417–35, https://doi.org/10.1007/978-3-319-78440-3_61.

Sources: (Adapted from [2]). Author analysis (2025).

Platforms such as Facebook, Telegram, and YouTube, designed for rapid global communication, have played a significant role in facilitating the spread of propaganda as well as radicalizing vulnerable individuals by the Islamic State (ISIS) [3].

TABLE 1. Platform vulnerabilities exploited by extremist groups

Platform	Vulnerability	Exploitation Example
Telegram	End-to-end encryption	ISIS's "Virtual Dead Drops"
YouTube	Algorithmic Recommendation	Radical Content Amplification
Facebook	Close Groups	Recruitment in Private Communities

Sources: [4]

[5] emphasize that these platforms facilitate "asymmetric radicalization," since individuals are systematically indoctrinated through customized information that

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[2] Scrivens, Gill, and Conway, "The Role of the Internet in Facilitating Violent Extremism and Terrorism: Suggestions for Progressing Research," 2020.

[3] Weimann, "When the Theatre of Terror Emerged."

[4] Weimann; Ruth Gan et al., "Change Is the Only Constant: The Evolving Role of Women in the Islamic State in Iraq and Syria (ISIS)," *Women and Criminal Justice* 29, no. 4–5 (2019): 204–20, https://doi.org/10.1080/08974454.2018.1547674.

[5] Scrivens, Gill, and Conway, "The Role of the Internet in Facilitating Violent Extremism and Terrorism: Suggestions for Progressing Research," 2020.

capitalizes on psychological vulnerabilities and geopolitical grievances. While online platforms enhance access to information and global communication, terrorist organizations have recently emerged as primary actors. [6] stress that the internet presently provides a stage for the expression of strong beliefs, the preparation of attacks, and the social movement mobilization. [7] also underlines how these platforms allow radicalized persons in supporting ideological convictions, socializing with like-minded others, and organizing violent acts to be active participants in. Apart from operational planning and recruitment, the internet is also used for propaganda, memorializing criminals, and escalation of terror, thereby essentially hiding the difference between virtual extremism and real violence. Extreme groups can use social media's anonymity, scalability, and algorithmic implication by nature to exploit psychological vulnerabilities, generate empathy, and radicalize people all around [89]. Groups like Al

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[6] Charlie Winter et al., "Online Extremism: Research Trends in Internet Activism, Radicalization, and Counter-Strategies," *International Journal of Conflict and Violence* 14, no. 2 (2020): 1–20, https://doi.org/10.4119/ijcv-3809.

[7] Kevin Siqueira and Daniel Arce, "Terrorist Training: Onsite or via the Internet?," *European Journal of Political Economy* 63 (2020), https://doi.org/10.1016/j.ejpoleco.2020.101878.

[8] Linda Schlegel, "'Yes, I Can': What Is the Role of Perceived Self-Efficacy in Violent Online-Radicalisation Processes of 'Homegrown' Terrorists?," *Dynamics of Asymmetric Conflict: Pathways toward Terrorism and Genocide* 13, no. 3 (2020): 212–29, https://doi.org/10.1080/17467586.2019.1700539.

[9] Simon Cottee, "Incel (E)Motives: Resentment, Shame and Revenge," *Studies in Conflict and Terrorism* 44, no. 2 (2020): 93–114, https://doi.org/10.1080/1057610X.2020.1822589.

Qaeda and ISIS have used platforms like Telegram and YouTube to spread propaganda, exalt violence, and find fit candidates including young and underprivileged populations by means of which they have corrupted [1011].

The transition from conventional, localized recruitment to digital radicalization highlights the exibility of terrorist organizations to technology progress. Researchers contend that an increasing number of multinational rms evade criticism and sustain global supremacy through gamication strategies [12], AI-enhanced content personalization, and secure communication channels [13]. Digital echo chambers that promote extreme ideologies and articially manufactured

[10] Daniel Milton, "Truth and Lies in the Caliphate: The Use of Deception in Islamic State Propaganda," *Media, War and Conflict* 15, no. 2 (2022): 221–37, https://doi.org/10.1177/1750635220945734.

[11] Jacob Zenn, "Chronicling the Boko Haram Decade in Nigeria (2010-2020): Distinguishing Factions through Videographic Analysis," *Small Wars and Insurgencies* 31, no. 6 (2020): 1242–94, https://doi.org/10.1080/09592318.2020.1776582.

[12] Linda Schlegel, "Jumanji Extremism? How Games and Gamification Could Facilitate Radicalization Processes," *Journal for Deradicalization*, no. 23 (2020): 1–44, https://www.scopus.com/inward/record.uri?partnerID=HzOxMe3b&scp=85119412279&origin=inward.

[13] Ori Swed and Kerry Chávez, "Between Scylla and Charybdis: The Threat of Democratized Artificial Intelligence," in *International Political Economy Series* (Department of Sociology, Texas Tech University, Lubbock, TX, United States: Palgrave Macmillan, 2021), 177–94, https://doi.org/10.1007/978-3-030-74420-5_8.

content exacerbate this operational evolution [1415]. An illustrative instance is the Islamic State's employment of "virtual dead drops" transient digital conduits to propagate propaganda, exemplifying the tactical sophistication of contemporary extremism [16]. Notwithstanding counterterrorism initiatives, research underscores enduring decencies: disjointed international regulatory frameworks [17] and the spread of encryption technologies remain in facilitating extremist activities with negligible accountability [18]. Governments and technology rms have enacted remedies such as content removal, algorithmic moderation, and counter-narrative campaigns, nevertheless, their effectiveness

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[14] Catherine Bouko et al., "Discourse Patterns Used by Extremist Salafists on Facebook: Identifying Potential Triggers to Cognitive Biases in Radicalized Content," *Critical Discourse Studies* 19, no. 3 (2022): 252–73, https://doi.org/10.1080/17405904.2021.1879185.

[15] Angela Nienierza et al., "Too Dark to See? Explaining Adolescents' Contact with Online Extremism and Their Ability to Recognize It," *Information Communication and Society* 24, no. 9 (2021): 1229–46, https://doi.org/10.1080/1369118X.2019.1697339.

[16] Gabriel Weimann and Asia Vellante, "The Dead Drops Of Online Terrorism: How Jihadists Use Anonymous Online Platforms," *Perspectives on Terrorism* 15, no. 4 (2021): 39–53, https://www.scopus.com/inward/record.uri?eid=2-s2.0-85119455207&partnerID=40&md5=7db638b3bc149ab38502ec2c80c889e2.

