European Economic Letters
ISSN 2323-5233
Vol 14, Issue 4 (2024)
http://eelet.org.uk

Bibliometric Analysis: Impact of Ai on Consumer Behavior in Luxury Fashion Brands

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Abstract: This bibliometric paper investigates the impact of artificial intelligence (AI) on consumer behavior in the luxury fashion brand industry. As AI technology continues to evolve, its impact on various industries, including the fashion sector, is growing. The purpose of this article is to provide a comprehensive overview of existing research on this topic by analyzing relevant scientific articles. Through bibliometric analysis, we identify key themes, trends and gaps in the literature, providing insight into the evolving relationship between artificial intelligence and consumer behavior in the context of luxury fashion brands. The results of this study contribute to a deeper understanding of the intersection of technology and consumer preferences in the luxury fashion market.
In the ever-changing world of luxury fashion, the integration of artificial intelligence (AI) has become a transformative force, changing the dynamics of consumer behavior. This bibliometric article examines the impact of artificial intelligence on consumer preferences, purchasing patterns, and brand interactions in the luxury fashion industry.

Keywords: Artificial Intelligence, Consumer Behavior, Luxury Fashion Brands, Bibliometric Analysis, Research Trends.
Keywords Analysis: Artificial Intelligence, “fashion system", "fashion forecasting", "Fashion trend"
Primary Key Words: “deep learning”, “machine learning”, “supervised learning”, “unsupervised learning”, "neural networks"
Secondary Key Words: fashion AND (e-commerce OR style OR apparel OR clothing OR outfit

Introduction:
Industries around the world are transforming as artificial intelligence (AI) is integrated into various aspects of business operations, and the fashion sector is no exception. In particular, luxury fashion brands have begun leveraging artificial intelligence technology to improve customer experience, personalize marketing strategies, optimize supply chain management, and design innovative products. As AI continues to transform the landscape of consumer behavior, it is important to examine its impact, especially in the context of luxury fashion brands. This bibliometric analysis aims to systematically review and analyze the existing literature on this topic to reveal key trends, research gaps, and future directions in this field.

1. The evolution of artificial intelligence in luxury fashion. The use of artificial intelligence technologies, including machine learning, natural language processing, and computer vision, has revolutionized many aspects of the luxury fashion industry. From personalized recommendations to virtual experiences, AI has enhanced consumer engagement and streamlined operations for luxury brands.
2. Personalized recommendations and personalization. AI-based recommendation systems analyze massive amounts of consumer data to provide personalized product suggestions based on individual preferences. By understanding consumer tastes and preferences, luxury fashion brands can create personalized experiences, thereby increasing brand loyalty and customer satisfaction.
3. Augmented reality and virtual fitting. The integration of artificial intelligence-based augmented reality (AR) technology and virtual experiences has redefined online shopping for luxury consumers. Virtual fitting rooms and AR-enabled product visualizations allow consumers to make informed purchasing decisions while reducing concerns about fit and style accuracy.
4. Predictive analytics and demand forecasting. Artificial intelligence algorithms allow luxury fashion brands to more accurately predict consumer demand and optimize inventory management and supply chain operations. By analyzing

historical sales data and market trends through AI-powered predictive analytics, brands can predict consumer preferences and customize products accordingly.

5. Improved customer service and interaction. AI-powered chatbots facilitate real-time customer support and assistance by providing personalized recommendations and resolving queries quickly. Additionally, AI-based sentiment analysis allows luxury brands to measure consumer reviews and sentiment on social media platforms for proactive reputation management and targeted marketing strategies.
6. Ethical considerations and consumer trust. AI offers numerous opportunities to improve the consumer experience of luxury fashion, but ethical considerations around data privacy, algorithmic bias and sustainability remain paramount. Luxury brands must prioritize transparency and accountability to maintain consumer trust and mitigate potential ethical issues associated with AI adoption.

The literature on the impact of AI on consumer behavior in luxury fashion brands encompasses a range of topics, including but not limited to:

