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Mapping Emerging Trends in Augmented Analytics and Generative AI for Business Intelligence: A Bibliometric Analysis (2019–2025)

Mohammad Alhur[1],Omar Alsaudi[2]

[12]Faculty of Business, Al-Zaytoonah University of Jordan, Amman, Jordan

Abstract: The landscape of Business Intelligence (BI) goes through a transformation because augmented analytics combined with generative AI facilitates automated data processing and insight generation. Research identified emerging trends and intellectual structures by analyzing 374 peer-reviewed Scopus publications from 2019 to 2025. Network visualization tools allowed researchers to see co-authorship patterns together with publication trends alongside thematic clusters. The research shows that scholarly production of Business Intelligence grew extensively from 2023 before reaching its peak during 2024 followed by its stabilization in 2025. Yogesh K. Dwivedi together with Ooi Keng-Boon and Arpan Kumar Kar established a dominant scholarly group which governs the evolution of the field. The analysis displays four main groups: (i) Machine Learning together with Natural Language Processing, (ii) Privacy issues and ethical matters, (iii) Specific domain utilization and measuring approaches and (iv) Interactive BI with visualization practices. The worldwide collaboration network shows strong partnerships exist between universities in the USA and China. Research findings create vital knowledge about augmented analytics and generative AI in BI which demonstrates the necessity to connect academic work with industrial implementation practices.

Keywords: Augmented Analytics, Bibliometric analysis, Generative AI, Business Intelligence.

1 Introduction

Current Business Intelligence solutions use AI technology to predict future trends enhance decision automation and make company data more accessible to all levels of employees (Ahmed et al., 2025). BI now serves as a new strategy due to aided analytics that uses AI to automate data preparation and insight generation and produces generative AI tools like ChatGPT to provide human-like outputs (Hutson, 2024).

According to Gartner (2023) augmented analytics belongs to the "top strategic technology trends" and will replace traditional dashboards as 60% of companies embrace AI-augmented analytics by 2026 (Gartner, 2023). Companies such as Microsoft and Salesforce provide NLP tools that help users converse with business intelligence platforms through Copilot for Power BI and Einstein GPT (Khan, 2024; Parnin et al., 2023). Research efforts to examine AI-augmented Business Intelligence stand isolated from one other because scholars investigate different aspects of this convergence including technical advancements, ethical risks, and company management structures (Zhang et al., 2024; Aljawazneh 2024).

This study examines 374 peer-reviewed publications from 2019 to 2025 on Scopus to identify the intellectual connections between AI-assisted Business Intelligence. It studies two parts: 1) Which research areas control the discipline and 2) What new directions are developing. What researchers, organizations and scientific outlets steer this specific area? As technology advances ethical issues concerning its use have developed differently over time.

This bibliometric study analyzes 374 peer-reviewed articles from 2019–2025, sourced from Scopus, to map the intellectual structure of AI-augmented BI. It explores: (1) What are the dominant research themes and emerging trends? (2) Which authors, institutions, and journals are leading this domain?

The following sections of this review are structured as follows: The second part provides a thorough overview of the existing literature on the topic. The third section outlines the methodology utilized in the research. In the fourth part, the findings from the bibliometric analysis are presented. Finally, the fifth and sixth parts engage in a discussion of the research findings, exploring their implications and acknowledging the limitations of the study.

2 Related Work

2.1 The Emergence of Augmented Analytics: Automating the BI Pipeline

Augmented analytics uses natural language processing and machine learning to automatically perform complex BI tasks including data cleaning, feature extraction, and insight detection. Goswami et al. (2024) introduced augmented analytics as a method to decrease the time for creating insights through AI-driven process optimization (Goswami et al., 2024). Research studies verify these insights through their findings. For instance, Researchers found that using Google AutoML Tables cuts retail analytics preparation by 30% (R. Larsen & Becker, 2021). Wang et al. (2024) confirmed a 22% better skipping of defective objects with automatic anomaly detection systems that operate across multiple Chinese factories. When users in Jordanian small businesses utilize self-service analytics tools they can enter natural language queries which produces improved satisfaction by 35 percent according to studies by (Anabtawi et al., 2024; Hayajneh & Harb, 2023). Oliveira and Santos (2023) show in their research that Portuguese SMEs face scalability problems when adopting BI systems.