[17] Stephen A. Meserve and Daniel Pemstein, "Terrorism and Internet Censorship," *Journal of Peace Research* 57, no. 6 (2020): 752–63, https://doi.org/10.1177/0022343320959369.

[18] Raphael Cohen-almagor, "The Future of the Internet," *Academia Letter* 64, no. 4 (2021): 18–19, https://doi.org/10.1093/combul/bwac113.

is still debated [19][20]. For instance, distributed sites like Gab and 8chan continue to host extremist content even if the Global Internet Forum to Counterterrorism (GIFCT) has reduced ISIS's online presence [21][22].

Furthermore often overlooked in counter-terrorism strategies are the sociopsychological elements causing radicalization: perceived unfairness, identity crises, and systemic marginalization [23][24]. The excessive dependence on

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[19] Ryan Scrivens et al., "Searching for Extremist Content Online Using the Dark Crawler and Sentiment Analysis," in *Sociology of Crime Law and Deviance*, vol. 24 (Emerald Group Publishing Ltd., 2019), 179–94, https://doi.org/10.1108/S1521-613620190000024016.

[20] Jocelyn J. Bélanger et al., "Supporting Political Violence: The Role of Ideological Passion and Social Network," *Group Processes and Intergroup Relations* 23, no. 8 (2020): 1187–1203, https://doi.org/10.1177/1368430220933954.

[21] J Tinnes, "Bibliography: Internet-Driven Right-Wing Terrorism," *Perspectives on Terrorism* 14, no. 3 (2020): 168–89, https://www.scopus.com/inward/record.uri?eid=2-s2.0-85087873965&partnerID=40&md5=1efdbb98d3ee586679ace5dca69a5c11.

[22] Dhiraj Murthy, "Evaluating Platform Accountability: Terrorist Content on YouTube," *American Behavioral Scientist* 65, no. 6 (2021): 800–824, https://doi.org/10.1177/0002764221989774.

[23] Arie W. Kruglanski and Preben Bertelsen, "Life Psychology and Significance Quest: A Complementary Approach to Violent Extremism and Counter-Radicalisation," *Journal of Policing, Intelligence and Counter Terrorism* 15, no. 1 (2020): 1–22, https://doi.org/10.1080/18335330.2020.1725098.

[24] Cécile Rousseau et al., "Collective Identity, Social Adversity and College Student Sympathy for Violent Radicalization," *Transcultural Psychiatry* 58, no. 5 (2021): 654–68, https://doi.org/10.1177/1363461519853653.

reactionary strategies, instead of proactive community-oriented initiatives, has intensive suspicion and alienation among vulnerable communities [25][26]. Bibliometric analysis offers a vital framework for methodically delineating the developing relationship between social media and terrorism, revealing neglected research pathways and guiding evidence-based policy measures. Previous research has thoroughly investigated specific aspects of this relationship, including propaganda dissemination mechanisms [27], algorithmic recruitment dynamics [28], and platform-specific vulnerabilities (e.g., encryption features in messaging applications [29]), however, these studies are fragmented across disciplinary boundaries. A comprehensive synthesis of worldwide research trends, subject clusters, and interdisciplinary crossovers is

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[25] Philip Baugut and Katharina Neumann, "Online Propaganda Use during Islamist Radicalization," *Information Communication and Society* 23, no. 11 (2020): 1570–92, https://doi.org/10.1080/1369118X.2019.1594333.

[26] Marina Eleftheriadou, "Fight after Flight? An Exploration of the Radicalization Potential among Refugees in Greece," *Small Wars and Insurgencies* 31, no. 1 (2020): 34–60, https://doi.org/10.1080/09592318.2020.1672960.

[27] Nicolas Johnston, "Selling Terror: A Multidimensional Analysis of the Islamic State's Recruitment Propaganda," *Australian Journal of International Affairs* 76, no. 2 (2022): 194–218, https://doi.org/10.1080/10357718.2021.1970714.

[28] Saimum Parvez and Justin V. Hastings, "Understanding the Role of Digital Media in Female Participation in Terrorism: The Case of Bangladesh," *Small Wars and Insurgencies* 33, no. 8 (2022): 1345–71, https://doi.org/10.1080/09592318.2022.2109371.

[29] Gan et al., "Change Is the Only Constant: The Evolving Role of Women in the Islamic State in Iraq and Syria (ISIS)."

notably lacking, hindering a holistic understanding of how digital ecosystems promote radicalization. This gap highlights the necessity of utilizing bibliometric approaches to detect epistemic communities, monitor conceptual development, and prioritize neglected areas such as cross-platform coordination or AI-facilitated radicalization strategies. This study addresses this gap by analyzing 416 Scopus-indexed publications (2010–2025) to answer the following questions:

RQ1: What are the trends in international publications on the study of social media and terrorism?

RQ2: What are the critical themes related social media and terrorism in the scientific literature?

This paper claire's the shifting focus from early studies of online radicalization to current debates on artificial intelligence, encryption, and cross-platform cooperation by means of co-occurrence network analysis and keyword mapping. The outcomes expect to guide academics toward creating thorough plans, IT startups, and legislators toward lessening of the digital components of terrorism.

II. Method

This study uses bibliometric analysis as its primary approach. Bibliometric analysis is a scientific approach that allows researchers to explore hidden patterns in academic literature through statistical techniques and data visualization. This approach provides a strong foundation for understanding research trends, identifying key themes, and collaborations between researchers relevant to a particular topic. This study focusing articles between 2015 and 2025, this

work defines the multidisciplinary study terrain on social media and terrorism by means of a thorough bibliometric analysis. The method combines quantitative and qualitative approaches and follows accepted bibliometric frameworks [30][31] to solve the disconnected prior literature.

In a bibliometric analysis study, the results of the analysis obtained are displayed through a visualization and mapping process in the form of diagrams, tables, or visualization images, making the research more interesting and easier to understand [32]. Bibliometric analysis is a type of research that is increasingly being used by researchers because it enables global data analysis without being limited by language, time, region, or specific fields [33][34].

This method is very relevant in the context of this study because of its exploratory and data-driven nature, making it

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[30] Naveen Donthu et al., "How to Conduct a Bibliometric Analysis: An Overview and Guidelines," *Journal of Business Research* 133 (2021): 285–96, https://doi.org/10.1016/j.jbusres.2021.04.070.

