

**Exploring online buying behaviours: Psychological insights from a comprehensive bibliometric analysis**

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***Data availability statement:***

The data supporting the findings of this study is taken from the WoSCC, however, the dataset is available in a public repository at PsyArXiv (doi:.....)

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## Abstract

The shift from traditional to online shopping is happening at an exponential rate. Numerous terms have emerged recently in the field, such as “impulsive purchasing,” “compulsive buying,” “compulsive consumption,” “impulsive spending patterns,” “revenge buying,” “panic buying,” and “shopping addiction”. The objective of this study is to understand the psychological perspectives associated with online buying. Web of Science Core Collection (WoSCC) was the source of obtaining publication records from the year 1989 till 2024. Latest version of CiteSpace 6.3.R1 (64-bit) W software was used for mapping and bibliometric analysis. Document co-citation analysis (DCA), author co-citation analysis (ACA), and dual map overlay was analysed by using 813 records. Publication records indicate that a greater number of articles were published during the Covid-19 pandemic. Country network mapping found USA (252) with highest number of publications in the concerned domain. However, in institutional based analysis, it was found that the University of London (22) contributed the maximum number of publications. Author Muller, A (8) had contributed highest number of publications which are mainly focussed on shopping disorder. The largest five clusters, Cluster #1 *online compulsive buying*, Cluster #2 *trust convenience*, Cluster #3 *state anxiety*, Cluster #5 *covid-19 pandemic*, Cluster #6 *Hong Kong* were identified by DCA analysis. Keywords with strongest burst were mental health (5.81), community (5.59), purchase intention (4.44), disability (3.88), validation (3.82), risk (3.77), responses (3.74), performance (3.70), internet (3.64) and abuse (3.48), which were the indicators of emerging trend.

**Keywords:** online buying, CiteSpace, bibliometric, citation analysis

## Introduction

Shopping is defined as “the process of browsing and/or purchasing items in exchange for money.” Apart from the satisfaction of acquiring goods, shopping also provides a sensory and experiential reward. Over the past decade, the advent of the internet has transformed the shopping landscape. Online shopping offers numerous advantages during the information search phase and the purchasing act itself (Rose & Samouel, 2009). These advantages include external factors like convenience, ease of use, perceived usefulness, control, and enjoyment, as well as internal factors such as individual attitudes towards the internet, personal motivations, risk perceptions, and innovativeness (Cheung et al., 2005; Gefen, 2003; Wolfinbarger & Gilly, 2001). These benefits have driven a steady increase in consumer use of online shopping, thereby significantly benefiting e-retailers. However, the rise of online shopping has also been associated with heightened levels of impulsive purchasing, compulsive buying tendencies, impulsive spending behaviors, and phenomena such as revenge buying, panic buying, and even shopping addiction, contributing to potential negative psychological impacts on individuals (Faber et al., 1987; Hirschman, 1992; Sussman, Lisha & Griffiths, 2010; Laato et al., 2020).

Problematic buying behavior is viewed as the extreme “abnormal” end of a continuum that includes ordinary, psychologically motivated buying, where individuals purchase goods for psychological benefits, such as improved self-esteem or mood enhancement (Williams & Grisham, 2012). This spectrum suggests a substantial middle ground characterized by escalating levels of compulsive, uncontrollable buying that, while problematic, remains largely asymptomatic. Individuals with problematic buying behaviors often experience heightened anxiety in response to internal or external stimuli, with shopping binges serving as a quick and easy way to alleviate such anxiety (O’Guinn & Faber, 1989; Laier & Brand, 2017). Long-term consequences of repeated loss of self-control include severe distress, psychiatric comorbidity, and family conflicts. Additionally, individuals may experience clutter from pathological hoarding and accumulate debt. In many cases, deceit and embezzlement become strategies to sustain spending despite growing financial difficulties (Muller et al., 2019).

There are various other psychological factors related to online shopping behavior. Rose et al. (2014) identified social anonymity and cognitive overload, as a significant predictor of online shopping addiction. Perceived lack of control can impact stress levels, leading individuals to engage in various consumer behaviors to cope with emotional discomfort (Sneath et al., 2009). Panic buying initially aimed to address potential product scarcity, while

later in the pandemic, revenge buying emerged as a coping mechanism and a way to elevate mood and well-being (Atalay & Meloy, 2011; Islam et al., 2021).

In another study, Lejoyeux and Weinstein (2010), found that compulsive buying is linked to mood disorders such as depression, eating disorders, obsessive-compulsive disorders, substance use disorders, and personality disorders. The etiology of compulsive buying behavior is complex and multifaceted (O'Guinn & Faber, 1989). Factors include arousal levels (e.g., high excitement or low boredom), relief from negative emotional states (e.g., low self-esteem), sensation seeking, external environmental cues, and personality traits like impulsivity and immediate gratification (O'Guinn & Faber, 1989). Excessive shopping serves as a means to control or regulate emotions, experience pleasure, escape from unpleasant emotions, or address behavioral inconsistencies. Impulsive shopping is also explained by hedonic shopping values, which include fun, social interaction, novelty, escapism, and external appreciation (Atulkar & Kesari, 2017). Individuals with high material values exhibit lower self-esteem (Chaplin & John, 2007), greater self-doubt (Chang & Arkin, 2002), and higher social anxiety (Schroeder & Dugal, 1995) compared to those with low material values (Japutra, Ekinci, & Simkin, 2019).

The panic buying phenomenon arises from the basic human need to control some aspects of existence (Singh & Rakshit, 2020). Panic buying spikes in response to news of product shortages, as seen during the COVID-19 pandemic, driven by consumers' emotional states (Lins & Aquino, 2020; Arafat et al., 2020). Consumers stockpile to ensure they have necessary items to combat the pandemic and regain control over their circumstances (Ngunjiri, 2020; Sim et al., 2020). Fear is the primary driver of panic buying (Ngunjiri, 2020), which serves as a coping mechanism to reduce anxiety (Arafat et al., 2020). However, panic buying can lead to shortages of essential goods, resource depletion, and food waste, turning it into maladaptive behavior (Roy et al., 2020; Wang & Hao, 2020; Yuen et al., 2020).