1. Personalization and customization strategies enabled by AI algorithms.
2. The role of AI-powered recommendation systems in shaping consumer preferences.
3. Ethical considerations surrounding the use of AI in consumer engagement within the luxury fashion industry.
4. AI-driven innovations in virtual try-on experiences and augmented reality applications.
5. Supply chain optimization through predictive analytics and demand forecasting powered by AI.
6. Artificial Intelligence Technologies Used Possible Applications Benefits Challenges/Limitations
7. Fashion compatibility modeling Image generative adversarial network Provides compatibility preferences between fashion recommendation items and item template perspectives Allows measurement of compatibility between two fashion items 2
8. Clothing Recommendation Image and Text Attention-Based Fusion Methods Fashion/Clothing Recommendations Although they have the ability to learn relevant correlations between fine-grained fashion attributes, they do not yet provide a clear preference for fine-grained item representations over coarse-grained representations.
9. Description Clothing recommendation Image and text convolutional neural network, Closed recurrent neural network with cross-modality Fashion/clothes recommendation, comment generation Description recommendation possible short comment generation, maximum number of positive comments and few negative comments
10. Fashion analysis and prediction image unsupervised learning, soft computing using predictive models Fashion prediction, business decision making Ability to work with valuable data Working with unstructured social data
11. Predict fashion trends. Knowledge of images. Enhanced Recurrent. Network model. We write professional reports on fashion trends. Ability to capture complex patterns in time series data. More user information needs to be taken into account.
12. Fashion style trend analysis Retina Net image Very useful for decision-making experts Part of the research depends on expert feedback Contributes to research on various fashion issues Bibliometric Analysis
13. Fashion image classification and symmetry-based learning method Clothing classification Ability to process unbalanced data requires a large amount of labeled data
14. Text mining for fashion analysis. Fashion blog data text. Rule-based classification. Decision-making in the supply chain. Use of social media data for structured and targeted use. Need to process unstructured and ambiguous data
15. Synthesis of clothing segments image. CNN's rule-based approach and virtual trials. Customers can virtually check out suitable clothing styles. Needs improvement to look natural
16. Visual search Images Semantic granularity Deep learning for metrics, CNN multitasking, soft binomial loss Useful in clothing e-commerce Computational simplicity cropped images required for optimal results.

Methodology:

This bibliometric analysis adopts a systematic approach to identify and analyze scholarly articles related to the impact of AI on consumer behavior in luxury fashion brands. A comprehensive search of academic databases such as Web of Science, Scopus, and Google Scholar is conducted using relevant keywords and search terms. The retrieved articles are then screened based on predefined inclusion and exclusion criteria to ensure their relevance to the research topic.

Bibliometric techniques, including citation analysis, co-citation analysis, and keyword co-occurrence analysis, are employed to map the intellectual structure of the field and identify prominent themes and research clusters.
Results and Discussion: The analysis reveals a growing interest in the intersection of AI and consumer behavior within the luxury fashion industry, with an increasing number of scholarly publications in recent years. Key themes identified include the role of AI in personalizing consumer experiences, the ethical implications of AI adoption, and the potential for AI-driven innovations to reshape traditional retail paradigms. Co-citation analysis highlights influential works and research clusters, while keyword co-occurrence analysis uncovers the prevailing topics and emerging trends within the literature. Bibliometric Analysis

Initial Analysis:
Total 165, English 163 (Final),
Bibliometric analysis used the Scopus database for retrieving the documents. Based on the above keyword search query, a total of 165 research articles were retrieved from the Scopus database out of which 163 English language research articles from the time interval ranging from 1995 to 2024 were selected for further analysis.

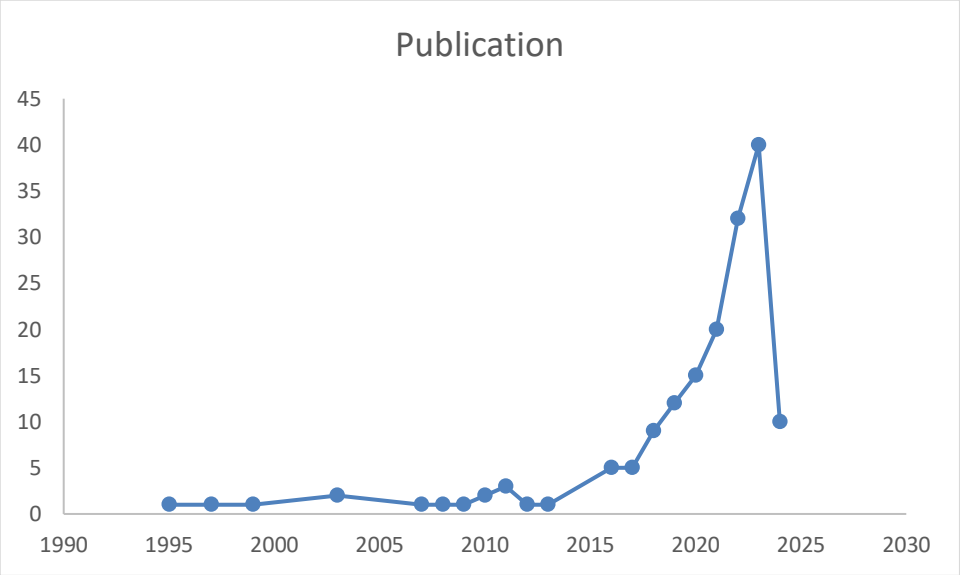
Language	Number	Percentage
English	163	98.79
Chinese	2	1.21
Total	165	100.00

Analysis considered Articles, Conference papers, Book chapters, Conference reviews Review, Retracted, Books and Editorials are considered. Articles published in journals and conference proceedings, book chapters, etc. detailed information is provided in Table Number below.

