

Evolution of online herd behavior of investors in Indian stock market

Ameet Sao *

RICS School of Built Environment

Amity University

Noida 201301

Uttar Pradesh

India

Amit Kumar †

Christ University

Ghaziabad 201003

Uttar Pradesh

India

Narendra Bhasin §

Professional Development Centre

Indian Institute of Banking and Finance

New Delhi 110008

India

Savita †

Amity College of Commerce

Amity University

Gurugram

Haryana

India

* E-mail: ameetsao@gmail.com (Corresponding Author)

† E-mail: amitgem@gmail.com

§ E-mail: dr.narinder.bhasin@gmail.com

‡ E-mail: drsavita86r@gmail.com

Manish Sharma[@]

Department of Business Administration

Maharaja Agrasen Institute of Management Studies

Delhi

India

Abstract

Assessing investor's behaviour toward Indian capital markets is crucial for every management in a market where competition is fierce in order to maintain profitability and boost overall business performance. Managers who deal with shares frequently mention online influence and online herd behaviour as approaches. Since a few years ago, it has been up for debate whether or not investors follow the online herd and buy stocks, or use their own judgement. Through this study, an effort has been made to pinpoint the most recent developments in consumer herd behaviour online. Thus, an analysis of the many national and international published studies connected to online herd behaviour has been conducted in an effort to pinpoint the most current patterns in its evolution and to evaluate future study opportunities. In order to conduct a systematic literature review, the output from the Scopus database is extracted and then subjected to bibliographic analysis using the bibliometric tool in R. A total output of 79 Article (2014-2023) was obtained after duplicates were removed. In addition to the amount of material that was available, the citations, early journals, distribution of the regions and nations, and key writers were also examined.

Subject Classification: 32J99.

Keywords: Online herd behavior, Scopus, Systematic literature review, Bibliometric analysis.

Introduction

All businesses nowadays operate in a demanding, complex environment. Technology advancements and increased global competitiveness have made things more difficult. Increasing stakeholder expectations and consumer knowledge have made it harder for firms to achieve their goals. Profit maximisation is the primary driving factor behind greater performance, which necessitates analysing customer behaviour online and the effects of online marketing in order to meet goals.

The Indian stock market has seen huge transformations due to technological advancements and the increasing use of online investment platforms in recent times. The advent of online herd behaviour among investors, which denotes the propensity for people to copy the activities of

[@] E-mail: ameetsao@gmail.com

others while making investing decisions, has been one of the most noticeable shifts (Ali et. al., 2021). Researchers have paid close attention to this phenomena since it may have an influence on market stability and efficiency (Bikhchandani et. al., 1992)

Scholars and practitioners are affected by Indian stock market online herd behavior research. Academics can study how investor herd behavior impacts market efficiency and stability (Bikhchandani et al., 1992). The study helps practitioners identify and mitigate online herd behaviour risks, which may improve investment decisions and market stability (Hirshleifer & Teoh, 2003).

The influence of internet marketing on consumer behavior regarding investment capital investments has garnered attention in recent years. With the rise of online investing platforms, customers now have more possibilities to invest their money (Karn & Mattila, 2016). Providing clients with knowledge and enabling investment decisions, internet marketing has significantly impacted consumer behavior in this sector (Chang & Chen, 2015).

Online marketing has a variety of distinct effects on how consumers behave while considering investments. For instance, it has been demonstrated to raise knowledge of various investment options, which encourages investment in a greater variety of investment products (Zhang & Wang, 2017). The degree of risk tolerance among investors has also been observed to grow as a result of online marketing, since investors are more ready to accept riskier investments when they have access to more information and a feeling of control (Lin & Guo, 2018).

Remember that online marketing can negatively impact consumer investment decisions. Online information overload may inhibit users from making smart judgments (Karn & Mattila, 2016). Online marketing can spread incorrect information and financial fraud, leading to investment losses (Chang & Chen, 2015).

Herd behaviour, which is the propensity for people to copy the decisions made by others, has an impact on online consumer behaviour. Numerous situations, including online consumer behaviour, have examined this phenomena (Li, Wang, & Chen, 2019). Several consequences, including greater buying intent and readiness to pay, can result from herd behaviour (Liang, Xie, & Wang, 2017).

