Research Article

Construction of College Innovation and Entrepreneurship Information-Sharing Platform under Big Data Analysis

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Achieving outcomes in today’s colleges will need a creative attitude to be associated with higher necessary reforms to ensure a long-term future. The goal of this study is to enhance college students’ creativity and entrepreneurship by providing them with enough innovation and entrepreneurship information (IEI). This exploration is to build a college IEI sharing platform under big data analysis (BDA). First, the existing problems of IEI sharing in colleges are analyzed, and the construction principles of IEI sharing platform in colleges are put forward. Then, the platform’s structure is designed, and its operation mechanism is explained. Next, the IEI sharing platform of colleges is designed and constructed through BDA. At the source layer, the platform checks the big data collection goal, confirms the scope and substance of the collected big data via the open access mechanism, and communicates the extracted target big data to the data layer via the data collector. In the data layer, the data table is streamlined, and the data processing method is built. They gathered a large amount of classified and preserved data, and then communicated to the analysis layer via the classified storage mechanism via the open data sharing interface. The analysis layer analyzes and processes large data using a BDA algorithm, allowing for adaptive scheduling and information access. The performance content may eventually alter with the demands by integrating the big data received through the integration and sharing method. The results of the experiments indicate that the platform’s data mining range is pretty consistent. When the number of data operation requests exceeds 10,000, the platform’s processing speed reaches 45000. Furthermore, the time cost remains constant within 2 s as the data scale rises. As the number of repetitions grows, the recall rate rises to 98%. The findings indicate that the platform offers significant data mining, processing, and scheduling skills, as well as the ability to distribute IEI in real-time among universities. This study helps the promotion of entrepreneurship among college students by improving the present college IEI sharing platform.

1. Introduction

In recent years, China’s higher education reform has centered on innovation and entrepreneurial education. Many domestic universities mix innovation and entrepreneurship teaching and practice, which has increased students’ inventive spirit, entrepreneurial consciousness, and entrepreneurial competence [1]. In addition, colleges contain a wealth of material and initiatives related to innovation and entrepreneurship. These resources are continually acquired and combined with other relevant data to create large big data for innovation and entrepreneurship. Sorting and analyzing these school-enterprise resources and innovation and entrepreneurship big data to provide IEI resources for students in need can reduce the work intensity of college IEI managers and improve the deployment efficiency of college IEI in the context of “mass entrepreneurship and innovation.” Furthermore, it has the potential to fully develop college students’ creativity [2]. Big data analysis (BDA) is to search for effective information in the research process by analyzing large-scale data to make the demander adapt to changes and make correct decisions. The visual analysis in BDA can visually display the characteristics of big data. In the data mining part, various data mining algorithms under different data types and formats are applied to enlarge the characteristics of the data and speed up the processing of big data. The results of visual analysis and data mining are adopted to predict and analyze future data. The whole BDA
is inseparable from data quality and management. The information-sharing platform can ensure the high quality and effective management of data and the authenticity and value of analysis results [3, 4]. Through an integrated data platform of fundamental information, the IEI sharing platform under BDA intends to implement IEI sharing of colleges and integrated management of entrepreneurship information based on big data. Then, it will be able to accommodate a variety of student demands and better inform college students about entrepreneurship. Most domestic college IEI sharing systems, on the other hand, have issues such as low usage, limited user stickiness, and inability to grow sustainably. To manage access to the information database of the short rent shared service platform, domestic academics Li and Cao suggested a shared service platform based on the backpropagation neural network (BPNN). However, this platform’s calculation range of information-sharing data is too large, and the real-time performance is poor [5]. Bai and Li proposed an educational big data information platform based on resource sharing. However, the platform has poor integrated control ability and low information recall [6].

In order to solve the above problems, this exploration constructs a college IEI sharing platform under BDA. BDA can effectively promote the information management of the platform and overcome the inherent problems of outdated information resources and slow updates of traditional platforms. First, the construction principles of the proposed IEI sharing platform are introduced. Then, the platform’s structure is proposed, and the operation mechanism is explained. Next, the college IEI sharing platform is designed and constructed through BDA. Finally, the information-sharing platform is experimentally analyzed. This exploration can improve the existing information-sharing platform and promote entrepreneurship for college students.

2. Methodology

2.1. Problems with IEI Sharing. Domestic colleges encourage college students to start businesses and reform traditional education. However, many students have no relevant action even though they have the idea of starting a business. The reason for this is the following problems in IEI sharing on campus:

(1) Differentiation between supply and demand for both the government and colleges. They are attempting to construct and enhance the sharing of college information, from the government’s demarcation of the college city to the formation of college partnerships to solve information communication [7]. With the advancement of Internet information technology, there are many information-sharing platforms, but these platforms mostly include academics, life, and job, and only a few platforms exchange IEI.