Publication Type	Number of Publications	Percentage
Article	84	51.53
Conference paper	50	30.67
Book chapter	14	8.59
Conference review	6	3.68
Review	4	2.45
Retracted	2	1.23
Book	2	1.23
Editorial	1	0.61
Total	163	100.00

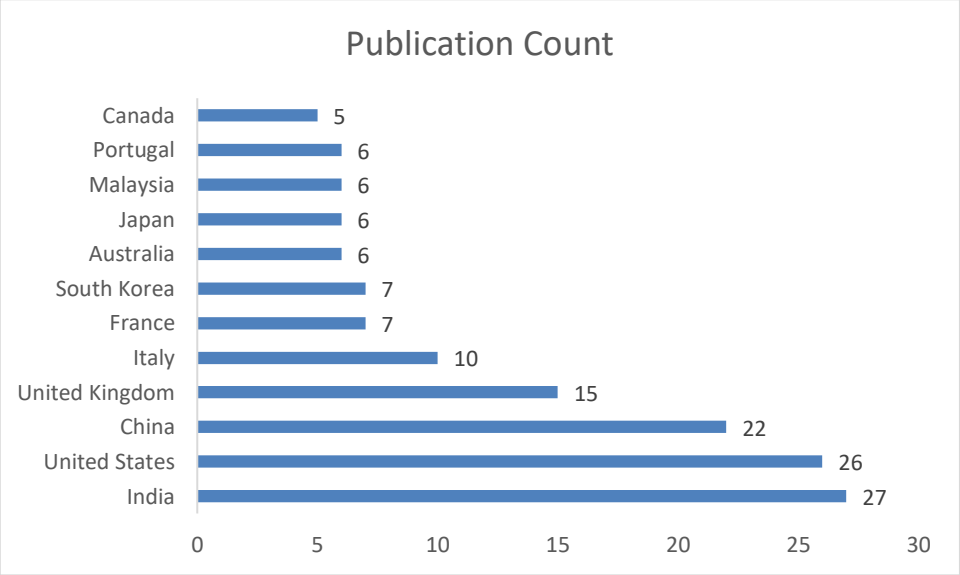
Exploratory Data Highlights
The research study considered the time frame from 1995 – 2024. The same research publication information is mentioned in the chart. It is found from the data that many researchers focused on AI and Luxury goods in the last Six to Seven years. The highest publication was found in 2023 and 2022. In 2023 total of 40 articles were published focusing on Artificial Intelligence and Luxury Goods based on Consumer Behaviour. However, before 2016 only a few researchers contributed to this field.

European Economic Letters
ISSN 2323-5233
Vol 14, Issue 4 (2024)
http://eelet.org.uk



Geographical Analysis

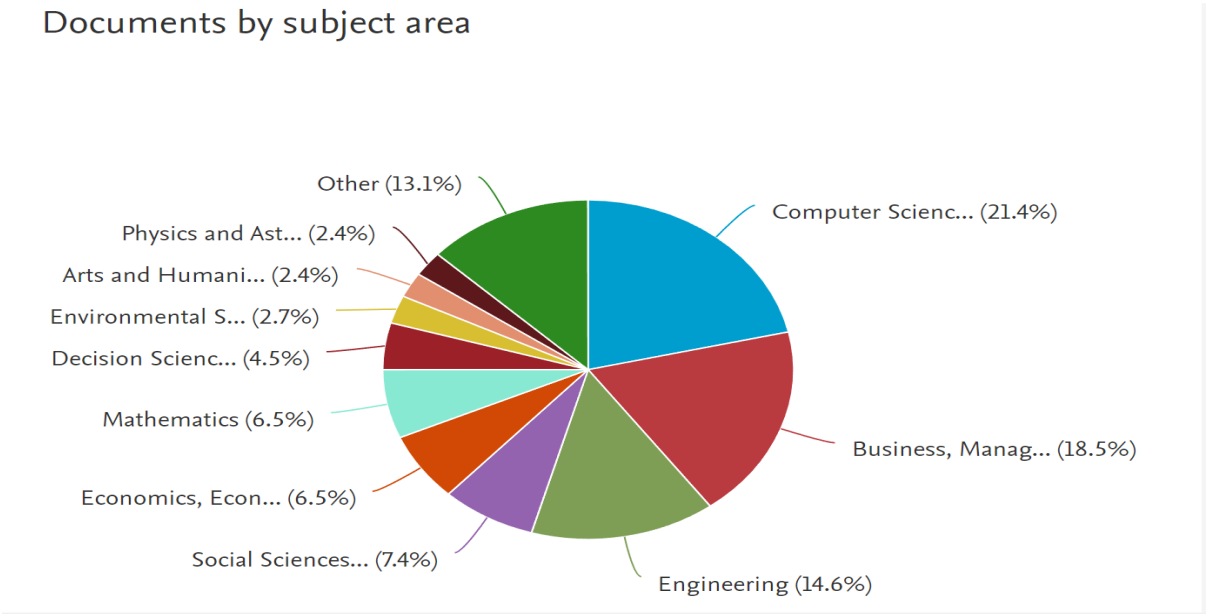
Geographical analysis is used to analyse the country/territory where research in the field of artificial intelligence and Luxury segmentation is carried out. In the following Figure, research publication frequency is illustrated using bar diagram. Top most count found at India i.e.27followed by United States i.e. 26 and China- 22. For more details, Table Number is also provided to get the exact count for each country.



