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# The influence of Covid-19 on consumer behaviour: a bibliometric review analysis and text mining

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## Abstract

**Purpose** – This paper is a bibliometric analysis of articles published on the influence of Covid-19 on consumer behaviour.

**Design/methodology/approach** – Biblioshiny and VOSviewer applications are employed for the bibliometric analysis and visualisation, respectively.

**Findings** – The most influential documents, authors, affiliations, countries and journals are presented. Citation, Co-citation and keyword co-occurrence analysis is conducted and presented in the form of a clustered network diagram.

**Practical implications** – This paper found three main themes of the research in consumer behaviour amid Covid-19 a) Food purchasing decisions and food wastage, b) Adoption of technology and c) Intrinsic and extrinsic influence on consumer behaviour.

**Social implications** – The Covid-19 pandemic has shaken the world's economy and left behind its adverse effect on almost every walk of life. Consumer behaviour is no exception, studies have reported paradigm shifts in the way consumers are reacting to marketing stimuli, making purchase and consumption decisions. For the marketers to sustain profitability, they need to understand the changing behaviour and tailor their offerings accordingly.

**Originality/value** – The article offers the emerging theme and sub-themes in the consumer behaviour research that leads to future expansion of this research domain.

**Keywords** Consumer behaviours, Bibliometric analysis, Covid-19, VOSviewer, Biblioshiny

**Paper type** Research paper

## 1. Introduction

The world has witnessed one of the most disastrous viruses – Covid-19 – and it has devastated the global economy in almost every aspect. The virus not only affected businesses

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but also forced the closure of a few of the businesses because of social distancing norms and lockdowns (Rabbani *et al.*, 2021). Moreover, it has created several psychological issues because of reduced incomes, job losses and uncertainty about future. Consumer behaviour has also been affected and has gone through a comprehensive change, irrespective of product category (Falke & Hruschka, 2022). For the firms to sustain and operate successfully, it is important to understand these changes and behaviour, and re-strategise themselves to fit to the new normal.

The recent economic distress and behavioural changes led to various studies pertaining to economics, business and consumer behaviour (Baber, 2020). Recent articles have focused on consumer behaviour research in the wake of the pandemic to understand its unique effects on consumer buying and consuming habits. These articles needed to be gathered, structured and studied to gain insights into the trends in consumer behaviour research.

There are studies that have been conducted on consumer behaviour during Covid-19; most of such studies are either based on methodological aspects or have been studied in 2021 (Clement Addo, Fang, Asare, & Kulbo, 2021; Dou *et al.*, 2021; Nyagadza, 2022; Larios-Gómez, Fischer, Peñalosa, & Ortega-Vivanco, 2021; Luo, 2021; Toubes, Vila, & Fraiz Brea, 2021). Because of the importance of consumer behaviour research, there are continuous publications of the literature focusing on the important facets. Therefore, a comprehensive study is required to collect, analyse and visualise the most recent studies that can be a guide for the researchers and decision-makers to strategise accordingly. This study is an attempt to present a comprehensive bibliometric analysis of the literature on the influence of Covid-19 on consumer behaviour available on the Scopus database as of 10 March 2022.

This article intends to answer the following research questions:

*RQ1.* What is the current state of the research on Covid-19 and consumer behaviour? Which are the best countries, authors, journals, affiliations and documents?

*RQ2.* What is the social intellectual structure of the research on Covid-19 and consumer behaviour?

The rest of the article is structured as follows. The second section is based on the data and methodology, followed by the results and analysis. In the fourth section, the major trends and themes are presented. The fifth and sixth sections are devoted to the conclusion and limitations, respectively.

## 2. Data and methodology

A systematic approach is employed for the collection, screening and inclusion of data for this research. The data was sourced from the Scopus database. A combination of appropriate keywords for Covid-19 such as coronavirus, Covid-19 pandemic, sars-Cov-2 and consumer purchasing, consumer shopping and consumer buying for consumer behaviour were searched in the TIT-ABS-KEY field of Scopus search engine. The following strings were employed. ((Covid-19) OR (Corona virus) OR (Pandemic) OR (epidemic) OR (SARS-CoV-2)) AND ((Consumer behaviour) OR (Online behaviour) OR (Consumption behaviour) OR (Consumer preferences) OR (Consumer attitude) OR (buying behaviour) OR (Consumer Shopping)).

