Real Estate Market Analysis System Based on Big Data

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Abstract: *With the changes in China's macroeconomic environment, the volatility of the real estate market is increasing. In recent years, the national macroeconomic regulation has gradually formed a classified guidance approach, and various regions have timely chosen to adjust policy toolboxes to ensure the healthy development of the real estate market. The regulation of the real estate market should establish Systems thinking and select the regulation tools according to the market development. The speed of internet data generation in China is constantly accelerating, and the real estate market is experiencing rapid development. Real estate data analysis technology can convert massive resources into structured data for analysis. This paper first introduces the concept of Big data technology, then discusses the application of Big data technology in real estate market analysis, and finally constructs a real estate production analysis system based on Big data.*

Keywords: Big data; Real estate market; Analysis System

1. Introduction

The real estate industry is the leading industry in China's national economy, and the healthy development of the real estate industry is related to the development of the national economy. As competition intensifies, the average profit of the industry decreases. How to maintain competitiveness is a problem that enterprises need to consider. At present, China's real estate market is in the stage of housing distribution monetization reform and macro-control. After China's economy entered the New normal, the economic environment began to improve. The competition in the real estate industry market has risen to a higher level, and it is particularly important to obtain the latest market data for digital analysis. The Big data era provides an efficient data analysis tool for real estate market analysis. The application of information technology enables centralized data processing and integrates business System integration into a system platform. The use of Big data in real estate market analysis can better provide decision-making support for the national macro-control economy and promote the healthy development of the national economy.

2. Big data and Real Estate Market Analysis

The real estate market is the material responsibility for the operation of real estate operations, and understanding and adapting to the real estate market is a basic requirement for operators. Various operational information systems within the enterprise generate a large amount of business data, and the data scattered in various operational information systems cannot effectively support data analysis needs. Historical data integration needs to be separated from operational systems to facilitate decision analysis. Real estate market research is an activity that connects participants with real estate through information, seeks internal patterns, predicts development trends, and helps participants seize market opportunities. The information content required for real estate market research depends on different service objects, and Big data technology should be fully used for real estate market analysis [1]..

Big data is a huge amount of data generated in the era of information explosion, and Big data has penetrated into the business functions of various industries. Big data is a diversified information asset that needs a new processing mode and has stronger decision-making power and high growth rate, with many types and fast speed [2]. Big data is structured and unstructured multi-dimensional heterogeneous data composed of graphics, text, audio and image. Under massive data, Big data can be processed in real time, with bold application value and low value density. Only by processing massive data can some useful information be obtained. The real estate industry is an industrial sector that has a significant impact on the development of the national economy. The real estate market has massive data

accumulation. The real estate market analysis should use Big data analysis technology to correctly judge the Market trend. The real estate market is a multi-level complex system with the participation of land seduction, brokerage agencies and other parties. The Big data of the real estate market is a collection of data related to the macro economy of the market transaction data set. Housing is the fundamental physical unit that constitutes the real estate market, with basic data including building information and surrounding environment. Trading activities include pre-sale and transaction volume price data in the commercial housing market, housing mortgage registration data, and rental market price data.

The development of the real estate industry is closely related to other industrial sectors of the national economy. The market analysis should be placed in the economic system to draw objective conclusions. The relevant data of the real estate industry include financial investment, municipal planning, etc. [3]. In the mobile The Internet Age, people have a huge dependence on network information, and the dynamic behavior data left by accessing services through the network contains behavior patterns that are indicative of the real estate market orientation. The Big data of real estate can be based on the data of housing management business, and gradually integrate relevant data to build a Big data warehouse. It is necessary to integrate the dynamic update of related business design, strengthen horizontal department contact, establish a sharing and exchange mechanism, and deepen data mining and analysis to promote the integrated management of real estate Big data. Housing management business data is the core of real estate Big data, including housing transaction security and housing security Big data. The degree of System integration of housing management business information is not high, so it is necessary to break the information island and establish a clear basic database to accurately grasp the real-time changes of housing space and business information.

3. Application of Big data in Real Estate Market Analysis

The real estate industry is an important pillar of China's economy, and the rapid growth of housing prices affects people's daily lives. In the era of Big data, the data of all industries has exploded, and the application of Big data has been widely integrated into all aspects of people's lives. Data asset transaction under Big data is the key point to reflect the value of data [4]. Real estate is an information intensive industry. Real estate data has multiplied in the era of Big data. Only by making use of transactions to strive for data interconnection between different departments and institutions can we give full play to the value of data. The combination of real estate data analysis and Big data analysis can transform massive data into high-value information, and reasonably allocate the real estate center to better serve the social economy.