Because customers may observe others' actions on social media, herd behaviour might be exacerbated (Liang, Xie, & Wang, 2017). When customers see a product or service is popular among peers, they are more likely to purchase it. The influence of social proof on online customer behavior is enormous (Li, Wang, & Chen, 2019).

Keeping in mind that herd behavior can have significant impacts on online customer behavior. Misinformation and overvaluation of stock products or services might arise (Li, Wang, & Chen, 2019). Furthermore the result is less variety in customer options and a decrease in the quantity of distinctive and new items on the market (Liang, Xie, & Wang, 2017).

For researching the evolution of online herd behaviour in the Indian stock market, bibliometric analysis is a valuable technique (Chiang & Zheng, 2015). This strategy entails evaluating patterns in the literature on a certain issue in order to get insights on the current status of research and significant areas of interest (Hirshleifer & Teoh, 2003). Researchers can acquire a better understanding of the elements that drove the birth of this phenomena, as well as the impact it has had on the market, by using bibliometric analysis to the literature on online herd behaviour in the Indian stock market (Martnez-López & Sosvilla-Rivero, 2019).

Objectives

A comprehensive appraisal of a topic's influence in literature requires an analytical review (Stefano & Filho, 2013). This article aims to understand and organize studies on investor online herd behavior in the stock market. This work aims to contribute to scientific discourse. The focus of this study is on the evolution of investor online herd behavior throughout time. This study aims to identify research gaps by providing comprehensive and current information on earlier studies on online herd behavior.

The present research questions are based on the goals mentioned earlier:

1. How many studies have recently focused on online herd behaviour?
2. Which writers and outlets were the first to address the topic of online herd behavior?
3. In order to determine which countries undertake the most studies in this area of knowledge, which related disciplines of study are used most often?
4. How is the concept of online herd behavior developing, and what are the most common problems that researchers in this area face?

The current study's objectives are to assess national and worldwide studies using bibliometric analysis and to pinpoint the research areas being pursued in the relevant area. The study's value lies in its statistically supported generic display of historical data with the goal of enhancing

existing knowledge and offering some guidelines for potential future research directions.

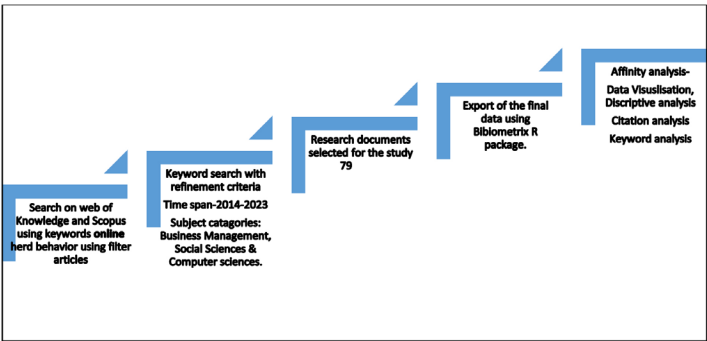
This study establishes an efficient theoretical framework on online herd behavior and finds that internet marketing is crucial, unlike traditional advertising. The study techniques are discussed in the next section. A study’s analysis and results are followed by a discussion of its shortcomings, suggestions for further research, and a conclusion.

3. Methodology

Studies that use bibliometric analysis look for patterns in published works by using statistical and mathematical methods (Singh and Dhir, 2019). The technique for selecting the papers under research, as well as the methods used, are discussed in this part and a pictorial presentation in Figure 1. The amount of citations, co-authorship, patents, and maps of scientific subjects and nations can all be utilized as indicators (Stefano & Filho, 2013).

3.1 Selection of database

The present investigation’s data was gathered when an adequate database was identified. The database extraction portal was selected as SCOPUS because of its extensiveness and multidisciplinary nature. After that, a search was executed using a suitable combination of several essential words. Software and analytical tools were utilized once the data set was created using appropriate inclusion/exclusion criteria. The data was first descriptively analyzed in light of current theories on online herd



Source: Authors Compilation

Figure 1
Steps followed to select documents

behaviour. Then, to illustrate intellectual and conceptual frameworks and better data visualization, network maps, charts, and diagrams were created.

