THE PHENOMENON OF PANIC BUYING AND SCARCITY DURING THE COVID-19 PANDEMIC: A BIBLIOMETRIC STUDY

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ABSTRACT

The COVID-19 pandemic has implications for multi-sector problems that affect human life globally. One of the impacts arising from the COVID-19 pandemic is the phenomenon of panic buying, which causes scarcity. This study aims to describe the phenomenon of panic buying and scarcity comprehensively. The research method used is qualitative with bibliometric studies. The results showed that panic buying and scarcity during the Covid-19 pandemic occurred in 3 research streams, namely: 1) health and medicine, whose case/theory basis is pandemic and healthcare; and the basis for further research is the COVID-19 pandemic and domiciliary quarantine measure. 2) psychology, whose basic case/theory is panic, public perception, anxiety, and experience; the next research is psychological underpinning, monitoring social interaction, and frequent social interaction. 3) consumer behavior, whose basic case/theory is purchasing/buying/shopping, e-commerce; And subsequent research is extra buying, panic buying, and scarcity. Further research can raise the issue of consumer experience, whose basic case/theory is impulse buying, concept buying, and outbreak; the next research is buying factor, experience buying, and fear.

Keywords: Panic buying, Scarcity, Bibliometric
JEL Classification: E02, E71, H08

INTRODUCTION

The COVID-19 outbreak, first identified in December 2019 in Wuhan, has spread worldwide and affected human life. According to WHO (2020), the occurrence of the COVID-19 pandemic has implications for problems in the social, political, psychological, and economic fields. The impact is not only on the health sector but also on various sectors. One of the phenomena that occurs around the world with the outbreak of COVID-19 is mass public anxiety. According to Naeem (2020), this anxiety is not only caused by the transmission of COVID-19 but also anxiety about meeting needs, which disrupts purchasing behavior and shopping

habits (Naeem, 2020). People who experience excessive anxiety tend to take excessive preventive measures. People often do not pay attention to the price when making purchases for fear that they cannot find the item on the market and the inventory runs out. As a result, not a few people hoard (Khusnul, 2021). With this phenomenon, social symptoms arise in the form of panic buying, which can cause scarcity due to the imbalance between demand and supply (Soenjoto and Mujiyono, 2020).

Panic buying occurs in different forms in each country experiencing the Covid-19 pandemic. According to Khusnul (2021), research stated that the phenomenon of panic buying erodes fear and anxiety by causing a "sense of relief" for the perpetrators (Khusnul, 2021). As a result, many consumers are willing to queue for weeks to buy the goods they need, as in the queue report from Singapore to America (Thukral, 2020). The phenomenon of panic buying of firearms, for example, panic buying is carried out by the people of North Carolina to protect themselves from looting and robbery in the future. A similar phenomenon also occurs in New York; people panic buying chicks when meat and eggs are unavailable. Unlike the panic buying phenomenon in Indonesia, most people panic buy masks, hand sanitizers, ginger, bear milk, and cooking oil. As a result, the price of these products has increased, and supply scarcity has occurred due to the high level of demand (Izzaty, 2020).

Based on the complexity of the problem, researchers are interested in comprehensively studying the phenomenon of panic buying and scarcity during the COVID-19 pandemic, with the formulation of research problems, namely: 1) What is the trend of panic buying and scarcity research trends?; 2) how is the flow of literature in research?; 3) how is the flow of panic buying research during the COVID-19 pandemic?; and 4) what is the possibility of further flow in panic buying research during the COVID-19 pandemic? This study aims to provide a comprehensive picture of panic buying and scarcity through bibliometric studies and the discovery of possible further research streams.

METHOD

The study used a number of articles on panic buying and scarcity published in scientific journals between 2020 and 2022. This research uses data sourced from Google Scholar. The method used is an applied bibliometric that traces research development in panic buying and scarcity. The bibliometric review method is applied as an approach that focuses on specifying the number of scientific articles so that special and unique polarization that can map a number of new research achievements can be obtained. The software used in this study is R Bibliometrix Biblioshiny using biblioshiny. Biblioshiny for bibliometrix is a Java-based software developed to conduct functional combination research using the bibliometrix package with web apps and a shiny R Studio environment (Huang et al., 2021).

Research in scientometric, bibliometric, and thematic Methods will help researchers avoid errors resulting from deep bias (Dormezil et al., 2020). Using this comprehensive approach is believed to lead to better internal studies to map the

development of a specific and actual scientific study in identifying the past and the identification of the future (Laela & Azhari, 2023; Nobanee et al., 2021). Stages in conducting analysis refer to applying research steps to a systematic literature review. The settings carried out in this study are sorted into three steps. The activities and sets carried out in this study are shown in the table below:
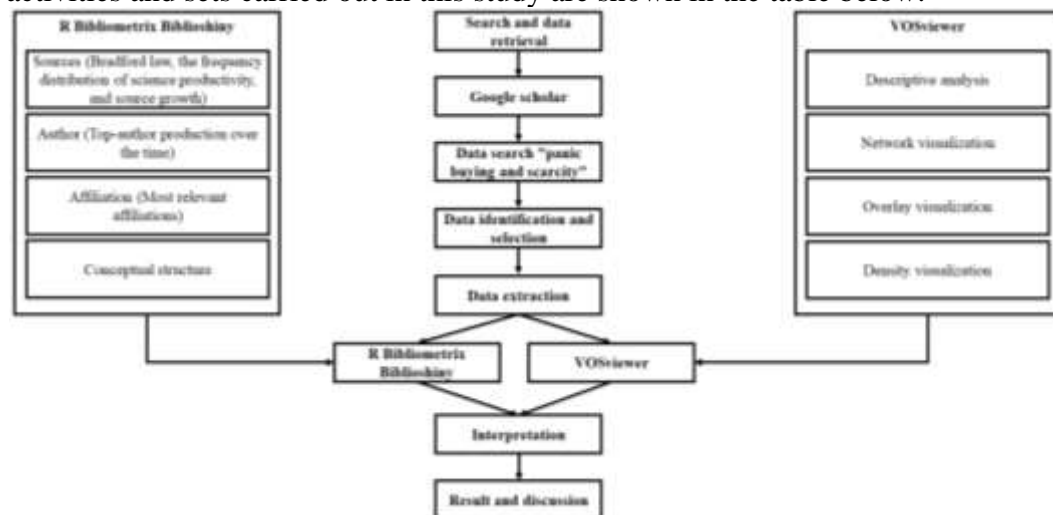
Figure 1. Bibliometric Research Steps

