Research Article

Analysis of Factors Influencing the Development of mHealth Innovation Based on Data Mining Algorithms

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Data mining algorithms combine expertise in machine algorithm learning, software modeling pattern recognition, statistical analysis principles, database construction, and artificial intelligence. With the rapid development of Internet technology and the common application of cell phones, mobile medical, a new medical method based on this technology, has been spawned, which greatly facilitates multiple aspects of medical services such as doctor diagnosis, patient treatment, disease care, and health management of critically ill patients and also alleviates the imbalance of medical resources. This paper firstly starts from the background of rapid development of information technology and mobile technology, combines the theoretical knowledge of data mining algorithm and mobile medical, as well as previous research reviews, and presents the main research content of this paper: analysis of factors influencing the development of mobile medical innovation based on data mining algorithm. Based on the K-means algorithm in the data mining algorithm and the Apriori algorithm in the association algorithm, this paper analyzes the current situation and problems of mobile medical development in China based on the algorithm model, analyzes the influencing factors of mobile medical innovation development in China based on the algorithm model, and summarizes and concludes the influencing factors of mobile medical innovation development and concludes that there are four categories of mHealth innovation development influencing factors: demand influence, policy orientation, technological innovation, and capital injection.

1. Introduction

With the advent of the information age various kinds of data are rapidly expanding and diverse. In the face of the huge amount of complex storable information data, how to analyze and find the key information data resources or information-related knowledge resources that can be used in a practical way is another very complex, difficult, and urgent task for human beings. The theory of data and information resources mining has been increasingly and rapidly developed to meet the basic theoretical needs of data and information utilization. Data information resource mining should actually be the study of how human beings can extract all the data information resources and other related information resources from the massive information data resources containing a large amount of information and not quite complete, with a certain amount of noise, fuzzy information, and various random changes in nature, which are temporarily hidden and of unknown significance but still have the possibility and are still useful or meaningful in practice. The research process of scientific knowledge resource information: Data resource visualization and its mining method is a kind of research based on modern computing machine meta-learning, pattern feature recognition, statistics, database analysis and modeling algorithms and large-scale data visualization and mining, and artificial intelligence as the core discipline and is an in-depth research on the development of the key technologies of today’s world database architecture and large distributed complex information intelligent collection, analysis, decision-making, and application and other system technology issues. The research content of frontier technologies and fundamental theories of major disciplines has attracted the attention of domestic and international researchers. At the same time, a variety of new mining algorithms based on visualization of big data and visualization of deep
mining are also emerging. In this paper, we mainly introduce the K-means algorithm, the classical Apriori algorithm of the clustering analysis algorithm, and the SPSS tool software to conduct the main analysis of the algorithm based on data deep mining.

At present, almost all countries in the world have been faced with a series of health management problems plagued by the imbalance between supply and demand of medical resources in each country and the imminent reform of medical institutions. The rapid and healthy development of Internet information technology has brought many traditional industries a lot of new eras of business development innovation model problems and business opportunities. The rate of aging of our society and the continued rise in the incidence of chronic diseases among the elderly have basically become irreversible social trends in the future, along with a sharp increase in demand for healthcare resources from year to year; the large-scale construction and application of mobile network medical system will not only rapidly expand the coverage of primary care and improve the level of social medical quality, but also provide timely personalized and customized quality medical technology services to meet the health needs of various different population user groups, improve the utilization of resources of technical experience and knowledge, and effectively alleviate the current tension in the supply of medical resources. China’s mobile hospital Internet products and value-added services have begun to form a preliminary scale after the rapid Internet development speed in recent years, but the current technical development of the domestic mobile online medical field is still in a relatively less mature and stable start-up stage. For service providers, some services are still superficial; for users, mobile medical habits have not yet been formed, and the awareness and use of mobile medical care is not high. Therefore the development of mHealth has a very important impact on our country and even on the world. However, the development of mobile medical innovation is still constrained and influenced by many factors.

This article is based on the K-means algorithm in the data algorithm of the cluster analysis algorithm, the classical Apriori algorithm in the association algorithm, to analyze the multiple constraints and factors affecting the development of mobile medical innovation.

2. Research Background

With the development of smartphones, the popularity of wireless signals, and the decrease in charges and increase in speed of 4G and 5G cell phone data networks, data mining algorithms and mobile medical services have been rapidly developed. This section summarizes the research on the development of data mining algorithms and mHealth at home and abroad to provide a basis for subsequent research.