3.2 Keywords for search strategy

Online herd behavior or herd behavior or e-commerce or social commerce or evolution of herd behavior

3.3 Criteria for documents selection

Short lists of the documents also included any accompanying proceedings. Only 79 papers from the most recent ten years, from 2014 to 2023, were included in the nominated data, indicating a clear gap. Even though we also used reviews, early access materials, and book chapters for further study. Early screening of the shortlisted papers used the “English” language filter. Biblioshiny was provided with the article details (title, authors, abstract, and keywords) in a plain text data format for additional processing. A total of 79 publications were eventually added to the Bibliometric mainframe after data was cleaned up to remove duplicate entries and ensure compatibility with other formats.

3.4 Choosing a bibliometric analysis tool

The study used the Bibliometrix R-package for the thorough scientific mapping. It is an analytical tool that Ariaa and Cuccurullo (2017) created using the R programming language . In practically all scientific fields, Bibliometrix is utilised for scientific collaborative networking and has grown in popularity over time. It permits bibliometric analysis in a thorough way that analyses the data using visualisation approaches. It is highly recommended programme for bibliographic analysis that is open-source, capable of continual improvement, and integrated with other statistical R tools. The Bibliometrix package’s web-based application Biblioshiny is used to analyse the data used in this investigation. It is very user-friendly and simple to grasp even for people who are not programmers.

4.0 Data Analysis and Findings

4.1 Number of Publications

Figure 2 reveals that the topic online herd behaviour had shown growth in the year 2021–2022. After 2021, there is a noticeable increase in publications, which is likely due to the growing number of research on online herd behaviour.



4.2 Three field plots.

Author names and research nations are presented on Sankey Plot, with keywords in the middle row. Twenty items were shown, with key themes such as herd behavior, electronic commerce, and social commerce. Recent sub-topics explored by important writers and journals include herd behavior, internet commerce, and social commerce.

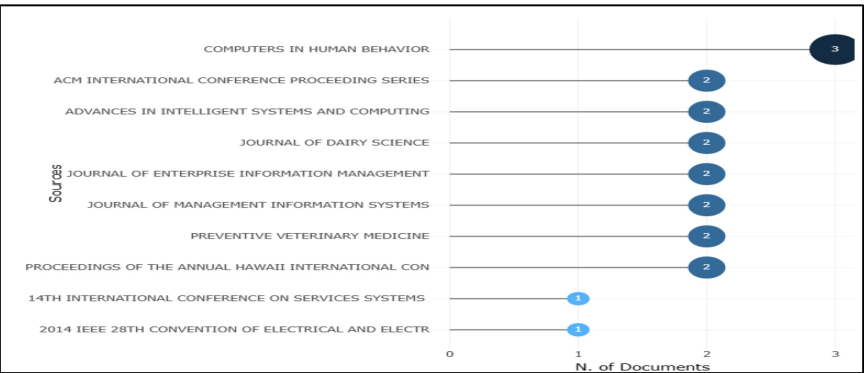


Figure 3
Three Field Plot

With published works in nations including China and the USA, Fornell C. Larker, Duan W., and Bandura A. are the most referenced writers in the research field.

4.3 Journals that receive the most citations

The most cited journal is shown in Figure 4.



Source: Authors Analysis

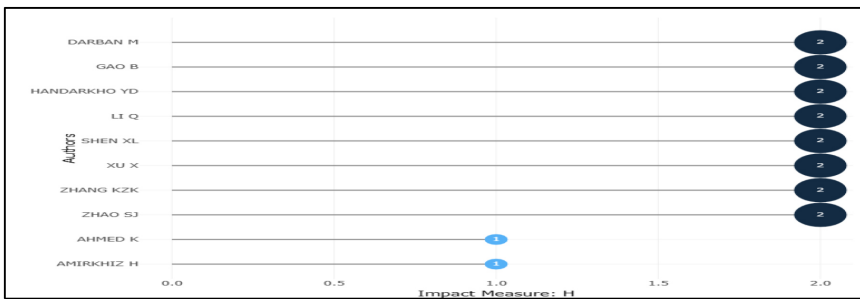
Figure 4
Most Cited Journals

Among the most influential sources, ACM International Conference Proceeding Series ranks first, with the most citations going to Computers in Human Behavior. Observing more closely, it becomes clear that computer science and dairy science have been the primary areas of research.