Source: Author Processed Data, 2023

The framework of thought used in the thematic analysis is familiarizing yourself with the data, generating initial code, searching for themes, reviewing themes, defining and naming themes, and developing reports (Kiger & Varpio, 2020). Bibliometric research uses a qualitative research approach by using a number of scientific articles to obtain information on the development of research topics (Cobo et al., 2011; Martínez et al., 2015). Bibliometric mapping is research in bibliometric studies and can be used in various studies (Aria & Cuccurullo, 2017).

This research combines performance analysis tools and mapping tools in bibliometrics to analyze the field of research, generalization, and visualization of its conceptual subdomains and the thematic evolution that develops on a particular research topic (Muñoz-Leiva et al., 2012). In forming research with a bibliometric approach, some aspects need to be completed: bibliometric mapping, explanation of bibliometric findings, and presentation of graphs (Taqi et al., 2021). Bibliometrics that incorporate mapping and graphical This can turn into scientometric-based research. The scientometric analysis is the analysis of publications in a scientific field through different perspectives and mapping with a general approach to the field (Makkizadeh & Sa'adat, 2017).

In the development of bibliometric studies (as well as in the expansion of use in scientometrics), there are two procedures for conducting research, namely by using Performance Analysis and Science mapping (Rosado & De Souza, 2021; Yu & Muñoz-Justicia, 2020). Deep performance analysis describes evaluations of

scientific publications and citations comprising databases such as author(s), author affiliation(s), total citation, type of document, and main information. Science mapping demonstrates generalized scientific research's dynamic structure through digital-based visualization Bibliometric Tools (Yu & Muñoz-Justicia, 2020).

RESULTS AND DISCUSSION
Panic Buying

According to Billore & Anisimova (2021), panic buying is a response to the external or internal context that is not fully controlled or carried out because of the planned decision to act. This phenomenon is due to concerns about the availability of future goods while looking for functional benefits from the shopping process. Behavior panic buying is part of a post-modern culture that is more concerned with personal gain than collective gain and can lead to social problems (Kroker et al., 1990; Waseem et al., 2022). According to Taylor (2019), behavior panic buying is contagious to people around.

Based on the report of Honigsbaum (2013), the Spanish flu outbreak in 1918 was the beginning of the phenomenon of panic buying. This phenomenon resurfaced during the SARS outbreak, which struck Hong Kong in 2003 (Cheng, 2004). In addition, panic buying is expected to happen when natural and non-natural disasters are expected (Wai et al., 2010). Panic buying is characterized by behavior that changes suddenly, uncontrollably, done en masse, excessively, and based on worry (Shadiqi et al., 2020).

The acceptance of diverse messages transmitted through various news channels, the prevailing ambiguity in society, fears of social distancing, and the image of empty shelves in retail outlets led to panic buying, leading to irrational behavior (Ahmed et al., 2020; Chen et al., 2020). People who previously did not have a purchase plan or a purchase plan in quantities that were not too large will also be affected to make purchases in large quantities. People buy products, fundamental necessities, and food at retail despite no discounts or other promotional offers (Naeem, 2020).

Based on this phenomenon, society will remain uncertain, and a prolonged sense of worry will arise (Jariyah et al., 2022). Therefore, understanding the causes of panic buying is critical to managing crises because this behavior can lead to unforeseen consequences (Tsao et al., 2019; Zeng, 2020). According to Widya (2021) in (Firmansyah et al., 2022), here are the factors causing the phenomenon of panic buying:

1. The desire to have stock for now and in the future is to minimize the possibility of being infected with the virus because they do not leave the house often.
2. The ease of online shopping that does not crowd, interact, and leave the house.
3. Changes in shopping behavior from home drive producer behavior to catch up and adjust to consumer changes for fulfillment and satisfaction.

Scarcity

As a result of the pandemic and social restrictions, scarcity of resources has become a hallmark of it (Hamilton, 2021). Scarcity is a condition of imbalance between limited economic resources and unlimited human needs (Rahmatullah et al., 2018). According to Sachdeva et al. (2021), scarcity is a feeling of lack of what is necessary. This causes people to prioritize immediate, short-term, and long-term needs (Sachdeva et al., 2021). The thing that needs to be underlined by the occurrence of scarcity is the limited resources or factors of production used to produce a good or service. This is certainly contrary to the limitlessness of people's desires to enjoy all types of goods and services. As a result, people cannot obtain and enjoy all the types of goods or services they want. Under these conditions, competition between individuals and others will increase (Wu et al., 2012). To overcome these problems, people must determine other choices to fulfill their desires (Sukirno, 2004). According to Islam et al. (2021), scarcity is a deliberate restriction on demand, discounts, timing, and other purchasing circumstances comparable to a product. According to Jang et al. (2015), scarcity is often communicated through marketing campaigns, which convey the impression that certain product purchases are restricted. As a result, an imbalance between demand and supply affects behavior and decisions in purchasing (Brock, 1967).

