

Application Analysis of Data Visualization in Tiktok E-commerce

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Abstract: With the rapid development of the e-commerce field, the application of data visualization technology is more extensive. Visual development in the field of Tiktok e-commerce can improve marketing accuracy and optimize consumers' shopping experience. However, visualization development in the field of Tiktok e-commerce has been affected. Based on this, the paper proposes to optimize Tiktok e-commerce by means of data optimization and integration. This paper uses the literature research method to analyze the application of data visualization in Tiktok e-commerce. Through reading a large number of literature, it is found that data visualization is of great help to the development of e-commerce. The technical realization and function summary of data visualization in Tiktok e-commerce are studied, but there are still some problems in commodity information, commodity quality, user positioning, logistics, and other aspects. Finally, some solutions are proposed.

Keywords: Tiktok, Data visualization, E-commerce, Short video platforms

1. Introduction

With the development of big data, the Internet, cloud computing, and other technologies, massive data is processed to provide a reference for the development of all walks of life [1]. Liu used literature analysis to analyze the problems still existing in the field of e-commerce [2]. Data visualization technology can deeply explore the needs of users, facilitate enterprises to develop precision marketing programs, ensure the efficient operation of the supply chain, and optimize the shopping experience of consumers. However, in the application of visualization technology in the field of e-commerce, there are problems such as unequal data, imperfect product information, inaccurate positioning, and high logistics supply costs, which are not conducive to the play of the advantages of big data. This paper starts with what is data visualization and the development status of Tiktok and Tiktok e-commerce, analyzes the existing problems of Tiktok e-commerce, and puts forward solutions. Yang used the EECM-ISC Model to put forward optimization strategies for the sustainable development of Tiktok e-commerce [3]. Through this study, the development of Tiktok e-commerce and the role of data visualization in Tiktok e-commerce can be clearly understood, and the existing problems are also understood. Besides, Tiktok e-commerce can be further optimized and upgraded.

2. Data Visualization

Data visualization is mainly aimed at conveying and communicating information clearly and effectively by means of graphical means. However, this does not mean that data visualization has to be boring in order to achieve its functional purpose, or extremely complex in order to look colorful. In order to communicate ideas effectively, aesthetic form and function need to go hand in hand, providing insight into rather sparse and complex data sets by visually communicating key aspects and features.

Data visualization is closely related to information graphics, information visualization, scientific visualization and statistical graphics. The success of data visualization is due to the completeness of the basic ideas behind it. Computer-generated images can be used to gain insight and knowledge based on data and their inherent patterns and relationships. The second premise is to use the vast bandwidth of the human sensory system to manipulate and interpret intricate processes, data sets involving different subject areas, and simulations of large abstract data sets from diverse sources.

3. Application of Data Visualization in Tiktok E-commerce

3.1. Development of Tiktok E-commerce

On December 16, 2021, Tiktok e-commerce independent APPTiktok box was officially launched on Android and iOS systems. Tiktok Box is a trendy e-commerce platform for young people launched by Tiktok.

With the rise of Tiktok e-commerce, more and more merchants and individuals began to enter Tiktok. They show their products in short videos and sell them online. On Tiktok, millions of merchants and individuals have set up their own shops, displaying a wide range of goods and services.

In order to meet the needs of merchants and users, Tiktok e-commerce features are constantly upgraded. It can not only carry out online payment and order management but also carry out various forms of e-commerce activities such as live marketing and group shopping. The continuous upgrading and improvement of these functions provide more favorable conditions for the development of Tiktok e-commerce.

3.2. Technical Realization of Data Visualization in Tiktok E-commerce

The product pictures, videos, etc. are presented on the Tiktok platform, so that users can intuitively understand the appearance, function, use scenario, and other information of the product. Merchants can post videos introducing products on Tiktok to attract users' attention and increase product exposure and sales through vivid display and narration. Displaying transaction information such as the purchase process and refund process in the video allows users to understand the convenience and security of shopping, and increases their confidence in buying. Merchants can establish communication with users through various forms of interaction such as live broadcasting, Q&A, lottery, and so on to improve user engagement and loyalty [4].

