Emerging Trends in Retail Analytics: A Bibliometric Analysis of the Last Decade

Tendencias Emergentes en la Analítica del Retail: Un Análisis Bibliométrico de la Última Década

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**Abstract**

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*Keywords*:.

**Resumen**

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*Palabras clave*:.

# Introduction

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The rest of this paper is organized as follows: Section 2 discusses the methodology used. Section 3 presents the results. Section 4 discusses the findings. Finally, Section 5 presents the conclusions.

# Literature Review

# Materials and Methods

## Study Design

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TITLE( "retail analytics" )

OR TITLE( retail PRE/2 analytics)

OR TITLE( retail AND "data science" )

OR TITLE( retail AND insight )

OR TITLE( retail AND "big data" )

OR TITLE( retail AND insight )

OR TITLE( retail AND "predictive analytics" )

OR TITLE( retail AND "consumer analytics" )

OR TITLE( retail AND "artificial intelligence" )

OR TITLE( retail AND "machine learning" )

OR TITLE( inventory PRE/2 analytics )

OR AUTHKEY( "retail analytics" )

OR AUTHKEY ( retail PRE/2 analytics)

OR AUTHKEY ( retail AND "data science" )

OR AUTHKEY ( retail AND insight )

OR AUTHKEY ( retail AND "big data" )

OR AUTHKEY ( retail AND insight )

OR AUTHKEY ( retail AND "predictive analytics" )

OR AUTHKEY ( retail AND "consumer analytics" )

OR AUTHKEY ( retail AND "artificial intelligence" )

OR AUTHKEY ( retail AND "machine learning" )

OR AUTHKEY ( inventory PRE/2 analytics )

Figure 1. Search String

Source: The authors.

## Data Treatment

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## Data Analysis

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# Results and Discussion

This section presents the basic bibliometric indicators of the analyzed dataset.

## General Metrics

The dataset includes scientific publications spanning from January 2015 to December 2024, totaling 15,286 documents and reflecting an annual growth rate of 28.05%. The average document age is 5.77 years, with each work receiving approximately 4.11 citations overall, or 0.41 citations per year. Publications originate from 37 different sources, averaging 413.14 documents per source. The dataset comprises 14,822 journal articles, 35 conference papers, 21 editorials, 2 errata, 1 letter to the editor, and 402 review papers. A total of 40,773 authors (1,609 unique) contributed to the publications, with a strong tendency toward collaboration—averaging 3.61 authors and 3.92 co-authors per document. International collaborations account for 18.84% of the dataset. The contributing authors are affiliated with 10,687 organizations across 127 countries.

## Basic Metrics

### Authors

### Organizations

### Countries

### Sources

## Correlation Analysis

### Countries

### Keywords

### Descriptors

## Correlation Analysis

### Citation Network

### Co-citation Network

### Coupling

## Dominant Themes

### Dominant Clusters

### Trending Terms per Year

## Publication Trend

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## Leading Scopus Subject Areas