Piquet-Pessoa et al. (2014) noted similarities between compulsive buying (CB) and substance use disorders, including craving, drug-seeking behavior, and withdrawal symptoms. Müller et al. (2019) found a significant positive correlation between depression and CB scores. Hopelessness, a core feature of depression, is also linked to CB (Assari & Lankarani, 2016). Anxiety sensitivity, comprising somatic and cognitive components, predicts CB levels (Gallagher et al., 2017). Anxiety symptoms may precede CB and increase spending propensity, while depressive symptoms may co-occur with guilt after purchases (Gallagher et al., 2017). Negative and self-conscious emotions, including body dysmorphia, depression, tension,

uncontrollable need, or anxiety, often trigger shopping binges or continuous CB behavior (Black et al., 1998; Christenson et al., 1994; Lejoyeux et al., 2005; McElroy et al., 1994). Compulsive buyers often feel shame, guilt, regret, despair, and self-recrimination following shopping episodes (Faber & Vohs, 2004; McElroy et al., 1994). These emotions, superimposed on pre-existing negative affectivity and poor self-images, set the stage for compulsive buyers to seek brief psychological respite through compulsive buying.

Despite the extensive research on the psychological aspects of online shopping behavior and its association with problematic buying behaviors, there is still a need for a comprehensive bibliometric analysis to map the existing literature, identify key trends, and highlight areas where further research is warranted. This study aims to bridge this gap by conducting a bibliometric review of the literature on online shopping behavior and its psychological correlates, with a focus on understanding the evolving landscape of consumer behavior in the digital age.

### **Current study**

The present study is a bibliometric analysis of published studies on psychological perspective in online buying using the latest version of Cite Space 6.3.R1 (64-bit) W software. The purpose of this study is to investigate the new directions and trends in online buying behaviour by utilising quantitative and visual methods to identify popular themes, author distributions, organizations/institutions, nations, and the intellectual landscape from data gathered between 1989 and 2024 from Web of Science Core Collection (WoSCC). It investigates a scientific field's research status, research hotspots, research frontiers, and evolution process by creating a series of visual knowledge maps. This allows the field to be evaluated in terms of its development trend as well as its direction, stage, and author characteristics (Luo et al, 2021).

### **Method**

#### **Literature search and inclusion criteria**

The inclusion criteria consists of

- Publications in the Web of Science (WoS) including Science Citation Index- Expanded (SCI-E), Social Sciences Citation Index (SSCI), and Arts and Humanities Citation Index (A&HCI) during the period from 1989 to 2024.

- Documents included articles, review articles and proceeding papers.
- English language documents were only included

## **Data Collection**

The articles were collected from advanced search in the Web of Science Core Collection (WoSCC) incorporating Science Citation Index-Expanded (SCI-E), Social Sciences Citation Index (SSCI), as well as Arts and Humanities Citation Index (A&HCI). CiteSpace bibliometric software mainly monitors and examines a topic's evolution, therefore even though WoSCC offers a multitude of search technique combinations, the targeted topic retrieval results are superior (Chen, 2015).

*The data set was collected through the following strategies:*

### **SET-1**

Totally, 24360 data were collected by using the search strategy, TS= ("online buying") OR ("online shopping") OR ("shopping") OR ("pathological buying")) OR ("purchasing disorder")) OR ("online purchase behavior") OR ("online shopping addiction")) OR ("purchase intention")

### **SET-2**

In Set-2, 2,939,053 data were collected by using the search strategy, TS= ("cognitive dissonance") OR ("mental conflict") OR ("emotional conflict") OR ("depression") OR (stress\*) OR (anxiety\*)

### **SET-3**

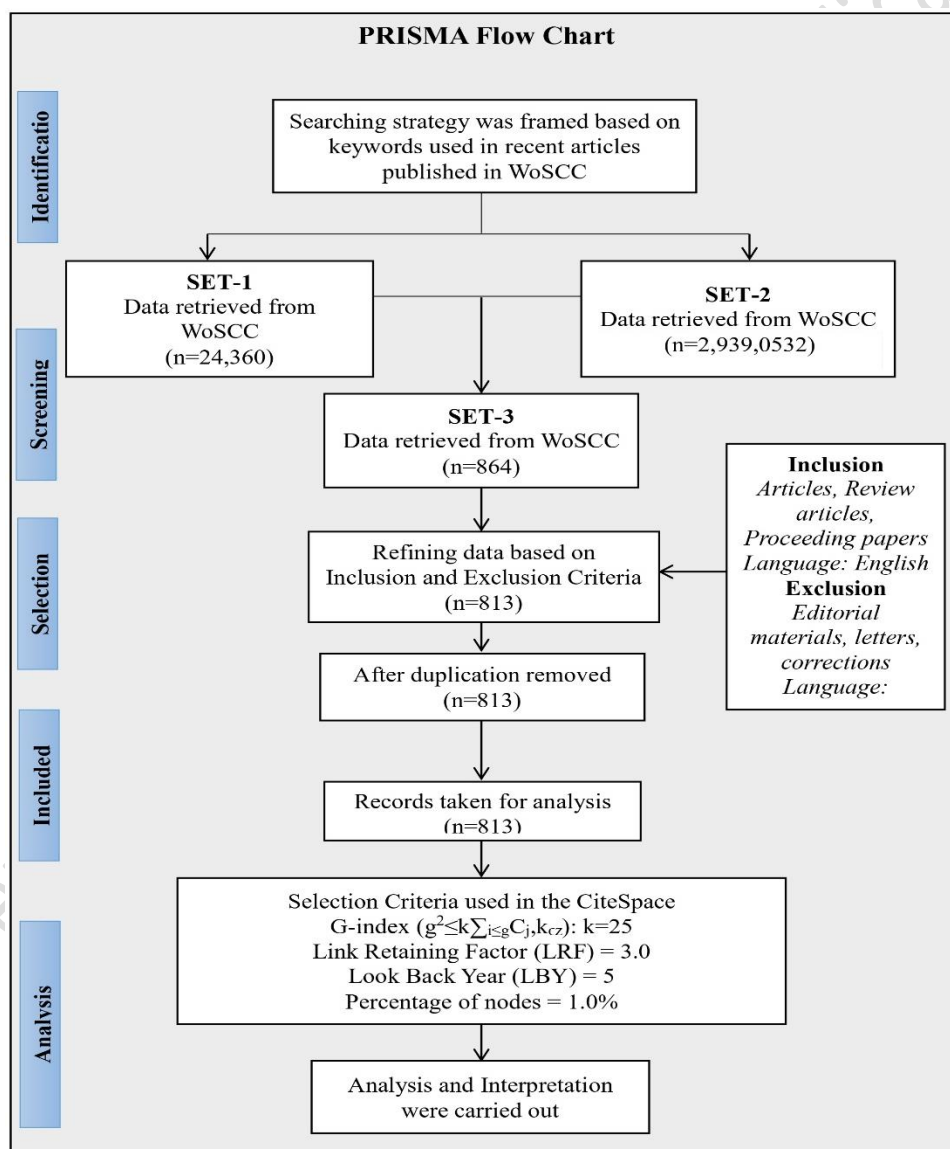
Data SET-1 and SET-2 was later combined to get data SET-3 which came around to be 864. Finally, after the removal of data duplication, 813 eligible data were considered for bibliometric analysis.