2.2 Generative AI in BI: From Automation to Creative Synthesis

Generative AI, particularly large language models (LLMs) like GPT-4, has significantly enhanced business intelligence (BI) capabilities by advancing beyond basic automation to incorporate creative data synthesis (M. S. Alhur et al., 2022; Mohammed et al., 2024). A notable example is OpenAI's Codex, which can transform natural language prompts into SQL queries, simplifying database interactions for users without technical expertise (Odeh et al., 2024). Additionally, ChatGPT has been utilized to create analytical summaries from spreadsheet data, offering quick and narrative-driven insights that facilitate decision-making (Aldreabi et al., 2025; Dwivedi et al., 2023). This trend aligns with the broader movement toward "analytic democratization," which emphasizes the need to make advanced analytics accessible to a larger audience, as highlighted by Duan et al. (2019).

However, there are still considerable challenges to address. Generative models can unintentionally reinforce historical biases; for instance, if the training data reflect

gender imbalances in hiring practices, the resulting analytics may mirror those biases (Sreerama & Krishnamoorthy, 2022; Qasim et al, 2025). Furthermore, the often opaque nature of many AI models can undermine user trust. Without a transparent understanding of how conclusions are drawn, stakeholders might hesitate to depend on AI-generated recommendations (Anabtawi et al., 2024; Rimon et al., 2024; Mohammed etal., 2024).

3 Methodology

This study employs a systematic bibliometric methodology—aligned with best practices in the field (Alzboun et al., 2024; Donthu et al., 2021)—to map global trends in Augmented Analytics and Generative AI in Business Intelligence research. Bibliometric analysis, as defined by Md Khudzari et al. (2018), provides a quantitative approach to assess and visualize the evolution of a research domain, distinguishing itself from traditional literature reviews. In our analysis, Augmented Analytics and Generative AI in Business Intelligence-related publications were sourced from the Scopus database. Scopus was chosen for its comprehensive coverage of high-quality, peer-reviewed articles, ensuring that the data is both robust and representative. The dataset was subsequently processed using the biblioshiny tool and VOSviewer, which facilitated the extraction and visualization of key bibliometric indicators.

3.1. Data collection and Search Strategy

In March 2025, a comprehensive investigation was conducted using the Scopus database to identify relevant literature on the topic of augmented analytics in Business Intelligence. The main search focused on articles containing the combination of ("augmented analytics," "generative AI," "AI-driven BI," "natural language processing,") AND ("business intelligence," "data visualization," OR "decision support systems")" throughout Article title, Abstract, Keywords, and Authors. The search query expanded scope and retrieval by including three new synonyms—GenAI, BI, and DS systems—to find more documents.

The first search returned 652 publications spanning 2019 to 2025 that contained relevant content about augmented analytics in the BI domain. Before further evaluation, the search excluded 271 documents under proceeding papers, meeting abstracts and editorial materials, retracted publications, and meetings with book chapters, data papers, and notes. The research included 381 studies but eliminated seven particular documents because their main content utilized a language other than English.

A bibliometric evaluation of document metadata included author and publication year information, source publications, institutional affiliations, keywords, and topical research, which revealed annual growth rates, document citation averages, and international author relationships. The research mapping used a complete method to show new trends and collaboration patterns in augmented analytics within the BI field.