[31] Massimo Aria and Corrado Cuccurullo, "Bibliometrix: An R-Tool for Comprehensive Science Mapping Analysis," *Journal of Informetrics* 11, no. 4 (2017): 959–75, https://doi.org/10.1016/j.joi.2017.08.007.

[32] Noorika Retno Widuri et al., "Bibliometric Approach for Innovations Analysis on Disaster Risk Reduction," *Berkala Ilmu Perpustakaan Dan Informasi* 18, no. 1 (2022): 16–30, https://doi.org/10.22146/bip.v18i1.2431.

[33] Donthu et al., "How to Conduct a Bibliometric Analysis: An Overview and Guidelines."

[34] Ali Roziqin, Fajrina Amaliana Nur, and Tri and Sulistyaningsih, "The Development of Indonesian E-Government: A Bibliometric Analysis," *COLLNET Journal of Scientometrics and Information Management* 16, no. 1 (January 2, 2022): 49–74, https://doi.org/10.1080/09737766.2021.2007036.

capable of answering complex questions related to the relationship between social media and terrorist recruitment. Bibliometric analysis not only helps in understanding existing publications, but also provides insights into research gaps that require further attention.

A. Data Source and Search Strategy

The data for this study were obtained from Scopus, the biggest peer-reviewed literature database recognized for its comprehensive coverage of social sciences and cybersecurity research [35]. A Boolean search string, ALL (terrorist AND recruitment AND social AND media), was utilized and modified through the application of particular filters to optimize precision and recall [36]. The filters utilized encompassed publication years (2015–2025) to identify post-ISIS digital recruitment trends, pertinent keywords (terrorism, social media, radicalization, propaganda, recruitment,

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[35] Jeroen Baas et al., "Scopus as a Curated, High-Quality Bibliometric Data Source for Academic Research in Quantitative Science Studies," *Quantitative Science Studies* 1, no. 1 (2020): 377–86, https://doi.org/10.1162/qss_a_00019.

[36] Mayur Gaikwad et al., "Online Extremism Detection: A Systematic Literature Review with Emphasis on Datasets, Classification Techniques, Validation Methods, and Tools," *IEEE Access* 9 (2021): 48364–404, https://doi.org/10.1109/ACCESS.2021.3068313.

counter-terrorism, cybersecurity) [373839], document types (articles, book chapters, and books), and the subject area (Social Sciences). From 2015 to 2025, 2,433 internationally published documents concerning social media and terrorism were acquired from the Scopus database.

TABLE 2. Scopus search strategy for data collection.

Component	Details
Database	Scopus
Boolean Query	ALL (terrorist AND recruitment AND social AND media)
Publication Years	2015-2025
Document Types	Articles, Book Chapters, Book
Subject Area	Social Sciences (SOCI)

Sources: Author analysis from (2025).

B. Data Selection and Extraction

The data selection and extraction were performed using a systematic, multi-stage process. Initially, redundant data and non-peer-reviewed materials, such as conference abstracts and editorials, were excluded. In the second step, works irrelevant to the domain of social sciences such as technical publications on encryption devoid of any association with terrorism were

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[37] Johnston, "Selling Terror: A Multidimensional Analysis of the Islamic State's Recruitment Propaganda."

[38] Parvez and Hastings, "Understanding the Role of Digital Media in Female Participation in Terrorism: The Case of Bangladesh."

[39] Gan et al., "Change Is the Only Constant: The Evolving Role of Women in the Islamic State in Iraq and Syria (ISIS)."

omitted. A manual verification confirmed that the remaining studies were consistent with the study aims, retaining those that investigated algorithmic radicalization [40] and cross-platform coordination [41]. The technique produced 416 relevant publications, including metadata such as titles, abstracts, keywords, citations, and authorship details, subsequently exported in CSV and RIS formats for further analysis [42].

C. Data Analysis and Visualization

The analysis of data was performed utilizing two principal bibliometric software applications: VOS viewer and Bibliometrix (Biblioshiny). VOS viewer was utilized to construct networks illustrating keyword co-occurrence and citation clusters [43], thereby emphasizing predominant topics

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[40] Bouko et al., "Discourse Patterns Used by Extremist Salafists on Facebook: Identifying Potential Triggers to Cognitive Biases in Radicalized Content."

[41] Murthy, "Evaluating Platform Accountability: Terrorist Content on YouTube."

[42] Muhammad Shoaib, Shengzhong Zhang, and Hassan Ali, "A Bibliometric Study on Blockchain-Based Supply Chain: A Theme Analysis, Adopted Methodologies, and Future Research Agenda," *Environmental Science and Pollution Research* 30, no. 6 (2022): 14029–49, https://doi.org/10.1007/s11356-022-24844-2.

[43] Nees Jan Van Eck and Ludo Waltman, "Manual VOSviewer," *Univeristeit Leiden*, no. January (2022): 54.

such as encrypted propaganda [44] and AI-driven recruiting [45]. From 2015 to 2018, social media was perceived solely as a tool, however from 2019 to 2025, the focus shifted to analyzing the ecosystems of algorithmic radicalization; bibliometrix (Biblioshiny) facilitated the investigation of temporal trends and thematic evolution [46]. Furthermore, qualitative validation was accomplished by conducting a content analysis of 50 extensively cited studies (≥50 citations) to contextualize thematic clusters, alongside policy relevance coding to classify research that addresses regulatory deficiencies [47] and the efficacy of counter-narratives [48]. The resultant visual outputs, comprising network maps of keyword connections and temporal trend graphs, efficiently demonstrate interdisciplinary crossovers and pinpoint existing research needs.

III. Result & Discussion

A. International Publication Trends on social media and Terrorism by Year

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[44] Weimann and Vellante, "The Dead Drops Of Online Terrorism: How Jihadists Use Anonymous Online Platforms."

[45] Swed and Chávez, "Between Scylla and Charybdis: The Threat of Democratized Artificial Intelligence."

[46] Donthu et al., "How to Conduct a Bibliometric Analysis: An Overview and Guidelines."

[47] Meserve and Pemstein, "Terrorism and Internet Censorship."

[48] Baugut and Neumann, "Online Propaganda Use during Islamist Radicalization."