## **Visualization and Mapping**

Cite Space 6.3.R1 (64-bit) W and Excel 2013 was used to create visual charts of countries, institutions, author collaboration networks, keyword co-occurrence, keyword clustering, and keyword emergence in addition to visually analysing the number of publications, authors and trends in the field of online buying. The analysis includes Author co citation Analysis (ACA) and Document co-citation Analysis (DCA) which created citation matrix analysis of cited references which was further divided into co-citation cluster of references. Each cluster denotes the intellectual base.

## Metrics

The network's quality is evaluated using silhouette values, and the homogeneity of the entire knowledge network is shown by the mean silhouette value across the clusters. Citation burstness detection technique is “used to identify emerge research-front event” in a short amount of time, while betweenness centrality is “used to highlight potential pivotal points of paradigm shift over time” (Chen, 2006). The most active research domains are determined by the sigma metric, which combines betweenness centrality and citation burstness to find outstanding documents containing novel and significant ideas (Chen, 2017).



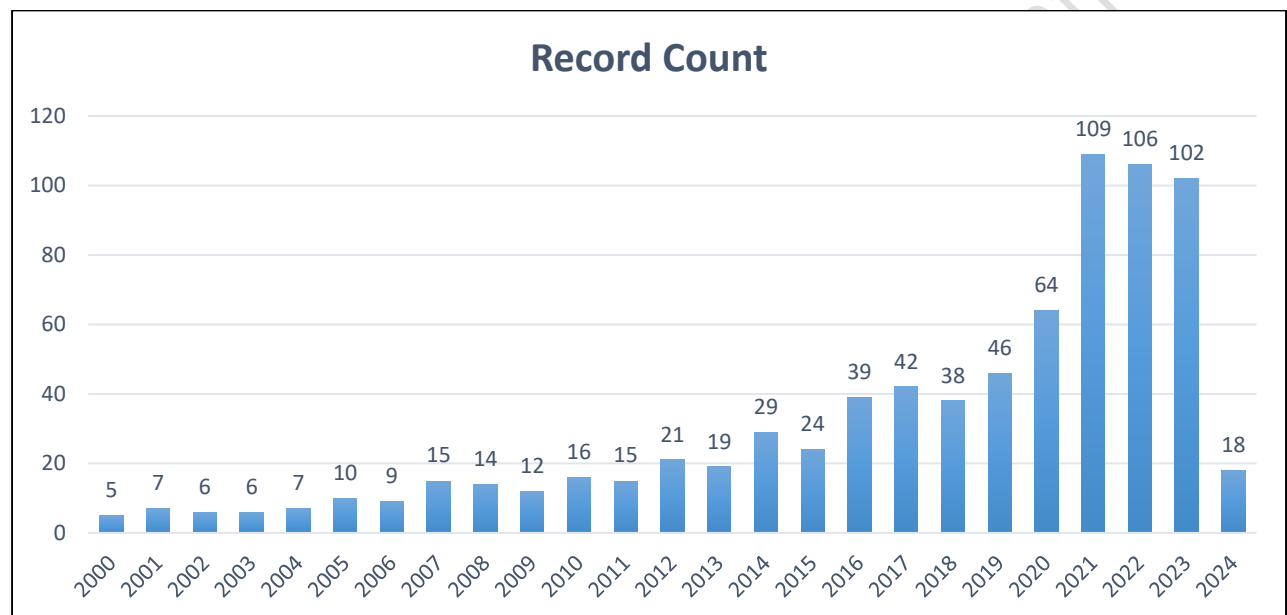
**Figure 1:** Flow chart of the selection process and the selection criteria for analysis using CiteSpace



## Results

### Distribution of Publications and Document type

In total 813 publications were identified and included in the study. The publications varied in different years. The highest publications were done in the year 2021(109), followed by 106 publications in 2022 and 102 publications in 2023, which was during and immediate after COVID-19 pandemic period wherein the online shopping was at peak. Based on searching strategy, documents used for this bibliometric study includes Articles (742), Reviews (43), Proceedings papers (12) and early access articles (16).



**Figure-2:** Annual distribution of publications from 2000 to 2024

### Distribution of country

By using CiteSpace, the country network mapping was generated by using data across 81 countries or regions. The country with most publications was USA (252), followed by China (98), England (82), Canada (45), and Germany (45). The first country by bursts is USA (15.87), followed by China (5.66), Taiwan (3.67), France (3.35), and Sweden (3.33). The first country by centrality is USA (0.29) followed by England (0.25), Italy (0.12), Netherland (0.10), and China (0.09). The top country in terms of sigma is USA (53.91) followed by China (1.65), England (1.55), Taiwan (1.29), and Italy (1.27).