2.1. Overview of Data Mining Algorithm Research

2.1.1. Review of Foreign Research. The analysis of foreign big data and its mining methods involved in the field of big database related research scope and content have been very mature and extensive, and many significant and representative technical results have been achieved [1]. So far, the research problems of knowledge systems and data value mining in the fields related to relational database models and associated transactional database models have basically made a lot of significant technical progress and have some important representative values. The academic results can be summarized as follows: methods such as induction and analysis oriented to data relational attribute features are used to find relational attribute differentiation rules and feature rules of data attributes in relational database models [2]. In order to be able to go deeper into solving the most complex uncertainty problems in the computational analysis of Duri databases, rough set theory, evidence-theoretic models, and fuzzy set theory have also been applied and carried out, respectively, forming databases with increasingly high breadth and depth of research, related problems research methods practice models, and related technical applications [3]. In addition, neural networks, decision trees, visualization analysis methods, and optimization models of genetic algorithms and other artificial intelligence technologies that combine with a variety of massive data deep information mining and its related theoretical methods models of research experimental work research and results development and application demonstrations have also, respectively, achieved new series of domestic and international breakthrough progress with great impact. Among them, the most representative data mining algorithms with global influence mainly include Harvard University’s IBM professor by Agrawal and another forty people in cooperation with the research proposed association rule algorithm, Princeton University’s Canada Simon Fraser University professor by Han Jiawei cooperation in the development of the proposed concept tree improvement algorithm, and Columbia University by Professor Quinlan proposed algorithm classification algorithm. The genetic algorithm proposed by Professor Goodman of the Department of Computer Science at Michigan State University is the Bayesian approach to probabilistic concept learning [4].

2.1.2. Review of Domestic Research. Compared with other similar research and practice field projects jointly conducted abroad, some of the technical research results obtained by the domestic Chinese group members in terms of cultivating the ability of rapid analysis and mining analysis of network data and the ability to continuously discover and acquire the value of network knowledge have been transformed and scientific practice and application work are carried out at a later stage and are still mostly in the early stage of development or the beginning of the fumbling stage. It has not been further developed to form a more complete and mature force of such a technical system [5]. At present, most of the research and data mining projects in academia are mainly funded by the government or organizations, and most of the professionals or researchers involved in the research or data mining process are still concentrated and residing in universities, research institutions, or companies. The main recent research results are reviewed as follows: (1) the in-
depth research of the National Natural Science Foundation of China, Beijing Institute of Systems Engineering Fund, demonstrates the fuzzy methods and the practical application research in the field of knowledge system discovery; (2) the in-depth theoretical research of data cubic algebra; (3) the research of East China University of Science and Technology, Beijing University, Fudan University, Zhejiang University, China University of Technology, Institute of Mathematics, Chinese Academy of Sciences, and Jilin University optimized and modified the mining algorithm of association rules; (4) Nanjing University, Sichuan University, and based Shanghai Jiaotong University, etc. carried out empirical research on knowledge resource discovery mechanism and data mining problems for unstructured data networks, etc.; (5) Institute of Computing Technology, Chinese Academy of Sciences, Tsinghua University, Chinese Academy of Sciences’ group of professors, using Zhongzhi and other multiperson data mining tool designs, developed a knowledge discovery and analysis platform with multihuman strategy, which can detect various kinds of abnormal situation information in local tax systems such as Guangdong providing services to taxpayers using decision tree algorithm [6].

2.2. Review of Mobile Medical Development Research

2.2.1. Review of Foreign Research. This paper mainly comes to describe the development of Internet mobile medical technology and other situations in foreign countries such as the United States [7]. Since the late 1990s of the last century, the US government has facilitated the rapid development of our entire mobile Internet medical industry in China through the establishment of special government approval departments, the promulgation of corresponding industry technology laws and regulations, and the formulation of mobile medical technology development policies and plans. The United States attaches great importance to the protection of user data privacy and has enacted the Health Insurance Portability and Accountability Act, the Economic and Clinical Health Information Technology Act, and the Health Information Technology Improvement Act, which define in detail the scope of the content of data privacy disclosure information disclosure and elaborate and clarify the content of the general operating procedures rules and supervision methods for the release of electronic medical information, other rights protected by the owner of the content of information privacy disclosure, and false information disclosure cases, as well as the requirements and timely corrective disposition measures for handling penalty mechanisms for cases of illegal disclosure of false information [8]. In addition, the FDA has issued mobile Internet devices and cell phone applications that involve users’ privacy and product quality specification information, and all medical device applications that pose a risk to users’ life safety require certification.