4.4 Impact by H-index

Sometimes analysing a journal’s contribution to a given field is unreliable if just the greatest number of articles or citations are taken into account. Instead, a presentation employing the H-index can be a trustworthy way to show the volume, and influence of a publication.

The top 10 academic publications in the field are listed in Figure 5, based on h-index. This statistic compares the journals’ quality based on their citation impact and output. As stated by Ingale and Paluri (2020), the greatest value of the H-index can be “n,” where “n” is the number of journals, articles and citations.

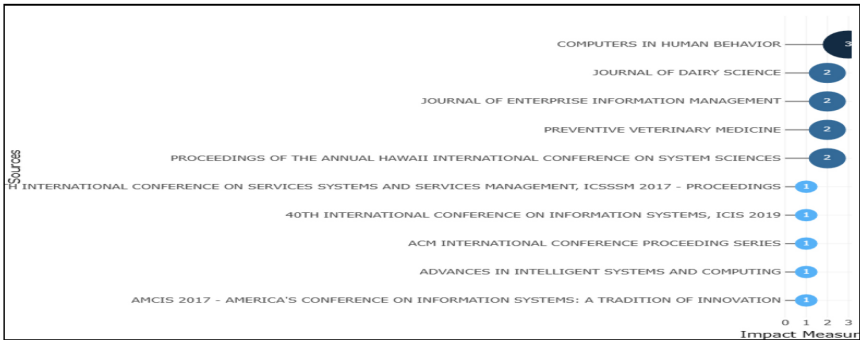


Source: Authors Analysis

Figure 5
H-index of Authors

4.5 *Most Cited Documents*

Figure 6 displays the top 10 articles in the subject of online herd behaviour by number of citations. These articles all currently have a very low number of citations. Computers in Human Behavior, Journal of Dairy Sciences, and Journal of Enterprise Information Management were the top 3 publications.

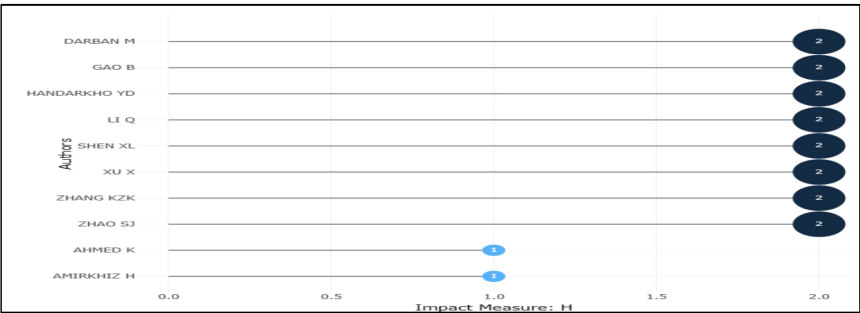


Source: Authors Analysis

Figure 6
Most Cited Documents:

4.6 *Most cited Authors*

According to the h-index, the most influential authors were Darban M, Gao B, and shown in Figure 7. Their work is seminal. These articles are significant in terms of future research in this field.

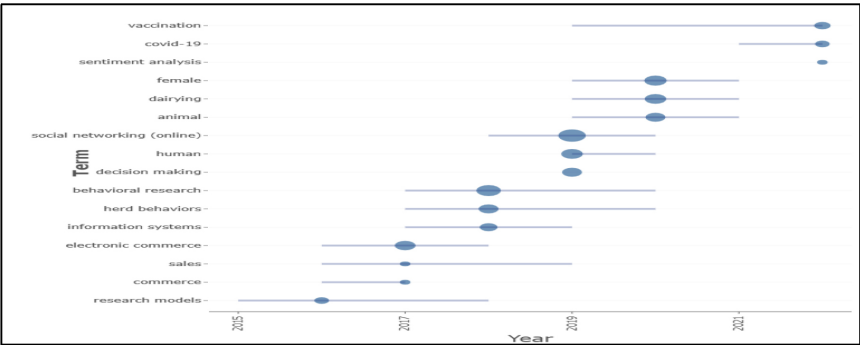


Source: Authors Analysis

Figure 7
Most Cited Authors

4.7 Trend Topics

Figure 8 depicts an overview of the most popular topics related to online herd behaviour. It demonstrates that today’s investors are more interested in vaccination and covid-19. However, online herd behaviour is an unexplored topic, with less published work in this area and is evolving.