The first search string returned 1134 articles that were exported in .CSV format. Several inclusion criteria were designed to ascertain that the articles must be on the effects of Covid-19 on consumer behaviour. It was crucial to distinguish between health studies and other aspects of human studies during Covid-19. The title and abstract of each paper were thoroughly investigated by the researchers to find suitable studies as per the scope of the research. Only articles written in the English language were included. Conference papers, short notes, editorial notes, etc. are excluded; only research and review articles were

considered for the inclusion. The inclusion criteria excluded 499 articles and 635 quality articles were considered for further analysis.

For descriptive analysis, the Biblioshiny web application of R is used – it is one of the most used methods for analysing and presenting results in tabular and graphical forms (Bashar, Singh, & Pathak, 2021; Singh and Bashar, 2021). VOSviewer software application is employed for creating a network visualisation map. The visualisation of social and intellectual structures is comprehensively mapped and themes can be identified using VOSviewer applications (Ariza-Garzón, Camacho-Miñano, Segovia-Vargas, & Arroyo, 2021; Tandon, Kaur, Mäntymäki, & Dhir, 2021).

## 3. Results and discussion

The following section presents the descriptive and bibliometric analysis of research in consumer behaviour during Covid-19.

### *3.1 Description of the data*

The data characteristics used in this analysis are presented in Table 1. The data set consists of 635 documents published during 2020–2022 of which 15 are review papers and 620 research articles focusing on consumer behaviour during Covid-19. These articles are published by 310 sources and attracted an average citation of 8.4 per document. 2112 authors have published their papers, of which 48 articles are single-authored and 2064 are multi-authored documents.

### *3.2 Publication trend*

The Main data characteristics describes in Table 1.

### *3.3 Influential country*

The countries with their total number of publications, total citations and average citations are presented in Table 2. The United States of America (USA) published 84 articles, followed by China (58) where the pandemic was first reported. The next countries, in terms of publication, are Korea which is followed by Italy. The United States scholars studied the food waste habit, food waste sustainability, household decision-making, alcohol consumption, etc., while Chinese researchers are focused on the issues of food security, country of origin affect, consumer risk perception and overall consumption behaviour.

| Description | Results |
|---|---|
| Time span | 2020:2022 |
| Sources (Journals, books, etc.) | 310 |
| Documents | 635 |
| Average years from publication | 0.951 |
| Average citations per document | 8.4 |
| Average citations per year per doc | 3.608 |
| References | 36,285 |
| Articles | 620 |
| Review | 15 |
| Authors | 2,112 |
| Author appearances | 2,369 |
| Authors of single-authored documents | 48 |
| Authors of multi-authored documents | 2,064 |

**Source(s):** Prepared by authors

**Table 1.** Main data characteristics

| Country | Number of papers | Total citations | Average article citations | Research focus |
|---|---|---|---|---|
| USA | 84 | 757 | 9.01 | Food waste habit, food waste sustainability, household decision-making, alcohol consumption |
| China | 58 | 460 | 7.93 | Food security, country of origin affects, consumer risk perception and overall consumption behaviour |
| Korea | 33 | 234 | 7.09 | Panic buying, consumer attitude, unusual purchasing behaviour |
| Italy | 26 | 322 | 12.38 | Consumption behaviour, consumer attitude |
| India | 25 | 88 | 3.52 | Online consumer behaviour, Covid-19 panic buying |
| United Kingdom | 20 | 349 | 17.45 | Family decision-making, consumer intention to purchase, consumer wellness |
| Poland | 18 | 79 | 4.39 | Consumer attitude, purchase intention, panic buying |
| Germany | 17 | 135 | 7.94 | Hygiene-related issues, consumer online adoption |
| Australia | 15 | 141 | 9.40 | Online food ordering, consumer purchase intention |
| Spain | 14 | 195 | 13.93 | Consumer behaviour and obvious changes in purchase attitude |
| Turkey | 12 | 42 | 3.50 | Consumption behaviour, consumer attitude |
| Romania | 10 | 95 | 9.50 | Food behaviour, overall consumption behaviour |
| Qatar | 7 | 139 | 19.86 | Consumer attitude, food wastage behaviour, food consumption |
| Denmark | 5 | 89 | 17.80 | Online behaviour, shopping attitude, panic buying |
| Norway | 4 | 196 | 49.00 | Consumer expenditure, behavioural psychology |