To date, mHealth has largely penetrated all aspects of healthcare delivery in the US, such as health management systems based on physician and patient communication, Blue Star based on chronic disease management, adapters based on health management, remote monitoring based on patient discharge, and popular literature based on physician and patient communication. Diabetes, hypertension, and mental illness are the most common disease-specific applications. In the market, the most famous software developer in the United States—Google Inc.—integrates devices and big data platforms into a closed loop of big data, where users can choose products or service providers according to their condition [9]. Ninety percent of apps can be downloaded for free from the app store, but for autism apps, the price exceeds $150, and more than 30% of apps require the purchase of an assistive device to use. Apple, on the other hand, usually collaborates with other medical institutions through medical device manufacturers to create their personal health records based on these user behavioral and medical data and usually establishes a link with their doctors by triggering system alerts when there are some abnormalities in the behavioral health record data of some users and family members and synchronizing medical data and disease associated with other doctors’ risk assessment with other physicians to further facilitate better treatment for other users [10].

Istepanian and lacal argued that good compatibility and connectivity between mobile medical device products are the most critical factors affecting the sustainability of mobile web-based healthcare. Liang et al. successfully developed a mobile telemedicine product with emergency medical call service function, which will actively trigger the emergency medical call service when a patient suddenly encounters an emergency distress situation, and all emergency search and rescue team personnel around will instantly obtain the latest basic medical patient information transmitted by the system in real time, shortening the response time to rescue the scene in medical emergency situations. This will shorten the response time to medical emergencies and improve the efficiency of treatment. Liu et al. summarized and predicted the future development of mobile applications and future trends of the industry from the perspective of the needs of the application developer community. Kim argued that the disclosure of and access to user data should be made more secure through appropriate security mechanisms and protocols. Bricker et al. also used apps with mobile smart opt-out as an experimental group based on the synchronized treatment that patients received with the real world and tried to use some apps based on our clinical application practices and guidelines as a control group and found that the smart opt-out rate of users was higher in apps that used mobile smart opt-out [11].

2.2.2. Review of Domestic Studies. More than a dozen domestic scholars, such as Yumeng, have used model design techniques and analytical methods for goal-oriented services to significantly improve clients’ goal-decision adherence to a service model for managing patients with hypertension chronic diseases. A software model for the management of hypertensive chronic disease patients was developed for the Chinese hypertensive population, and a comprehensive
2.3. Research Methods and Materials. This chapter mainly describes the theories related to data mining algorithms and theories related to mobile medical care. The main overview of the research theories and research methods used in this paper is given.

2.4. Data Mining Algorithms

2.4.1. Meaning of Data Mining Algorithms. Data information mining research is also often translated and understood as big data knowledge exploration and research and information data mining, which is firstly required to start research from the research activities of knowledge system discovery carried out in information database research and is an important working step of scientific research one [14]. Data mining is usually considered as a process of how to automatically search for a large amount of valuable information hidden in a large number of information data systems with certain special relationships. Data information mining systems are usually also related to other computer science systems, using data statistics and analysis, automatic information retrieval, machine learning, expert systems, pattern recognition, online information analysis models, and information processing technology methods to assist in achieving the above system goals. A data mining algorithm system is a methodological and computational technology approach to data mining that provides a set of methodological and computational techniques that can be used to create a system of algorithmic models for data information mining based on existing data [15]. In order to achieve the creation of data mining models, algorithms have to first analyze what kind of data the system needs to provide and look for specific types of patterns and trends. Data mining algorithms combine expertise in modern machine deep learning, pattern recognition, statistics, database principles, and computer artificial intelligence systems to obtain knowledge in large amounts of information and provide references for decision-making [16].

2.4.2. Types of Data Mining Algorithms. Data mining algorithms are divided into two categories in the general direction: supervised learning and unsupervised learning, and supervised learning and unsupervised learning are further divided into several major categories. As shown in Figure 1.

Supervised learning data mining is a top-down approach that is usually performed in the form of predictive models where the users already know what they are looking for; that is, the users already know what to predict [17]. The goal of data mining with supervised learning is to use existing data to build a model to describe a specific variable.