Country	Publication Count	Country	Publication Count
India	27	Netherlands	2
United States	26	Macao	2
China	22	Iran	2
United Kingdom	15	Germany	2
Italy	10	Egypt	2
Undefined	7	Bangladesh	2

South Korea	7	Austria	2
France	7	Viet Nam	1
Portugal	6	Tunisia	1
Malaysia	6	Spain	1
Japan	6	Slovakia	1
Australia	6	Serbia	1
Canada	5	Romania	1
Thailand	4	Qatar	1
Taiwan	3	Peru	1
South Africa	3	Palestine	1
Saudi Arabia	3	Oman	1
Hong Kong	3	New Zealand	1
Finland	3	Morocco	1
Colombia	3	Monaco	1
United Arab Emirates	2	Mexico	1
Turkey	2	Mauritius	1
Switzerland	2	Jordan	1
Sweden	2	Israel	1
Singapore	2	Indonesia	1
Russian Federation	2	Czech Republic	1
Norway	2	Bosnia and Herzegovina	1

Subject Area Analysis



Based on the bibliometric analysis, we found that the researcher from Computer science contributed higher than the other field. Computer science contributed a total of 21.4 %. And after that Business, Management and Accounting contributed 18.4 %. Third place was taken by Engineering contributing 14.6 % research articles.

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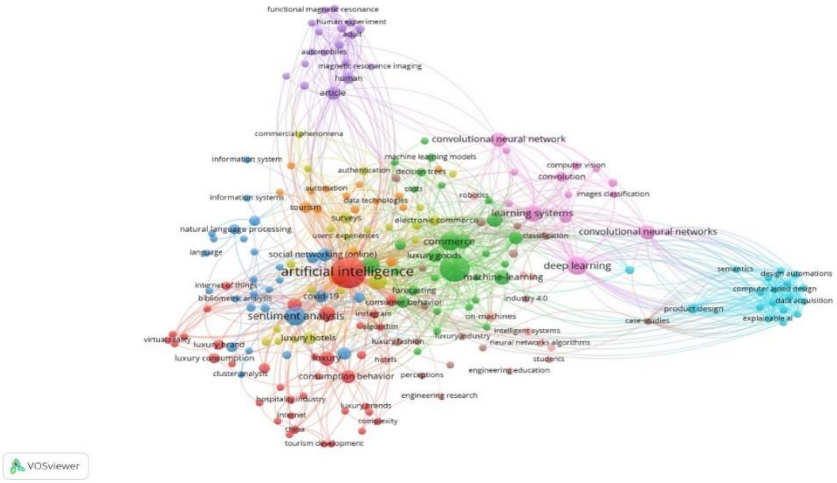
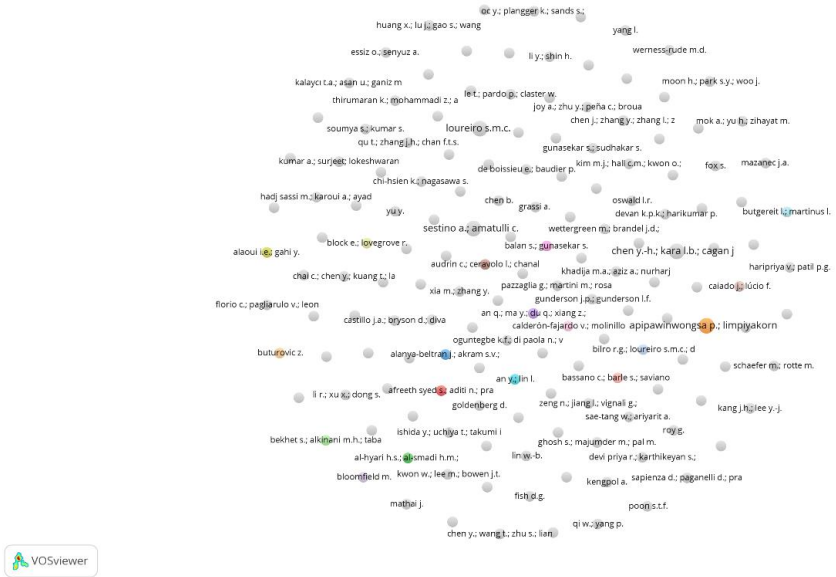
Network Analysis