**Table-1**

Top 10 countries publication records on psychological perspective of online buying from 1989-2024

Rank	Country	Publication	Country	Burst	Country	Centrality	Country	Sigma
1	USA	252	USA	15.87	USA	0.29	USA	53.91
2	China	98	China	5.66	England	0.25	China	1.65
3	England	82	Taiwan	3.67	Italy	0.12	England	1.55
4	Canada	45	France	3.35	Netherland	0.10	Taiwan	1.29
5	Germany	45	Sweedeen	3.33	China	0.09	Italy	1.27
6	Australia	44	Malaysia	3.09	Germany	0.08	Netherland	1.26
7	Taiwan	43	Netherland	2.48	Brazil	0.08	France	1.22
8	Italy	39	Iran	2.14	Taiwan	0.07	Turkey	1.09
9	France	35	Norway	2.10	France	0.06	Malaysia	1.09
10	South Korea	31	Italy	2.09	Canada	0.06	Iran	1.06

*Note*-Data from analysis (Cite Space) of data set retrieved from Web of Science

### Distribution of Institutions

Based on the institutional network generated by CiteSpace, 1,455 institutions had published 813 publications in total from 1989 till 2024. As depicted in Table 2, the institution with highest number of publications is University of London (22) followed by University of California system (16), Pennsylvania Commonwealth System of Higher Education (PCSHE) (15), Kings College London (11), Centre National De La Recherche Scientifique (CNRS) (10). On the basis of burst the top institute is Hannover Med Sch (3.16), followed by Univ Calgary (2.54), Qatar University (2.16), University of Iowa (2.04) and Duke University (1.88). On the basis of citations, the first institute is Hannover Medical School (7), followed by University of Calgary (6), University of Pittsburgh (5), Kings college London (5) and University of California Los Angeles (4). The centrality for the top 10 institutions stands 0.00 and Sigma value stands 1.00.

### Keywords distribution

Keyword analysis help to determine the research hotspots in the field of psychological perspective in online buying, on the basis of citation, burst and centrality. Based on keyword analysis by using CiteSpace, Table-3 showed the top-10 keywords on the basis of citation, such as depression (93), behaviour (81), impact (81), prevalence (56), anxiety (54), stress (52), health (51), purchase intention (51), model (48), and consumption (35). The keywords based on centrality were depression (0.25), impact (0.14), behaviour (0.13), health (0.12) prevalence (0.09), anxiety (0.09), stress (0.09), model (0.08), gender (0.08) and performance (0.07). The top-10 keywords with strongest burst were mental health (5.81), community (5.59), purchase intention (4.44), disability (3.88), validation (3.82), risk (3.77), responses (3.74), performance (3.70), internet (3.64) and abuse (3.48).

**Table-2**

Published records from top 10 academic institutes from 1989-2024

Rank	Publication	Institution	Burst	Institution	Citation	Institution
1	22	University of London	3.16	Hannover Medical School	7	Hannover Medical School
2	16	University of California	2.54	Univ Calgary	6	Univ Calgary
3	15	PCSHE	2.16	Qatar Univ	5	Univ Pittsburgh
4	11	Kings College London	2.04	Univ Iowa	5	Kings College London
5	10	CNRS	1.88	Duke Univ	4	Univ Calif Los Angeles
6	10	SUSF	1.86	Temple Univ	4	Univ Minnesota
7	9	HMS	1.84	Univ Pittsburgh	4	Harvard Univ
8	9	Harvard University	1.81	Norwegian Univ	4	Qatar Univ
9	9	UMS	1.75	Harvard Univ	4	Duke Univ
10	9	UMTC	1.68	Chang Jung Uni	4	Drexel Univ

Note: PCSHE-Pennsylvania Common wealth System of Higher Education, CNRS-Centre National De La Recherche Scientifique, SUSF-State University System of Florida, UMS-University of Minnesota System, UMTS- University of Minnesota Twin Cities, HMS-Hannover Medical School

**Table-3**

Top-10 keywords according to citation, burst and centrality between 1989 and 2004

Rank	CC	Keyword	Centrality	Keyword	Burst	Keyword
1	93	Depression	0.25	Depression	5.81	Mental health
2	81	Behaviour	0.14	Impact	5.59	Community
3	81	Impact	0.13	Behaviour	4.44	Purchase intention
4	56	Prevalence	0.12	Health	3.88	Disability
5	54	Anxiety	0.09	Prevalence	3.82	Validation
6	52	Stress	0.09	Anxiety	3.77	Risk
7	51	Health	0.09	Stress	3.74	Responses
8	51	Purchase intention	0.08	Model	3.70	Performance
9	48	Model	0.08	Gender	3.64	Internet
10	35	Consumption	0.07	Performance	3.48	Abuse

Note: CC-Citation Count; Data from analysis (CiteSpace) of dataset retrieved from Web of Science (WoS)

**Author Co-Citation Analysis (ACA)**

Top 10 authors on the basis of number of publications are depicted in table-4. The table 5 represents the top-10 authors with highest citation count, centrality and burst. Author *Muller, A* (8) has the highest number of publications (Müller, 2019). Most of the publications of *Muller, A* is related to shopping disorders. Next *Mitchell, JE* (6) has published articles related to compulsive buying and its relation to various illnesses like depression and eating disorder and also role of cognitive behaviour therapy in treating compulsive buying. (Mitchell, 2002; 2011; 2013). Hair, JF (101) has highest co citation count after unknown (297) with articles mainly on partial least squares-structural equation modelling (PLS-SEM) used PLS-SEM for analysis.

Furthermore, the first author based on centrality after unknown is Kroenke, K (0.22) who published an article on personality trait predicting addictive behaviour (Kroenke, 2022). World Health Organization (WHO) is the first on the basis of burst value followed by *Cohen, S* (5.55) and *Kock, N* (5.10) as WHO has defined various disorders and conditions related to excessive online buying.

**Table-4**

Top 10 authors published on psychological perspective in online buying

Rank	Publication	Author
1	8	Müller A
2	6	Mitchell JE
3	6	Griffiths MD
4	6	Black DW
5	5	Li X
6	5	De Zwaan M
7	4	Brand M
8	4	Chen Y
9	4	Jiang L
10	4	Kim S

Note-Data retrieved from Web of Science (WoS)