(2) Resource isolation. Advantageous resources are communicated and isolated in the region. It is difficult for students who do not often contact teachers to obtain relevant information resources. In the daily life of colleges, it is difficult for students to accurately understand what is happening around them and related to their vital interests. With entrepreneurship as an example, the main channel for students’ entrepreneurship consultation is the college students’ employment and entrepreneurship guidance center. However, due to the constraints of financial and material resources and geographical location, it is sometimes unable to obtain relevant information in time, and there is a lack of a platform for the unified release of entrepreneurship-related information. This has led to problems such as information separation, closure, high cost, slow effect, and regional constraints [8].

(3) Missing quantitative information. There are few platforms that can report the progress of entrepreneurship, such as the number of graduates, entrepreneurs, employment, enrollment, and number of people going abroad. These need to be counted, the procedures are cumbersome, and there is no platform for unified background quantitative processing [9].

2.2. Platform Construction Principles. To boost the educational impact of innovation and entrepreneurship, a perfect IEI sharing platform must be established using contemporary information technology to provide ideal information and resource support for students’ innovation and entrepreneurship activities. The building principles of the college IEI sharing platform based on the BDA suggested are shown in Figure 1.

The construction principles of the college IEI sharing platform include systematic principle, sharing principle, extensibility principle, user-oriented principle, and security principle. The systematic principle means that the platform should incorporate various factors related to students’ innovation and entrepreneurship into a system, and design from the perspective of content, participants, and evaluation. The sharing principle is the essence of the platform. To provide users with shared services, it is required to combine big data, cloud computing, and platform resources during the platform’s development. The extensibility principle states that while developing a platform, the platform’s future evolution should be anticipated, and the interface should be reserved ahead of time. The user-oriented concept states that the platform’s development must be user-centered and thorough, including a user satisfaction survey, students’ innovation and entrepreneurship demands, and platform conditions to design the platform. In platform operation, attention should be paid to students’ demands and changes in behavior, and services should be provided according to requirements. The IEI platform requires a high level of security. In order to avoid the impact of hackers and viruses on the operation of the platform, the establishment of the platform must pay attention to security issues to set up scientific crisis handling methods, and formulate a security plan to ensure the safe operation of the platform [10–13].
2.3. Platform Structure and Operating Mechanism. The BDA has built an IEI sharing platform for colleges. By analyzing the preprocessed data, the data from college IEI are first sorted out, sampled, preprocessed, and translated into shareable information [14]. The platform construction is shown in Figure 2.

The collegiate IEI sharing platform under BDA, as shown in Figure 2, consists primarily of layers of source, data, analysis, and presentation [15]. By examining several data sources, the source layer validates the target data and its information to be retrieved. The data collector is then used to send the extracted target data to the data layer. The data layer makes data table development, as well as data processing, mining, and analysis, easier. It also simplifies the data gathered. Through data sharing, the open interface is supplied back to the analytical layer. The BDA algorithm is used to handle big data at the analysis layer, according to the needs of the entrepreneurial information application. The presentation layer may be used to acquire diverse information presented based on big data. It can alter as the demand and object change. Finally, it is applied to innovation and entrepreneurship projects [16–18] combined with innovation and entrepreneurship decision-making. The platform studies individuals’ career direction and characteristics through massive innovation projects combined with personal conditions. It can intuitively feed back the overall personal conditions, so that college students can better carry out innovation and entrepreneurship activities [3]. Figure 3 is the operation mechanism system diagram of the platform.

In order to make the big data sharing subject of innovation and entrepreneurship in colleges play its due role, the information platform must be used to stimulate the sharing object. Through the deconstruction of the system, five interrelated operation mechanisms are obtained to ensure the smooth completion of this process: open access mechanism, classified storage mechanism, integration and sharing mechanism, technical support mechanism, and management coordination mechanism. These mechanisms provide strong support for maintaining the benign operation of the system [19]. The platform confirms the scope, content, and methods of the big data of entrepreneurship and innovation of colleges through the open access mechanism. Then, it uses the classified storage mechanism to classify and save the obtained college innovation and entrepreneurship big data. The big data of innovation and entrepreneurship in universities is then integrated using the integration and sharing mechanism to establish advantageous benefit-sharing relationships, build a standardized platform, and improve the security of the big data resource sharing environment. Then, using the technical support mechanism, software systems that fulfill the platform’s criteria are put up. The platform can link college IEI big data resources with Internet information technology, allowing for faster integration of online and offline IEI big data resources. Furthermore, big data-related technologies can be thoroughly investigated and implemented. Finally, to strengthen colleges’ organization and coordination capacity, the guiding function of government policies is completely performed through the management coordination mechanism [20, 21].