Network analysis is carried out through network visualization using software tools like VOS viewer. In network visualization graphs, nodes and edges are used to represent relationships or connections between different considered attributes.

In Figure number, network visualization is represented for all keywords and source titles. Here circles are used to represent nodes i.e. keywords from source titles. 3 is the threshold value used for minimum no. of keyword occurrence. Artificial intelligence and deep learning are detected as dominant keywords. Total 7 clusters found in the visualization represented using various colors. Total 208 items connected with each other through 4850 links.



To represent the collaborative work network visualization provided for the author and co-authors in Figure. The parameter value for the minimum number of documents of the author is set to 1 but we are not able to find a link between the author and coauthor link which highlights the lack of Coordination and research in the field. This is one of the best opportunities for the researcher to focus more on the usage of Artificial Intelligence in Luxury Industry relations.



European Economic Letters
ISSN 2323-5233
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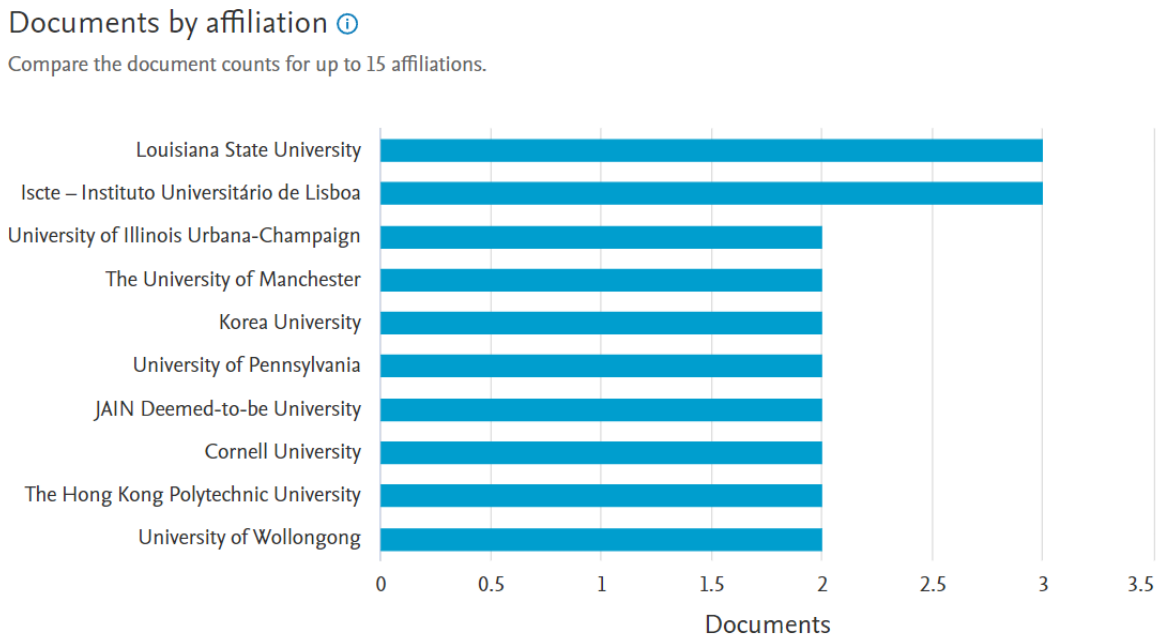
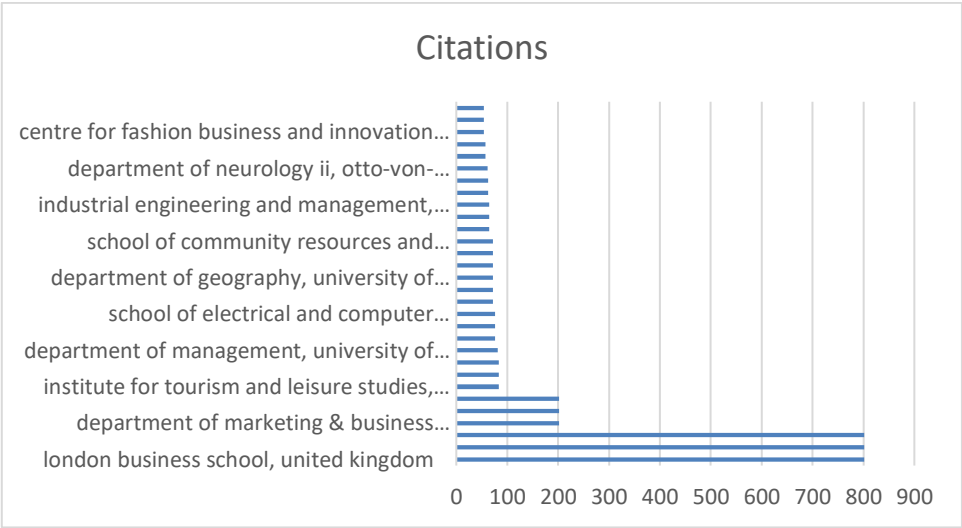
Author co Author Relation
Statistical Analysis
Affiliation based Statistical Analysis