FIGURE 2. Published documents on social media and terrorism by Annual publication trends (2015–2025).
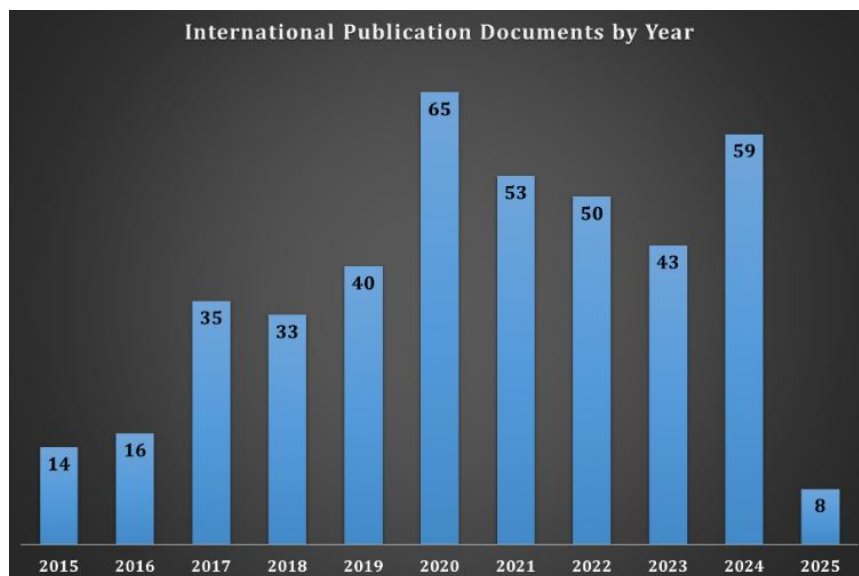
Sources: Author analysis using Scopus data (2025).

The scholarly discussion regarding social media and terrorism has progressively increased in the last ten years. In 2015, research on this topic was limited, with a total of 14 publications documented. Early studies primarily focused on the function of digital platforms in enabling extremist propaganda and recruitment. The escalation of global security concerns corresponded with a moderate increase in scholarly interest, reflected in a rise to 16 publications in 2016.

In 2017, there was a significant increase in research activity, leading to the publication of 35 documents. The study examined the methods employed by terrorist organizations to exploit platforms such as Twitter, Facebook, and YouTube for propaganda distribution and recruiting

[49][50][51]. In 2018, the overall number of articles remained constant at 33, as academics continued to investigate radicalization processes and online extremist networks [52][53][54][55]. In 2019, there was a notable rise, with 40 papers focusing on escalating concerns over encrypted messaging platforms such as Telegram and the consequences of algorithmic

[49] Murthy, "Evaluating Platform Accountability: Terrorist Content on YouTube."

[50] Roy Mendez, Eula Mendez, and Jericho Zamora, "The Impact of Social Media on Terror-Related Groups," *Science of Law* 2022, no. 4 (2022): 36–42, https://doi.org/10.55284/sol.v2022i4.101.

[51] Gabriel Weimann, "Terror and the Internet," in *International Encyclopedia of the Social & Behavioral Sciences: Second Edition* (University of Haifa, Haifa, Israel: Elsevier Inc., 2015), 227–36, https://doi.org/10.1016/B978-0-08-097086-8.95091-8.

[52] Stefan Malthaner, "Radicalization: The Evolution of an Analytical Paradigm," *Archives Europeennes de Sociologie* 58, no. 3 (2017): 369–401, https://doi.org/10.1017/S0003975617000182.

[53] Scrivens et al., "Searching for Extremist Content Online Using the Dark Crawler and Sentiment Analysis."

[54] María Navarro-Granados and Vicente Llorent-Bedmar, "The Spanish Muslim Community's Views on Terrorism in the Name of Islam and Perceived Discrimination: Socio-Educational Measures," *International Journal of Intercultural Relations* 89 (2022): 166–82, https://doi.org/10.1016/j.ijintrel.2022.05.009.

[55] Moorthy S. Muthuswamy, "Radicalization Ecosystem as a Confounder of Violent Extremism's Drivers," *Dynamics of Asymmetric Conflict: Pathways toward Terrorism and Genocide* 17, no. 1 (2024): 23–43, https://doi.org/10.1080/17467586.2024.2305443.

radicalization [565758]. The peak number of publications occurred in 2020, amounting to 65.

The increase can be linked to the COVID-19 pandemic, which fostered a digital landscape favorable for extremist exploitation. During this period, research highlighted the ways in which terrorist groups exploited public uncertainty to disseminate propaganda and misinformation [5960]. Subsequent years exhibited a slight decline in publication trends. In 2021, 53 studies were published, while 50 research were published in 2022. The research systematically analyzed content moderation rules and the utilization of artificial intelligence in

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[56] Zainab Al-Sabahi and Reza Montasari, "The Use of the Internet for Terrorist Purposes: Investigating the Growth of Online Terrorism and Extremism," in *Advanced Sciences and Technologies for Security Applications*, vol. Part F1417 (Department of Criminology, Sociology and Social Policy, School of Social Sciences, Swansea University, Singleton Park, Swansea, SA2 8PP, United Kingdom: Springer, 2023), 55–66, https://doi.org/10.1007/978-3-031-40118-3_4.

[57] Gan et al., "Change Is the Only Constant: The Evolving Role of Women in the Islamic State in Iraq and Syria (ISIS)."

[58] Arie W. Kruglanski et al., "What a Difference Two Years Make: Patterns of Radicalization in a Philippine Jail," *Dynamics of Asymmetric Conflict: Pathways toward Terrorism and Genocide* 9, no. 1–3 (2016): 13–36, https://doi.org/10.1080/17467586.2016.1198042.

[59] Brian Levin, "The Original Web of Hate: Revolution Muslim and American Homegrown Extremists," *American Behavioral Scientist* 59, no. 12 (2015): 1609–30, https://doi.org/10.1177/0002764215588815.

[60] Winter et al., "Online Extremism: Research Trends in Internet Activism, Radicalization, and Counter-Strategies."

counter-terrorism [616263]. In 2023, scholarly output decreased to 43, which may indicate a change in research priorities or a temporary saturation of certain topics.

However, in 2024, a renewed academic focus on emerging threats such as AI-driven recruitment and deepfake propaganda resulted in an increase to 59 publications [646566]. As of early 2025, 8 publications have been indexed, with the number expected to rise as more studies become available.

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[61] Darya Bazarkina, "Current and Future Threats of the Malicious Use of Artificial Intelligence by Terrorists: Psychological Aspects," in *The Palgrave Handbook of Malicious Use of AI and Psychological Security* (Department of European Integration Research, Institute of Europe of the Russian Academy of Sciences, Moscow, Russian Federation: Springer International Publishing, 2023), 251–72, https://doi.org/10.1007/978-3-031-22552-9_10.