2.4. Innovation and Entrepreneurship Information-Sharing Platform Design. The college IEI platform’s analysis layer’s BDA algorithm is built, and a representative college IEI is chosen to send the large data stream. Equations (1) and (2) are the basic logical unit of college IEI big data distribution.

\[ T_{set} = \{T_1, T_2, \ldots, T_n\}, \]

\[ T_z = \{z, \text{hashkey}, \text{visit}, \text{maxlife}, \text{hits}, \text{size}, \text{replace}, \text{requesttime}, \text{currenttime}\}. \]
In (1), \( T_{set} \) is the set of arrangement diagrams between the IEI fusion characteristics of colleges. In (2), \( Tz \) is the combination goal of describing the service, and \( z \) is the keyword attribute corresponding to the college IEI search template. By calculating the reliability \( Fz \) of college IEI big data, the association mapping relationship between association rule feature vectors is studied [22]. The following equation is the specific content:

\[
F_z = \frac{C_z + (C_z/h_s)}{\text{SIZE}_z} \times (C_z)^{c_2}. \tag{3}
\]

In (3), \( C_z \) is the partition benefit coefficient of college IEI big data, \( \text{SIZE}_z \) is the college IEI transmission eigenvector, and \( h_s \) is the college IEI confidence. Using the optimal control scheme of Quality of Service (QoS) cost-benefit set and random dynamic combination, adaptive scheduling is used to process college IEI big data. Figure 4 shows the adaptive scheduling process of college IEI big data.

In Figure 4, A, B, C, and D are the instruction transmission steps in the process of big data processing. \( p_0 \) and \( p_{\text{loss}} \) represent the initial amount of big data and the loss in the process of big data processing, respectively [23]. If \( a \) groups of college innovation and entrepreneurship big data can be practiced, the combination scheme of college IEI adopts \( U = [u_1, u_2, \ldots, u_a] \) description to plan the web combination of college innovation and entrepreneurship big data. A triple model is selected to represent a college entrepreneurship information set. The following equation is the index system expression of entropy fusion characteristics of college IEI big data:

\[
f_{zj} = h_t \delta_t + h_c \delta_c + h_q \delta_q + h_s \delta_s. \tag{4}
\]

In (4), \( h_t + h_c + h_q + h_s = 1. \) \( t \) stands for time, which is the information sampling and statistical time of innovation and entrepreneurship in colleges. \( c \) stands for cost, which is the practical cost of information sharing. \( q \) stands for quality, which is QoS. \( s \) stands for security, which is the security feature of information sharing. \( \delta \) represents the entropy of big data [24]. Therefore, the following equation is the input model expression for obtaining the optimal solution set of college IEI big data optimization:

\[
M_z = L_m + 0.5N - \sum f_{\text{less}} \times \text{width}. \tag{5}
\]

In (5), \( M_z \) represents the global measure, \( L_m \) represents the feature distribution set of mutual information, and \( f_m \) represents the frequency of multi-objective decision-making of finite schemes. \( f_{\text{less}} \) represents the intracluster adjacency coefficient of college IEI distribution, width is the data
bandwidth, and \( N \) represents the feasible region of college IEI distribution [25]. The target solution of college IEI big data optimization is defined as \( f_z \), and its calculation equation reads as follows:

\[
\text{Id} f_z = \ln \left( \frac{N}{a_z} \right). \tag{6}
\]

The statistical sample set \( \{(x_2, y_2); \cdots; (x_N, y_N)\} \) of the college IEI is created by an adaptive feature search algorithm. The search space is set to \( D \) dimension. The following equation is the feature distribution set of the output big data:

\[
x = (x_1, x_2, \cdots, x_N). \tag{7}
\]

The following equation is the edge fusion vector of the \( z \)-th information access position:

\[
x_z = (x_{z1}, x_{z2}, \cdots, x_{zD}). \tag{8}
\]

In (8), \( z = 1, 2, \ldots, N \). The following equation is the process function of information access:

\[
u_z = (u_{z1}, u_{z2}, \cdots, u_{zD}). \tag{9}
\]

In order to improve the generalization ability of the BDA algorithm, big data mining is used to complete the adaptive scheduling and access of college IEI [26]. The following equation is the objective function:

\[
J_1(h, e_z) = \frac{\varphi(x_z)}{2} h + \frac{1}{2} \mu_e D \sum_{z=1}^{N} e_z. \tag{10}
\]

In (10), \( \mu_e D \) represents one of the IEI combination schemes of colleges. \( h, e_z, \) and \( \varphi(x_z) \) represent the combination weight vector of college IEI, the interaction error of college IEI, and the kernel space mapping function of college IEI big data.