Affiliation-based statistical analysis shows that "Louisiana State University" and "Iscte – Instituto Universitário de Lisboa" contributed with highest number of publications in the area of Artificial Intelligence and Luxury Industry. In Figure Number, universities published more than equal to 2 publications in this area are represented. Total 342 universities have published research work in this field put of which only 22 universities have 2 or more than 2 publications rest 322 universities have only 1 publication.



Analysis of Affiliations and Publication Count



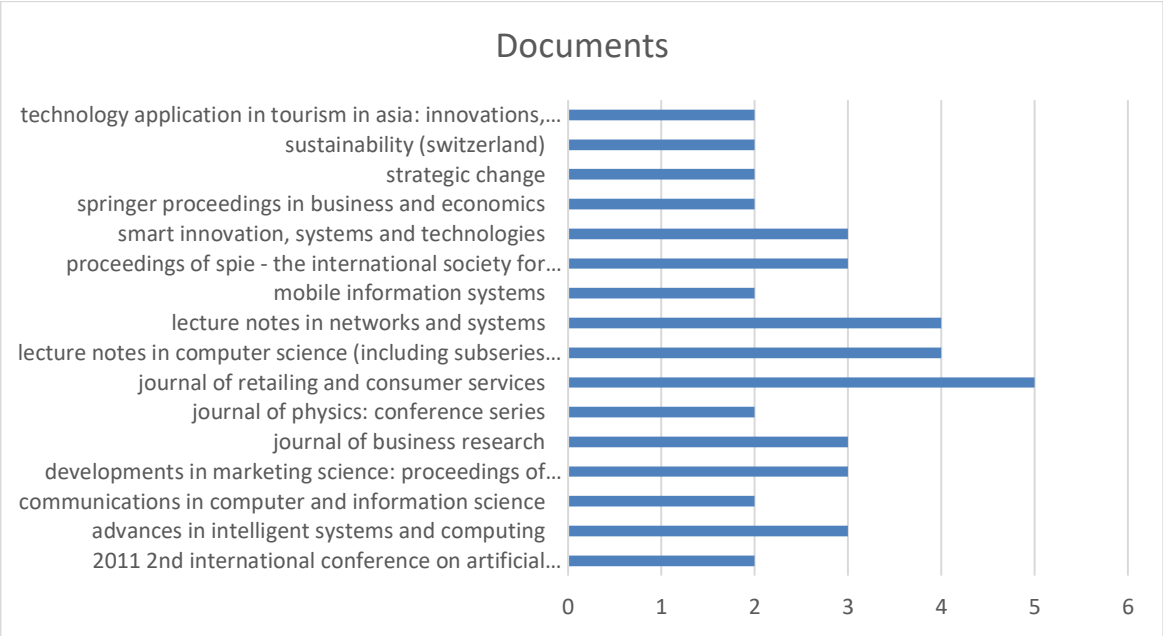
Affiliation and Citations

The highest citation received from London Business School, United Kingdom, Woodside Institute, United States and Woodside Institute, woodside, CA, United States having citation of 801 each. Department of Marketing &Business

Information Systems, William g. Rohrer college of Business, Department of Marketing, e. j. ourso college of business, Louisiana state university, and department of marketing, parker college of business, Georgia southern universityhave 202 total citations in their name.