**Table 2.**
Country production

**Source(s):** Prepared by authors

### *3.4 Most influential authors*

Table 3 shows the most prolific authors in the research domain of Covid-19 and consumer behaviour. The table details the various indices along with their total number of citations over the period. Sheth, J. is the most cited author, having 318 total citations in his

| Element | h_index | g_index | m_index | TC | NP | PY_start |
|---|---|---|---|---|---|---|
| Sheth J | 1 | 1 | 0.33 | 318 | 1 | 2020 |
| Dhir A | 1 | 1 | 0.33 | 192 | 1 | 2020 |
| Farooq A | 1 | 1 | 0.33 | 192 | 1 | 2020 |
| Islam Akmn | 1 | 1 | 0.33 | 192 | 1 | 2020 |
| Laato S | 1 | 1 | 0.33 | 192 | 1 | 2020 |
| Kirk CP | 1 | 1 | 0.33 | 177 | 1 | 2020 |
| Rifkin ls | 1 | 1 | 0.33 | 177 | 1 | 2020 |
| Allington D | 1 | 1 | 0.50 | 174 | 1 | 2021 |
| Dhavan N | 1 | 1 | 0.50 | 174 | 1 | 2021 |
| Duffy B | 1 | 1 | 0.50 | 174 | 1 | 2021 |

**Table 3.**
Top ten most influential authors

**Source(s):** Prepared by authors

single article titled as *"Impact of Covid-19 on consumer behavior: Will the old habits return or die?"* (Sheth, 2020). This article is one of the earlier studies on the effect of Covid-19 on consumer behaviour and adequately presented with probable habit changes that can be regained and habits that will change forever. The next author in the list is Dhir, A, who is also having a single paper, but this document attracted 192 citations. This paper is based on the unusual consumer purchasing behaviour during Covid-19 (Laato, Islam, Farooq, & Dhir, 2020; Ligaraba, Nyagadza, Dorfling, & Zulu, 2022). The other authors have also contributed to the understanding of the impact of Covid-19 on consumer behaviour.

### *3.5 Most important documents*

The most influential documents with their total number of citations and annual citations are presented in Table 4. In line with our findings in the previous section, Sheth, J. is the most prolific author, as seen from his document which was published in the *Journal of Business Research* in 2020 and cited 318 times – the most in the current data set. The next document

| Author | Year | Journal | Title of the article | Total citations | TC per year |
|---|---|---|---|---|---|
| Sheth J | 2020 | Journal of Business Research | Impact of Covid-19 on consumer behavior: Will the old habits return or die? | 318 | 106 |
| Laato S | 2020 | Journal of Retailing and Consumer Behaviour | Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach | 192 | 64 |
| Kirk CP | 2020 | Journal of Business Research | I'll trade you diamonds for toilet paper: Consumer reacting, coping and adapting behaviors in the COVID-19 pandemic | 177 | 59 |
| Allington D | 2020 | Psychological Medicine | Health-protective behaviour, social media usage and conspiracy belief during the COVID-19 public health emergency | 174 | 87 |
| Jribi S | 2020 | Environmental Development and Society | COVID-19 virus outbreak lockdown: What impacts on household food wastage? | 158 | 52.667 |
| Shin H | 2020 | International Journal of Hospitality Management | Reducing perceived health risk to attract hotel customers in the COVID-19 pandemic era: Focused on technology innovation for social distancing and cleanliness | 115 | 38.333 |
| Laguna L | 2020 | Food Quality and Preference | The impact of COVID-19 lockdown on food priorities. Results from a preliminary study using social media and an online survey with Spanish consumers | 99 | 33 |
| Islam T | 2021 | Journal of Retailing and Consumer Services | Panic buying in the COVID-19 pandemic: A multi-country examination | 96 | 48 |
| Hall MC | 2021 | Journal of Service Management | Beyond panic buying: consumption displacement and COVID-19 | 94 | 47 |
| Ben Hassen T | 2020 | Sustainability | Impact of COVID-19 on food behavior and consumption | 90 | 30 |