3.1. Analysis scope of Big data in the real estate market

Big data analysis is an important bridge between data and information knowledge. It can find potential associations through massive data statistical search. Big data emphasizes the accumulation of network behavior data. How to deeply mine and apply unstructured data is the current challenge [5]. The field of real estate Big data analysis includes cluster evolution and correlation prediction analysis. Cluster analysis is the process of dividing data objects into groups, with significant differences in objects between different groups. Cluster analysis can be used to study the composition of demand types. Association analysis is to find the correlation between attributes and establish association rules between real estate related services and user behavior. Evolutionary prediction analysis constructs a reasonable prediction trend by extracting important data of the object and finding the value of association mining is the need of information analysis in the era of Big data. Relevant research work on the real estate market is carried out around massive Big data, and the application of Big data analysis technology helps to reasonably formulate industrial regulation policies.

The application of Big data analysis in the real estate market includes the research on the early warning indicator system of the real estate economy, regional plate research and supply and demand cycle research [6]. Real estate development trend research analyzes the relationship between demand and factors such as national economic growth and land transfer area, and uses neural network and other methods to model and predict analysis. Real estate cycle research seeks to analyze the cyclical patterns of real estate fluctuations in specific regions during a certain period of time and the influencing factors. The research on the regional sector of the real estate market focuses on dynamic analysis of the phenomenon of imbalanced economic development in different regions. Real estate market demand analysis uses correlation analysis to study customer demand, identify factors that affect home purchase

consumption, and provide a basis for formulating marketing strategies. The research on the supply of real estate market is a scientific calculation of the supply of different types of housing in different regions based on the current land use situation. Research on the Real Estate Economic Early Warning Indicator System, analyze the market operation situation, allocate orders, and timely adopt effective measures to mitigate fluctuations.

3.2. Real estate market analysis based on Big data

The supply and demand analysis of the real estate market under Big data includes the scale structure and participants. The monitoring and analysis object of the unbalanced development of the regional pre market must be divided into regions. The division of regional plates must be scientific and reasonable, taking into account the administrative district street boundaries and other factors, adhering to the principle of full coverage without overlap, and can select sales and price indicators to verify the rationality of the division results. Regulatory policies should be classified and guided based on key functional areas, hot demand areas, etc., and dynamically adjust core regional sectors according to market development and changes in regional sectors. After data integration, appropriate indicators can be selected to construct a real estate market monitoring and analysis system, which can be measured from the current situation and other aspects. The object covers the stock of new houses and the rental market, and the regional market analysis system can refer to the overall market construction.

The scale of housing demand is an important factor that affects the market development potential. Usually, regional permanent residents are used to predict future market demand, and key factors that affect housing demand can be investigated through questionnaires and other methods [7]. The demand structure can be reflected by the market transaction structure, including the product structure of the population, which reflects the actual market preference for buying a house. It is necessary to increase the monitoring of indicators such as the ratio of rigid demand and the ratio of house price to rent. The turnover rate of existing housing reflects the market activity of existing housing, and homebuyers can use indicators such as the ratio of housing prices to income to reflect whether the housing prices are suitable for the level of residents' income. The supply-demand balance indicator is a reflection of the market's supply-demand balance, which can be measured by periodic changes in sales volume, and the price can be measured by the year-on-year growth rate of prices. On the basis of Big data integrated management of real estate, combined with data achievements such as natural disaster housing risk survey, an analysis model is established to grasp the regional distribution of real estate. The stock size indicator value should pay attention to the ratio of households to households and the vacancy rate indicator. The ratio of households to households can measure the amount of housing owned by local residents. The vacancy rate is the ratio of vacant housing area to total housing area at a certain time, which is of great significance for determining the supply scale of the new housing market and revitalizing the market. The supply scale can be divided into long and medium term, and the current land transaction scale can be considered as long-term market supply. The newly constructed area of houses will become pre-sale and listed commercial houses. The supply and demand ratio can be used to monitor the supply scale, product structure, including unit size, etc.

4. Big data analysis model of real estate market

China's housing system reform has gone through the exploration stage from 1980 to 1985, the comprehensive reform stage from 1986 to 1993, the comprehensive supporting reform stage from 1994 to 1998, the monetization stage of housing distribution from 1998 to 2001, and the rapid development stage of the urban real estate market from 2002 to present. After the reform and opening up, the real estate market in China has developed rapidly, and various real estate sales websites are constantly emerging. The scattered real estate data cannot comprehensively collect and process professional data related to the entire network. Distributed data indexing technology can quickly and accurately locate and meet the needs of real estate market information analysis. The combination of real estate Market data analysis and Big data analysis can transform massive data into high-value information, provide a benign Market trend and promote the development of the real estate market. The application of Big data analysis in the real estate market includes supply and demand balance and future development forecast.