4 Data Analysis and Results

Research collaboration and trends

The network diagram illustrates the pattern of co-authorship among researchers in augmented analytics and GenAI in the BI research community, shaded according to the average number of citations per author. The size of each node is determined by the

number of publications involving co-authors, with edges indicating collaboration strength. The color gradient, which varies from dark blue (low citation impact) to yellow (high citation impact), distinguishes citation patterns across different research clusters. Core authors like Yogesh K. Dwivedi, Ooi Keng-Boon, and Arpan Kumar Kar are a dense collaborative core central to the network. Peripheral authors are less impactful in terms of citations and are sparsely connected. This analysis gives a snapshot of influential contributors and the impact of citations within the field.

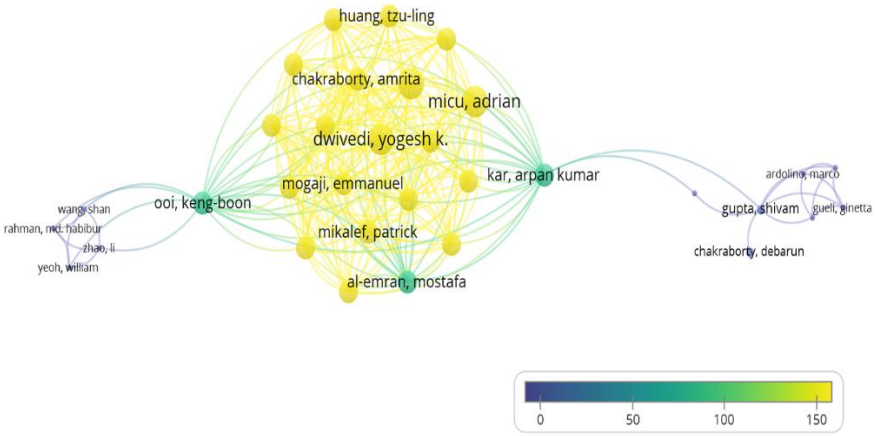

Figure 1 Co-authorship analysis of augmented analytics and GenAI within the BI field with average of citations

The figure (2) illustrates the trend of publication of documents on augmented analytics and Generative AI (GenAI) in the Business Intelligence (BI) field from 2019 to 2025. The y-axis denotes the number of documents published, and the x-axis denotes the years.

In the years 2019-2022, the number of publications was minimal since it was the initial stages of augmented analytics and GenAI as new fields. The research done in these years was focused on laying down the basic concepts and methods, while the cloud-based BI platforms were in the process of evolving.

An interesting turn was witnessed in the year 2023, where the publications increased exponentially. The rise would likely be due to improvements in generative AI, particularly in large language models (LLMs), natural language processing (NLP), and machine learning (ML). There was a peak in publications in 2024, with increased interest to apply augmented analytics as a means to automate insights and improve decision-making processes. But in 2025, publication numbers fell, which might indicate stabilization or maturity of such research topics in BI.

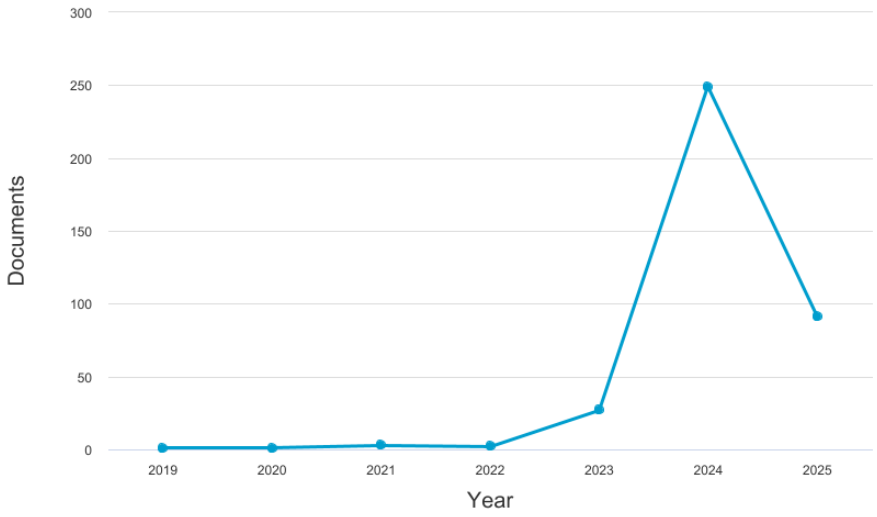

Figure 2 Year-wise publication of augmented analytics and GenAI within the BI field (2019-2025)