**Source(s):** Prepared by authors

**Table 4.**
Top ten most influential documents

which has contributed the most is authored by Laato, S. and published by the *Journal of Retailing and Consumer Behaviour* and cited 192 times. The next article in the list is published by the *Journal of Business Research* and written by Kirk, C.P, which has been cited 177 times. The other articles in the list have also contributed towards the development and understanding of the research in consumer behaviour in the wake of Covid-19.

### *3.6 Most important sources*

The ranking of the influential journals in the research of consumer behaviour and Covid-19 is presented in Table 5. Sustainability ranked number one with 58 articles. This journal has published articles on the role and interplay of Covid-19 on consumer behaviour, especially from purchasing decision and selection of product categories points of view (Alam, Schlecht, & Reichenbach, 2022; Grashuis, Skevas, & Segovia, 2020; Lin, Marjerison, Choi, & Chae, 2022; Martínez-Fernández *et al.*, 2021; Ligaraba, Chuchu, & Nyagadza, 2023). The *International Journal of Environmental Research and Public Health* has published 34 articles and ranked second in the table, this journal has also focused on the importance of the role of Covid-19 on the overall consumer behaviour, especially the hygiene factor that leads to the psychological and behavioural intentions about the supply chain mechanism, etc. (Akram, Fülöp, Tiron-Tudor, Topor, & Căpuşneanu, 2021; Dong *et al.*, 2022; Harba, Tigu, & Davidescu, 2021). While the *Journal of Retailing and Consumer Services* published 17 high-quality papers that addressed the consumption patterns during Covid-19, fear of shopping, adoption of online mode of shopping, food waste behaviour, etc. (Guthrie, Fosso-Wamba, & Arnaud, 2021; Park, Lee, Lee, Lee, & Chung, 2022; Wang, Cheah, Lim, Leong, & Choo, 2022). The other sources have also focused and published on the important aspects of consumer behaviour that has been affected due to the pandemic, mainly the psychological factors and motives (hedonic vs. utilitarian). Most journals in this list are focusing on food, health and hygiene. Food habits and hygiene were of utmost importance during pandemic and authors focused to gauge the consumer behaviour from these prospects. These behaviours were most suitable to be published in journals which are not considered as core marketing journals. This is because core marketing phenomenon was not published in the traditional marketing journals at that time because of the publication delays.

### *3.7 Most important affiliations*

The top affiliations with the number of articles published are presented in Table 6. The University of Queensland, Australia, is the top affiliation and contributed 21 articles about consumer behaviour and Covid-19 research. The scholars of this university have undertaken

| Source | Rank | Freq | Cum Freq |
|---|---|---|---|
| Sustainability (Switzerland) | 1 | 58 | 58 |
| International Journal of Environmental Research and Public Health | 2 | 34 | 92 |
| Journal of Retailing and Consumer Services | 3 | 17 | 109 |
| Plos One | 4 | 16 | 125 |
| British Food Journal | 5 | 14 | 139 |
| Foods | 6 | 12 | 151 |
| Nutrients | 7 | 10 | 161 |
| Appetite | 8 | 9 | 170 |
| Frontiers In Psychology | 9 | 9 | 179 |
| Socio-Economic Planning Sciences | 10 | 9 | 188 |