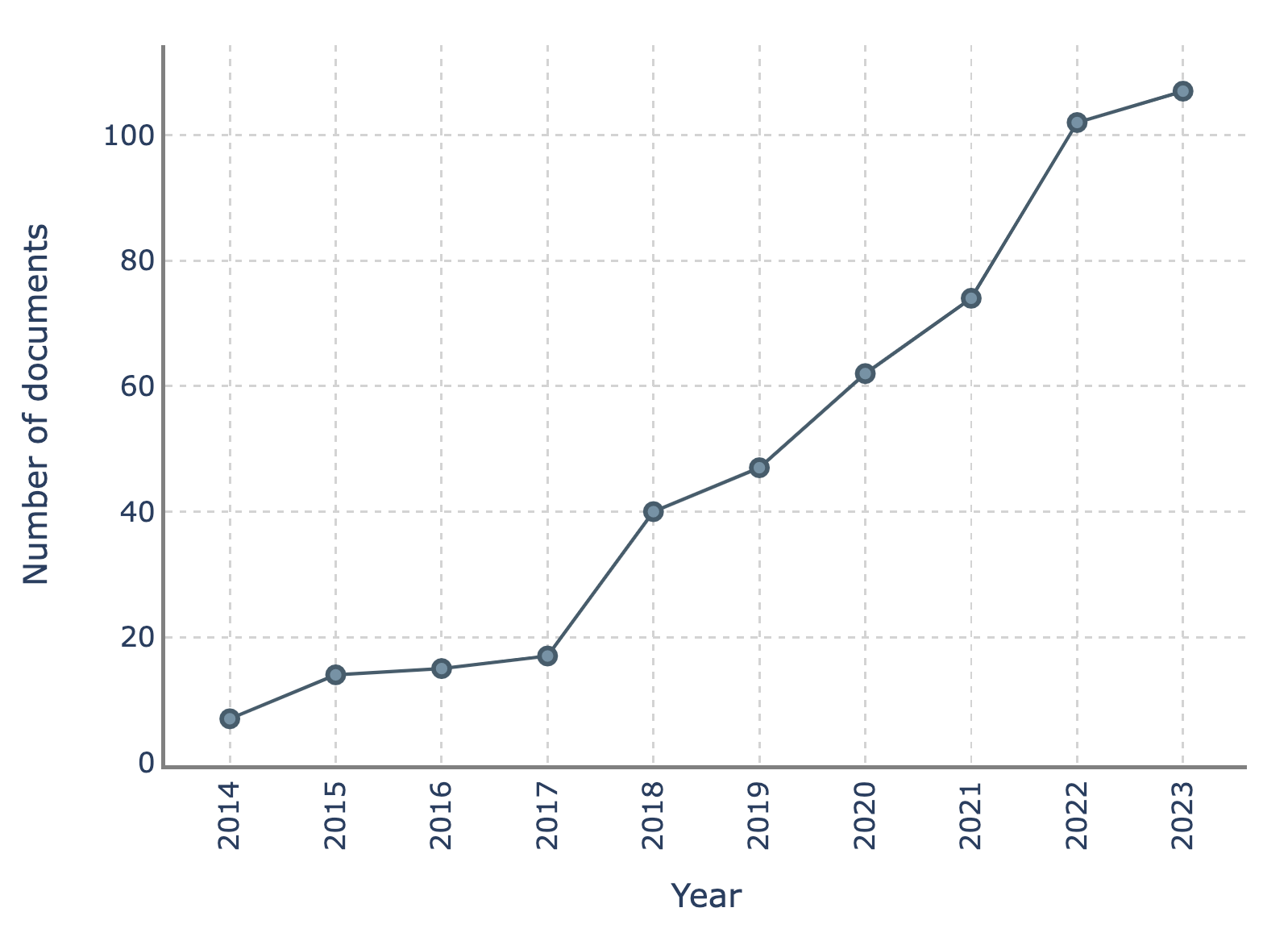


Figure 2. Number of documents published by year.

Source: The authors.

## Cited References

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## Similarity among Scopus subject areas

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## Leading Countries

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## Leading Institutions

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## Leading Publication Sources