3. Results and Discussion

A college in Jiangsu Province is taken as the experimental object to verify the advantages of the IEI sharing platform under BDA. The platform created is applied to the college to provide IEI resources for the college, improve the intelligent processing level of IEI, realize IEI sharing, and cultivate the innovation and entrepreneurship ability of college students in an all-round way. Figure 5 shows the IEI sharing platform interface of the college.

The platform, according to Figure 5, offers services such as activity release, legal services, laws and regulations, data download, resource management, monitoring audit, and system administration. It also offers users an opinion feedback module, task reminder module, and system alert module, as well as statistics on the survey data of service resource overview and data resource overview. It features a
**Figure 5:** College IEI sharing platform interface.

**Figure 6:** IEI mining results: (a) raw time-amplitude data; (b) raw frequency-amplitude data.
simple operation and a high level of integrated control, making it ideal for increasing user retention and use of the college IEI sharing platform.

3.1. Platform Data Mining Performance Verification. The collection time interval and training set scale of IEI characteristics of the college are set to 100 s and 600 s, respectively, to verify the IEI mining ability of the college after applying the proposed platform. The distribution length of big data and the symbol width of intelligent scheduling of IEI in the college are 2100 ms and 0.15 ms, respectively. Figure 6 shows the original IEI data of the college mined by the platform.

Figure 6 reveals that the platform constructed has a stable mining range of college IEI data, indicating that the platform has good data mining performance and can mine college IEI data stably.

3.2. Platform Data Processing Performance Test. IEI-related archive information data, comprising basic data kinds, document information data, and user push information data, are picked from the college to check the platform’s data processing capacity. The platform operation request is set to 10n step-by-step pressure increase mode. To process the desired amount of data, the 10n step-by-step pressure rise method is used. Figure 7 depicts the platform data processing performance test results.

Figure 7 shows that the number of requests that the designed platform per unit time can support increases significantly with the gradual increase in the amount of data processed by batch requests for innovation and entrepreneurship archive information in colleges. Meanwhile, the effect of concurrent data connection is good. Experimental results show that the platform has better data processing ability with the gradual increase of user data.

3.3. Platform Data Scheduling Performance Test. BPNN-based shared service platform (B) and resource sharing-based educational big data information platform (C) are selected for comparison to verify the data scheduling ability of platform (A). The real-time performance and information recall of college IEI sharing on the three platforms are compared. Figure 8 shows the comparison results.

Figure 8(a) reveals that with the increase of data scale, the time cost of the proposed college IEI sharing platform is low and the change is relatively stable. The time cost of sharing service platforms based on BPNN and the education big data information platform based on resource sharing is relatively high. Moreover, the time cost also increases significantly.
with the increase of the data scale. This reveals that the college IEI sharing platform based on BDA proposed here has better real-time performance compared with the other two comparison platforms.

Figure 8(b) shows that as the number of iterations increases, the recall rate of the proposed platform is always higher than that of the other two comparison platforms, indicating that the proposed college IEI sharing platform based on BDA has good recall. To sum up, the information’s adaptive scheduling of the platform proposed is accurate, which can greatly improve the deployment efficiency of college IEI.

4. Conclusion

Various viewpoints in management studies have recently given substantial attention to innovation and entrepreneurship. To compete in the global arena, players have turned to innovation as a source of competitive advantage. To encourage college students’ innovation and entrepreneurship, a BDA-based IEI sharing platform has been built. First, the present issues with IEI sharing at universities, as well as the notion of developing an information-sharing platform, are discussed. The framework of the college IEI sharing platform, as well as the operating method, is then created. Furthermore, the BDA algorithm is created specifically for the platform. Finally, the information-sharing platform is subjected to an experimental investigation. The experimental findings suggest that the college IEI sharing platform under BDA performs well in terms of data mining and data processing. Furthermore, when compared to the BPNN-based sharing service platform and the resource-based education big data information platform, the platform suggested has greater real-time performance and recall. It can properly and adaptively arrange information, considerably increasing the efficiency of IEI deployment in institutions. Only the IEI sharing platform has been constructed due to a lack of energy. Later, the innovation and entrepreneurship project management platform will be developed and integrated with the information-sharing platform, allowing students to complete the sharing of entrepreneurship knowledge while working on entrepreneurship projects. This research enhances the college IEI sharing platform and helps to promote entrepreneurship among college students.

Data Availability

The data used to support the findings of this study are available from the author upon request.

Conflicts of Interest

The author declares no conflicts of interest.

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