**Source(s):** Prepared by authors

**Table 5.**
Top ten most important sources

| Affiliations | Articles |
|---|---|
| The University of Queensland | 21 |
| Nanyang Technological University | 18 |
| Jilin University | 17 |
| The Bucharest University of Economic Studies | 16 |
| Chung-Ang University | 14 |
| Purdue University | 14 |
| University of North Texas | 13 |
| Aarhus University | 12 |
| The University of Tennessee | 12 |
| G. D'annunzio University of Chieti-Pescara | 11 |

**Source(s):** Prepared by authors

**Table 6.**
Top ten affiliations

studies to gain deep insight into the reaction of the consumers during adverse marketing situations like the lockdown, social distancing, fear, etc. (Li and Shu, 2021; Romeo-Arroyo, Mora, & Vázquez-Araújo, 2020; Segovia, Grashuis, & Skevas, 2021). Second in the list is the Nanyang Technological University, Singapore, which has published 18 articles, followed by Jilin University, China, with 17 publications. These institutions have diverted their effort and focused entirely on studying and understanding the effects of Covid-19 on consumer behaviour. The results of these studies help the decision-maker to tap the nerve of the scene and redesign their strategies to reach their target consumers and sustain profitably (Cho, Oh, & Chiu, 2021; Hansen, 2022; Nakamura, Shirai, & Sakuma, 2021; Pratiwi, Maftuhah, Wessiani, Partiwi, & Gunarta, 2021).

### *3.8 Citations analysis*

Citation analysis is a tool to identify the best document, author or a source by counting the number of times the document is cited by another document; it helps in recognising the impact of the documents in a specific theme or trend (Delle Foglie and Panetta, 2020). The VOSviewer application is used for citation analysis, it is one of the most comprehensive methods to visualise the pattern of the research in a given area of research (Mustak, Salminen, Plé, & Wirtz, 2021).

The criterion for a document to be included in citation analysis was that a document must have at least five citations. Out of 635 articles in the data set, only 130 documents matched the criteria. The network thus formed has three clusters and presents a specific theme of research in consumer behaviour and Covid-19 by assembling similar documents in each cluster.

The network thus obtained is represented in Figure 1, first cluster is represented in red colour and is made up of 71 documents that are based on the food purchase habits during Covid-19. Some of the important aspects in this cluster is about consumer behaviour towards grocery purchases (Segovia *et al.*, 2021; Vizuete-Luciano, Boria-Reverter, Solé-Moro, & Gil-Lafuente, 2022), eating behaviour (Ben Hassen, El Bilali, Allahyari, Berjan, & Fotina, 2021; Romeo-Arroyo *et al.*, 2020), food purchasing (Altarrah, Alshami, Alhamad, Albesher, & Devarajan, 2021; Segovia *et al.*, 2021), and online food ordering and adoption (Dsouza & Sharma, 2021; Habib, Hamadneh, Al wadi, & Masadeh, 2021; Tasnim, Alam, Saha, & Rabbi, 2022).

The second cluster is made up of 30 documents primarily based on consumer adaptation to the new normal and is represented by a green colour. A few of the influential studies in this cluster are based on the importance of hygiene products, as compared to most expensive commodities (Palomino Pita, Carolina, & Oblitas Cruz, 2020; Sheth, 2020), in-store adaptation with adherence to all Covid-19 safety norms, such as social distancing, wearing masks,

