The Choice of Marketing in the E-commerce Era Based on the Bibliometric and Visualized Analysis

Yuzi Zhang[1], Wei Zhang[2] [*], Yunxuan Yao[3]

[1]zhangyuzi2021@163.com

[2*]Corresponding author: 1907020220@hhu.edu.cn

[3]yunxuay1@uci.edu

[1]Public Administration School Hohai University Nanjing, PEOPLES R CHINA

[2]Business School Hohai University Nanjing, PEOPLES R CHINA

[3]Physical Science School University of California, Irvine Irvine CA, USA

Abstract. Under the background of the rapid development of e-commerce, how to choose the correct marketing path is an important issue that needs to be faced to enhance the competitiveness of enterprises. This paper adopts the bibliometric method and uses the visual analysis tool CiteSpace to visually analyze the related literature in the field of e-commerce in the Web of Science database from 2017 to 2022, and we evaluated and analyzed the current research hotspots from the perspective of marketing. The research results show that the current research in the field of e-commerce presents the following characteristics: (1)E-commerce research has ushered in the second peak in the past five years. (2) The count and centrality of research keywords in the field of e-commerce are not consistent. (3) It focuses on the analysis of *online reviews; big data; urban logistic; technology acceptance mode; trust; consumer loyalty,*etc. (4) The current research trends, frontiers and marketing priorities should be based on *platform; last-mile delivery; brand experience* and *security* according to the burst. By matching the above academic hotspots with their own core competitiveness, enterprises can boost their own development.

Keywords-CiteSpace; electronic commerce; marketing strategy

1 INTRODUCTION

E-commerce is the buying and selling of goods and services over the Internet through the exchange of money and the transfer of data to achieve transactions[1]. Recently, with the development of high-technologies such as the Internet and artificial intelligence, e-commerce has developed extremely rapidly in a short period of time. E-commerce has bridged the information gap and the business model can better meet the needs of investors and consumers.

As consumers generally spend at home under the epidemic, e-commerce continues to be the driving factor for the growth of retailers [2], and marketing activities have played an important role in the production and operation activities and market competitiveness of enterprises [3]. Therefore, in the face of the fiercely competitive e-commerce industry, how to make good use

of marketing methods is an urgent problem to be solved. The goal of this paper is to explain the hotspots, trends and frontiers of e-commerce in academic research through the methods of bibliometrics and visualization, and to analyze its marketing trends, so as to bring inspiration to the marketing of enterprises.

2 METHOD

2.1 Method

In the research of marketing path in the era of e-commerce, CiteSpace, which is a visual citation analysis software, is mainly used. The visual graphics, which is also known as the "scientific knowledge map" is then developed.Using CiteSpace, we can cluster the papers of Web of Science to investigate the hotspots and find out research frontiers and research trends in some related fields.

2.2 Data Sources

The retrieval date for this article was 27 February 2022. In the Web of Science database, we set the search formula as "TS = (Electronic Commerce) or TS = (E Commerce)", set the article category as "business", "economics", "management" and "business finance", and limited the time range to nearly five years, that is, 2017-2022. After retrieving the database, 2022 articles and 89 reviews has been obtained.

3 RESULTS & DISCUSSION
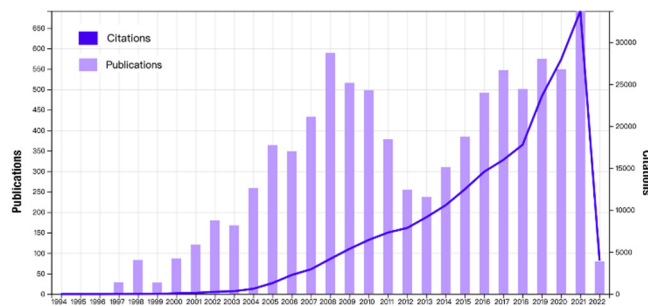
3.1 Analysis of the Number of Published Articles

Figure 1. Times Cited and Publications Over Time

Since the retrieval date was in the beginning of 2022, only publication data from 2017 to 2022 are considered. Overall, e-commerce-related publications and citations have shown an upward trend in the past five years, especially Citations have always maintained growth and the growth

rate has continued to increase. (Figure 1) Even in 2021, the keyword *e-commerce* has seen its second peak since 2008.

From the perspective of citations, the h-index of 2,111 articles from January 1, 2017 to February 27, 2022 is 61, that is, 61 of them have been cited 61 times or more. The average number of citations also reached 8.66. When the h-index reaches more than 60, it can be classified as a "truly unique" [4]. Therefore, in the last five years, the field has been extremely influential due to the development of e-commerce itself and the boost of Covid-19.