Source: Authors Analysis

Figure 8
Trending Topics

4.8 Keywords

The term “online herd behaviour” is not an often referenced one, according to the article’s keyword analysis, thus it’s clear that further research is required. Figure 9 shows the term’s frequency graphically by displaying a word cloud within the page with the most cited words highlighted in size.



Figure 9
Word Cloud

According to Ingale and Paluri (2020), conceptual structure shows how themes, subjects, and trends interact through a co-occurrence network or co-word analysis. There is no other approach that utilizes the information of research papers like this one. According to Li et al. (2018), the notions, frequently used words, or themes discovered in the network constitute the unit of research. By use of multiple correspondence analysis (MCA), the Bibliometrix program derives this conceptual framework of the study domain. Using Louvain's clustering technique with 50 nodes, the default choices for the keyword co-occurrence network were automated layout and normalisation by association. Figure 10 shows the network for the keyword plus unit of analysis. "Keyword Plus" refers to terms that are

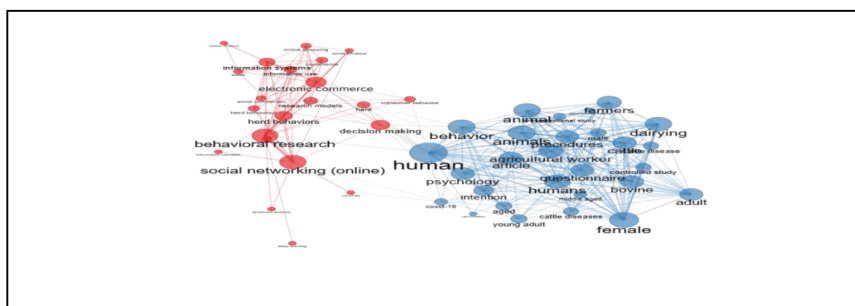
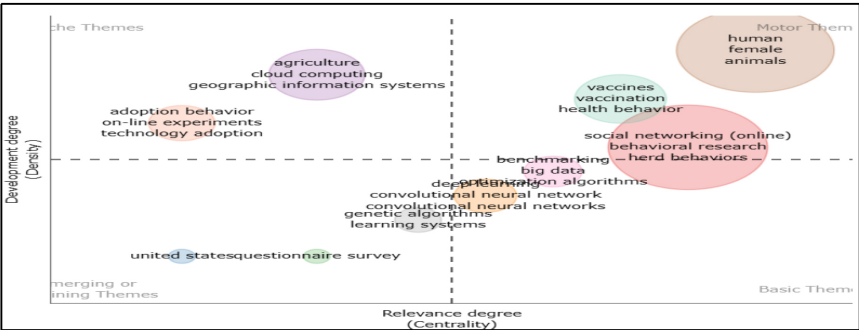


Figure 10
Conceptual Structure

automatically retrieved by an algorithm from reference lists and document titles that are highly frequent. Their range and depth in capturing the document’s substance make them the preferable choice (Garfield and Sher, 1993; Two groups were found in the data, as shown in Figure 10 by the colors red and blue. Nodes are proportionate to their occurrence, colors indicate clusters, distance shows relatedness, words represent vertices, and size is directly proportional to the node’s size.