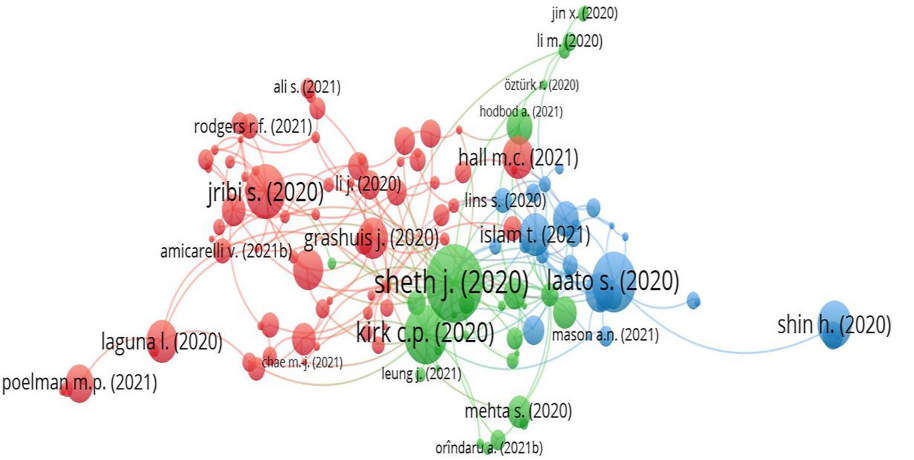



**Figure 1.**
Citation analysis of documents

**Source(s):** Prepared by authors

personal protective kits, etc. (Altarrah *et al.*, 2021; Mogaji, 2022; Park *et al.*, 2022), new behavioural paradigms (Brandtner, Darbanian, Falatouri, & Udokwu, 2021; Hesham, Riadh, & Sihem, 2021; Nilashi *et al.*, 2021), and whether the old habit will sustain or whether there will be an acceptance of the new behaviour (Sehgal *et al.*, 2021; Vătămănescu, Dabija, Gazzola, Cegarro-Navarro, & Buzzi, 2021; Zhang & Chiu, 2021).

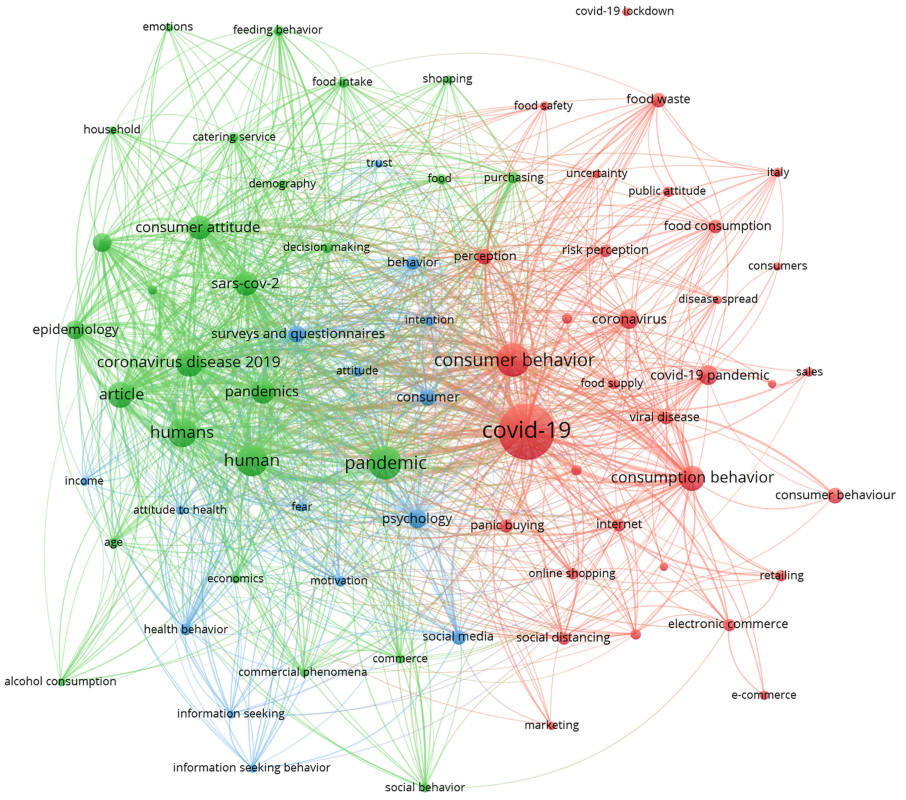
The smallest cluster, represented by blue colour, is made up of 29 documents which are based on the unusual purchasing behaviour (Cervellati, Stella, Filotto, & Maino, 2022; Laato *et al.*, 2020), panic buying (Omar, Nazri, Ali, & Alam, 2021; Taylor, 2021), reducing perceived risk (Fihartini, Helmi, Hassan, & Oesman, 2021; Shin & Kang, 2020), and the importance of understanding the consumer behaviour post Covid-19 era (Cooke *et al.*, 2021; Kim, Yang, Min, & White, 2022).