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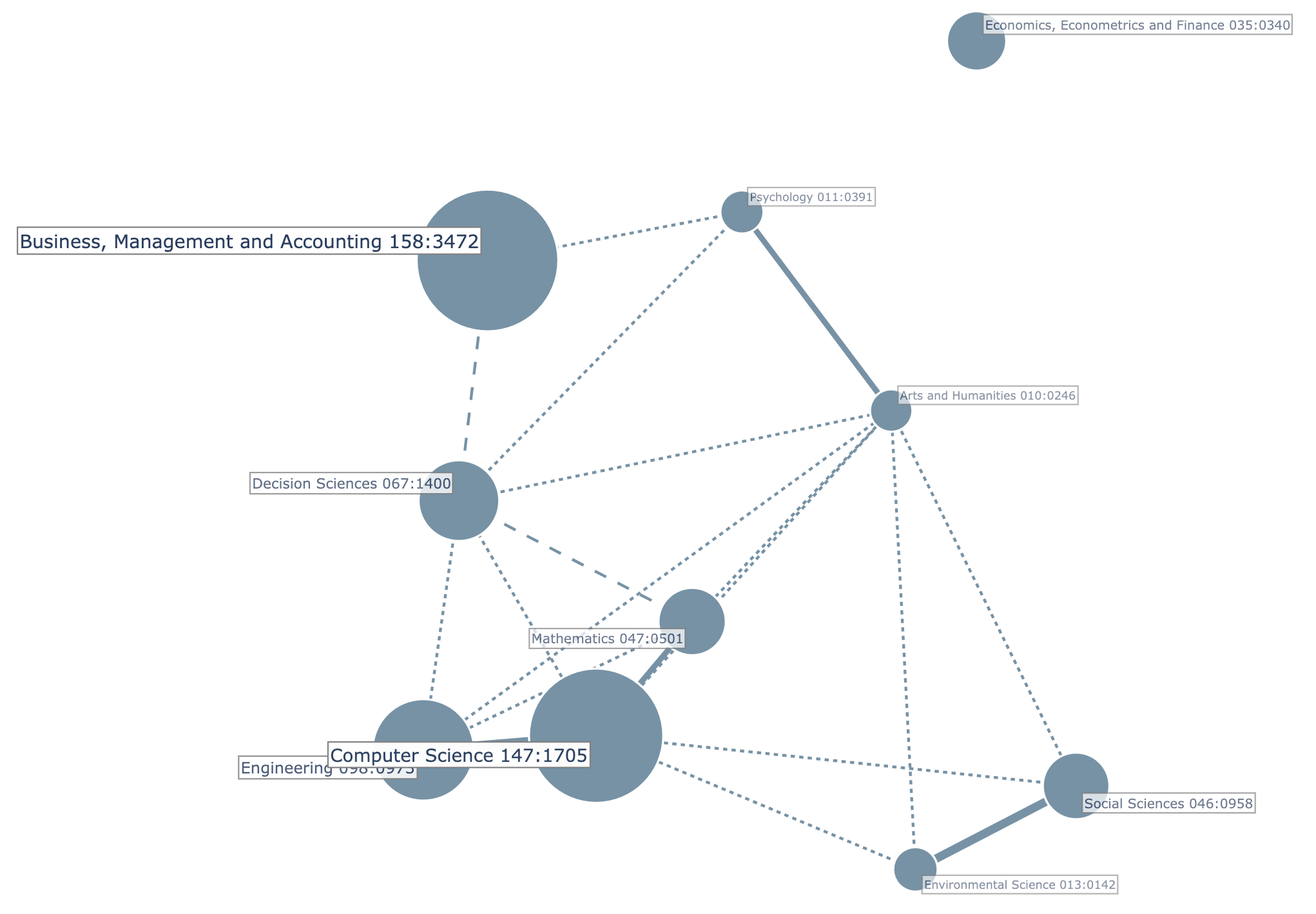


Figure 3. Correlation map of Scopus Subject Areas crossed with cited journals.

Source: The authors.

## Most Cited Documents

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Table 1.

Most Cited Documents in Retail Analytics.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Title | Authors | Document  Type | Rank  Global  Citations | Global  Citations | Rank  Local  Citations | Local  Citations |
| Shopping intention at AI-powered automated retail stores (AIPARS) | Pillai et al. [17] | Article | 1 | 201 | 2 | 13 |
| A study on investments in the big data-driven supply chain, performance measures Stuckenschmidt [\*142\*] and organizational performance in Indian retail 4.0 context | Gawankar et al. [19] | Article | 2 | 130 | 7 | 6 |
| Shopping with a robotic companion | Bertacchini et al. [20] | Article | 3 | 127 | 4 | 9 |
| Big data analytics and demand forecasting in supply chains: a conceptual analysis | Hofmann and Rutschmann [22] | Article | 4 | 111 | 16 | 4 |
| Consumer engagement via interactive artificial intelligence and mixed reality | Sung et al. [23] | Article | 5 | 103 | 52 | 1 |
| Drivers and impact of big data analytic adoption in the retail industry: A quantitative investigation applying structural equation modeling | Lutfi et al. [24] | Article | 6 | 95 | 27 | 3 |
| Retail business analytics: Customer visit segmentation using market basket data | Griva et al. [25] | Article | 7 | 91 | 11 | 5 |
| Agent-Based Modeling of Retail Electrical Energy Markets with Demand Response | Dehghanpour et al. [26] | Article | 8 | 91 | 117 | 0 |
| Indian shopper motivation to use artificial intelligence: Generating Vroom’s expectancy theory of motivation using grounded theory approach | Chopra [21] | Article | 9 | 87 | 5 | 8 |
| Retail sales forecasting with meta-learning | Ma and Fildes [27] | Article | 10 | 86 | 12 | 5 |
| Daily retail demand forecasting using machine learning with emphasis on calendric special days | Huber and Stuckenschmidt [16] | Article | 11 | 80 | 1 | 16 |
| State-of-the-art and adoption of artificial intelligence in retailing | Weber and Schütte [18] | Article | 18 | 70 | 3 | 12 |
| Revolution of Retail Industry: From Perspective of Retail 1.0 to 4.0 | Har et al. [28] | Article | 32 | 49 | 8 | 6 |
| Artificial intelligence in retail: applications and value creation logics | Cao [29] |  | 40 | 43 | 6 | 8 |
| Low cost embedded system for increasing retail environment intelligence | Pierdicca et al. [30] |  | 49 | 37 | 9 | 6 |
| Incorporating big data within retail organizations: A case study approach | Aversa et al. [31] | Article | 58 | 31 | 10 | 6 |

Source: The authors.