3.3. Function of Data Visualization in Tiktok E-commerce

Big data accelerates the openness of data, and visualization accelerates data mining, which can help e-commerce enterprises predict consumer demand, timely adjust business planning, and improve personalized service level [5]. In the field of e-commerce, based on consumers' browsing history, evaluation, and other information, through data mining and visualization processing, consumers' preferences can be accurately grasped, and precise marketing push can be provided for target groups

[2]. The visual processing of commodity reserves, location, logistics, and other information facilitates consumers to supervise the whole shopping process and improves the service efficiency of the supply chain [6]. The data visualization processing of Tiktok e-commerce shopping platform can help consumers understand the product information more objectively and comprehensively, and optimize the shopping experience of consumers.

3.3.1. Achieving Precision Marketing

With the rapid development of the e-commerce field, consumers' shopping methods have changed, and they can buy their favorite products or enjoy services without leaving their homes. At the same time, consumers' web browsing footprints, shopping preferences, and other data are generated in large quantities. Studies have shown that 75% of the data in the field of e-commerce is created by consumers, and e-commerce enterprises have mastered 85% of the data [1]. With such rich data, big data processing can transform boring data into visual images and intuitively analyze consumers' search content, shopping habits, and types, etc. When consumers browse the web again, e-commerce platforms can recommend similar products and achieve accurate push [7]. Tiktok platform will build a user portrait based on the user's basic information, social information, consumption information, etc., and combine the subjective data of consumers with search information to mine consumers' exclusive clothing types to achieve "one-to-one" precision marketing. The visual development of e-commerce has enhanced the effective communication between merchants and consumers and improved the efficiency of precision marketing services [8].

3.3.2. Enhancing Logistics Supply Efficiency

As a bridge between products and consumers, logistics ensures the integrity of e-commerce sales and broadens the scope of e-commerce sales. With the continuous increase in commodity sales, consumer groups have more diversified requirements for logistics services. The visual processing of logistics information reduces the error rate of the supply link and improves the efficiency of logistics supply. The intelligent storage system improves the efficiency of transportation. Before goods are stored, the system will collect information such as storage conditions and shelf life. On the Tiktok e-commerce platform, consumers can know the expected delivery time of products, so that consumers can choose the right order time according to their needs. At the same time, e-commerce enterprises will recommend the nearest products of the same type to consumers on the browsing page to reduce logistics and transportation costs [6]. The development of e-commerce logistics information visualization technology has realized the optimal allocation of resources, improved the level of logistics services, and guaranteed consumers' shopping experience.

3.3.3. Enhancing User Shopping Experience

Due to the lack of face-to-face communication in the field of e-commerce, improving the shopping experience of users has become the focus of attention. With the diversification of commodities in the e-commerce field and the increase in consumer choices, Tiktok e-commerce wants to stand out in the fierce market competition and needs to provide consumers with personalized shopping experiences from the perspective of consumers. The visual design of the website pages of e-commerce enterprises and the links of "picking-ordering-payment" can facilitate consumers to search for the required information [9] and optimize consumers shopping experience. Consumer satisfaction with e-commerce directly affects consumer sentiment and ultimately affects commodity turnover. The visual analysis of communication records between consumers and customer service can help businesses improve service quality in a more targeted manner. For example, intelligent customer service robots are added to provide consumers with 24-hour consulting services, improve the fluency

of communication and reply, and help consumers quickly obtain the required product information and obtain a better shopping experience. The development of visualization technology in the field of e-commerce, relying on big data, strengthens the effective communication between merchants and consumers, improves the accuracy of services, and provides consumers with a more satisfactory shopping experience [8].