3.2 Research Hotspot

After merging synonyms, replacing hyphens, ignoring singular and plural numbers, and other cleaning tasks, with the help of CiteSpace, we get the cluster view of keyword co-occurrence map, as shown in Figure 2.
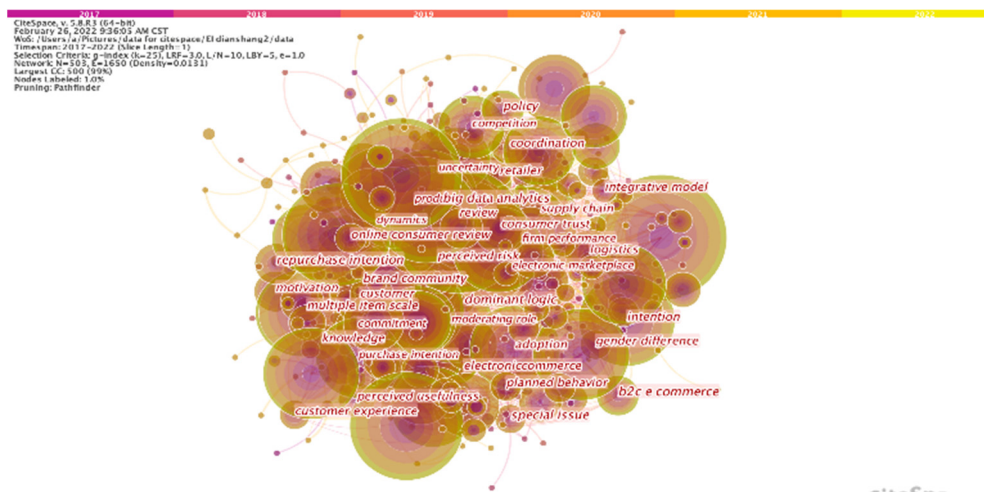

Figure 2. Cluster view of keyword co-occurrence map from 2018 to 2022

3.2.1. Count and centrality analysis:

We listed the top ten keywords according to their co-occurrence count and centrality, and obtained the results in Table 1 and Table 2 as follows:

Table 1. Keywords Sorted By Count

Keywords	Count	Centrality
e commerce	525	0.01
impact	394	0.01
model	382	0.01
trust	285	0.01
online	270	0.00

electronic commerce	256	0.01
information	224	0.01
behavior	207	0.01
word of mouth	206	0.02
internet	190	0.01

Starting from the count, It is not difficult to find that the keywords related to marketing,like trust; online; behavior; word of mouth, etc. These words reflect the marketing in the e-commerce field in the past five years from two aspects: consumer analysis and online information dissemination. Specifically, in the past five years, scholars have focused more on analyzing user behavior, gaining user trust, and creating user reputation.

Table 2. Keywords Sorted By Centrality

Keywords	Count	Centrality
big data analytics	14	0.09
knowledge	30	0.07
information privacy	22	0.07
b2c e-commerce	32	0.06
dominant logic	10	0.06
review	37	0.05
gender difference	25	0.05
special issue	24	0.05
intention	149	0.04
adoption	138	0.04

Then, research on the centrality of keywords. Interestingly, when searching for keywords, citations with higher count always have lower centrality, while citations with higher centrality match the lower count.

Centrality represents the importance of keywords and reflects the degree of connection between different keywords. Therefore, it can be understood that although the keywords with high centrality have not received many citations, they are relatively concentrated in their citations. Marketing concepts with high intermediateness include information privacy, b2c e-commerce, dominant logic, gender difference, and intention.

3.2.2. Marketing strategy based on cluster analysis:

After clustering based on keywords, we get the Timeline view, as shown in Figure 3. The vertical axis from top to bottom indicates that the clusters decrease in size, while the horizontal axis from left to right indicates the clustering time from far to near. We got: #0 online reviews; #1 big data; #2 urban logistics; #3 supply chain; #4 social commerce; #5 technology acceptance model; #6 trust; #7 electronic commerce; #8 consumer loyalty; #9 digital platforms, except that #7 is part of retrieve formula, #2;#3 and #4 also have clusters in 2022.