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Table 3.

Dimensions for analysis of emerging topics.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Rank  Occurrences | Occurrences | Rank  Citations | Citations |
| JOURNALS |  |  |  |  |
| Journal of Retailing and Consumer Services | 1 | 18 | 1 | 632 |
| Lecture Notes in Networks and Systems | 2 | 14 | 56 | 25 |
| Lecture Notes in Computer Science | 3 | 10 | 16 | 79 |
| ACM International Conference Proceeding Series | 4 | 9 | 42 | 37 |
| International Journal of Retail and Distribution Management | 5 | 8 | 3 | 232 |
| Advances in Intelligent Systems and Computing | 6 | 8 | 74 | 18 |
| Sustainability (Switzerland) | 7 | 5 | 12 | 95 |
| Lecture Notes in Electrical Engineering | 8 | 5 | 92 | 12 |
| International Journal of Production Research | 9 | 4 | 2 | 246 |
| Procedia Computer Science | 10 | 4 | 13 | 93 |
| Annals of Operations Research | 19 | 3 | 9 | 116 |
| International Journal of Information Management | 29 | 2 | 4 | 182 |
| European Journal of Operational Research | 30 | 2 | 5 | 162 |
| Computers in Human Behavior | 31 | 2 | 6 | 148 |
| International Journal of Logistics Management | 32 | 2 | 7 | 131 |
| International Journal of Physical Distribution and Logistics Management | 33 | 2 | 8 | 118 |
| Expert Systems with Applications | 34 | 2 | 10 | 99 |
| COUNTRIES |  |  |  |  |
| India | 1 | 124 | 2 | 1131 |
| United States | 2 | 69 | 1 | 1190 |
| China | 3 | 56 | 5 | 429 |
| United Kingdom | 4 | 51 | 3 | 1020 |
| Germany | 5 | 35 | 4 | 497 |
| Italy | 6 | 20 | 6 | 412 |
| Canada | 7 | 20 | 8 | 188 |
| Russia | 8 | 18 | 25 | 63 |
| Brazil | 9 | 14 | 7 | 215 |
| Ireland | 10 | 13 | 9 | 188 |
| Hong Kong | 21 | 7 | 10 | 177 |
| ORGANIZATIONS |  |  |  |  |
| Maynooth Univ. (IRL) | 1 | 8 | 9 | 129 |
| Univ. of Appl. Sciences Upper Austria (AUT) | 2 | 6 | 5 | 158 |
| Amity Univ. (IND) | 3 | 6 | 36 | 76 |
| Univ. of Bristol (GBR) | 4 | 5 | 14 | 107 |
| Dublin City Univ. (IRL) | 5 | 5 | 37 | 76 |
| Massachusetts Inst. of Technol. (USA) | 6 | 5 | 58 | 55 |
| Univ. of Moratuwa (LKA) | 7 | 5 | 204 | 14 |
| Univ. of Duisburg-Essen (DEU) | 8 | 4 | 20 | 100 |
| Univ. of Tennessee (USA) | 9 | 4 | 33 | 81 |
| Univ. of Bologna (ITA) | 10 | 4 | 59 | 55 |
| Swansea Univ. (GBR) | 37 | 2 | 1 | 242 |
| Montana State Univ. (USA) | 38 | 2 | 4 | 194 |
| Univ. of Mannheim (DEU) | 39 | 2 | 6 | 156 |
| Pune Inst. of Bus. Manag. (IND) | 116 | 1 | 2 | 201 |
| Sri Balaji Univ. (IND) | 117 | 1 | 3 | 201 |
| California State Univ. (USA) | 118 | 1 | 7 | 130 |
| Nac. Inst. of Ind. Eng. (NITIE) (IND) | 119 | 1 | 8 | 130 |
| Università della Calabria (ITA) | 120 | 1 | 10 | 127 |
| AUTHORS |  |  |  |  |
| Razmochaeva N.V. | 1 | 7 | 117 | 46 |
| Bezbradica M. | 2 | 5 | 57 | 76 |
| Cirqueira D. | 3 | 5 | 58 | 76 |
| Helfert M. | 4 | 5 | 59 | 76 |
| Klionskiy D.M. | 5 | 5 | 240 | 21 |
| Griva A. | 6 | 4 | 12 | 122 |
| Frontoni E. | 7 | 4 | 17 | 103 |
| Pantano E. | 8 | 4 | 20 | 103 |
| Frazzon E.M. | 9 | 3 | 15 | 106 |
| Pereira M.M. | 10 | 3 | 16 | 106 |
| Huber J. | 33 | 2 | 4 | 156 |
| Stuckenschmidt H. | 34 | 2 | 5 | 156 |
| Dwivedi Y.K. | 137 | 1 | 1 | 201 |
| Pillai R. | 138 | 1 | 2 | 201 |
| Sivathanu B. | 139 | 1 | 3 | 201 |
| Gawankar S.A. | 140 | 1 | 6 | 130 |
| Gunasekaran A. | 141 | 1 | 7 | 130 |
| Kamble S. | 142 | 1 | 8 | 130 |
| Bertacchini F. | 143 | 1 | 9 | 127 |
| Bilotta E. | 144 | 1 | 10 | 127 |