Furthermore, the following figure illustrates the worldwide collaboration network in augmented analytics and GenAI research in BI field, mapped onto a geospatial map. The color scale, from dark blue (most) to light blue (least), shows the number of co-authored publications for each nation. Gray signifies no known co-authored publications in the dataset. Edges between nations signify collaboration links, with edge width corresponding to the quantity of co-authored publications between countries.

The USA and China enjoy the most cooperative relationship, as indicated by the darkest blue color and thickest line, denoting a high volume of collaborative publications. Close cooperation can also be seen between the USA and Australia, along with other European nations, highlighting the research network that spans several geographic locations.

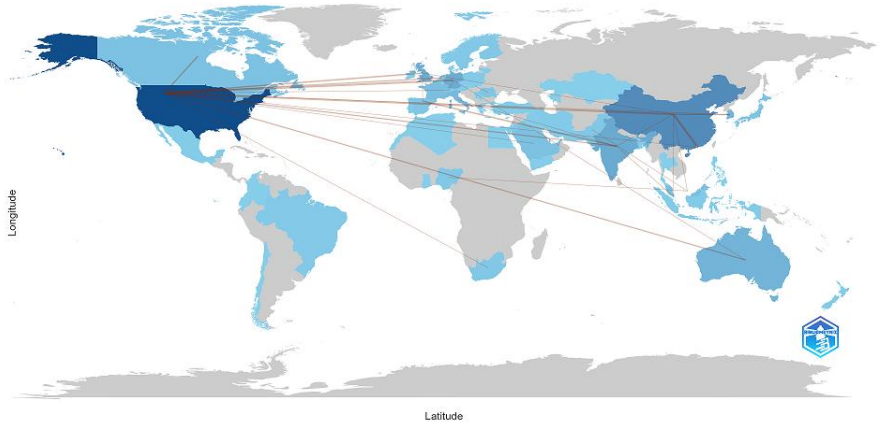

Figure 3 Global Collaboration Network in augmented analytics and GenAI within the BI field

Main themes

The figure below shows the thematic landscape of research emphasis on augmented analytics and Generative AI (GenAI) in Business Intelligence (BI). The figure is created from keyword co-occurrence analysis from relevant publications. The keywords are extracted from titles and abstracts, and the visualization shows the intensity of co-occurrence relations among these terms.

In this figure, the nodes represent keywords whose size indicates their frequency within the dataset. The closeness and lines between the nodes indicate how strong their co-occurrence is, thereby indicating thematic relations among the keywords. The nodes are also clustered and colored differently according to their thematic similarity, indicating different research fields.

The key themes discovered herein are: (1) Machine Learning and Natural Language Processing, characterized by keywords such as "machine learning," "natural language processing," "large language models," and "training," which delineate the technological basis of Generative AI within the scope of Business Intelligence. (2) Ethical Considerations and Privacy, characterized by keywords such as "ethical consideration," "privacy," "trust," and "safety," which denote the significance of appropriate development and implementation of these technologies. (3) Utilization and Measurement in Certain Areas, including descriptors like "medicine," "diagnosis," "patient," "accuracy," and "evaluation" that indicate hands-on application and measurement of GenAI within expertise areas. (4) Visualization and Interactive BI: evident through keywords like "visualization," "web," "interactive," and "platform," indicating a focus on how GenAI enhances data exploration and presentation within BI tools.