4.10 Thematic Map

According to Cobo et al. (2011), thematic maps are two-dimensional graphs that show typological patterns as shown in Figure 11. Using co-word analysis, we may identify clusters of keywords, which in turn reveal themes within the study subject. Using density and centrality as the two dimensions, these patterns may be grouped into four quadrants on a two-dimensional graph. Each theme is represented by a bubble on the map. “Online herd behaviour, social networking (online) behavioral research, vaccines health behaviour, benchmarking big data, convolutional health problems, cloud computing, and adoption behaviour online are all seen as bubbles. The theme of online herd behaviour is located in the upper right corner of the right quadrant, indicating an important but underdeveloped area. Upper left quadrant represents a niche area to be explored through technology for such an adoption behaviour. The theme “united states questionnaire survey” in the lower left quadrant is underdeveloped and of lesser importance. It represents both emerging and declining ties (Huang et. al., 2020).



Source: Authors Analysis

Figure 11
Thematic Map

5. Findings

Synthesizing large amounts of data to form new knowledge is the primary goal of the research (Stefano & Filho, 2013). Among marketing and consumer behavior scholars, online herd behavior is a popular subject. Given the limitations of traditional marketing and the need to remain competitive, managers are shifting away from traditional marketing and toward advanced online marketing, which can assist in penetrating and capturing market share.

This research collects data from 2014–2023 on online herd behavior and its effects literature. This article analyzes the domain's social structure and scientific appraisal in detail. This study sheds light on the growth of publications, key sources, most-cited studies, pioneer writers, and research disciplines, providing a structural view on the fragmented literature.

As the most intuitive and versatile method for bibliometric analysis, the Bibliometrix R-package was used to organize the study. SCOPUS is used to extract data due to its high-quality publications, compatible structure, and current data.

The data set investigation found more publications about online herd behavior than before. Thus, investors want conformity. Chinese academics publish more than their American colleagues. Due to the growing number of writers studying online herd behavior and the expansion of publications worldwide, the social structure is innovative and widespread.

An interdisciplinary approach, rather than a domain specific one, is being paved the way for in the subject of online herd behavior through the bulk of publications being connected to buy intention, online adoption behavior information system, decision making, herd behavior, and electronic commerce.

Conclusion

In this work, we aimed to organize what is already known about online herd behavior in a way that both academics and practitioners could comprehend. By looking at the trend of previously published work with big nations, sources, study topics, most cited papers, authors, and their partnerships, they may also discover fresh research prospects. In conclusion, this study shows how far we've come in understanding online herd behavior and gives real-world tips for using online ads in all sorts of contexts.

Limitations of current study and Future research directions

Only the SCOPUS database was utilized in this bibliometric study. Future research can utilize more databases like WoS and Springer for data extraction. The term refers to digital herd behavior. Adding updated keywords can increase the number of articles in the research. To fully understand the domain, apply meta-analysis in combination with the visual representations offered.

References

- [1] (PDF) Herd Behavior in Technology Adoption: the Role of Adopter and Adopted Characteristics. (n.d.). Retrieved January 26, 2023, from https://www.researchgate.net/publication/280683307_Herd_Behavior_in_Technology_Adoption_the_Role_of_Adopter_and_Adopted_Characteristics.
- [2] A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades on JSTOR. (n.d.). Retrieved January 26, 2023, from <https://www.jstor.org/stable/2138632>.
- [3] Ali, M., Amir, H., & Shamsi, A., Consumer Herding Behavior in Online Buying: A Literature Review. *International Review of Management and Business Research*, 10, 345–360 (2021). [https://doi.org/10.30543/10-1\(2021\)-30](https://doi.org/10.30543/10-1(2021)-30).
- [4] Aria, M., & Cuccurullo, C., bibliometrix: An R-tool for comprehensive science mapping analysis. *J. Informetrics*, 11(4), 959–975 (2017). <https://doi.org/10.1016/J.JOI.2017.08.007>.
- [5] Chang, H. H., & Chen, S. W., The impact of online store environment cues on purchase intention: Trust and perceived risk as a mediator. *Online Information Review*, 32(6), 818–841 (2008). <https://doi.org/10.1108/14684520810923953/FULL/XML>.
- [6] Chen, X., Li, Y., Davison, R. M., & Liu, Y., The Impact of Herd Behavior on Purchase Behavior: The Moderating Role of Uncertainty. *Pacific Asia Conference on Information Systems* (2019).
- [7] Chen, Y.-F., Herd behavior in purchasing books online. *Computers in Human Behavior*, 24(5), 1977–1992 (2008). <https://doi.org/10.1016/J.CHB.2007.08.004>.