Source: The authors.

Table 4.

Emergent topics clusters.

|  |  |  |  |
| --- | --- | --- | --- |
| Cluster Name | Num Terms | Percentage | Main Terms |
| Retail Sales prediction | 9 | 12.5 | Prediction; Retail Sales; Sales Forecasts; Sales Data; Time Series; Retail Trade; Strategic Decisions; Sales Promotions; Sales Prediction |
| AI-Driven Customer Insights | 9 | 12.5 | Artificial Intelligence; Retail Industry; Retail Organizations; Customer Satisfaction; Artificial Intelligence Technology; Computer Vision; Experience; Information Technology; Business Performance |
| Consumer Behavior and Price Dynamics | 8 | 11.1 | Consumer Behavior; Insights; Retail Operators; Data Sets; Consumption Behaviors; Customer Engagement; Price Dynamics; Pricing |
| ML for Predictive Modeling | 7 | 9.7 | Random Forest; Decision Trees; Retail Location; Logistic Regression; Predictive Models; Support Vector Machine; Boosting |
| AI-driven Retail Performance | 7 | 9.7 | Learning Systems; Neural Network; Deep Learning; Convolutional Neural Networks; Radio Frequency Identification; Performance Metrics; Supervised Learning |
| Data-Driven Social and Consumer Dynamics | 6 | 8.3 | Social Media; Consumer; Retail Banks; Finance; Robots; Retail Data |
| Customer-Centric Data-Driven Strategies | 6 | 8.3 | Customers; Data Mining; Customer Relationship Management; Business Analytics; Electronic Commerce Websites; Mobile Devices |
| Consumer-Centric Experience | 5 | 6.9 | Customer Experience; Management; Customer Service; Customer Data; Consumer Data |
| Predictive Customer Behavior Systems | 5 | 6.9 | Customer Behavior; Information System; Recommender Systems; Transaction Data; Customer Demands |
| Predictive Customer Behavior Systems | 4 | 5.6 | Decision Making; Decision Support Systems; Decisions; Efficiency |
| Human-Centered Business Process Strategy | 3 | 4.2 | Strategy; Business Processes; Human Resource Managers |
| Fashion Analytics | 3 | 4.2 | Data Science; Data Analysis; Fashion |

Source: The authors.

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# Conclusions

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# References

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**J.D. Velásquez-Henao** earned his BS in Civil Engineering in 1994, an MS in Systems Engineering in 1997, and a PhD in Energy Systems in 2009, all from the National University of Colombia in Medellin, Colombia. From 1994 to 1999, he worked in electricity utilities and consulting companies in the power sector. In 2000, he joined the National University of Colombia in Medellin and was appointed a full professor of computer science in 2012. Between 2004 and 2006, he served as an Associate Dean for Research, and from 2009 to 2018, he led the Computing and Decision Science Department at the Facultad de Minas, National University of Colombia, Medellin. His research and publications span simulation, modeling, optimization, and forecasting in energy markets. He specializes in nonlinear time-series analysis and forecasting using statistical and computational intelligence techniques, numerical optimization with metaheuristics, and analytics and data science. He currently instructs postgraduate courses in data science, machine learning, and big data in the Analytics program, emphasizing Python programming.

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