The unsupervised learning data mining method refers to a bottom-up learning data mining method, a mining method that uses a method that acquires learned data patterns on behalf of the users own methods to discover learning patterns throughout the process of performing data pattern mining work and then allows these users themselves to judge the importance of the data that they decide to learn using these data patterns. The ultimate goal of the unsupervised learning pattern data pattern mining method is also to find out the correlation that exists between all the learning variable data of the data. Berry divides data information mining tasks into six main categories: classification, estimation, prediction, association, clustering, and information visualization. The combination of more than two or at least two or more types of information data with mining technology methods is usually used in the practical solution of various practical business problems [18]. Several important data mining algorithms are described and analyzed below.

2.4.3. Theory of Clustering Analysis. Data clustering is a multivariate statistical analysis method that uses the idea of “similarity clustering” to find useful information by classifying samples or indicators. The objects discussed in data clustering are usually a large number of samples that can be reasonably classified according to their characteristics, without any existing pattern to follow or reference and without prior knowledge. Data clustering evolved from taxonomy, where in ancient taxonomy, people generally used historical experience to make qualitative classifications and rarely used mathematical tools to make quantitative
classifications. With the development of modern science and technology, the requirements for classification are getting higher and higher. It has been difficult for the original classification methods based on experience and professional knowledge to meet the requirements. Digital classification was created when mathematical tools were introduced into taxonomy, and data clustering in the modern sense was created after multivariate analysis was introduced into digital classification. Clustering is the process of classifying data into different classes or clusters according to the characteristics of the data. Objects in the same class or cluster have strong similarities, while objects in different classes or clusters have strong dissimilarities. Data clustering comes from many fields, including mathematics, computer science, statistics, economics, and so on. Data clustering is also widely used in many fields, and clustering techniques have been developed in different application areas [19].

2.4.4. Theory of Association Analysis. Association rules are used to analyze and discover the degree of association between different variables or individuals in a database and to model customer purchase behavior using association rules, such as the effect of purchasing a desktop computer on the purchase of computer peripherals. Association rule is a simple and practical data mining rule first proposed by Agrawal et al. in 1993. Association rules can discover valuable correlations between sets of items from a large number of business transaction records. The process of mining association rules in transaction databases can be described as for a given transaction database, the problem of mining association rules is to eliminate the minimum support and minimum confidence to find the appropriate association rule.

2.4.5. The Process of Data Mining Algorithm. The process of data mining algorithm to mine data is as follows: first, the external data is organized, followed by the preprocessing work on the data, then the data information is formed, and finally, after the main algorithm procedures and formulas of data mining, the analysis is processed, and finally the calculation results of data mining are formed and given to display, as shown in Figure 2.

2.5. Mobile Medical

2.5.1. The Meaning of Mobile Healthcare. Mobile healthcare, translated from the English word “mobile” and the Chinese word “health,” is referred to as mobile healthcare and is one of the parts of the national health management information system. This concept of mobile healthcare system was first proposed by Istvanian Robert, a professor at Imperial College London, Stanford University, as a new-age mobile communication device and network technology for mobile medical and healthcare services. The International Health Organization defines mHealth services as primarily the provision of mHealth-related service functions and demand information through the use of modern mobile communication technologies such as personal digital assistants, cell phone networks, and in-vehicle satellite positioning communication services. It can be seen that the value of mobile intelligent medical equipment is mainly through mobile intelligent computing, medical sensor technology, and other modern communication technologies; the carrier can be wireless PDA, cell phone switch, and other wireless terminal equipment; the output product’s greatest value can be to provide medical technology service needs and application information. These high-quality information sharing services, including teleconsultation, body mass index...
monitoring, electronic registration for appointment, and palm teleconsultation platform, will show to play its own great unique service value in actively promoting the rational and coordinated use of various high-quality medical resources in different places, improving the level of urban and rural medical environment and sharing medical experience [20].

2.5.2. Development Trend of Mobile Medical Care. China’s mobile medical has gone through four main growth stages: exploration period, start-up period, high growth period, and maturity period. The initial formation of medical informatization began in the 1980s; with the support of national policies and the investment of medical insurance, mobile medical became a key industry to be fostered. From the initial formation to 2011, with the development of network technology coupled with a large number of intelligent devices, mobile medical technology began to start the development, coupled with a variety of investors, capital forces involved, and mobile medical into the rapid growth of the golden period; until today, the application of mobile medical has gradually tended to mature and stable period, as shown in Figure 3 below.