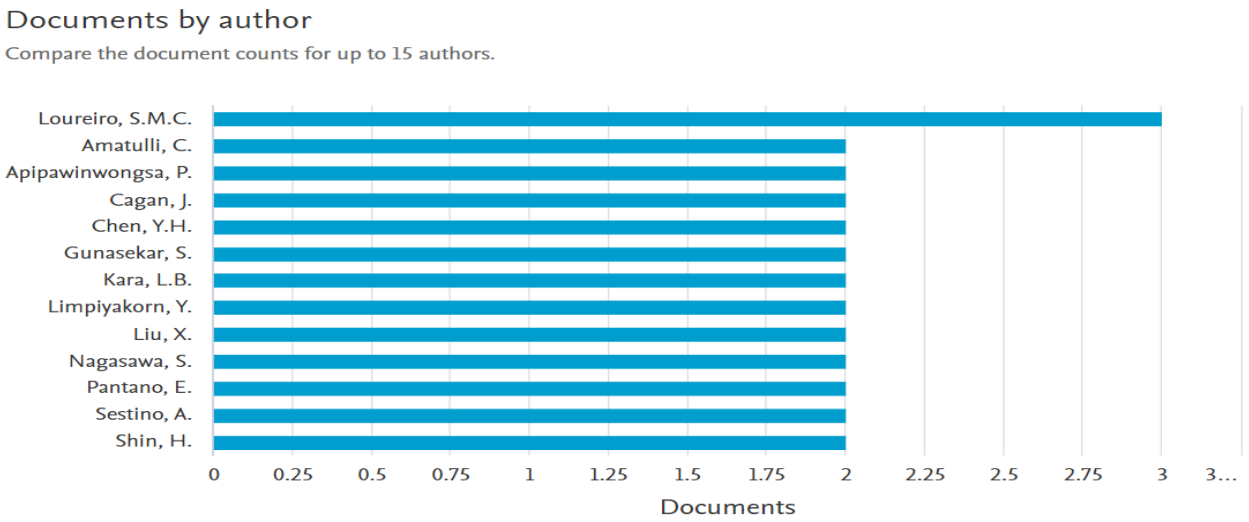
Source Titles-based Statistical Analysis

The highest documents published by Journal of retailing and consumer services, Lecture notes in computer science and Lecture notes in networks and systems. by Journal of retailing and Consumer Services published 5 documents and rest 2 sources published 4 documents consecutively.



Source and Documents

Publication count per author is the basis for analysis in this subsection. In Figure Number, only authors with greater than or equal to 2 publication count are considered for illustration. Figure Number is provided in order to get the information about the number of authors with respect to the count of publications.



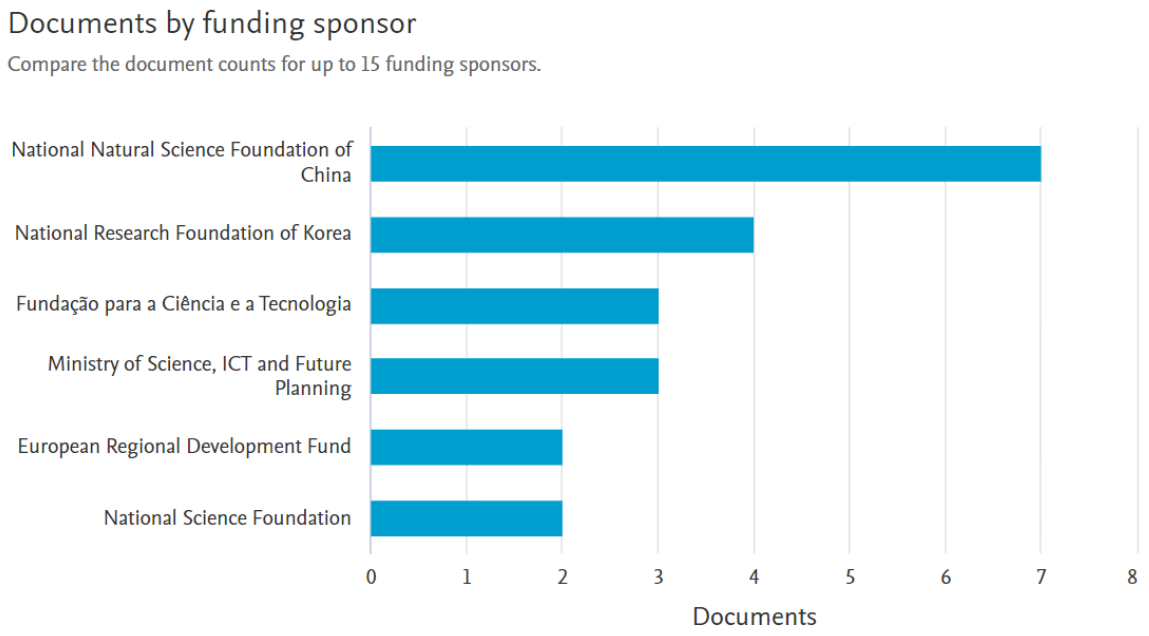
European Economic Letters
ISSN 2323-5233
Vol 14, Issue 4 (2024)
http://eelet.org.uk