**Table-5**

Top 10 cited authors in respect to citation count, centrality and burst

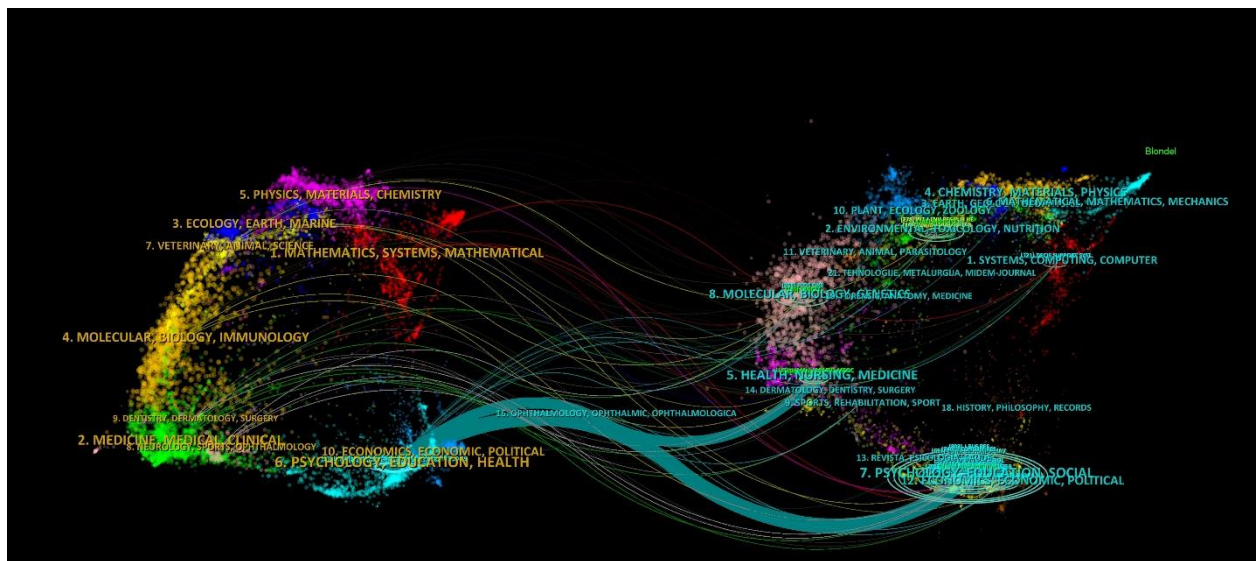
Rank	CC	Cited Author	Centrality	Cited Author	Burst	Cited author
1	297	Unknown	0.34	Unknown	7.01	WHO
2	101	Hair JF	0.22	Kroenke K	5.55	Cohen S
3	93	Fornell C	0.22	Cohen S	5.10	Kock N
4	60	Podsakoff PM	0.21	Nunnally JC	4.95	Mcelroy SL
5	48	Ajzen I	0.16	Hirschman EC	4.89	Koran LM
6	46	APA	0.15	Beck AT	4.82	Podsakoff PM
7	42	Festinger L	0.12	Ajzen I	4.66	Prentice C
8	41	Hayes AF	0.11	APA	4.66	Katz S
9	40	Davis FD	0.10	Baumeister RF	4.60	Unknown
10	40	Kim J	0.08	Hu LT	4.37	Islam T

Note-Data from analysis (Cite space) of Author co-citation Analysis from data retrieved from web of science database; WHO-World Health Organization, APA-American Psychiatric Association

### Finding Interdisciplinary nature

In dual map overlay, the left side is known as citing overlay and right side is known as cited overlay. The dual map overlay is helpful in understanding the origin of citations and the point where it reaches and have impacted other disciplines and also understanding the interdisciplinary source. The major discipline on the citing overlay is PEH (Psychology, education and health) and the major discipline on the citing overlay is PESPE (Psychology, education, social, political, economics) and HNM (health, nursing, medicine). The blue

coloured arrow in the below figure represents interdisciplinary between PEH and PSPE and HNM.



**Figure-3:** Dual map overlay based on data retrieved from Web of Science

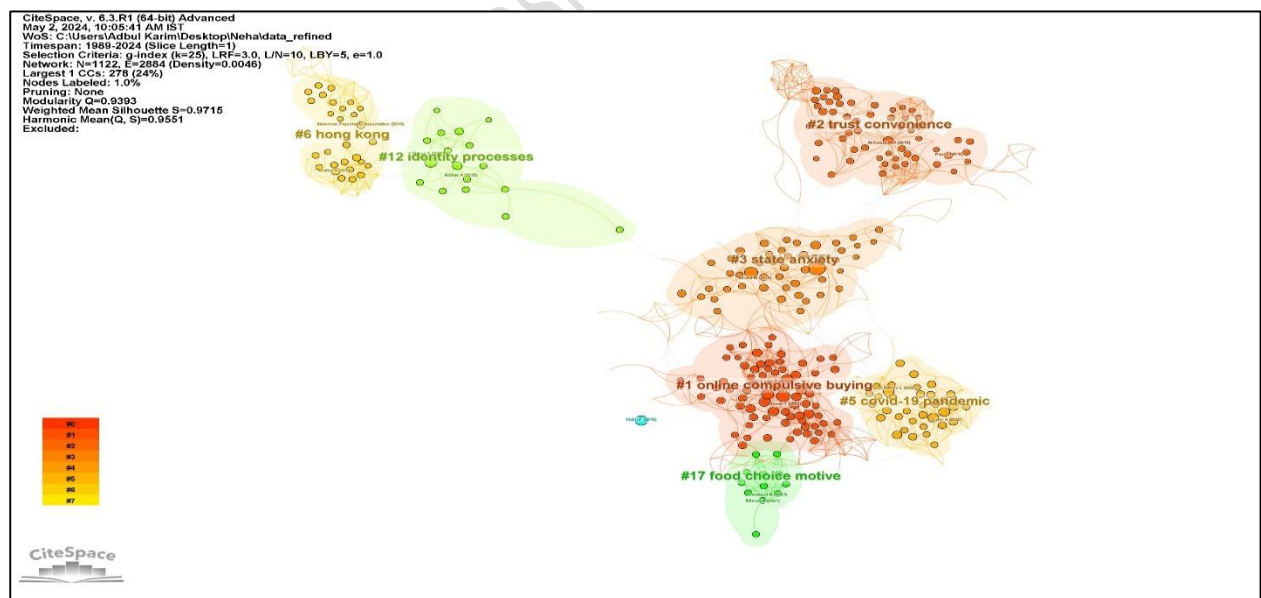
### Document co-citation analysis (DCA)

Totally, 873 bibliometric recordings were analysed by using single year time slice from 1989 to 2004. There were 1122 nodes and 2284 links in whole dataset representing cited articles and co-cited relationship amongst dataset (Figure 3, Figure 4). On the basis of narrative summary largest 8 clusters were recognized having highest citation count and burst value indicating these clusters as critical and were the focused area of study from 1989 to 2024. The overall mean silhouette value was 0.9715. As the value stands high it indicates homogeneity in clusters. As shown in the table above the silhouette value ranges from 0.948 to 0.984 across clusters which represent homogenous clusters. The table mentioned above summarizes citation count, mean year, cluster size, silhouette value, burst, centrality, sigma and DOI of the top cited references.

