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Research on the application of big data analysis technology in cross-border e-commerce

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Abstract: With the acceleration of globalization, cross-border e-commerce has become an important part of international trade. The application of big data analysis technology in cross-border e-commerce provides enterprises with more accurate decision support and improves operational efficiency and customer satisfaction. By analyzing the application status of big data in cross-border e-commerce,this paper discusses the application of big data analysis technology in customer portrait,personalized recommendation,supply chain optimization,risk control and other aspects, and puts forward relevant strategic suggestions,in order to provide reference for the development of cross-border e-commerce enterprises.

Keywords: Big Data Analysis; Cross-border E-commerce; Applied Research

Introduction:

In recent years,with the rapid development of Internet technology and the deepening of globalization process, cross-border e-commerce has become an important part of international trade.According to eMarketer's report, global cross-border e-commerce transactions reached $4.8 trillion in 2020 and are expected to reach $7.5 trillion by 2023.In the face of such a huge market size and fierce competitive environment,how to use big data analysis technology to improve operational efficiency and enhance customer experience has become an urgent problem to be solved.

1. Overview of big data analysis technology

Big data analytics refers to the acquisition, management and processing of massive, high-growth and diverse information assets to discover new correlations and generate valuable insights to improve decision-making accuracy and risk management capabilities.Big data analysis technology mainly includes data collection, storage, processing,analysis and visualization, involving a variety of technical means, such as Hadoop, Spark, NoSQL, machine learning, data mining and so on. The advantage of big data analysis technology is that it can process massive structured and unstructured data,find hidden rules and trends behind the data, and provide more accurate decision support for enterprises.

2.The application status of big data analysis technology in cross-border e-commerce

At present, more and more cross-border e-commerce enterprises begin to pay attention to the application of big data analysis technology,through the collection and analysis of massive customer behavior data, transaction data,logistics data, etc., to provide data support for corporate decision-making. Here are some typical use cases:

2.1. Amazon: Amazon is one of the world's largest cross-border e-commerce platforms, and its big data analysis technology is widely used.By analyzing customer behavior data such as browsing, purchasing and evaluation, Amazon can accurately predict customer demand,provide personalized product recommendation,optimize inventory management,and improve logistics efficiency[1].According to statistics,35% of Amazon's sales come from personalized recommendations.

2.2. Alibaba:Alibaba is the largest cross-border e-commerce platform in China,and its application of big data analysis technology is also very mature.By analyzing massive transaction data, Alibaba has built the world's largest commodity classification and attribute library to provide merchants with accurate market insights and marketing strategies.At the same time,Alibaba also uses big data technology to optimize supply chain management,improve logistics efficiency,and control risks.

3. The application strategy of big data analysis technology in cross-border e-commerce

3.1. Customer portrait and personalized recommendation

In the field of cross-border e-commerce,Big data analysis technology is being widely used in customer portraits and personalized recommendations.By collecting and analyzing various behavioral data of customers, such as browsing, search, purchase, evaluation,etc.,combined with the demographic characteristics,preferences and other information of customers,cross-border e-commerce platforms can build accurate customer portraits.These customer profiles not only reflect the basic attributes of the customer, but also provide insight into the customer's needs, preferences and purchase intentions.Based on these rich customer insights, cross-border e-commerce platforms can leverage machine learning algorithms to provide highly personalized product recommendations to each customer.These recommendation algorithms usually adopt collaborative filtering,content filtering and other technologies to recommend similar products to other customers based on their historical behavior and preferences,or recommend products similar to or complementary to the products customers have browsed and purchased[2].Personalized recommendations can effectively improve customer shopping experience and satisfaction, but also significantly improve the conversion rate and sales of the platform.

China's cross-border e-commerce platforms have accumulated rich practical experience in personalized recommendation. For example, NetEase Kaola uses big data analysis technology to dig deeply into customers' behavioral data and build an accurate customer portrait system. On this basis,NetEase Kaola uses machine learning algorithms to recommend the most likely products of interest to each customer, and the accuracy and conversion rate of the recommendation significantly exceed the industry average. For another example, Tmall International also attaches great importance to the application of personalized recommendation. By analyzing massive user data, Tmall International has established a complete customer portrait and adopted advanced recommendation algorithms to provide customers with dynamic and real-time personalized product recommendations.