The supply analysis of the real estate market includes data collection and preprocessing. Data collection is the preparatory stage of data mining, aimed at obtaining complete indicator data using scientific methods for the purpose of analyzing the real estate market. It is necessary to collect real

estate supply data to study the development of the real estate market from the perspective of total quantity, region, and structure. According to the content, market research can be divided into direct and indirect data methods, and data collection forms can be divided into Wet market research and network data collection. Analyzing the historical changes in the supply of commercial housing in the real estate market, it was found that the supply capacity of commercial housing is greatly influenced by policy and economic factors. There are regional differences in the real estate market in major city districts, and there are differences in the supply types of commercial housing in different regions. Measuring the demand of the real estate market from the perspective of population and economy, the economy is an important factor affecting the demand of the real estate market. The demand of the real estate market revolves around people's housing and investment needs. Economic indicators include Gross regional product and the number of employees. Population indicators refer to the total population at the end of the year. Select indicators to measure the demand of the real estate market and construct an AHP hierarchical analysis structure, which consists of quantitative indicators for measuring the demand of the real estate market based on population and economic indicators. The analysis of the real estate market shows that the economic environment is good and the employment situation in cities is stable, and the ability of employees to purchase houses in the real estate market has improved. The demand in the main urban area is stronger than that in the suburbs, and the growth rate of demand in the suburbs is relatively fast.

5. Analysis and application of Big data in the real estate market

With the increasing degree of monetization of newly added housing, the level of housing prices and the volume of commercial housing transactions have rapidly increased. The real estate industry in China has become an industry sector with a significant impact on economic development, and its rapid development has led to many problems such as excessive investment in the real estate industry. The real estate market has regional characteristics, and how to attract population resources and make reasonable use of available land to meet the production and living needs of residents, alleviate the current shortage of land supply and demand, and promote housing is an urgent problem to be solved. According to the construction goal of Internet plus housing management, the Real Estate Information Center establishes a dynamic housing basic database based on the platform construction results, and builds a real estate market analysis system[8].

The Big data management mode housing basic database construction carries out basic information survey, grasps the basic information of urban state-owned land housing, integrates relevant information and data such as warehousing property right registration and housing safety appraisal, forms the overall structure of the platform in the life cycle stages of planning, construction, right confirmation and registration, and provides Big data support for the implementation of refined housing management in the city. The Big data analysis takes the data as a whole as the analysis object. It is difficult to guarantee the accuracy and objectivity of the analysis results of Wet market analysis using the data sampling method. Data such as financial loans are collected based on the dynamic basic database, and the indicator system is constructed using online online analysis and other information technologies combined with the real estate market analysis method. Determine the influencing factors based on the development of the real estate market, including urban economy and real estate policies. From the perspective of policy theory and suitability, determine the measurement dimensions of the real estate market, including the rationality of layoffs and development sustainability. Construct a market analysis index system to match the current situation in the real estate market. Using annual data from the real estate market to calculate the measurement indicators for each dimension, and using the majority principle to determine the reasonable range of secondary indicators. By creating a four-dimensional rose chart display, it represents the moderate scale, stable changes, and reasonable structure of the real estate market.

The regional development in the real estate market is imbalanced. Using GIS platform spatial data, taking into account urban planning and the characteristics of the real estate market, we extracted some areas from the differences in housing transaction prices, and verified the rationality of the division results of the areas. Use the multi indicator clustering analysis method to classify the regional market for market evolution trend analysis. Based on the development force of regional differentiation, a regional analysis index system is constructed to analyze the operation of the real estate market in the regional sector. Quarterly data of the regional market is selected to calculate and analyze the indicators. Visual analysis is an important aspect of Big data analysis. Through spatial clustering of specific geographical locations and dynamic database of housing life cycle, special market analysis can be carried out on hot spots of a market.

6. Conclusion

With the in-depth application of computer software and hardware technology in the commercial field, Big data is gradually applied in various fields of society. The State Council issued the Action Plan for Promoting the Development of Big data, pointing out that we should promote the application and development of Big data, strive to create a precise social management situation here, create an efficient and safe economic operation system, and build a livelihood service system for policy implementation. The real estate industry is a non-linear economic system with a large amount of data and complex structure. The monitoring and analysis of the real estate market is a normalization work that needs continuous improvement of Systems thinking. The construction of a dynamic database for the life cycle of houses enhances the application value of market analysis results in government decision-making. Due to the division of powers and responsibilities, there are practical barriers to data sharing and exchange among horizontal departments. Big data integration, mining and analysis are the foundation of market monitoring. It is necessary to continuously strengthen data mining capabilities to compensate for business data shortcomings and fully leverage the role of big data in real estate market monitoring and analysis.

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