Through the analysis of keyword clustering, the marketing strategy of e-commerce can be inspired.
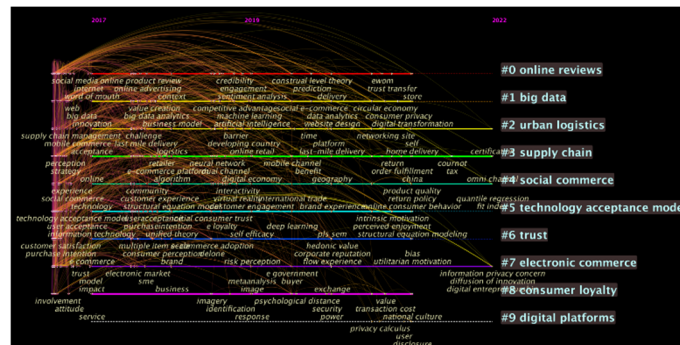
Figure 3. Timeline view of keyword co-occurrence map from 2018 to 2022

3.2.2.1. #0 online reviews

Online reviews are not uncommon in life, and this marketing model has been going on for many years. Whether it is online products such as books and movies, or offline experience venues such as restaurants and cafes, people always want to listen to the opinions of others before exploring unknown things, and businesses can also find their own development from the real feelings of consumers direction.

The "OMO" model proposed by Meituan, that is, Co-line Marketing, is a marketing that takes consumers as the core, covers all life scenarios, and truly realizes online and offline integration through data and technology.

3.2.2.2. #1 big data

Through big data, as long as you accumulate enough user data, you can analyze the user's preferences and purchasing habits, and even "know the user himself better than the user". In addition, applications such as RTB advertising now show us better accuracy than before, which is also supported by big data. It is worth mentioning that the promotion of big data to e-commerce is not only in marketing, but also through data analysis and observation of market trends and trends.For example, Alibaba realized the arrival of the international financial crisis earlier from the large amount of transaction data.

3.2.2.3. #2 urban logistics

The research on urban logistics has a large scale in 2017, ranking third in all clusters, and until 2022, there are still many keywords that have formed large-scale clusters and become the focus of academic research. For retailers, efficient logistics is the key to attracting consumers. If there are two items of the same price and quality with different delivery times, consumers will undoubtedly choose the faster one.Therefore, while pursuing to improve the logistics speed, e-commerce enterprises also need to highlight it as the focus of marketing in order to stand out in the fierce competition.

3.2.2.4. #5 technology acceptance model

The technology acceptance model is referred to as TAM, which is mainly realized through two variables, namely perceived usefulness and ease of use. Using these two variables, users' attitudes and intentions to use a certain technology can be evaluated. Cheon J, Chung S, Lee S demonstrated that in Serious Game, high satisfaction is beneficial to improve the player's performance in the game and the willingness to play another game, but playing well will not lead to another game [5]. Applied in e-commerce, through the TAM test of new technology or new function, it can better simulate user feedback and achieve better marketing effect.

3.2.2.5. #6 trust

Whether commercializing on the platform or pursuing sales growth for e-commerce companies, they must face the issue of user trust. In the short-term, the user's trust will affect the conversion rate of customer acquisition, and in the long-term, it will affect the user's LTV（life time value), and the credibility of the platform, and even retain DAU(Daily Active User）.

From the perspective of the consumption path, after the stage of "generating interest", the customer's trust largely determines their "consumption decision" and "use experience", and in the last stage of the consumption path, a high degree of trust will Make users more willing to share products with others, thereby generating new consumption paths and a virtuous circle.

3.2.2.6. #8 consumer loyalty

Customer loyalty refers to the customer's attachment or adoration to the company's products or services, which is mainly expressed through the customer's emotional loyalty, behavioral loyalty and conscious loyalty. Loyal customers are the most valuable customers of a business, and a small increase in customer loyalty can lead to a large increase in profits. Customer loyalty requires merchants to strictly control the quality or/and attractive marketing methods

3.3 Research Trends and Frontiers

The research frontier in the field of e-commerce is represented by the bursts. Bursts can reflect the research breakthrough or turning point of e-commerce related research in a certain period of time. Ranked according to strength, the top 25 keywords from 2017 to 2022 are shown in Figure 4.

Keywords	Year	Strength	Begin	End	2017 - 2022
relationship quality	2017	4.43	**2017**	2018	
utilitarian	2017	3.91	**2017**	2018	
website quality	2017	3.69	**2017**	2018	
cross-border e-commerce	2017	3.18	**2017**	2018	
e satisfaction	2017	2.95	**2017**	2018	
integrated model	2017	2.95	**2017**	2018	
acceptance model	2017	2.58	**2017**	2018	
mobile banking	2017	2.58	**2017**	2018	
useracceptance	2017	3.9	**2018**	2019	
online advertising	2017	3.25	**2018**	2019	
online retailing	2017	3.07	**2018**	2019	
literature review	2017	2.92	**2018**	2019	
online purchase intention	2017	2.6	**2018**	2019	
ebay	2017	2.6	**2018**	2019	
digital economy	2017	5.6	**2019**	2020	
evolution	2017	3.42	**2019**	2020	
website	2017	3.42	**2019**	2020	
virtual community	2017	2.8	**2019**	2020	
multiple item scale	2017	2.44	**2019**	2020	
platform	2017	3.57	**2020**	2022	
last-mile delivery	2017	3.36	**2020**	2022	
power	2017	2.81	**2020**	2022	
pls sem	2017	2.81	**2020**	2022	
brand experience	2017	2.55	**2020**	2022	
security	2017	2.55	**2020**	2022	

Figure 4. Top 25 Keywords with the strongest citation bursts

As can be seen from the figure, there are several bursts every year, and except for the bursts that began in 2022, the duration of other keywords is exactly one year.