The network chart underscores the interconnected nature of these themes, highlighting the multidisciplinary approach to GenAI in BI. Including a visualization cluster reflects the growing importance of leveraging GenAI to enhance data storytelling and user interaction within BI platforms.

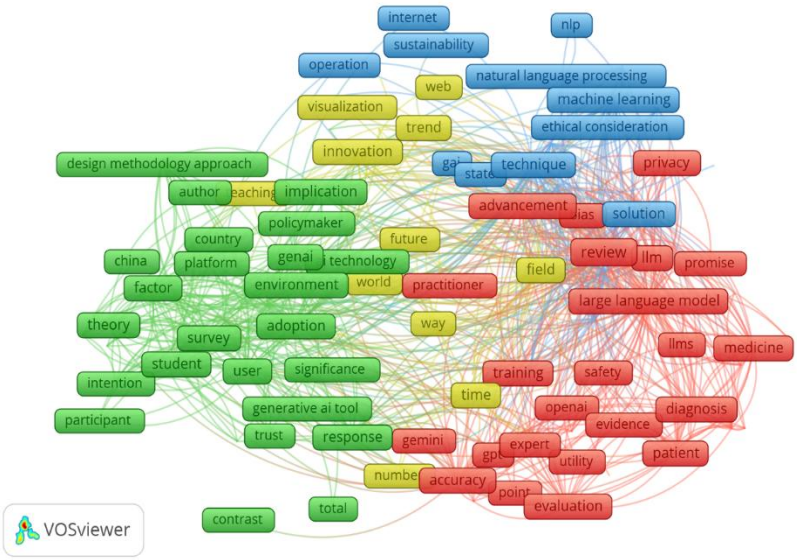

Figure 4 Main Themes of augmented analytics and GenAI within the BI field

Research Context

To gain a deeper understanding of how research on augmented analytics is distributed in business intelligence, we grouped the papers under survey based on their topic areas. Figure 1 indicates the distribution of research topics across domains.

The findings introduce that the study of augmented analytics in business intelligence occurs predominantly in five prevailing academic and professional fields. Computer Science forms the largest number of studies, which is 23.0% of total research. It is closely followed by Social Sciences, yielding 15.2%. 12.6% of research comes from the field of Engineering, and 12.4% of study of this category falls under the fields of Business and Management. Finally, Medicine is 10.7%, with a keen interest in how augmented analytics can enhance practices within the healthcare sector.

Notably, only 21.7% of the papers were applied uses of augmented analytics in industries such as healthcare, energy, and psychology. This is in line with previous findings that the applied application of augmented analytics in real industry contexts remains very underdeveloped. Although there is high interest in technology in academic fields such as computer science and business management, there is still much room for further applied research in industry contexts.