**Table-6**  
Five largest DCA clusters with five most cited references

Cluster	Cluster size	Silhouette	Mean value (year)	cc	Burst	Centrality	Sigma	DOI of the cited references
1	73	0.948	2020	12	4.65	.01	1.03	10.1016/j.jretconser.2020.102224
				11	4.26	.02	1.09	10.1016/j.jretconser.2020.102357
				10	3.87	.01	1.04	10.1016/j.jretconser.2020.102203
				9	3.48	.00	1.01	10.1016/j.jretconser.2021.102542
				8	3.09	.00	1.01	10.1016/j.jbusres.2020.05.028
2	56	0.983	2015	5	2.52	.01	1.04	10.1108/IntR-05-2014-0146
				4	2.41	0.00	1.01	10.1016/j.jretconser.2015.11.006
				3	0.00	0.00	1.00	10.1007/s10796-017-9774-y
				3	0.00	0.00	1.00	10.1002/mar.20823
				3	0.00	0.00	1.00	10.1016/j.ijinfomgt.2017.01.002
3	48	0.962	2017	20	5.83	.03	1.17	-
				12	4.51	.04	1.19	10.1016/j.neubiorev.2019.06.032
				5	2.16	0.00	1.01	10.1007/s11747-016-0514-5
				4	2.07	.01	1.02	10.1016/j.copsyc.2022.101321
				4	0.00	.02	1.00	10.1016/j.im.2016.06.001
5	35	0.984	2020	8	3.85	.01	1.06	10.1186/s12967-020-02399-5
				7	0.00	0.00	1.00	10.3390/foods9050675
				7	0.00	0.00	1.00	10.3390/nu12061657
				5	0.00	0.00	1.00	10.3390/nu12061583
				5	0.00	0.00	1.00	10.1016/j.ijisu.2020.04.018
6	28	0.993	2012	4	2.54	.01	1.02	1016/j.psychres.2012.06.003
				4	2.54	0.00	1.00	1016/j.psychres.2014.01.012
				4	2.44	.01	1.03	1176/appi.books.9780890425596
				2	0.00	0.00	1.00	1007/s10603-011-9168-3
				2	0.00	0.00	1.00	1016/j.psychres.2010.04.021

**Note:** Data from analysis (Cite space) of dataset retrieved from Web of Science (WoS). Cluster labelled by LLR (Log likelihood ratio); CC-Citation Count



**Figure 4:** Landscape mapping of view of cluster-based document co-citation analysis (DCA)



**Figure 5:** Cluster-based view of DCA analysis

The largest five clusters were Cluster #1 *online compulsive buying*, Cluster #2 *trust convenience*, Cluster #3 *state anxiety*, Cluster #5 *covid-19 pandemic*, Cluster #6 *Hong Kong*, and other significant clusters are #12 *identity processes* (cluster size-17), Cluster #17 *food choice motive* (cluster size-12), and Cluster #27 *increase purchase intention* (cluster size-9). The most cited references in *online compulsive buying* (cluster #1, cluster size -73) are: Laato S, 2020 (12), Islam T, 2021 (11), Prentice C, 2020 (10), Eger L, 2021 (9), Yuen KF, 2020 (8). The second largest cluster identified is *trust convenience* (Cluster #2, cluster size-56). The major cited references are Al-Debei MM, 2015 (5), Paul J, 2016 (4), Alalwan AA, 2017 (3), Slade EL, 2015 (3), Dwivedi YK, 2019 (3). The most cited references in third cluster *state anxiety* (Cluster #3, cluster size-48) are Hayes AF, 2017 (20), Brand M, 2019 (12), Albrecht CM, 2017 (5), Gallagher CE, 2017 (4), Chan TKH, 2017 (4). The fourth largest cluster is *covid-19 pandemic* (Cluster #5, cluster size-35) and the most cited references are Sidor A, 2020 (7), Scarmozzino F (7), Nicola M, 2020 (5), Ammar A, 2020 (5). The fifth cluster is *Hong Kong* (Cluster #6, cluster size-28) with major cited references as American Psychiatric Association, 2013 (4), Müller A, 2014 (4), Black DW, 2012 (4), Otero-López JM, 2014 (2), Grant JE, 2012 (2).

## Discussion

The bibliometric analysis on published studies on psychological perspective in online buying from 1989 to 2014 was conducted using the recent version of CiteSpace software [6.3.R1 (64-bit) W]. The study includes an in-depth analysis of recent trends and advancements by analysing document co-citation analysis (DCA), author co-citation analysis (ACA),

keywords distribution, country distribution, institutions, and dual mapping overlay. The dataset is sorted into clusters for easy interpretation and understanding. The year-wise publication trend shows a surge in the year of 2021, 2022, and 2023, with the maximum in 2021, which was during covid times as people were more into online buying and internet usage due to quarantine and various restrictions. Country-based analysis showed that United States has been the highest number of publications (252), burst (15.87), centrality (0.29), and sigma (53.91). The maximum scientific novelty in the field has been recorded in the United States. The highest number of publications was from University of London (22), followed by University of California (16). In terms of burst and citations in institution-based analysis, Hannover Medical School was on the top, followed by University of Calgary. In Document co-citation Analysis (DCA), the cluster-wise analysis helps in-depth understanding of the trends in studies done on the psychological perspective in online buying.