4. Existing Problems

4.1. Information Inequality

E-commerce has realized the effective docking between commodities and consumers, and in the non-contact shopping mode, e-commerce data information has become the way for consumers to obtain information. When some Tiktok e-commerce enterprises visualize the product information, they hide the information that is unfavorable to them, and it is difficult for consumers to objectively and accurately grasp the product in the unequal acceptance of information, and it is easy to make wrong judgments. For example, online reviews as one of the reference factors for consumer shopping, bad e-commerce companies use the form of network brushing, praise cashback, etc., to improve the comprehensive score of the store and avoid too much display in the visual review page. They put the praise in a prominent position, so that consumers buy products affect the market order [10]. In short, in the development of visualization technology in the field of e-commerce, unequal commodity information will affect consumers' purchase intentions, resulting in a reduction in commodity sales.

4.2. Poor Quality

The rapid development of e-commerce has broken through the space limitation of shopping and won the love of consumers with its price advantage lower than offline [11]. The price of goods in the Tiktok e-commerce market is relatively transparent, some merchants play a "price war" to attract consumers, and the quality of goods is uneven. On the one hand, some bad e-commerce present consumers with an untrue corporate image through data visualization technology to cover up the quality problems of the goods. For example, when merchants display clothes, they choose professional models to show the wearing effect, and use filters to adjust the color, which is easy to mislead consumers, resulting in the actual effect of the goods is not consistent with the imagination, and then leading to the return and exchange problem of consumers [12]. On the other hand, the development of e-commerce product visualization technology lacks a unified standard. Some e-commerce companies focus on art, hiring professional artists to beautify product pages to attract consumers, and even buying traffic to increase the number of page views of stores. Unfair competition results in the publicity of products greater than quality, which affects the consumer market [10].

4.3. Inaccurate Positioning

Precision marketing is based on the fine division of products. Only by making a clear market plan can businesses accurately grasp the target consumer groups. In the context of the development of big data, competition in the e-commerce industry has intensified, and some Tiktok e-commerce enterprises are difficult to find the characteristics of their products through visualization technology and achieve precise marketing to target groups. Precision marketing needs to strengthen the information matching between buyers and sellers. Some Tiktok e-commerce enterprises cannot make full use of information visualization technology, lack the ability to tap target groups, and adopt unified marketing strategies for all consumers, resulting in poor adhesion and high turnover of consumer

groups [13]. Some Tiktok e-commerce enterprises do not accurately grasp the consumption data, lack of fine division of consumer groups, and ultimately lead to poor marketing results.

4.4. Inefficient Logistics

As an important link of e-commerce consumption, logistics is the key to ensuring the timeliness of distribution. Logistics timeliness and transportation quality should become the standards to measure logistics capabilities, and big data can be used to give play to visual advantages and reduce transportation costs. Logistics and Tiktok e-commerce need to coordinate with each other to achieve efficient transportation of goods, but the current data of the two have not been effectively integrated, and when there is a problem in the transportation of goods, Tiktok merchants and logistics companies pass the responsibility on each other, increasing the transportation cost and time. For example, some goods lack visual supervision during the whole process of transportation, and it is difficult to hold goods accountable after damage.

5. Solutions

5.1. Standardizing Information Integration and Improving Trust Mechanism

Data mining in the field of e-commerce is based on information integration, passing the most authentic information of the product to the consumers to help the consumers make the right purchase decision. On the one hand, Tiktok platform should establish a strict supervision mechanism, resist unreasonable brushing behavior, display the true evaluation of goods, and give consumers objective evaluation. For example, an e-commerce platform requires merchants to visually display industry data, including consumer evaluation, complaint rate, reputation, price fluctuation, and other information, to provide consumers with comprehensive product information [12]. On the other hand, Tiktok should encourage consumers to post comments on e-commerce platforms. Real-picture feedback can directly show the real condition of the product, and positive comments can improve the reputation and attractiveness of the store. At the same time, the platform encourages consumers to write long reviews on various aspects such as goods, services, and logistics, which not only reduces the intentional negative reviews of some consumers but also provides opportunities for e-commerce enterprises to improve their services [14]. The relatively standardized visual information strengthens the trust between consumers and merchants.