### *3.9 Keywords co-occurrence analysis*

Keywords analysis is a method to analyse and count the paired data and similarity of the documents, authors and sources in a specific data set to find out the scientific structure of the knowledge. The co-occurrence of keywords is created using the VOSviewer application. The network is presented in Figure 2 and is made up of 75 keywords and three clusters, which have occurred at least ten times in the data set.

The largest cluster of the network (red) is based on 33 keywords, the most prominent keywords in this cluster are Covid-19, coronavirus, epidemic, consumption behaviour, uncertainty, China, etc.; these words specify the research trends on consumer behaviour which stems from the fear of uncertainty amid the Covid-19 pandemic (Derkacz, 2021; Kim *et al.*, 2022; Polas, Tabash, Afshar Jahanshahi, & Ahamed, 2022). This cluster also indicated the evolution of research in the domain of online commerce, food delivery, food waste, etc. (Palomino Pita *et al.*, 2020; Park *et al.*, 2022; Soon, Vanany, Abdul Wahab, Hamdan, & Jamaludin, 2021).

The second largest cluster, represented by the green colour, is made up of 27 keywords. The most prominent keywords in this cluster are human, adult, epidemiology, health, demography, food intake, feeding behaviour, etc. (Adkins-Jablonsky *et al.*, 2021; Alaimo, Fiore, & Galati, 2020; Chua, Yuen, Wang, & Wong, 2021). This cluster shows the important aspect of the research in human behaviour which pertains to the behavioural and psychological understanding of the impact of Covid-19 on consumer behaviour




**Source(s):** Prepared by authors

**Figure 2.**
Co-occurrence analysis of keywords

(Baicu, Gârdan, Gârdan, & Epuran, 2020; Din *et al.*, 2022; Vanderpool, Huang, Mollica, Gutierrez, & Maynard, 2021).

The smallest cluster (blue) consists of 15 keywords and health behaviour, government regulations, mental health, anxiety, virus pneumonia, etc. are prominent keywords. This cluster signifies the importance of the research to understand the various psychological phenomena because of Covid-19 and its accompanying regulations and effects (Dou *et al.*, 2021; Hall, Fieger, Prayag, & Dyason, 2021; Rabbi, Oláh, Popp, Máté, & Kovács, 2021; Teare & Taks, 2021). These important studies helped in understanding and formulating marketing strategies to cope with the new normal.

## 4. Discussion and future scope of research

Consumer behaviour amid Covid-19 and post-pandemic behaviour of the consumers are analysed and mapped in this paper. The understanding of the psychological and behavioural aspects of consumers as a result of the impact of Covid-19 is crucial for the marketing organisations to formulate marketing campaigns that can create confidence in customer spending and consumption (Quintal, Sung, & Lee, 2022).

The e-commerce firms need to adopt the changes in consumer buying behaviour and incorporate in their websites items that can attract, engage and instigate consumers to purchase from them. There has been a great increase in the use of technology in almost every

aspect of business. It has also given a tremendous push to digital adoption in e-purchasing, e-ordering, e-learning, etc. It has, however, also created a digital divide among the consumers. Therefore, the marketing firms need to design their strategies that can cater with all segments of the target markets. This extensive review and scientific mapping led to the evolution of the following themes that enable the understanding of underlying consumer behaviour in the wake of Covid-19. This study has made a solid foundation for the understanding of consumer behaviour and Covid-19. The following are the major trends that signify the consumer behaviour research amid Covid-19 and probable directions for future research.