3.2. Supply chain optimization and demand forecasting

Supply chain optimization is to find out the bottleneck and problems in the supply chain by analyzing the data of each link of the supply chain, and take corresponding optimization measures to improve the efficiency of the supply chain and reduce the cost.Demand forecasting is based on historical sales data, market trends,customer behavior and other factors to predict the future demand for goods in a certain period of time in order to arrange production and inventory.

In cross-border e-commerce,enterprises can optimize supply chain management and improve supply chain efficiency by collecting and analyzing sales data,inventory data,logistics data, etc.At the same time, enterprises can also use machine learning algorithms, such as time series analysis, regression analysis,etc.,to forecast commodity demand,rationally arrange procurement and inventory, reduce costs, and improve customer satisfaction. In addition to logistics optimization,big data analysis technology is also widely used in cross-border e-commerce supply chain management and demand forecasting.For example, by analyzing historical sales data and market trends, cross-border e-commerce companies can predict the demand for goods in a certain period of time in the future,thereby optimizing purchasing plans and inventory management. This can not only reduce inventory costs,but also improve the response speed and flexibility of the supply chain to better meet customer needs[3].For example,by analyzing the production capacity and delivery performance of suppliers, cross-border e-commerce enterprises can choose the best quality and most reliable suppliers to ensure the quality of goods and the stability of supply.At the same time, enterprises can also use big data technology to carry out real-time monitoring and early warning of all links in the supply chain, discover and solve potential problems in time,and improve the operational efficiency of the supply chain.

Taking cross-border e-commerce logistics company FlavorCloud as an example,it uses big data analysis technology to optimize logistics routes, improve distribution efficiency and reduce logistics costs. By analyzing massive logistics data, FlavorCloud can monitor the status of goods in real time, predict arrival times, and adjust delivery routes and times according to customer needs to improve customer satisfaction.

3.3. Risk control and fraud detection

Risk control refers to the analysis of transaction data and user behavior data to identify and prevent potential risks and ensure transaction security.Fraud detection is aimed at malicious registration, transactions, credit card theft and other fraud, take corresponding detection and prevention measures.

In cross-border e-commerce, enterprises can establish risk assessment models by collecting and analyzing user registration information,login behavior,transaction behavior and other data to identify and warn potential risks.At the same time,enterprises can also use machine learning algorithms, such as decision trees, random forests,neural networks,etc., to detect and prevent fraud in real time to ensure transaction security.In addition to common fraudulent behaviors such as malicious registration and transactions, cross-border e-commerce is also facing more complex and hidden risks,such as cross-border money laundering,commodity contraband,and intellectual property infringement. In order to deal with these risks, cross-border e-commerce enterprises need to cooperate with customs,banks,law and other multi-party institutions, using big data analysis technology,to establish a comprehensive and dynamic risk monitoring and early warning mechanism. For example,by analyzing the user's capital flow, commodity attributes,logistics trajectory and other data, cross-border e-commerce enterprises can timely detect and prevent potential illegal activities such as money laundering and contraband trading.For example,by analyzing the text, pictures, videos and other information of goods, cross-border e-commerce platforms can automatically identify and filter infringing and counterfeit goods, and protect the legitimate rights and interests of consumers and brand owners.

Take Payoneer,a cross-border payment company,for example, which has built one of the world's largest risk control systems using big data analytics. By analyzing massive amounts of transaction data and user behavior data,Payoneer can identify and prevent fraud in real time,ensuring the safety of user funds.According to statistics,Payoneer's risk control system can process more than 100 million transactions per day, and its fraud detection accuracy rate is 99.9%.

Conclusion:

The application of big data analysis technology in cross-border e-commerce has provided new growth points and competitive advantages for enterprises.Through the application of customer portrait, personalized recommendation, supply chain optimization,risk control and other aspects, cross-border e-commerce enterprises can gain in-depth insight into customer needs,improve operational efficiency, control risks, and enhance customer experience, so as to stand out in the fierce market competition.At the same time,cross-border e-commerce enterprises need to keep pace with The Times, actively embrace new technologies,and constantly innovate business models in order to remain invincible in the fierce market competition.

References

[1] Feng Jiadong. E-commerce Platform Big data analysis value chain Strategy from the perspective of knowledge dynamic capability[J].China Circulation Economy,2019,35(02):37-48.

[2]Zhang Caixia, Wu Shenghui.Research on optimal product recommendation strategy of e-commerce platform based on Big Data analysis [J].Business Economics Research,2018(19):76-79.

[3]Ren Juan.Big Data technology and application of Reader Behavior Mining and analysis[J].Friends of the Editor,2017(01):31-34.(in Chinese)