Google Scholar Data bibliometrics

In bibliometrics using Google Scholar Data, as data is being processed, the results of attachment visualization are obtained in the form of network visualization, overlay visualization, and density visualization. This visualization of entanglement allows an understanding of panic buying and scarcity scope at a wide level. It minimizes the risk of false positive items that do not complement the actual thematic literature (Kovács et al., 2015). This visualization will form a flow that can be identified based on the color of each Node. Node and text in each cluster represent the number of times one keyword appears with another (Farida & Firmansyah, 2020). In addition, the distance of keywords and lines shows the relatedness and relatedness of each keyword (Tamala et al., 2022). Based on the findings, various deep streams were found panic buying and rarity is as follows:
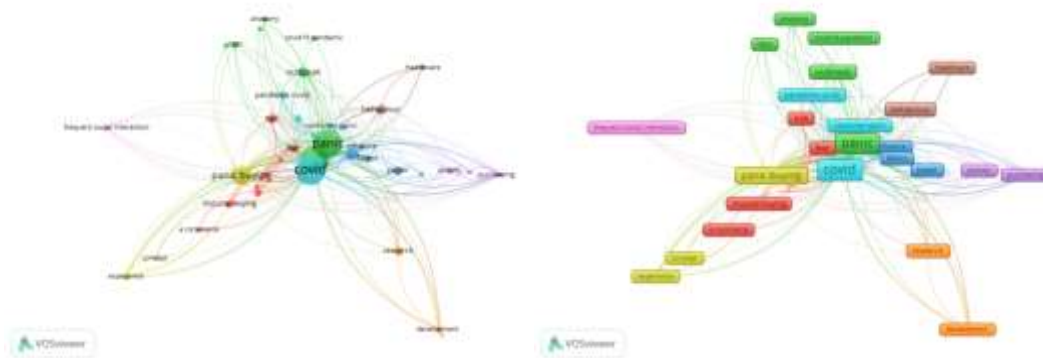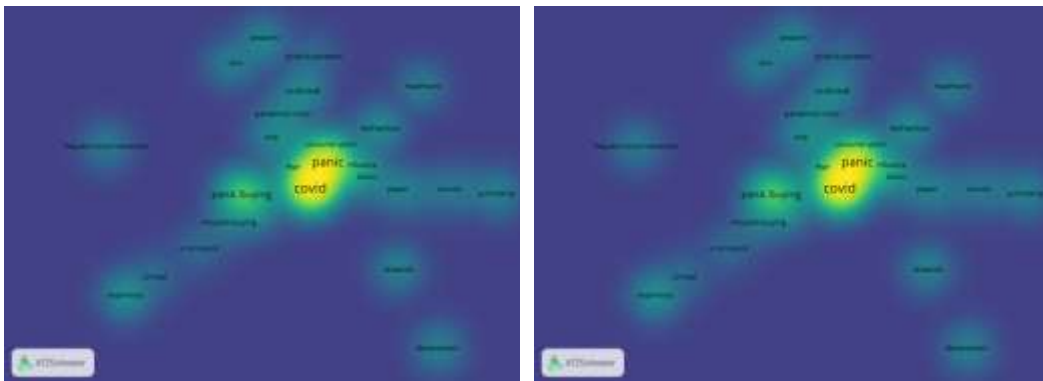
Figure 2. Network Visualization Based on Google Scholar Data
Source: VOSviewer, 2023
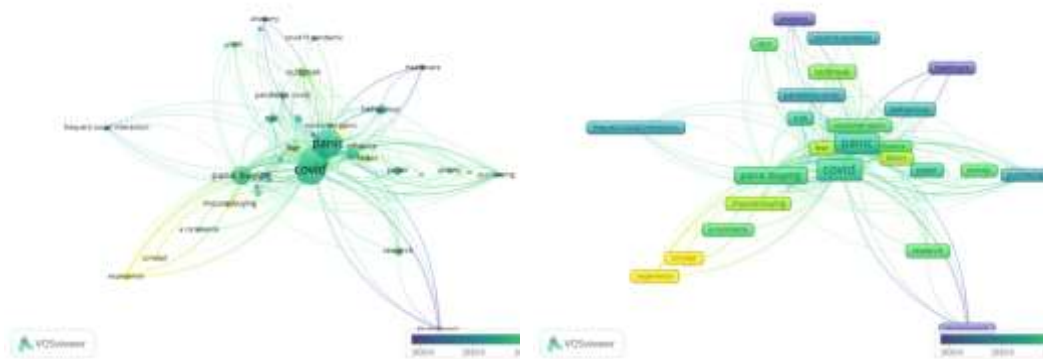
Figure 3. Overlay Visualization Based on Google Scholar Data
Source: VOSviewer, 2023

Figure 4. Density Visualization Based on Google Data
Source: VOSviewer, 2023

Based on the visualization of entanglement in Figure 4, it is known that each dot has a color indicating density. The greater the number of keywords around a point and the higher the weight of neighboring keywords, the closer the dot color becomes yellow. Conversely, the smaller the number of keywords around the point and the lower the weight of neighboring keywords, the closer the dot color becomes

blue (van Eck & Waltman, 2022). This attachment visualization can be used to determine the parts of research that are still rarely done and the parts that have been done a lot, which helps conduct further research (Zakiyyah et al., 2022).