2.6. Research Methods and Tools. The main research methods used in this paper are as follows.

(1) K-means algorithm. The K-means algorithm was used to analyze the dynamics of mobile medical development and technological innovation and to find out the dynamics of mobile medical technological innovation and the factors influencing technological innovation.

(2) Apriori algorithm. Using the Apriori algorithm, we analyzed the internal connection between the dynamics of mobile medical development and technological innovation and the region where they are located and found out the association rules between them.

(3) SPSS is the main research tool used in this paper. SPSS is the modeling tool software for data mining algorithms.

3. Results and Discussion

3.1. Construction of the Algorithm Model

3.1.1. K-Means Algorithm Model. The K-means algorithm (K-means algorithm), first proposed by Macqueen in about 1967, is the most influential and famous mean division method in today’s academic world and has the widest application. K-means algorithm is a kind of algorithm division method. The similarity calculation is mainly used to find the minimum spatial distance between a data object and the center of this cluster, and all the data objects near the center of a cluster are divided into several clusters, so that the “central object” (center of gravity) value obtained from the weighted average of the distance of all the objects in each cluster can be used to quantitatively calculate the similarity of each cluster.

The work and analysis process of K-means algorithm can be described as follows: first, data objects are randomly selected from the list, and for the objects that do not have the remaining initial data, the center of their clustering with the initial data of these data is found according to the calculation. After finding a maximum similarity value (distance) between them and the center of the initial data cluster, the K-means algorithm is used to solve the problem analytically by reassigning all of them to the centroid of an initial new cluster object (represented by the center of the cluster) at the most likely similar position to its center and then calculating the center of each original new cluster object that is in it during the calculation. The whole measurement process is repeated until a standard measurement function starts to converge. The standard measure function mean squared deviation is by far the most usually, not actually, used in the calculation. One of the three most important features of K-cluster theory is that the cluster model itself must be as compact as possible, with clusters as independent as possible. The specific steps of the K-means algorithm are as follows.

(4–1) Input $k$, data $(n)$

Selecting $K$ points as cluster $c(0) = \text{data}(0)$, $\ldots, c(k-1) = \text{data}(k-1)$ centers. (4–2)

will data$(0), \ldots, \text{data}(n)$ be $c(0) \ldots c(n-1)$ compared $c(j)$ with $i$ respectively, assuming the least difference with, then mark as (4–3)

For all points $i$ labeled as $c(i)$ points, recalculate (4–4)

Repeat the (4–2) calculation, (4–3) until all the $c(i)$ change values are less than the given threshold.

3.1.2. Apriori Algorithm Model. The Apriori algorithm model finds all database items and item sets that occur frequently in the database by performing multiple scans of
the database items to calculate the support of the item set. The frequency of these items must be at least as frequent as the predefined minimum support frequency. The frequent itemsets then generate a series of strongly associated rules, which in turn must satisfy their minimum reliability and minimum support, respectively. The Apriori algorithm requires multiple scanning cycles of the database. The value of the first scan requires first using \( k \) \((k - 1)\) the results of the first scan to generate a \( k \) set of candidate items, then determine the support \( C_k \) of the scanning process, at the end of each scan to calculate the \( K \) set of frequent items, \( k \) and the \( C_k \) algorithm ends when the set of candidate items is empty.

The Apriori algorithm model can be divided into two steps.

Step 1: Linking.

To find, \( I_k \) a \( l(k - 1) \) candidate set is generated by \( k \) linking \( C_k \) with itself. Assume that \( I_1 \) with \( I_2 \) is \( I_{k-1} \) the set of items in. \( I_j \) \((j)\) is \( I_l \) the items of \( j \) the itemset. For \((I_1(1) \cap I_2(1)) \cap \ldots \cap (I_1(k - 1) = I_2(k - 1)) \) example, \( I_1 \) can \( I_2 \) be linked with. (4–5)

Step 2: Pruning. \( K \) All subsets of items, which must be sequent sets.