[62] Swed and Chávez, "Between Scylla and Charybdis: The Threat of Democratized Artificial Intelligence."

[63] Keith Spiller et al., "The Politic of Everyday Counter-Terrorism: Online Performances and Responsibilities of the Prevent Duty in UK Higher Education Institutions," *Sociology* 57, no. 5 (2023): 1118–36, https://doi.org/10.1177/00380385221129950.

[64] Mitko Bogdanoski, "The Nexus between Cyberspace and Modern Terrorism," in *Countering Terrorist Activities in Cyberspace* (Military Academy "Gen. Mihailo Apostolski", University of Goce Delcev - Stip, Skopje, North Macedonia: IOS Press, 2018), 44–54, https://doi.org/10.3233/978-1-61499-847-1-44.

[65] J. Tochukwu Omenma, Cheryl Hendricks, and Nnamdi C. Ajaebili, "Al-Shabaab and Boko Haram: Recruitment Strategies," *Peace and Conflict Studies* 27, no. 1 (2020), https://doi.org/10.46743/1082-7307/2020.1460.

[66] Bouko et al., "Discourse Patterns Used by Extremist Salafists on Facebook: Identifying Potential Triggers to Cognitive Biases in Radicalized Content."

B. Geographic and Institutional Distribution

FIGURE 3. Published documents on social media and terrorism by Country or Territory.
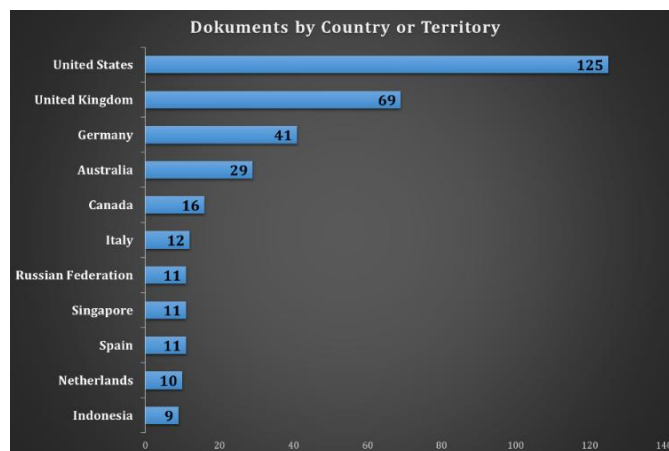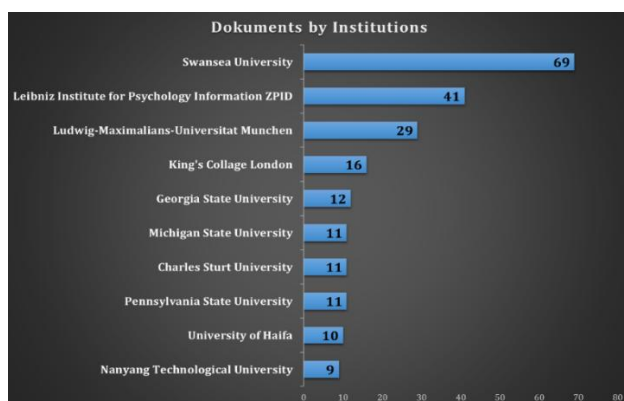

Sources: Author analysis using Scopus data (2025).

The geographical analysis reveals that the United States, with 125 articles representing nearly 30% of all studies, leads in intellectual contributions. The United Kingdom has produced 69 articles evidencing its sustained dedication to counter-terrorism research. Germany ranks third, producing 41 documents that emphasize cybersecurity and the

prevention of radicalization [67686970]. Also, noteworthy contributions have come from Australia (29), Canada (16), Italy (12), Spain (11), Russia (11), Singapore (11), The Netherlands (10), and Indonesia (9).

FIGURE 4. Published documents on social media and terrorism by Institution.

Sources: Author analysis using Scopus data (2025).

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[67] Malthaner, "Radicalization: The Evolution of an Analytical Paradigm."

[68] Irina Jugl et al., "Psychosocial Prevention Programs against Radicalization and Extremism: A Meta-Analysis of Outcome Evaluations," *European Journal of Psychology Applied to Legal Context* 13, no. 1 (2021): 37–46, https://doi.org/10.5093/EJPALC2021A6.

[69] William J. Schultz, Sandra M. Bucerius, and Kevin D. Haggerty, "We Wouldn'T Let Known Terrorists Live Here: Impediments To Radicalization in Western Canadian Prisons," *Sociology of Crime Law and Deviance* 25 (2020): 259–75, https://doi.org/10.1108/S1521-613620200000025022.

[70] Murthy, "Evaluating Platform Accountability: Terrorist Content on YouTube."

The great concentration of Western countries in this sector emphasizes how much national security issues and technical developments greatly influence study goals. Institutions like King's College London, Harvard University, and the University of Maryland have significantly contributed to the understanding of extremist networks and digital countermeasures [71][72][73][74].

Despite the significant challenges posed by terrorism in regions like the Middle East and Southeast Asia, these areas are notably underrepresented in scholarly literature. The considerable influence of digital radicalization in these areas necessitates enhanced research partnerships and localized investigations. Fostering collaborations between Western institutions and scholars from impacted regions may enhance the understanding of the global dynamics of online extremism.

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[71] Gary Lafree et al., "Correlates of Violent Political Extremism in the United States*," *Criminology* 56, no. 2 (2018): 233–68, https://doi.org/10.1111/1745-9125.12169.

[72] Gary Lafree and Anina Schwarzenbach, "Micro and Macro-Level Risk Factors for Extremism and Terrorism: Toward a Criminology of Extremist Violence," *Monatsschrift Fur Kriminologie Und Strafrechtsreform* 104, no. 3 (2021): 184–202, https://doi.org/10.1515/mks-2021-0127.

[73] Rousseau et al., "Collective Identity, Social Adversity and College Student Sympathy for Violent Radicalization."

[74] Milton, "Truth and Lies in the Caliphate: The Use of Deception in Islamic State Propaganda."

C. Keyword Co-occurrence Network

In this study, the social media and terrorism publications had several keywords, which were used by various authors as experimental priorities [75][76][77][78]. Vos viewer helped the bibliometric study of publications on social media and terrorism to identify numerous dominating keywords. Visualized (Figure 4) the co-occurrence network of these terms, then arranged them into many thematic clusters (Table 3).

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[75] Mendez, Mendez, and Zamora, "The Impact of Social Media on Terror-Related Groups."