R Bibliometrix Biblioshiny Package

The results of the analysis on the R Bibliometrix Biblioshiny Package found datasets in the form of Bradford law, the frequency distribution of scientific productivity, source growth, top-author production over time, most relevant affiliations, and conceptual structure as follows:
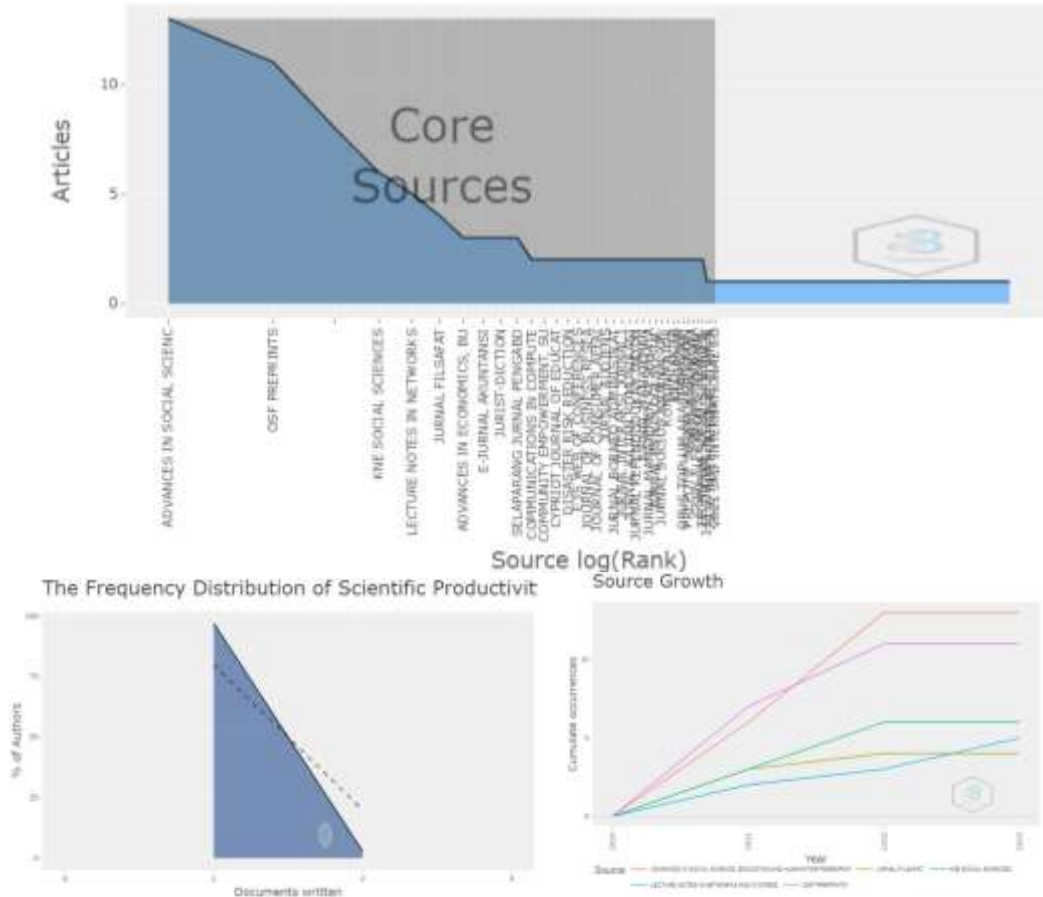
Figure 5. Bradford Law, The Frequency Distribution of Scientific Productivity, and Source Growth

Source: Bibliosiny, 2023

Figure 5 shows the processing results using Bradford Law, the frequency distribution of scientific productivity, and source growth. Bradford law indicates a number of core sources that point to a number of major publishers in the scientific development of panic buying and scarcity. The frequency distribution of scientific productivity is usually based on cross-sectional pieces of the population of

researchers under investigation (Wagner-Doubler, 1995). The following source growth shows data on publisher development from year to year by theme.

Based on the results of Bradford law analysis, it was found that 37 publishers were the dominant main publication sites and impacted the research theme of panic buying and scarcity. From these results, it was found that a place for research publication was found by considering 37 leading publishers on the research theme of panic buying and scarcity. Researchers need to determine the placement of research results on the best publishers.