The process is as follows

Input: database \( D \) minimum support \( \text{min} - \sup \) threshold \( (4) \)–(6) begin, \( L_1 = 1, \)

for \((k = 2; I_k - 1 \neq \emptyset)\) do, \( C_K = \text{Apriori - gen}(I_k - 1), \)

\[
C_T = \text{subset}(c_k, t),
\]

\[
I_k(c_k, c.\text{count}),
\]

Return \( L_1 \cup L_2 \ldots \cup L_m. \)

3.1.3. Model Implementation Tool Construction. The above two models are mainly implemented by SPSS tools, which are described below.

SPSS software is the world’s first ever computing system software for statistical data processing and economic analysis, which is currently the world’s first computer version of economic statistical data management and economic analysis application computer software known to mankind, hosted and developed and designed successfully by three master’s degree graduate doctoral students from Stanford University class of Harvard University in the United States since 1968. It has created the modern SPSS computer application software series as another major development and technical direction of the new software and greatly enriched the actual social and
practical application scenarios and research scope of the modern SPSS computer technology application, so that its products can be rapidly and widely used in the natural science, technical science, social science basic research, and related fields in the world today. The SPSS modeler is based on a comprehensive application platform of big data analysis and mining with many leading technologies in the industry, which has been greatly improved and upgraded. Its powerful data mining analysis capabilities will be a variety of complex statistical modeling methods and various machine learning techniques applied to transaction data to effectively help customers; powerful analysis of data and mining information capabilities are applied to a variety of complex statistical modeling methods and various machine learning techniques in the analysis of data to effectively help transaction customers quickly discover the hidden in the transaction system or enterprise resource planning, the structured databases, and public documents, enabling trading clients to achieve significant growth in ROI. The system’s features can be summarized as follows.

(1) The system has a user-friendly interface and is simple to operate.

(2) The system has the special features of this fourth-generation programming language.

SPSS software modeling is used to classify the types of research objects as follows: Type I hospitals: including well-known domestic hospitals and hospitals in economically developed areas; Type II: hospitals in economically underdeveloped areas; Type III: hospitals in economically deprived areas.

3.2. Algorithm Model Analysis

3.2.1. Analysis of Mobile Medical Development. According to the above algorithm plus SPSS software modeling for mobile medical development for analysis, we have the following.

The application of mobile medical care in China started to appear in 2011 and started late, but the application of mobile medical care in China has developed rapidly. Currently, there are more than 2,000 mobile applications based on various smartphone development systems in China. The emergence of cell phones has increased the number of Internet users in China, and with the increase in the number of Internet users the number of mobile medical users in China has also shown a rising trend. In 2011, the number of Internet users was 430 million and the number of mobile medical users was 20 million. From 2011 to 2022, both the number of Internet users and the number of mobile medical users are gradually increasing, and by 2022, the number of Internet users will reach 1.08 billion and the number of mobile medical users will reach 84 million, as shown in Figure 4.

In 2011, the number of mobile payment transactions such as Alipay and WeChat is 11,000, and the number of
mobile payment transactions in 2022 is 53,000 rising year by year; the number of other transaction methods transactions declines year by year. The convenience and low cost of mobile medical services make them more effective in solving common problems in medical information services. Overall, the future of mobile medical services in China is very
promising, but its profit model is not yet clear. In the field of mobile payment, China has taken the lead in recent years, and this convenient payment method has also penetrated into the mobile medical field, as shown in Figure 5.

The market size of mobile healthcare in China has gradually expanded from 2011 to 2022, from 1.32 billion yuan in 2011 to 25.56 billion yuan in 2022, which reflects the increase in the share of mobile healthcare in China’s market, the increase in the proportion of related investment, and the better development of mobile healthcare in China, as shown in Figure 6.

China’s mobile medical industry segmentation market pattern from 2018 to 2022: academic medical category accounted for 23.4% in 2018, 25.7% in 2019, 29% in 2020, 25.3% in 2021, and 25.6% in 2022, which shows that academic medical category, with a stable share, occupies roughly a quarter of the share. It can also be seen from the figure that self-examination accounted for 29.8% in 2018, 21.9% in 2019, 24% in 2020, 26.1% in 2021, and 28.2% in 2022. Therefore, self-examination also accounted for a quarter of the market share. Other models accounted for about 50 percent in 2018–2022. According to the statistics, academic medical treatment and self-examination accounted for a large proportion, as shown in Figure 7.