(1) **Food purchasing decisions and food wastage:** The finding of the research offers detailed understanding of the selection of food, ordering of food and consuming this with an intention not to waste. The consumers have also shown sustainable behaviour during purchasing and consumption of food. Additionally, local products have also seen a surge in their demand. The hygiene factors have been researched significantly and shed light on the handling of food with the utmost care to avoid infections. Moreover, the reaction of the consumer on the price dynamics of food has also shown that consumers were ready to pay more if they were assured of the hygiene of the products and their delivery (Ghali-Zinoubi, 2021). Since the pandemic will eventually end and the studies on the purchasing and handling of hygienic products and personal products will also diminish, future studies can compare the consumer behaviour before and after the pandemic with a special focus on food purchasing and wastage. A cross-cultural study between developed and non-developed nations will also be interesting to gain insight into the consumer behaviour. It will be useful to analyse the factors that urge consumers to look for sustainable products and sustainable consumption.

(2) **Adoption of technology:** The consumers have adopted online methods to order their necessary items like food, hygiene and personal protective equipment. The results show that there is a sea change in the adoption of the technology and the e-commerce industry has seen a significant growth in their revenue and profitability. Moreover, studies have shown that the consumers are accepting the omnichannel retailing and the retailers need to access their target market via online channels. Studies also have shown the instrumental role of technology in changing consumer avoidance purchasing behaviour (Bytyçi, Shala, Ziberi, & Myftaraj, 2021; Dong *et al.*, 2022; Stern, Georgsson, & Carlsson, 2021).

The role of technology can be further analysed to understand the aspects where it has affected the consumer behaviour at most. The role of disruptive technologies like AI, ML and robotics may also be investigated to understand the adoption and positive change that will bring for marketing firms. The mobile applications' and web portals' role in pleasure buying and eudaimonic pleasure buying will offer great insight to the e-retailers in formulating their marketing strategies that can help them to increase their revenue and profitability.

(3) **Intrinsic and extrinsic influence on consumer behaviour:** The results of the studies have shown that the pandemic has affected both intrinsic and extrinsic factors of consumer buying behaviour. The results show that almost every aspect of consumer behaviour has been affected by the adverse impact of Covid-19. Both the hedonic and utilitarian motives are affected by the coronavirus. The consumers have shown more impulsive shopping in a few of the cases to reduce their anxiety and loneliness while some studies have shown that consumers were shopping more for essential commodities and act rationally that signifies utilitarian motives for purchasing behaviour (Kim *et al.*, 2022; Mirzaei, Sadin, & Pedram, 2021; Smaldone, D'Arco, Marino, & Pellicano, 2021).

Future studies can be conducted to find the moderating and mediating role of Covid-19 on the relationship between shopping motives and shopping behaviour. Additionally, a study about risk perception and its mitigation should be conducted to understand the underlying phenomenon and to reach out to the consumers to create confidence and trust in their products and services. Additionally, the impulse purchase behaviour across product categories before and after Covid-19 can provide great understanding about the way consumers are expected to behave. Finally, the pandemic has shown a dynamic behaviour that is entirely non-linear and a complex combination of old behaviour and adopted behaviour; it demands regular studies on the various aspects of consumer behaviour to gain insights that will help in deciding on timely and accurate marketing strategies.

## 5. Conclusion and limitations

A bibliometric analysis of 635 articles based on the consumer behaviour during Covid-19 is carried out in this paper. The current state of the research and probable future directions are discussed. The best authors, documents, journals, countries and affiliations are presented with their contribution to this domain of research. Visual representation is done using network maps for the keyword occurrences and citation analysis which helps in discovering the trends in this area of research.

Three main themes are found in the research of consumer behaviour and Covid-19 – Food purchasing decisions and food wastage, Adoption of technology, and Intrinsic and extrinsic influence on consumer behaviour. The probable areas of future research expansion are charted and presented. As far as limitation is concerned, this research is based on the Scopus database which is one of the most extensive databases for the social sciences and allied subjects, but there might be a few good articles that may not be included because they are not indexed. Moreover, only research and review articles are considered, there might be good research presented in conferences, short notes, etc. that have been left behind and biased the data. However, it was important to limit the data to systemise this review.

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## Further reading

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