Based on the results of source growth analysis, research growth was found to come from cumulation events (Taqi et al., 2021). The curve illustrates how fluctuations in growth sources are developed for panic buying and scarcity research themes. The average development trend is increasing, with the highest increase in Advances in Social Science Education and Humanities Research. OSF Preprints occupy the second position. Meanwhile, other publishers such as Jurnal Philosophy, KNE Social Sciences, and Lecture Notes in Network and Systems have trends and standards that increase yearly. This development illustrates the increase in productivity and development with the theme of panic buying and scarcity from 2020 until now.
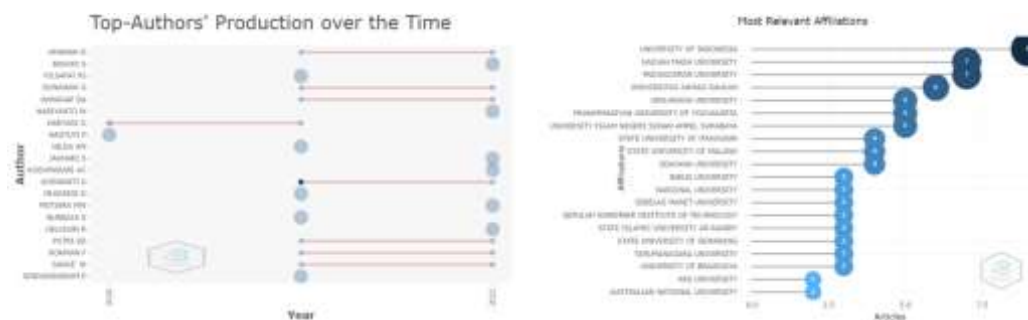
Figure 6. Top-Author Production over the Time and Most Relevant Affiliations
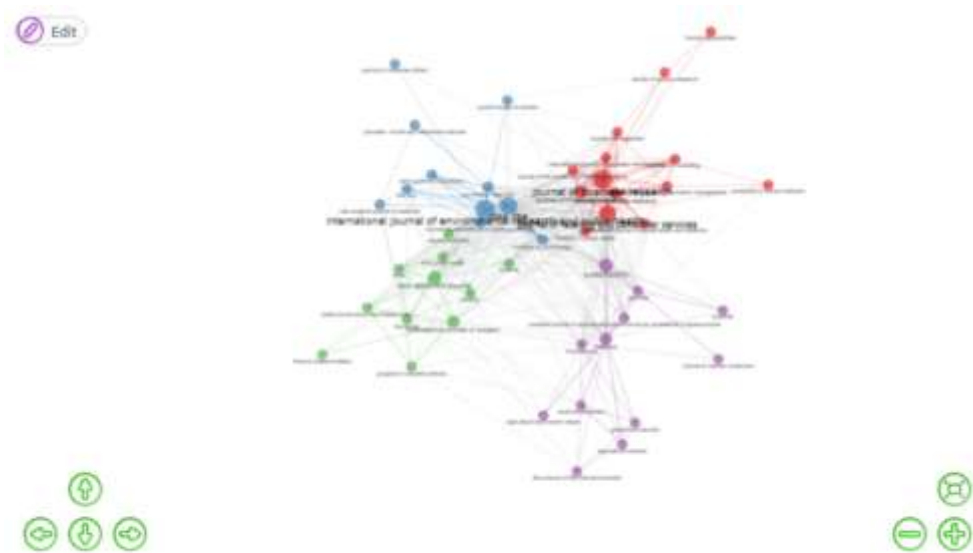**Source: Bibliosiny, 2023**

Figure 6 shows the visualization results of top-author production over time and the most relevant affiliations. By doing this analysis, Productivity data will be obtained from the Author in Panic Buying and Scarcity Research, as well as the geographical coverage of the journal (Eddy & Solomon, 2017) and collaboration mapping as part of the framework (Li et al., 2016). According to Lotka (1926), author productivity is the number of written works of a person in a certain period published in journals with related subjects. According to Natakusumah (2014), the author's productivity is determined based on the amount of his contribution to producing a work. Meanwhile, affiliate analysis is useful for the public because it makes it easier to convert publication metadata into visualizations to gain knowledge that can be beneficial (Sidiq, 2019).

Based on the results of the analysis of top-author production over time, The productivity of the author is indicated by a red line from the time the author publishes his first research until the last year of publication. In addition, the circle in the red line indicates the number of publications corresponding to the year in

force (Taqi et al., 2021). By top-author production over time, It can be seen that in 2020-2021 the author was active in doing research on panic buying during the COVID-19 pandemic was Haryadi D. Meanwhile, in the 2021-2022 period, it was shown that many studies had begun to be published, including the most dominant until 2020 were Amanah D., Gunawan G., Harahap DA., Kuswanti A., Putri S. O., Rohman F., and Sakke W.

Based on the analysis of the most relevant affiliations, the top 20 affiliates with the number of published document intervals ranging from 0-9 documents were found, indicated by a blue circle. The darker the blue, the more affiliated the researcher (Antonio et al., 2021). The University of Indonesia is a top-rated affiliate with nine affiliated publications, followed by Gadjah Mada University and Padjadjaran University, which has seven affiliated publications; Ahmad Dahlan University, which has six affiliated publications, as well as Airlangga University; Muhammadiyah University of Yogyakarta and State Islam Sunan Ampel Surabaya University Each has five affiliated publications. On the other hand, the following conceptual structure panic buying and rarity:

Figure 7. Conceptual Structure

Source: Bibliosiny, 2023

Here is the flow of literature in the study:

Table 1. Literature Stream

Main Stream	Sub-Flow	Topics/Methods of Relevance
A. Cluster 1 (Red) 10 items	E-Commerce	E-Commerce
	Fear	Psychology
	Impulse Buying	Consumer Behavior
	Panic Behavior	Psychology
	Perceived Scarcity	Consumer Behavior
	Person	Consumer Behavior
	Psychological Underpinning	Psychology
	Role	Psychology
	Shopping	Consumer Behavior
	World	Social Activities
B. Cluster 2 (Green) 8 Items	Anatomy	Health and Medicine
	Covid19 Pandemic	Health and Medicine
	Current Covid	Health and Medicine
	Domiciliary Quarantine Measure	Health and Medicine
	Outbreak	Health and Medicine
	Pandemic	Health and Medicine
	Panic	Psychology
	Social Medium	Psychology
C. Cluster 3 (Dark Blue) 5 Items	Behavior	Psychology
	Consumer	Consumer Behavior
	Influence	Psychology

	Relationship	Psychology
	Scarcity	Consumer Behavior
D. Cluster 4 (Yellow) 6 Items	Concept	Social Activities
	Experience	Psychology
	Extra Buying	Consumer Behavior
	Panic Buying	Consumer Behavior
	Public Perception	Psychology
E. Cluster 5 (Purple) 6 items	Anxiety	Psychology
	Early Phase	Psychology
	Ireland	Country
	Purchasing	Economics
	Republic	Government
	United Kingdom	Country
F. Cluster 6 (Light Blue) 6 items	Consumer Panic	Consumer Behavior
	Consumers Panic Buying	Consumer Behavior
	Covid	Health and Medicine
	Lockdown	Health and Medicine
	Pandemic Covid	Health and Medicine
	Panic Buying Behavior	Consumer Behavior
G. Cluster 7 (Orange) 3 items	Development	Development Studies
	Initial Psychometric Property	Psychology
	Research	Research
H. Cluster 8 (Brown) 3 items	Behavior	Psychology
	Healthcare	Health and Medicine
	Monitoring Social Interaction	Social Activities
I. Cluster 9 (Light Purple) 2 items	Frequent Social Interaction	Social Activities
	Higher Panic	Psychology