[76] Michael Tierney, "#TerroristFinancing: An Examination of Terrorism Financing via the Internet," *International Journal of Cyber Warfare and Terrorism* 8, no. 1 (2018): 1–11, https://doi.org/10.4018/IJCWT.2018010101.

[77] Philip Seib, "US Public Diplomacy and the Terrorism Challenge," *The Hague Journal of Diplomacy* 14, no. 1–2 (2019): 154–68, https://doi.org/10.1163/1871191X-14011012.

[78] Eka Miranda et al., "A Study of Radicalism Contents Detection in Twitter: Insights from Support Vector Machine Technique," *Proceedings of 2020 International Conference on Information Management and Technology, ICIMTech 2020*, no. August (2020): 549–54, https://doi.org/10.1109/ICIMTech50083.2020.9211229.

FIGURE 5. Keyword Co-occurrence network.
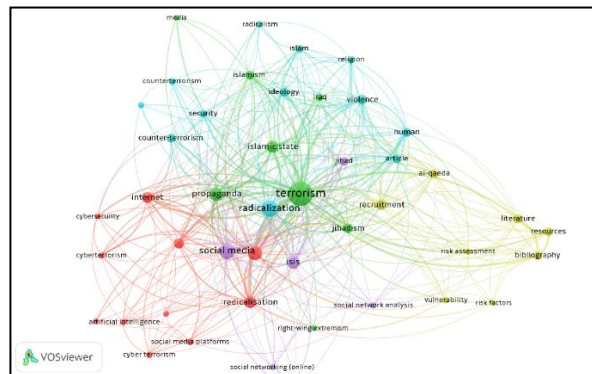
Sources: Author analysis from VOS viewer (2025).

TABLE 3. Cluster items by co-occurrence network.

	The Clusters	Total Items
Cluster 1	Artificial intelligence, cyber terrorism, cybersecurity, extremism, internet, online radicalization, radicalization, social media platforms, terrorist groups, violent extremism, cyberterrorism	11 Items
Cluster 2	Iraq, Islamic state, Islamism, jihadism, media, propaganda, right-wing extremism, terrorism	8 Items
Cluster 3	Article, counter-terrorism, human, ideology, Islam, radicalism, religion, violence	8 Items
Cluster 4	Al-Qaeda, bibliography, literature, recruitment, resources, risk assessment, risk factors, vulnerability	8 Items
Cluster 5	Isis, jihad, social media, social network analysis, social networking (online), twitter	6 Items

| Cluster 6	Countering violent extremism, counterterrorism, radicalization, security	4 Items

Sources: Author analysis from VOS viewer. (2025)

Based on the data visualization, certain keywords, such as social media, terrorism, and Twitter, are frequently used in 416 Scopus-oriented published documents. From these keywords, terrorism had the most prominent data visualization and was part of a cluster that included related terms such as Islamic State, Iraq, Islamism, Jihadism, Media, Propaganda, and Right-wing Extremism. The central theme network was built by these words, which also exhibit notable links with other important ideas. Strong connections between the keyword "Social Media" and phrases including extremism, radicalization, propaganda, internet, recruitment and Islamic State (ISIS) emerged.

D. Transition in Digital Radicalization

Figures 6 and 7 present thematic maps that provide a quadrant-based depiction of study themes over two separate time periods. From 2015 to 2018, terms like "Social Media" and "Terrorism" primarily dominated the Basic Themes quadrant. This position reflects their essential participation in the discourse, although it lacks significant analytical depth on the mechanisms through which internet platforms facilitate radicalization. Initial research primarily documented the strategies employed by extremist organizations to exploit

platforms like Facebook, Telegram, and YouTube for propaganda dissemination and recruitment, neglecting a comprehensive examination of the interplay between algorithms, user psychology, and global networks [79][80][81].

FIGURE 6. Thematic Map of Digital Radicalization (2015–2018): Basic Themes.
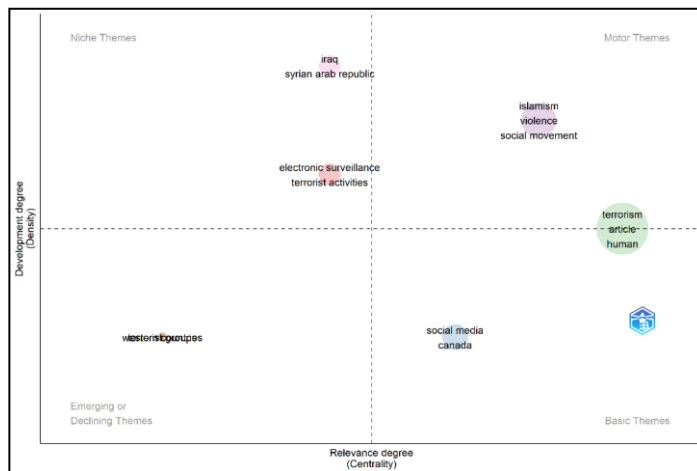
Sources: Author analysis from Biblioshiny (2025)

E. Key Emerging Trends and Implications for Countermeasures

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[79] Milton, "Truth and Lies in the Caliphate: The Use of Deception in Islamic State Propaganda."

[80] Ryan Scrivens, Paul Gill, and Maura Conway, "The Role of the Internet in Facilitating Violent Extremism and Terrorism: Suggestions for Progressing Research," *The Palgrave Handbook of International Cybercrime and Cyberdeviance*, 2020, https://doi.org/10.1007/978-3-319-78440-3_61.

[81] Gan et al., "Change Is the Only Constant: The Evolving Role of Women in the Islamic State in Iraq and Syria (ISIS)."

In contrast, the thematic maps from 2019 to 2025 demonstrate a substantial transition. Keywords such as "Violence," "Humans," and "Controlled Study" have transitioned into the Motor Themes quadrant, indicating heightened significance and sophisticated development in the literature. This transition indicates a heightened empirical examination of social media's influence on violent extremism, focusing specifically on behavioral studies, mental health aspects, and ideological framing [82][83][84]. Simultaneously, concepts such as "Online Social Networking," "Propaganda," and "Behavioral Research" reside in the Emerging or Declining Themes quadrant, indicating that while these topics have been examined, their future trajectories are contingent upon evolving trends in digital communication and global security

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[82] Muthuswamy, "Radicalization Ecosystem as a Confounder of Violent Extremism's Drivers."