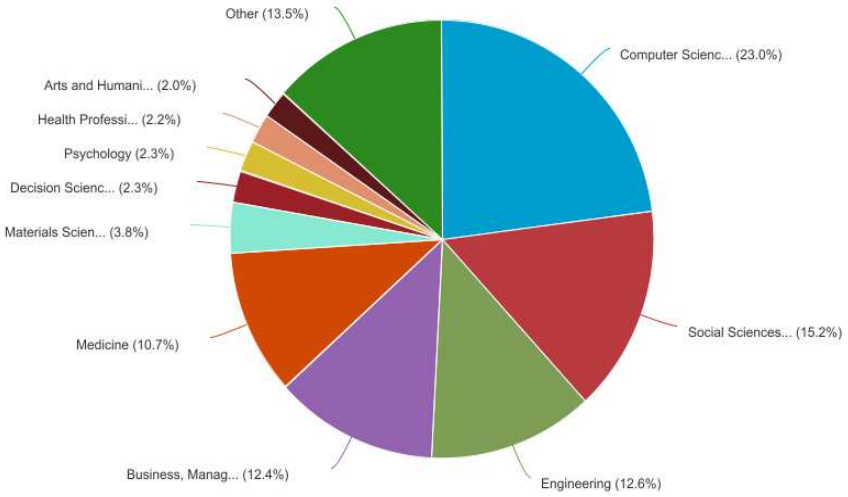

Figure 5 Articles by Domain of Applications

5 Discussion

The study highlights the evolving research landscape of augmented analytics and Generative AI in Business Intelligence. The main researchers, including Yogesh K. Dwivedi and Ooi Keng-Boon, are determined by using a co-authorship network analysis. Trend analysis shows a steep increase in publications starting from 2023, with a peak in 2024, followed by a plateau in 2025. International collaborations, especially between the USA and China, prevail. Thematic analysis reveals four core clusters: (1)

Natural Language Processing and Machine Learning, (2) Ethical Issues and Privacy, (3) Application and Measurement in Individual Fields, and (4) Visualization and Interactive Business Intelligence. Although academic research powers innovation, its industrial application remains comparatively less developed.

These findings are consistent with other studies emphasizing the growing significance of augmented analytics and Generative AI to BI. Current studies stress the unprecedented contribution of large language models (LLMs), machine learning (ML), and natural language processing (NLP) to automating data insights, as illustrated by Hadi et al. (2023). The sharp growth of scholarly literature after 2023 is consistent with general trends in artificial intelligence research, spearheaded by the development of sophisticated generative models like ChatGPT and Bard, which has spurred an astonishing amount of scholarly output (Dwivedi et al., 2023). The strong collaborative efforts between China and the United States are also supported by AlShebli et al. (2024) and Alzboun et al. (2024), which identified these countries as leading contributors to artificial intelligence studies. The limited share of applied research among industrial environments, however, presents concerns once raised by Pishgar et al. (2021)about the slow pace at which AI innovation evolves from theoretical models into practical applications. This study not only confirms trends that were uncovered in previous research but also provides a different perspective regarding the expected reduction in publication volume in 2025. Classic literature says that research on new technology generally takes the shape of exponential growth (M. Alhur et al., 2024; Bornmann et al., 2021).

Conversely, our results project a slight dip in 2025, which may be accounted for by market saturation and a shift from exploratory studies to implementation-oriented research. Secondly, while the literature has hitherto concentrated on AI applications in discrete domains such as finance and healthcare, our study demonstrates a more cross-disciplinary effort drawing on social sciences, engineering, and business administration, suggesting a move towards integrating AI into various academic disciplines.

5.1. Theoretical and practical implications

The present research extends knowledge about augmented analytics and GenAI in BI through an analysis of co-authorship networks. Academic collaboration networks define both scholarly research structures and demonstrate which researchers have the most influence on spreading innovative concepts. Historical analysis acts as a base to embrace machine learning and natural language processing tools yet it adds multiple dimensions which explore ethical matters and privacy and visualization aspects in order to develop interdisciplinary solutions to technological problems.

The research results help scientists together with professionals in the industry recognize leading scholars and new collaboration centers to develop partnerships. Foundation-building research has resulted in a stabilization of new article production thus enabling researchers to explore applications. The identified thematic groups focus on essential industrial aspects such as user trust improvements and ethical AI deployment practices.

6 Limitation, and further research.

Further research must expand their data collection scope and analysis for an extended time. Researchers who include various databases in their work will gain access to detailed field development from essential origins through projected changes. Qualitative evaluations should be performed to understand the reasons behind

publication trends, emphasizing the conspicuous decrease in publications during 2025. The study would gain substantial insight by interviewing researchers and conducting case studies with industry practitioners. An essential research need exists to link academic theoretical concepts with the actual implementation. Research should focus on practical implementation strategies of augmented analytics and generative AI technologies in different industry sectors. Different industrial sectors can validate theoretical findings by implementing case studies and pilot projects to help develop practical solutions. Additional collaboration mapping analytics must be implemented because it would reveal how multiple research communities pair up to shape business intelligence innovation. Such comprehension would enable a better selection of strategic research funding measures and policy choices.

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