Source: Author Processed Data, 2023

Based on the results of combining thematic maps and thematic evolution, it was found that at least three scientific fields contributed to the development of the study of panic buying and scarcity from 2020-2022. The three studies are health and medicine, psychology, and consumer behavior. Several comprehensive methods can be used in any scientific research: quantitative, qualitative, and mixed. Further developments will provide more insight for researchers in the field of development panic buying and scarcity because, in research mapping, only three scientific studies make major contributions. Future research may consider new research as in Table 2 below:

Table 2. Panic Buying Research Stream during the COVID-19 Pandemic (2020-2022)

First Stream Health and Medicine	Second Stream Psychology	Third Stream Consumer Behavior
Case/Theory Basis		
Pandemic	Panic	Purchasing/ Buying/ Shopping

Healthcare	Public Perception Anxiety Experience	E-Commerce
Advanced Basics		
Pandemic Covid-19	Psychological Underpinning	Extra Buying
Domiciliary Quarantine Measure	Monitoring Social Interaction	Panic Buying
	Frequent Social Interaction	Scarcity

Source: Author Processed Data, 2023

Figure 8. Research Mapping Concept of Panic Buying and Scarcity Phenomenon
Source: Author Processed Data, 2023

Here are possible further research streams in panic buying and scarcity:

Table 3. Advanced Research Streams in Panic Buying and Scarcity Research

First Stream Health and Medicine	Second Stream Psychology	Third Stream Consumer Behavior	Advanced Flow Consumer Experience
Case/Theory Basis			
Pandemic	Panic	Purchasing/ Buying/ Shopping	Impulse Buying
Healthcare	Public Perception Anxiety Experience	E-Commerce	Concept Buying Outbreak
Advanced Basics			
Pandemic Covid-19	Psychological Underpinning	Extra Buying	Buying Factor
Domiciliary Quarantine Measure	Monitoring Social Interaction	Panic Buying	Experience Buying

| Frequent Social Interaction | Scarcity | Fear |

Source: Author Processed Data, 2023

Based on the results of the analysis, further research can raise the issue of consumer experience, whose basic case/theory is impulse buying, concept buying, and outbreak. Further research is on buying factors, experience buying, and fear.

CONCLUSION

Based on the results of the analysis, research on panic buying and scarcity during the COVID-19 pandemic occurred in 3 research streams, namely: 1) health and medicine, whose basic cases/theories are pandemic and healthcare; and the basis for further research is the COVID-19 pandemic and domiciliary quarantine measure. 2) psychology, whose basic case/theory is panic, public perception, anxiety, and experience; further research is psychological underpinning, monitoring social interaction, and frequent social interaction. 3) consumer behavior, whose basic case/theory is purchasing/buying/shopping, e-commerce; And subsequent research is extra buying, panic buying, and scarcity. Further research can raise the issue of consumer experience, whose basic case/theory is impulse buying, concept buying, and outbreak. Further research is on buying factors, experience buying, and fear.

This research can be developed and used to test future trends and become material for evaluating the quality of future publications. Based on the analysis results, more research collaboration between topics in keywords, authors, and affiliations is needed. Therefore, for further research, researchers who use similar analysis must find and use coherent data and analyze the strengths, weaknesses, and limitations of the research database used. In addition, comparing the results of similar analyses using different bibliometric software is also recommended.

REFERENCES

Ahmed, R. R., Streimikiene, D., Rolle, J. A., & Duc, P. A. (2020). The COVID-19 Pandemic and the Antecedants for the Impulse Buying Behavior of US Citizens. *Journal of Competitiveness*, *12*(3), 5–27. https://doi.org/10.7441/joc.2020.03.01

Antonio, M. S., Rusydiana, A. S., & Firmansyah, I. (2021). Review on Islamic Social Reporting (ISR) Research. *Library Philosophy and Practice (e-Journal).*, *5435*.

Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for Comprehensive Science Mapping Analysis. *Journal of Informetrics*, *11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Billore, S., & Anisimova, T. (2021). Panic Buying Research: A Systematic Literature Review and Future Research Agenda. *International Journal of Consumer Studies*, *45*, 777–804. https://doi.org/10.1111/ijcs.12669

Brock, T. C. (1967). Implications of Commodity Theory for Value Change. *Psychological Foundations of Attitudes*. https://doi.org/10.1016/B978-1-4832-3071-9.50016-7

Chen, Y., Rajabifard, A., Sabri, S., Potts, K. E., Laylavi, F., Xie, Y., & Zhang, Y. (2020). A Discussion of Irrational Stockpiling Behaviour During Crisis. *Journal of Safety Science and Resilience*, *1*(1), 57–58. https://doi.org/10.1016/j.jnlssr.2020.06.003

Cobo, M. J., López-Herrera, A. G., Herrera-Viedma, E., & Herrera, F. (2011). An Approach for Detecting, Quantifying, and Visualizing the Evolution of a Research Field: A Practical Application to the Fuzzy Sets Theory field. *Journal of Informetrics*, *5*(1), 146–166. https://doi.org/10.1016/j.joi.2010.10.002

Dormezil, S., Khoshgoftaar, T., & Robinson-Bryant, F. (2020). Differentiating between Educational Data Mining and Learning Analytics: A Bibliometric Approach. *CEUR Workshop Proceedings*, *2592*, 17–22.