[83] Navarro-Granados and Llorent-Bedmar, "The Spanish Muslim Community's Views on Terrorism in the Name of Islam and Perceived Discrimination: Socio-Educational Measures."

[84] Bouko et al., "Discourse Patterns Used by Extremist Salafists on Facebook: Identifying Potential Triggers to Cognitive Biases in Radicalized Content."

policy [85][86]. The Niche Themes quadrant characterized by terms such as "Iraq," "Syrian Arab Republic," "Globalization," and "State Building" includes region-specific or specialized contexts that, although very relevant, receive comparatively little attention in academic literature. "Social Media" consistently appears as a Central Theme in both periods, underscoring its persistent importance in terrorist recruitment and illustrating the expanding analytical scope of modern research.

**FIGURE 7.** Thematic Map of Digital Radicalization (2019–2025): Emerging and Evolving Themes.

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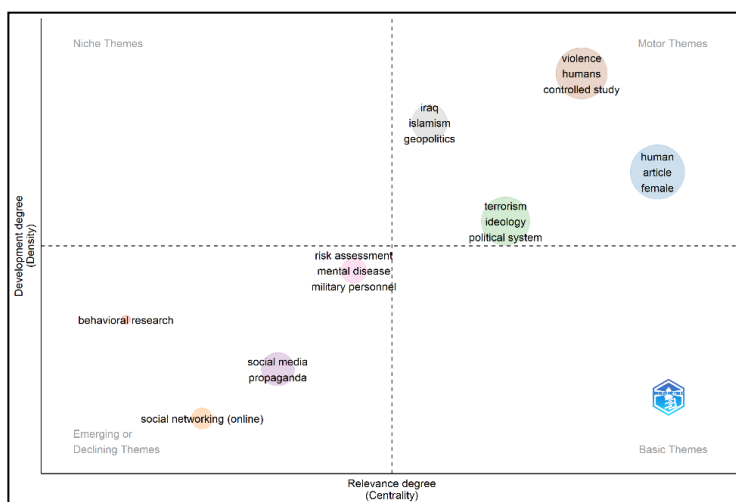
[85] Andrew Telford, "Where to Draw the Line? Climate Change-Conflict-Migration-Terrorism Causal Relations and a Contested Politics of Implication," *Environmental Science and Policy* 141 (2023): 138–45, https://doi.org/10.1016/j.envsci.2023.01.001.

[86] Nienierza et al., "Too Dark to See? Explaining Adolescents' Contact with Online Extremism and Their Ability to Recognize It."

Sources: Author analysis from Biblioshiny (2025)

The overall thematic evolution diagram succinctly summarizes the progression from early, simplistic views of digital platforms to the complex analyses of contemporary radicalization ecosystems.

FIGURE 8. Overall Thematic Evolution (2015–2025): Transition from Fundamental to Complex Radicalization Ecosystems.
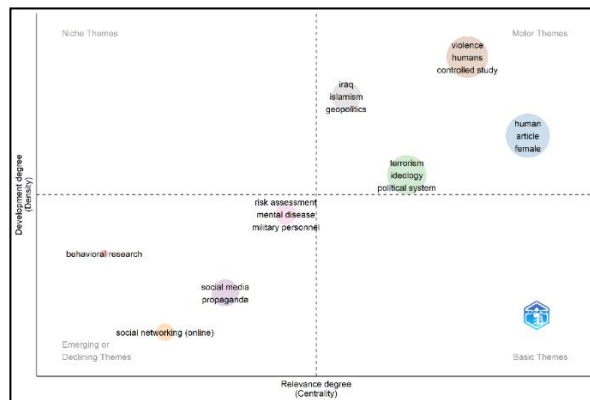
Sources: Author analysis from Biblioshiny (2025)

Furthermore, an integrated thematic network diagram that illustrates the interconnections among emerging trends reinforces the multidimensional nature of contemporary research.

FIGURE 9. Integrated Thematic Network of Emerging Trends in social media and Terrorism Research.
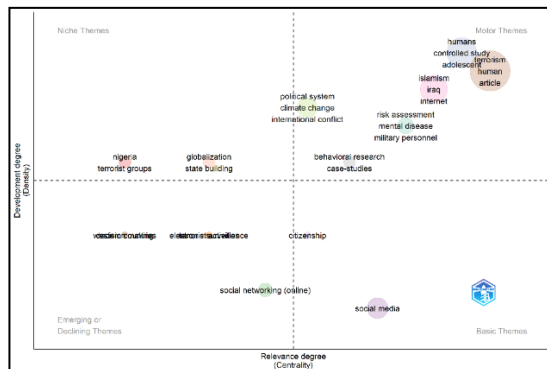
Sources: Author analysis from Biblioshiny (2025)

The evolution of the theme highlights the transition from perceiving social media as a mere communication channel to analyzing the complex social, psychological, and technological factors that facilitate radicalization. This development supports the promotion of multi-faceted solutions, encompassing content moderation, platform regulation, and community-focused interventions to address the root causes of extremism [87][88]. Mapping these thematic transitions aids scholars and policymakers in comprehending the changing dynamics of online terrorism and in formulating more comprehensive, evidence-based solutions.

F. Discussion

Technological developments have enabled terrorist groups to expand their reach. Platforms such as Telegram and

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[87] Baugut and Neumann, "Online Propaganda Use during Islamist Radicalization."

[88] Meserve and Pemstein, "Terrorism and Internet Censorship."

YouTube are the main tools for spreading propaganda. Studies show that ISIS uses social media to upload high-quality videos, memes, and infographics that appeal to young audiences. In addition, the use of social media for recruitment enables terrorist groups to target individuals in distant geographical locations, eliminating traditional physical boundaries in recruitment.

This study reveals that social media has evolved into a very effective tool for terrorist groups to spread ideology, recruit new members, and even plan attacks. Through bibliometric analysis, this study maps the development of social media use by terrorist groups, identifies vulnerable platforms, and evaluates existing counter-terrorism strategies. From the results of the study, it is clear that the dynamics between digital technology and terrorism create new challenges that must be addressed with an innovative and collaborative approach.

Social media, originally designed to strengthen social relationships, has been misused for destructive purposes. Terrorist groups such as ISIS use social media not only as a tool for disseminating information but also to build narratives that appeal to individuals who are psychologically and socially vulnerable. This is exacerbated by the ability of technology to reach a wide audience and create personal interactions, which are difficult for authorities to monitor.