- [8] Chiang, T. C., Li, J., Tan, L., & Tan, L., Empirical investigation of herd-ing behavior in Chinese stock markets: Evidence from quantile re-gression analysis. *Global Finance Journal*, 21, 111–124 (2010).
- [9] Cobo, M., López-Herrera, A. G., Herrera-Viedma, E., & Herrera, F., Science Mapping Software Tools: Review, Analysis, and Cooperative Study Among Tools. *Journal of the American Society for Information Sci-ence and Technology*, 62, 1382–1402 (2011). <https://doi.org/10.1002/asi.21525>.
- [10] Fornell, C., & Larcker, D. F., Structural Equation Models with Un-observable Variables and Measurement Error: Algebra and Sta-tistics. *Journal of Marketing Research*, 18(3), 382 (1981). <https://doi.org/10.2307/3150980>.
- [11] Gao, J., Efficiency and Herd Behavior in a Signalling Market (2013).
- [12] Garfield, E., & Sher, I. H., KeyWords Plus - Algorithmic Derivative Indexing. *J. Am. Soc. Inf. Sci.*, 44, 298–299 (1993).
- [13] Hirshleifer, D., & Teoh, S. H., Limited Attention, Information Disclo-sure, and Financial Reporting. *Journal of Accounting & Economics (JAE) Conference Series* (2003).
- [14] Ingale, K. K., & Paluri, R. A., Financial literacy and financial behav-iour: a bibliometric analysis. *Review of Behavioral Finance* (2020).
- [15] Ian Lerche. Epidemic evolution: Source, lock-down and removal modifications to the SIR model, *Journal of Statistics and Management Systems*, 25:8, 1767-1780 (2022), DOI: 10.1080/09720510.2021.1972622
- [16] Karn, P., & Mattila, A. S., The impact of online marketing on con-sumer behavior. *Journal of Business Research*, 69(1), 1-7 (2016).
- [17] Lin, X., & Guo, Y., The impact of online marketing on risk tolerance and investment behavior. *Journal of Business Research*, 91, 1-9 (2018).
- [18] Martínez-López, F. J., Anaya-Sánchez, R., Giordano, M. F., & Lopez-Lopez, D., Behind influencer marketing: key marketing decisions and their effects on followers' responses. *Journal of Marketing Man-agement*, 36(7–8), 579–607 (2020). <https://doi.org/10.1080/0267257X.2020.1738525>.
- [19] Osman Kamari & Morad Alizadeh. The type 2 extended exponenti-ated family of distributions, *Journal of Statistics and Management Sys-tems*, 25:8, 1735-1749 (2022), DOI: 10.1080/09720510.2021.2011115.
- [20] Singh, S., Dhir, S., Das, V. M., & Sharma, A., Bibliometric overview of the Technological Forecasting and Social Change journal: Analy-

- sis from 1970 to 2018. *Technological Forecasting and Social Change*, 154, 119963 (2020). <https://doi.org/10.1016/J.TECHFORE.2020.119963>.
- [21] Shirina, S., Sharma, R., Agarwal, R. N., & Sao, A., Factors affecting employee engagement in higher education institution-An empirical study in NCR. *Journal of Information and Optimization Sciences*, 43(7), 1779-1800 (2022). <https://doi.org/10.1080/02522667.2022.2128533>.
- [22] Sofia Khan, R. K. Tailor, Ranu Pareek, Rashmi Gujrati & Hayri Uygün. Application of Robotic Process Automation in education sector, *Journal of Information and Optimization Sciences*, 43:7, 1815-1834 (2022), DOI: 10.1080/02522667.2022.2128534.
- [23] Stefano, N. M., & Filho, N. C., Activity-based costing in services: literature bibliometric review. *SpringerPlus*, 2(1), 1–11 (2013). <https://doi.org/10.1186/2193-1801-2-80>
- [24] Zhang, Y., & Wang, D., The impact of online marketing on investment behavior and financial literacy. *Journal of Business Research*, 70(1), 1-8 (2017).