#### *Cluster #1: Online compulsive buying*

Based on DCA analysis, cluster-1 primarily focused on unusual purchasing behavior during the COVID-19 pandemic (Ben Hassen, 2021). Various psychological factors connected to online compulsive buying behavior were anxiety, stress, panic buying, and cyberchondria (Laato et al., 2020). The stimulus-organism-response (SOR) model, which validates that external stimuli affect cognitive and emotional states and, in turn, consumer behaviors, is a suitable tool for studying compulsive buying behaviors during the pandemic (Islam et al., 2018; Liu et al., 2016). Many consumers engaged in compulsive purchasing as a coping mechanism for psychological stress (Islam et al., 2021). This cluster also focused on social learning theory suggests that people imitate influential figures both in person and online, with social media posts significantly impacting purchasing behaviors (Zheng et al., 2020). Consumers' decisions are heavily influenced by their perception of product scarcity (Hamilton et al., 2019; Laato et al., 2020; Pantano et al., 2020). Online grocery shopping, which had been growing slowly, surged dramatically during the pandemic, with older, less tech-savvy consumers embracing its safety (Harris et al., 2017; Pantano et al., 2020; Eger et al., 2021). Impulsive purchasing grew globally due to fear induced by COVID-19 (Addo et al., 2020; Chinazzi et al., 2020; Kim, 2020; Wiranata & Hananto, 2020). Products perceived to combat specific risks attracted more purchases, as panic buying became a means to meet safety requirements. Some of the authors in this cluster focused on articles related to reactance theory, suggests that people experience a motivational state concerned with defending their behavioral freedom when they feel threatened (Gupta & Gentry, 2016; Thomas & Mora, 2014). Anxiety, rather than the outbreak



itself, alters shopping behavior (Larson & Shin, 2018). Fear-driven purchases provide a sense of safety, comfort, and temporary escape from stress (Sneath et al., 2009; Kennett-Hensel et al., 2012). Panic buying is thus seen as compensatory consumption, where purchases are made to address perceived deficiencies (Wells & Tadajewski, 2018). Misinformation and rumors about stockouts can drive panic buying out of fear of missing out (Frank & Schvaneveldt, 2016). Normative influence through word-of-mouth or peer pressure also plays a role on online compulsive behavior (Yangui & Hajtaieb, 2015).

#### *Cluster #2: Trust convenience*

This cluster primarily focused on buyer's intention based on trust (Raman, 2019). According to the study's findings, customer attitudes towards online purchasing are significantly predicted by trust (Hassanein & Head, 2007; Lin, 2011). Previous research has emphasised the importance of trust in e-commerce (Van der Heijden et al., 2003; Gefen et al., 2003; Limbu et al., 2012). Online shoppers have more positive opinions about online buying websites when they believe these websites offer benefits such as convenience, time savings, and cost savings (Al-Debei et al., 2015). People's opinions may also be influenced by data or anecdotes from those who have previously adopted the technology (Abubakre et al. 2015; Chiu et al., 2012; Pynoo et al., 2007; Sumak et al., 2010). Additionally, attitude directly impacts usage behaviour (Dwivedi et al., 2019). Convenience factor significantly influences online buying, allowing people to shop from the comfort of their homes. Previous research has shown that convenience is an important factor in online shopping (Clemes et al., 2014). In line with this, Burke (1998) found that the most often mentioned reason for internet shopping is convenience. Previous research has also confirmed that the customer service offered by online merchants, such as convenient return policies and expedited delivery services, significantly impacts consumers' purchase decisions (Rao et al., 2014). Return policies are evolving into strategic tool to boost sales and client loyalty as more customers accept online shopping (Khan et al., 2015). Convenience in online shopping is defined as the ability to shop from anywhere, save time, and easily compare prices (Al-Debei et al., 2015; Hung et al., 2014). A significant portion of the populace is preoccupied with daily tasks and severely limited in free time to shop physically (Chiu et al., 2014). Earlier research indicates that customers' decision to shop online are significantly influenced by the convenience of not having to travel or wait in queues (Anesbury et al., 2016). According to Hajli (2014), trust is a crucial element of the e-commerce sector. Extant literature indicates that trust positively affects consumers' intentions to make online purchases (Hsu et al., 2014). A study conducted by Bilgihan et al. (2015) show a positive correlation between increased trust levels and their propensity to purchase a product. Therefore,

trust is considered one of the most important variables in determining whether customers will shop online (Agag & El-Masry, 2016).

### *Cluster #3: State Anxiety*

This cluster focuses on state anxiety as a mediator and other psychological factors (self-esteem, personality) between social media usage and online buying (Zheng, 2020), the interaction of the person-affect and cognition execution model for addictive behaviour (Brand, 2019) and online buying as an avoidance coping behaviour (Albrecht, 2017). Psychopathological correlates, including depression and social anxiety, have been repeatedly reported in gambling (Dowling et al., 2017), gaming (Männikkö et al., 2017), unspecified internet use (Ho et al., 2014), buying-shopping (Müller et al., 2019), and other behavioural addictions (Starcevic & Khazaal, 2017). Individuals with high materialistic values have a higher likelihood of having buying-shopping disorder (Claes et al., 2016; Müller et al., 2014). Affective and cognitive reactions, such as increased attention to stimuli and desires to act, like purchasing online, have been observed (Starcke et al., 2018). The decision to engage in certain behaviours involves two interactive systems: the reflective/deliberative system (reasoning and executive functions) and the impulsive/reactive system (associative learning) (Kahneman, 2003; Schiebener & Brand, 2015; Strack & Deutsch, 2004). Individuals with compulsive shopping (CS) frequently experience co-occurring mood, anxiety, substance abuse, and personality disorders (Müller et al., 2010; Black, 2006). They typically exhibit low self-esteem but high impulsivity, depression, and ADHD (Otero-López & Pol, 2013; Black et al., 2012; Derbyshire et al., 2014). According to the Five-Factor Model of Personality, CS is linked to low conscientiousness and agreeableness, high neuroticism, and novelty-seeking (Black et al., 2012). It is associated with reward-seeking, cue-induced desire for buying/shopping stimuli, and poor decision-making under unclear risk settings, possibly due to altered emotional feedback (Kyrios et al., 2018). Compulsive buying is closely associated with behavioural addiction (Lejoyeux & Weinstein, 2010), impulse control disorders (Black et al., 2012), and obsessive-compulsive spectrum disorders (Frost, Steketee, & Williams, 2002). Negative mood states, such as stress or anxiety, are common triggers for compulsive purchase activities (Billieux, Rochat, Rebetz, & Van der Linden, 2008). A buying episode may provide temporary relief from negative emotions, often followed by guilt, shame, and anxiety (Williams & Grisham, 2012). Certain behaviours, such as purchasing goods, can relieve depressed emotions (Laier & Brand, 2017), modifying subjective reward expectancies linked to these behaviours. Higher symptom severity of internet-communication service addiction shows a relationship between desire sensations and expectancies (Wegmann et al., 2018). Emotional

and cognitive reactions, action choices, feelings of satisfaction and recompense, and expectancies related to specific behaviours may intensify over time, making it harder for inhibitory processes to govern behaviour (Brand et al., 2019). Anxiety, mood, and substance use disorders are common among first-degree relatives (FDRs) of people with CS (McElroy, 1994; Black et al., 1998). Disrupted neurotransmission, particularly affecting serotonergic, dopaminergic, or opioid systems, is the focus of neurobiological theories (Black, 2006). Dopamine involvement in “reward dependence” encourages behavioural addictions like compulsive shopping and pathological gambling (Black, Kuzma, & Shaw, 2012). The decision to buy is indicated by high activity in the mesial prefrontal cortex, while the decision to refrain is indicated by high activity in the insula. Buyers weigh the instant gratification of purchase against the immediate agony of paying a price (Knutson et al., 2007). In summary, state anxiety and various psychological factors play a crucial role in the dynamics of online compulsive buying behaviour.