Eddy, M. A., & Solomon, D. (2017). Leveraging Librarian Liaison Expertise in a New Consultancy Role. *Journal of Academic Librarianship*, *43*(2), 121–127. https://doi.org/10.1016/j.acalib.2017.01.001

Farida, N., & Firmansyah, A. H. (2020). Analisis Bibliometrik berdasarkan Pendekatan Co-Word: Kecenderungan Penelitian Kearsipan di Jurnal Khazanah: Jurnal Pengembangan Kearsipan dan Journal of The Archives and Records Association, Tahun 2016–2019. *Jurnal Pengembangan Kearsipan*, *13*(2), 91–109.

Firmansyah, M. F., Kurniawan, A., Sunarya, Z. F., & Rizqullah, M. I. (2022). Consumption Behavior in the Form of Panic Buying: The Concept of Dromology. *Symbolicus: Jurnal Ilmu Komunikasi*, *1*(1), 31–39.

Hamilton, R. (2021). Scarcity and Coronavirus. *Journal of Public Policy & Marketing*, *40*(1), 99–100. https://doi.org/10.1177/0743915620928110

Huang, J.-H., Duan, X.-Y., He, F.-F., Wang, G.-J., & Hu, X.-Y. (2021). A Historical Review and Bibliometric Analysis of Research on Weak Measurement Research Over the Past Decades based on Biblioshiny. *ArXiv:2108.11375v1*, 1–19.

Islam, T., Pitafi, A. H., Arya, V., Wang, Y., Akhtar, N., Mubarik, S., & Xiaobei, L. (2021). Panic Buying in the COVID-19 Pandemic: A Multi-country Examination. *Journal of Retailing and Consumer Services*, *59*(2020), 102357. https://doi.org/10.1016/j.jretconser.2020.102357

Izzaty. (2020). Kebijakan Pemerintah dalam Mengatasi Panic Buying Akibat Covid-19. *Info Singkat Pusat Penelitian Badan Keahlian DPR RI*, *12*(5), 19–30.

Jariyah, M., Sakdiyah, N., Setyarini, S. M., & Hermawan, S. (2022). Bagaimana Panic Buying Memainkan Perannya pada Perspektif Tingkat Ekonomi, Gender

dan Latar Belakang Pendidikan di Indonesia? *Business and Economic Conference in Utilization of Modern Technology*, 394–409.

Khusnul, F. (2021). Penurunan Daya Beli vs Panic Buying di tengah Pandemi Covid-19. Bagaimana Tinjauan Syariahnya? *Jurnal Syarikah: Jurnal Ekonomi Islam*, *7*(1), 18–25.

Kiger, M. E., & Varpio, L. (2020). Thematic Analysis of Qualitative Data: AMEE Guide No. 131. *Medical Teacher*, *42*(8), 846–854. https://doi.org/10.1080/0142159X.2020.1755030

Kovács, A., Van Looy, B., & Cassiman, B. (2015). Exploring the Scope of Open Innovation: A Bibliometric Review of a Decade of Research. *Scientometrics*, *104*(3), 951–983. https://doi.org/10.1007/s11192-015-1628-0

Kroker, A., Kroker, M., & Cook, D. (1990). PANIC USA: Hypermodernism as America's Postmodernism. *Social Problems*, *37*(4), 443–459. https://doi.org/10.2307/800575

Laela, E., & Azhari, S. C. (2023). Bibliometric Analysis: Patterns of Significance and Correlation in Consumer Satisfaction Research. *Jurnal Bisnis & Kewirausahaan, 19*(01), 81–94. https://doi.org/10.31940/jbk.v19i1.81-94

Li, X., Zhou, Y., Xue, L., & Huang, L. (2016). Roadmapping for Industrial Emergence and Innovation Gaps to Catch-up: A Patent-based Analysis of OLED Industry in China. *International Journal of Technology Management*, *72*(1), 105–143. https://doi.org/10.1504/IJTM.2016.080538

Lotka, A. J. (1926). The Frequency Distribution Of Scientific Productivity. *Journal of the Washington Academy of Sciences*, *16*(12), 317–323.

Makkizadeh, F., & Sa'adat, F. (2017). Bibliometric and Thematic Analysis of Articles in the Field of Infertility (2011-2015). *International Journal of Reproductive BioMedicine*, *15*(11), 719–728. https://doi.org/10.29252/ijrm.15.11.719

Martínez, M. A., Cobo, M. J., Herrera, M., & Herrera-Viedma, E. (2015). Analyzing the Scientific Evolution of Social Work Using Science Mapping. *Research on Social Work Practice*, *25*(2), 257–277. https://doi.org/10.1177/1049731514522101

Muñoz-Leiva, F., Viedma-del-Jesús, M. I., Sánchez-Fernández, J., & López-Herrera, A. G. (2012). An application of Co-word Analysis and Bibliometric Maps for Detecting the most Highlighting themes in the Consumer Behaviour Research from a Longitudinal Perspective. *Quality and Quantity*, *46*(4), 1077–1095. https://doi.org/10.1007/s11135-011-9565-3

Naeem, M. (2020). Understanding the Customer Psychology of Impulse Buying during COVID-19 Pandemic: Implications for Retailers. *International Journal of Retail and Distribution Management*, *49*(3), 377–393. https://doi.org/10.1108/IJRDM-08-2020-0317

Natakusumah, E. K. (2014). Penentuan Kolaborasi Penelitian dan Distribusi Pengarang pada Jurnal Teknologi Indonesia. *Jurnal Dokumentasi Dan Informasi*, *35*(1), 15–24. https://doi.org/10.14203/j.baca.v35i1.183

Nobanee, H., Hamadi, F. Y. Al, Abdulaziz, F. A., Abukarsh, L. S., Alqahtani, A. F., Alsubaey, S. K., Alqahtani, S. M., & Almansoori, H. A. (2021). A Bibliometric Analysis of Sustainability and Risk Management. *Sustainability (Switzerland), 13*(6), 1–16. https://doi.org/10.3390/su13063277

Soenjoto, W. P. P., & Mujiyono, A. (2020). Fenomena Panic Buying dan Scarcity di Masa Pandemi Covid 19 Tahun 2020 (Kajian Secara Ekonomi Konvensional dan Syariah). *Ekonomi dan Bisnis*, *6*(2), 2599–3348.