3.2.2. Analysis of Existing Problems in Mobile Medical Development

(1) The shortage of scientific research funds will still be the biggest bottleneck restricting the research and development of mobile telemedicine technology, technological innovation process, and the application and transformation ability of medical scientific and technological achievements in China in the future. The innovative research, pilot development and promotion, and application of mobile Internet medical technology innovation results are always inseparable from the effective investment of a large amount of capital and manpower. However, in terms of the overall situation in China, on the one hand, with the gradual deepening and implementation of the strategy of scientific and cultural construction of public hospitals, the proportion of scientific research tasks undertaken by hospitals and the proportion of contributions to scientific research activities may increase correspondingly. However, in the short term, the overall proportion of national social investment in medical technology innovation and the average proportion of domestic hospital investment in medical and health technology innovation may still be relatively limited.

(2) According to the characteristics of the overall level of economic development in our country at present and all the people to bear ability, basic urban and rural medical and health resources allocation system in China should be a pyramid. Providing health care services to more people should be a priority for the country to develop and build in the future. It is the dominant position and social foundation of grassroots medical and health service. However, in the great development of China’s current medical and health reform, we have really embarked on another road of high level and low coverage. Healthcare system structure has been formed on an inverted
3.2.3. Analysis of Influencing Factors of Mobile Medical Development. Through the above analysis of the development status and problems of mobile medical care, the influencing factors of the development of mobile medical care are further studied. A number of domestic hospitals were selected as research objects, including hospitals in economically developed areas, economically underdeveloped areas, and economically poor areas, as well as representatives of domestic advanced hospitals, third-class hospitals, and other general hospitals as data sources. According to K-means algorithm model, Apriori algorithm model, and SPSS software, the influencing factors of mobile medical development are analyzed:

The first type of hospital: including domestic well-known hospitals, hospitals in economically developed areas; Type II: economically underdeveloped hospitals; Type III: hospitals in economically poor areas. Visibly, all think that no matter what kind of hospital, policy influences the mobile medical development accounting for about 40%, demand and technology influence each accounts for about twenty percent, capital and accounts for about 10%, thus, national policy is the most important factor influencing the mobile medical development; hospital departments and patients demand mobile medical treatment only. The development of electronic information technology and the development of Internet plus technology and the needs of all parties are keeping pace, occupying the same important proportion. Finally, private capital only accounts for a small part of the investment, as shown in Figure 8 below.

4. Conclusion

As a new analysis technology, data mining is the most advanced research direction in the field of database and information decision and has been promoted in various fields. At present, this technology has not been deeply applied in the field of medicine and health. With the
popularization of medical and health information, the
capplication of data mining technology to data analysis in
the field of medical and health will have a huge market
prospect and provide effective data support for the inno-
vative development of mobile health. Based on the
K-means algorithm in the clustering analysis algorithm of
data mining algorithm and the Apriori algorithm in the
association algorithm, assisted by the SPSS software
modeling, this paper analyzes the development status and
existing problems of China’s mobile medical treatment and
analyzes the influencing factors of China’s mobile medical
innovation development according to the algorithm model.
The factors influencing the development of mobile medical
innovation are summarized, and the conclusions are as
follows:

(1) Demand impact: with unreasonable allocation of
medical resources, lack of experience of patients,
overwork or underpayment of doctors, and hospital
managers hoping to make hospital management
more efficient and time-saving, all three hope to use
new Internet thinking to improve the pain points of
the medical industry.

(2) Policy orientation: driven by policy, the state vig-
ously advocates reform of the medical industry,
and the State Council’s No. 1 document calls for the
active development of rural teleconsultation systems
conducive to rural “Made in China 2025.” The State
Council also calls for improving the innovation
capability and industrialization of medical devices,
focusing on the development of high-performance
diagnostic and treatment equipment such as imaging
deVICES and medical robots, high-value medical
supplies such as fully biodegradable vascular stents,
and mobile medical products such as wearable and
remote diagnosis and treatment.

(3) Technological innovation: driven by technology,
products such as wearable medical devices, as well as
the combination of 4G networks and smartphones,
have given a huge impetus to the mature develop-
ment of mobile medical care as a whole.

(4) Capital injection: capital-oriented and market-
based companies are looking to merge with other
traditional industries to earn more profits, in-
cluding the healthcare industry, which is also
looking to leverage the advanced technologies of
Internet companies, such as big data, cloud com-
puting, and the Internet of Things, to facilitate the
integration of the healthcare and Internet
industries.

Data Availability

The dataset is available upon request.

Conflicts of Interest

The authors declare no conflicts of interest.

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