#### *Cluster #5: Covid-19 Pandemic*

In this cluster focused on eating habits and lifestyle changes during the covid-19 pandemic (Di Renzo L, 2020). Overeating, food craving, were evident during pandemic (Yilmaz & Gokmen, 2020). The COVID-19 pandemic intensified psychological and emotional responses, increasing the likelihood of disordered eating patterns (Wang et al., 2020; Montemurro, 2020). Negative emotions often trigger overeating, or “emotional eating” (Van Strien, 2018; Evers et al., 2018), as people seek pleasure from food to counteract the negative feelings of isolation, sometimes ignoring hunger and fullness signals (Singh, 2014). Boredom from extended time at home also contributed to overeating as a way to break monotony (Havermans et al., 2015; Crockett et al., 2015). Eating habits shifted towards increased unhealthy food consumption, more frequent snacking, and larger meal portions (Ammar et al., 2020). Negative emotions linked to satiety can also trigger stress responses that lead to eating restrictions. Confinement measures significantly altered lifestyles, increasing sedentary behaviour and changing smoking and sleeping patterns (Di Renzo et al., 2020). Lockdowns reduced opportunities for physical activity, creating a cycle of unhealthy eating and sedentarism (Fernandez-Sanjurjo et al., 2018). Consumption of tea, coffee, herbal tea, and alcohol increased during the pandemic. The forced merging of living and working spaces blurred break-taking and self-rewarding behaviours (Bilal et al., 2003; Diez et al., 2019). Overall, lockdowns likely caused dietary changes (Scarmozzino & Visioli, 2020), with obesity linked to more severe COVID-19 outcomes and higher mortality risk (Williamson et al., 2020). Panic buying and food hoarding strained the food industry, affecting distribution and retail

(Bachelor, 2020). The surge in online meal delivery demand overwhelmed businesses, leading to delays or unfulfilled orders (Nicola et al., 2020), and negatively impacted food banks.

#### *Other clusters*

The interconnected studies across different clusters reveal a multifaceted understanding of compulsive buying (CB), identity processes, food choice motives, and purchase intentions influenced by technology. Cluster 6, HONG KONG, focused into the psychological distress and maladaptive coping strategies associated with CB (Billieux et al., 2008, Kellett & Bolton, 2009, Claes et al., 2010, Faber & Vohs, 2011), highlighting how self-regulation failures, anxiety, depression, and material values drive this behaviour. The temporary relief from negative emotions through shopping exacerbates CB, creating a cycle of stress and momentary respite that reinforces compulsive spending. Further, Cluster 12 (Identity processes), examines the link between material possessions and self-identity, proposing that people with a poor sense of self (Belk, 1988) or low self-esteem use CB to compensate for identity deficiencies. The acquisition of goods becomes a means to express and enhance their self-concept, aligning with theories such as Belk's "extending the self" and Cushman's "empty-self." This cluster underscores that compulsive buyers often seek to reconcile their real and ideal selves through material consumption, which can sometimes manifest in behaviours like hoarding. Furthermore, cluster 17 (Food choice motive), shifts the focus to the impact of the COVID-19 pandemic on eating habits and lifestyles. The pandemic's restrictions led to an increase in unhealthy food choices, reduced physical activity, and greater reliance on convenience foods. Emotional distress during the pandemic further mediated these changes, influencing children's and adults' eating behaviours and leading to a surge in online food shopping (Zajacova et al, 2020., Urhan & Okut Aysin, 2022). Lastly, Cluster 27 (Increase purchase intention), explores how advancements in technology, such as chatbots and augmented reality (AR), enhance online shopping experiences. AR, in particular, helps reduce cognitive dissonance and decision-making anxiety by allowing consumers to visualize products in real-life contexts, thus increasing purchase intention (Moriuchi, 2021; Barta, 2023; Deloitte, 2019; Dacko, 2016). Chatbots provide personalized, real-time assistance, making shopping more convenient and tailored to individual needs. Collectively, these clusters illustrate the complex interplay between psychological factors, identity, external circumstances like the pandemic, and technological advancements in shaping consumer behaviours and compulsive buying tendencies.

In the bibliometric analysis, keyword analysis is helped to identify the prominent keywords that are the indicators of major trend in the research area. Based on the keyword analysis, the burst keywords are “Mental health”, “Community”, “Purchase intention”, “Disability”, “Validation”, “Risk”, “Responses”, “Performances”, “Internet” “abuse”. The main research trends in psychological perspective in online buying as per the burst strength are “Mental health”, “Community”, “Purchase intention”. Basically, the relationship between online buying and mental health had been studied and also the purchase intention of the consumer has been an area of interest to the researchers. The researchers are done more on the basis of community and countries to understand the consumer behaviour and purchase intention and the factors influencing it.

#### *Limitation*

Few of the limitations of the study remains, limited searching strategy as the data was collected only from Web of Science core collection (WoSCC) publications. Language was restricted only to English so the publications, papers, articles not in English language were not considered.

#### **Conclusion**

The bibliometric analysis of 813 publications from the WoSCC (1989-2024) highlights the significant impact of psychological factors on online buying behaviour, particularly during the COVID-19 pandemic. Key variables such as stress, anxiety, fear, and trust were identified as influential. The analysis also underscores the dominant contributions from the USA, with notable input from the University of London and Hannover Medical School. These findings provide valuable insights into the psychological dimensions of online shopping and point to emerging trends and potential future research directions in this evolving field.

#### *Conflict of interest*

The authors report no conflicts of interest.

#### *Data availability*

The data supporting the findings of this study is taken from the WoSCC, however, the dataset is available in ..... repository.

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