Analysis of Authors and Publication Count
Citation based Analysis

Year	Citations
2024	3
2023	67
2022	281
2021	318
2020	153
2019	180
<2019	1289

Funding Sponsors based Analysis

Total 45 funding sponsors contributed for research in the field of Luxury goods using artificial intelligence. In Figure Number, funding sponsors associated with more than 2 publications are represented. Here, it is found that "National Natural Science Foundation of China" provided funding for maximum publications in this field i.e. 7.



Summarizing Comments on Bibliometric Analysis of Artificial Intelligence for Fashion Analysis
Funding Sponsors-based Analysis
Important findings of the bibliometric analysis of fashion using artificial intelligence:

Solving fashion-related problems and assisting related business decisions is very important from the perspective of the fashion and textile industry. Artificial intelligence is an excellent problem solver in many fields. So these days, the number of cases of using artificial intelligence in fashion is increasing.

The purpose of this study is to briefly introduce research conducted in a specific field from various perspectives. For our analysis, we consider publications based on a variety of attributes, including publication year, language, author, source title, publication type, geographic location, citations, and funding agency. Along with this, network visualization is also

provided to gain knowledge about the relationships/connections between various elements such as source keyword title, publication title-citation, author-co-author, etc.

This bibliometric analysis will be very useful to new researchers in this field. It will be useful to collaborate with potential researchers in this field, choose appropriate sources to publish your research, obtain information about funding agencies that support research in this field, use keywords to identify new ideas, etc. no see.

Important conclusions about bibliographic fashion analysis using artificial intelligence: • Becoming popular since 2015: Since 2015, researchers have focused their attention on fashion research work using artificial intelligence.

1. Maximum publications in this field are available in the form of conference papers and articles.
2. English is the preferred language for publications in this field. Several articles are also available in Chinese.
3. The top three countries/regions contributing to this field are: China, the United States, and India
4. The largest number of researchers in the subject area considered the field of computer science and engineering for their research.
5. Universities with the greatest contribution in this field: “Hong Kong Polytechnic University” and “Donghua University”.
6. The maximum number of publications in this field can be found in the sections “Lecture Notes in Computer Science” and “Advances in Intelligent Systems and Computing”. M. Choi is a writer who has made significant contributions to the field of fashion. “Ups and downs: Modeling the visual evolution of fashion trends using single-class collaborative filtering” is the most cited paper in the field.
7. Received maximum funding from “National Natural Science Foundation of China” for research in this field. • Fashion-related tasks require special attention: fashion forecasting and trend analysis, visual search, fashion creation and manipulation, etc. (Fashion recommendations are no exception, as they are a challenging field and require improvisation from multiple perspectives.) Challenges for fashion with artificial intelligence: â¢ Customer experience is critical o Customer personalization
8. It is important to include complex personalization Individual data Consider
9. Influence Factors Care must be taken when considering influence factors. • Data volume. Large volume data/big data processing is required.
10. Simple interface: The developed software should be simple and user friendly.
11. When collecting data from various sources, you need to deal with unstructured data. • Hardware limitations
12. Because large amounts of data and some deep learning techniques must be used, a device with sufficient computing power is required.
13. Virtual experiences should strive to be a natural experience.

Conclusion:

In conclusion, this bibliometric analysis provides valuable insight into the impact of artificial intelligence on consumer behavior of luxury fashion brands. By synthesizing existing research and identifying key themes and trends, this study contributes to a deeper understanding of the evolving relationship between artificial intelligence technologies and consumer preferences in the luxury fashion market. Future research directions, including interdisciplinary collaborations and empirical studies, are suggested to further explore this dynamic and rapidly developing field. The convergence of artificial intelligence and luxury fashion is driving a paradigm shift in consumer behavior, giving brands the ability to deliver personalized experiences and effectively anticipate changing preferences. By using artificial intelligence technologies responsibly and ethically, luxury fashion brands can build deeper relationships with consumers and drive sustainable growth in an increasingly digital marketplace.

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