5.2. Improving Operation Standards and Standardizing Market Fairness

When consumers buy goods, they are susceptible to the impact of the product details page, if the difference between the appearance and the real thing is large, it will affect the shopping experience of consumers. In order to improve the authenticity of e-commerce products, the Tiktok platform needs to set a unified standard for the visualization of product pages. Tiktok merchants should be based on pictures and videos, allowing merchants to modify the goods appropriately, but within the scope of meeting industry standards, and at the same time, the basic information of the products should be standardized to describe, to prevent misleading consumers. For example, in order to highlight the lightness of portable notebook products, some e-commerce companies show small pictures, but the actual size is larger. Therefore, Tiktok merchants need to set standard reference objects or clear-size labels to avoid misleading consumers [12]. Systematic and perfect visual operation standards can help consumers obtain accurate commodity information and ensure the standardized development of the e-commerce field. Therefore, in order to promote the continuous purchase behavior of users, the first thing to do is to work on product quality and to cooperate with multiple entities to screen products [3].

5.3. Identifying User Needs and Achieving Precision Marketing

Whether enterprises can accurately grasp customer needs in the fierce e-commerce competition is crucial to the development of enterprises. In the context of big data, e-commerce enterprises can make use of visualization technology to identify user needs in time, develop and adjust products, and help enterprises win the market [15]. On the one hand, the Tiktok platform should process user evaluation, purchase records, and other information, dig out the needs of users, and finally present them in the form of charts to help Tiktok e-commerce enterprises understand customer needs and determine target consumer groups. In addition, real-time visual monitoring of relevant data of consumers is carried out, and regular optimization and adjustment of marketing programs are carried out [13]. On the other hand, the target consumer group is classified, and the appropriate marketing method is selected according to the consumer demand, and the benign transformation is promoted by a concise information push. For example, for old customers with high purchase frequency, regularly push new products and promote the "old with new" promotional activities, increasing the consumption stickiness of old customers while improving the conversion rate of new customers. For consumers who like discounts, push discount products and related preferential information, issue shopping money and full discount coupons, increase consumption willingness and achieve precision marketing.

5.4. Monitoring Logistics Processes and Improving Supply Efficiency

The visual processing of logistics information can effectively reduce the transportation cost of e-commerce and improve the efficiency of logistics transportation. With the development of the e-commerce field of Tiktok, consumers' demand for logistics services is increasing, which promotes the visual development of logistics processes. On the one hand, strengthening the real-time combination of online information and offline warehousing information of Tiktok e-commerce to achieve the matching and pushing of homogeneous goods, so that consumers can see the latest commodity logistics information and improve consumer satisfaction. On the other hand, visualization of e-commerce strengthens the integration of logistics information, can monitor the whole process of transportation, and ensure the efficient use of transportation resources [16]. In addition, visualization technology can strengthen the traceability of logistics transportation, conduct real-time tracking of product quality, clearly record the status and person in charge of each transfer of goods, and reduce the return cost caused by transportation supervision [17].

6. Conclusion

Data visualization technology has promoted the positive development of the e-commerce field and pointed out the direction for the transformation of the e-commerce field of Tiktok. Under the background of big data, in order to improve the functions of Tiktok e-commerce, the following measures can be adopted to optimize and adjust: Tiktok e-commerce industry should dig deep into the data and carry out visual processing to help merchants find the target consumer groups; Improve the operation standards, strengthen the governance of the e-commerce market, and create a fair and harmonious e-commerce market order; Strengthen the supervision of the logistics process, so that consumers can intuitively understand the real-time dynamics of goods and get a good shopping experience. However, the data and conclusions of this study are mostly found in literature, and there is no real practice. Future studies can focus more on investigation and practice.

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