3.3.1. 2017: insufficient attention

Based on this, we infer that the research in 2017 focused on network infrastructure such as website quality, integrated model, acceptance model, etc., while the burst in marketing was only "e satisfaction". And there is a direct relationship among e-service quality, e-satisfaction and e-loyalty in terms of online spending by consumers [6].

3.3.2. 2018: promote the intention

In 2018, the focus of the research was on marketing, including keywords such as useracceptance, online purchase intention, and online advertising, which reflected that the research on e-commerce marketing paths at this stage focused on using online advertising to enhance users' intentions. For example，according to the stimulus-organism-response (SOR) framework, Zhang, M et al.（2018）proposed that consumer empowerment can be promoted through channel integration, thereby increasing trust and satisfaction, and improving consumer willingness to patronize[7]

3.3.3. 2019: the development of digital economy

Since 2019, digital economy has gradually become the mainstream of the times, and e-

commerce, as the main component of digital economy and an important engine driving the formation and development of digital economy. Among them, the burst of virtual community also provides inspiration for the marketing of e-commerce in the digital era. From virtual community to meta, we could only make full use of the continuous development of technological means and keeping up with the hot spots and wind direction of the times, can we have a place in the increasingly competitive e-commerce battlefield.

3.3.4. Research frontiers:

From 2020 to 2022, keywords on e-commerce also went through a big burst, and these keywords still have great strength to this day, so they can be used as the current research frontier for more in-depth research and grasp. In Figure 4, we can easily find that marketing-related keywords include platform, last-mile delivery, brand experience, and security.

3.3.4.1. Platform

In the digital age, social platforms are constantly iteratively updated, and e-commerce marketing should keep up with the development of the platform and pursue a better consumer experience. This is why the keyword *platform* is still a burst today.Effective use of social platforms can fully save costs. Social media marketing eliminates the need for print and has better interactivity. Social media platforms allow people to read your posts, read your blog, and interact with you. In addition, from search marketing, bidding marketing, keyword marketing, database marketing, to the rise of micro-business and live broadcast, the platform has gradually become the main body of e-commerce from the carrier of marketing, and *Convert more People* has become the focus of platform marketing.

3.3.4.2. Last-mile delivery

The last-mile delivery problem is a pain point that plagues e-commerce merchants and consumers in many countries, but the birth of China's Meituan, Ele.me and other companies has provided a relatively perfect answer to the last-mile problem. In fact, how to efficiently and accurately solve the last mile problem will also affect consumer choice to a large extent.

3.3.4.3. Brand experience

Brand experience is a term in brand management. If the product experience is the trigger point and the user experience is the feeling point, then the brand experience is the ultimate point. The first is product experience. When users "contact" and "use", they have psychological feelings and decide their impressions and preferences of the brand, so that users feel "identified"; the second is user experience, allowing users to pay the minimum cost to meet their needs, so that They feel "easy to use" for their ultimate purpose. The purpose of a brand experience is to make it "unforgettable" for users. Product experience focuses on current functions, user experience emphasizes continuous optimization of user experience, and brand experience is more like a process of guided exploration, integrating brand information into every link and action.

3.3.4.4. Security

Cebeci, SE; Nari, K and Ozdemir, E mentioned the security risks of telecommunication fraud (2022) [8], it is true that it is difficult for marketing to make a prominent contribution to the security of e-commerce, but the burst of this keyword also proves that concerns about safety

have increased significantly in recent years. For e-commerce companies, marketing and publicity from the perspective of security is bound to achieve better results.

4 CONCLUSION

After analyzing and sorting out the current research, this paper can not only help scholars in various fields from all over the world to better grasp the current hot topics of e-commerce research, but also provide guidance for the current e-commerce companies' marketing path selection with certain reference. In the context of the new era, e-commerce companies should keep pace with the times. This not only refers to improving production capacity and management, but also dynamically adjusting marketing strategies on the basis of fully understanding the current hot spots and frontiers. The current e-commerce marketing strategy should focus on hotspots such as urban logistics, consumer loyalty and digital platforms, and grasp the research frontiers such as platform, last-mile delivery, brand experience, security, etc. In this era where every second counts, only by being at the forefront can you gain competitiveness.

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