Putri E. H., Fakhri, M., & Pradana, M. (2022). How Scarcity and Perceived Value Affecting Impulse Buying Among Customer During Covid-19. *International Conference on Industrial Engineering and Operations Management Istanbul*, 3890–3894.

Rahmatullah, Inanna, & Mustari. (2018). *Konsep Dasar Ekonomi Pendekatan Nilai-Nilai Eco Culture*. Makassara: CV. Nur Lina.

Rosado, C. A. G., & De Souza, M. C. (2021). A Bibliometric Study on the Use of Games in the Production Engineering Area. *Gestao e Producao*, *28*(3), 1–21. https://doi.org/10.1590/1806-9649-2021V28E5171

Sachdeva, S., Wu, J. S.-T., & Zhao, J. (2021). The Impact of Scarcity on Pro-environmental Behavior in the Covid-19 Pandemic. *Frontiers in Sustainable Cities*, *3*(767501), 1–7. https://doi.org/10.3389/frsc.2021.767501

Shadiqi, M. A., Hariati, R., Hasan, K. F. A., I'anah, N., & Al Istiqomah, W. (2020). Panic Buying pada Pandemi COVID-19: Telaah Literatur dari Perspektif Psikologi. *Jurnal Psikologi Sosial*, *19*(2), 131–141. https://doi.org/10.7454/jps.2021.15

Sidiq, M. (2019). Panduan Analisis Bibliometrik Sederhana. *Researchgate*. https://doi.org/10.13140/RG.2.2.15688.37125

Tamala, J. K., Maramag, E. I., Simeon, K. A., & Ignacio, J. J. (2022). A Bibliometric Analysis of Sustainable Oil and Gas Production Research using VOSviewer. *Cleaner Engineering and Technology*, *7*, 100437. https://doi.org/10.1016/j.clet.2022.100437

Taqi, M., Rusydiana, A. S., Kustiningsih, N., & Firmansyah, I. (2021). Environmental Accounting: A Scientometric using Biblioshiny. *International Journal of Energy Economics and Policy*, *11*(3), 369–380. https://doi.org/10.32479/ijeep.10986

Taylor, S. (2019). *The Psychology of Pandemics: Preparing for the Next Global Outbreak of Infectious Disease*. Newcastle upon Tyne: Cambridge Scholars Publishing.

Tsao, Y. C., Raj, P. V. R. P., & Yu, V. (2019). Product Substitution in Different Weights and Brands Considering Customer Segmentation and Panic Buying Behavior. *Industrial Marketing Management*, *77*(August), 209–220. https://doi.org/10.1016/j.indmarman.2018.09.004

van Eck, N. J., & Waltman, L. (2022). *VOSviewer Manual.* Leiden: Univeristeit Leiden.

Wagner-dobler, R. (1995). Were Has the Cumulative Advantage Gone? Some Observations about the Frequency Distribution of Scientific Productivity, of

Duration of Scientific Participation, and of Speed of Publication. *Scientometrics*, *32*(2), 123–132. https://doi.org/10.1007/bf02016890

Wai, O., Fung, M., Loke, A. Y., Wai, O., Fung, M. A. N., & Loke, A. Y. (2010). Disaster Preparedness of Families with Young Children in Hong Kong. *Scandinavian Journal of Public Health,* *38*(8):880-8. https://doi.org/10.1177/1403494810382477

Waseem, M. A., Waqas, M., Irfan, I., Abdullah, I., & Wajid, N. (2022). A Cross-sectional Study of Antecedents and Consequence of Panic Buying Behavior: The Moderating Effect of COVID-19 Rumors. *Inquiry : A Journal of Medical Care Organization, Provision and Financing*, *59*. https://doi.org/10.1177/00469580221126304

Wu, W. Y., Lu, H. Y., Wu, Y. Y., & Fu, C. S. (2012). The Effects of Product Scarcity and Consumers' Need for Uniqueness on Purchase Intention. *International Journal of Consumer Studies*, *36*(3), 263–274. https://doi.org/10.1111/j.1470-6431.2011.01000.x

Yu, J., & Muñoz-Justicia, J. (2020). A Bibliometric Overview of Twitter-Related Studies Indexed in Web of Science. *Future Internet*, *12*(5). https://doi.org/10.3390/FI12050091

Zakiyyah, F. N., Winoto, Y., & Rohanda. (2022). Pemetaan Bibliometrik terhadap Perkembangan Penelitian dengan Topik Arsitektur Informasi pada Google Scholar menggunakan Vosviewer. *Journal of Library and Information Science, 2*(1), 43–60. 10.24198/inf.v2i1.37766

Zeng, G. (2020). Effect of Convalescent Plasma Therapy on Viral Shedding and Survival in COVID-19 Patients. *J Infect Dis. 222*(1), 38-43. https://doi.org/10.1093/infdis/jiaa228.
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