This bibliometric analysis offers a comprehensive assessment of research trends on the impact of social media on terrorist recruiting, highlighting a dynamic academic environment that reflects technical progress and the evolving tactics of extremist organizations. The notable increase in publishing output post-2015 shows the growing

acknowledgment of digital terrorism as a multifaceted problem. Research (2015–2018) largely defines social media as a communication tool, focusing on the use of platforms such as Facebook, Telegram, and YouTube for propaganda and recruitment purposes. Data shows that the focus of academic studies has broadened as the complexity of the digital ecosystem has increased. Later phase (2019–2025) research on the intricate interaction of algorithmic curation, user psychology, and network dynamics in generating radicalization processes is under increasing focus [89][90].

The geographical distribution of publications also provides important insights. The United States, United Kingdom, and Australia excel in academic contributions, indicative of their strategic focuses on national security and

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[89] Swed and Chávez, "Between Scylla and Charybdis: The Threat of Democratized Artificial Intelligence."

[90] Bouko et al., "Discourse Patterns Used by Extremist Salafists on Facebook: Identifying Potential Triggers to Cognitive Biases in Radicalized Content."

counterterrorism [91][92][93][94][95]. The results of these countries' research are due to the need to protect national interests in a rapidly changing digital communications landscape, where unregulated distribution of information can exacerbate societal suffering and undermine public trust [96][97]. The focus of study in these domains underscores the necessity for a robust academic framework and financial support for research,

[91] Kristy Campion, "Women in the Extreme and Radical Right: Forms of Participation and Their Implications," *Social Sciences* 9, no. 9 (2020), https://doi.org/10.3390/SOCSCI9090149.

[92] Emma F. Thomas et al., "MOBILISE: A Higher-Order Integration of Collective Action Research to Address Global Challenges," *Political Psychology* 43, no. S1 (2022): 107–64, https://doi.org/10.1111/pops.12811.

[93] Nathan Brooks, Vaishnavi Honnavalli, and Briar Jacobson-Lang, "Children of ISIS: Considerations Regarding Trauma, Treatment and Risk," *Psychiatry, Psychology and Law* 29, no. 1 (2022): 107–33, https://doi.org/10.1080/13218719.2021.1904448.

[94] Gregory H. Winger, "Cybersecurity in the U.S.-Philippine Alliance: Mission Seep," *Pacific Review* 36, no. 6 (2023): 1365–93, https://doi.org/10.1080/09512748.2022.2112064.

[95] Doron Goldbarsht, "Dancing in the Dark: Terrorist Financing Via the Dark Web," in *Ius Gentium*, vol. 115 (Macquarie Law School, Sydney, NSW, Australia: Springer Science and Business Media B.V., 2024), 167–90, https://doi.org/10.1007/978-3-031-59543-1_7.

[96] Gabriel Weimann, "The Emerging Role of Social Media in the Recruitment of Foreign Fighters," in *Foreign Fighters under International Law and Beyond* (Department of Communication, University of Haifa, Haifa, Israel: T.M.C. Asser Press, 2016), 77–95, https://doi.org/10.1007/978-94-6265-099-2_6.

[97] Mirya R. Holman, Jennifer L. Merolla, and Elizabeth J. Zechmeister, "Terrorist Threat, Male Stereotypes, and Candidate Evaluations," *Political Research Quarterly* 69, no. 1 (2016): 134–47, https://doi.org/10.1177/1065912915624018.

facilitating comprehensive investigations into the technological and socio-political dimensions of online extremism.

The thematic evolution that our Biblioshiny analysis has captured provides a vivid illustration of the transition in research focus over time. The initial phase's theme maps demonstrated a nascent understanding of digital radicalization, with fundamental concepts such as "Social Media" and "Terrorism" occupying central positions. In contrast, subsequent research has expanded this discourse by incorporating complex topics such as algorithmic radicalization, behavioral dynamics, and the psychosocial underpinnings of extremist recruitment. These findings are visually supported by the quadrant-based thematic maps (Figures 5 and 6), which delineate the transition from simplistic models to multidimensional frameworks that better account for the interplay between technology and human factors.

Furthermore, the implications for countermeasures are significant. The advancement of study subjects indicates that effective interventions must go beyond traditional content moderation and platform regulation [98][99]. Policymakers and stakeholders are encouraged to adopt multi-tiered strategies that combine community-based interventions targeting the socio-psychological vulnerabilities exploited by extremist organizations with advanced technological solutions, such as

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[98] Telford, "Where to Draw the Line? Climate Change-Conflict-Migration-Terrorism Causal Relations and a Contested Politics of Implication."

[99] Muthuswamy, "Radicalization Ecosystem as a Confounder of Violent Extremism's Drivers."

artificial intelligence for content filtering [100][101]. This strategy is essential for developing policies that can adapt to the rapidly changing digital environment and mitigate the various factors contributing to digital radicalization.

This research emphasizes the importance of understanding the evolution of social media use by terrorist groups to develop more effective counter-terrorism measures. Social media, as a double-edged sword, can be used to spread propaganda but also to build awareness and solidarity in the fight against extremism. Going forward, a collaborative approach that combines advanced technology, a strong legal framework, and community education is key to addressing this threat. This research is expected to be a catalyst for further research and the development of relevant policies in this digital era. With joint efforts, the global community can create a digital space that is safer and protected from exploitation by extremist groups.

IV. Conclusion

This study demonstrates that social media has transformed from a basic communication platform into a complex catalyst for terrorist recruitment. Through an analysis of 416 Scopus-indexed publications (2010–2025), our bibliometric methodology reveals a distinct transition: initial research concentrated on the utilization of platforms such as

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[100] Baugut and Neumann, "Online Propaganda Use during Islamist Radicalization."

[101] Meserve and Pemstein, "Terrorism and Internet Censorship."

Facebook, Telegram, and YouTube for extremist propaganda, while contemporary studies explore intricate dynamics including algorithmic radicalization, behavioral influences, and cross-platform coordination.

Research findings indicate that digital radicalization encompasses not only the dissemination of content but also a multifaceted interplay between human and technological factors. In response to this evolution, technologically sophisticated and community-aware countermeasures are required. For optimal effectiveness, strategies must incorporate community-based interventions that tackle the fundamental social and psychological vulnerabilities exploited by extremist groups alongside AI-driven content moderation.

In conclusion, our research elucidates the evolution of academic focus in social media terrorism and establishes a foundation for the formulation of comprehensive, evidence-based policies moving forward. Future research must concentrate on emerging digital phenomena, including deepfakes and decentralized networks, to enhance counterterrorism strategies within the evolving online media landscape.

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