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Research Article

Research and Practice Analysis of Higher Vocational Colleges Facing the Experience and Dissemination of Regional Characteristic Tea Culture

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Tea culture has special relevance in China's cultural system. It is closely related to the development of tea industry. It is also an important branch of China's traditional cultural system. Therefore, it must be paid great attention to. Especially in the context of big data, computer technology is widely used in the links of culture or information communication, and its purpose is to improve the communication effect. Therefore, the dissemination of tea culture information can be realized with the help of computer technology. From this perspective, this paper analyzes the development of computer technology in the background of big data, summarizes the necessity of using computer technology in the dissemination of tea culture information and, on this basis, considers the application strategy of computer technology in the dissemination of tea culture information from the perspective of big data, hoping to enter a more ideal pattern of tea culture information dissemination.

1. Introduction

China is the hometown of tea. In the long process of tea tasting, tea culture came into being. Tea culture which has been there for thousands of years is a shining pearl in the excellent traditional culture of China [1]. Culture is infiltrated through various symbols. Behavior, action, gesture, and taste are all symbols with different symbolic meanings. Some scholars believe that symbols carry the perception of meaning. Through the study of symbols, culture is analyzed, as shown in Table 1.

After entering the era of big data, the innovation of computer technology has stepped into a higher level, and its utility in information media has begun to show the characteristics of intelligence, which has completely changed the actual pattern of information media industry [2]. In detail, these technologies mainly include the following three types (as shown in Figure 1).

Data Mining Technology. In the era of information explosion, if people want to obtain the data they want, they often need to spend a long time to screen, which will involve a lot of time and cost, which is what many people do not want to see. At this time, data mining technology can reasonably realize the mining and analysis of corresponding information and obtain more valuable information in the context of big data, so as to facilitate people to make better decisions. Such data mining technology has a relatively large auxiliary efficiency and a wide range of practical applications [3].

Intrusion Detection Technology. In the context of big data, if the computer system is invaded, it will be detected quickly, so as to form a safe network environment, protect the corresponding data information, and make the actual Internet ecology develop and progress in a more sustainable direction [4]. Especially, as the scale of mobile payment is increasing and people use mobile payment more and more frequently, we should give full play to the efficiency of this technology.

Firewall Technology. In the context of big data, the interaction between computer software and hardware needs to

Table 1: Characteristic tea culture and Chinese etiquette.

Three tea	Six rituals	
Engagement requires "tea"	"Nacai" means that the man invites a matchmaker to propose marriage, and after approval, he needs to bring Dayan to propose marriage	"Salvation" refers to the fact that after the engagement, the man sends a dowry gift to the woman's house
Wedding etiquette needs to "order tea"	"Ask the name" is when the man asks a matchmaker to ask the woman's eight characters	"Invitation period" means that the man chooses a good and auspicious day after the betrothal gift, and prepares the ceremony to go to the woman's house to ask for advice
"Have tea" before the same room ceremony	"Naji" is based on Zhou Yi's test that men and women are suitable, and the man informs the woman that he can marry and comes to the door with a gift	"Welcome in person" is the ceremony for the man to marry the bride at the wedding.

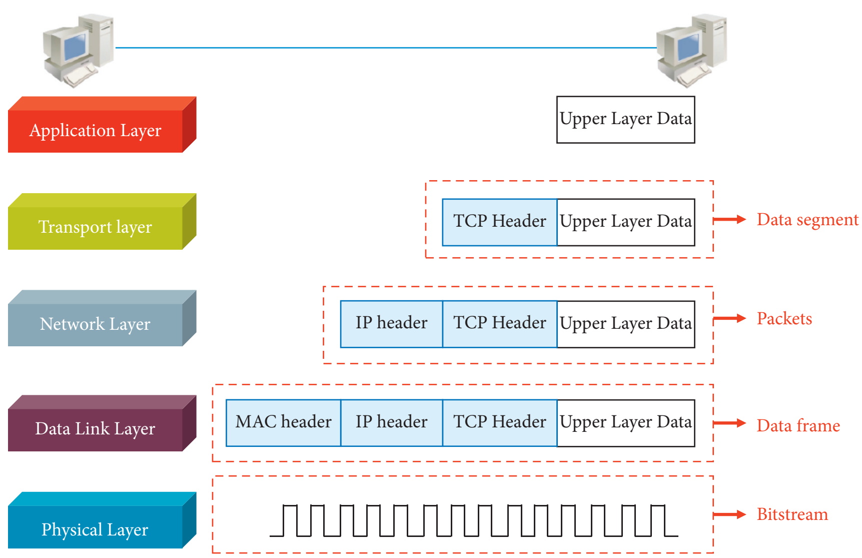

Figure 1: Computer network communication technology.

reach a high-quality state. At this time, firewall technology needs to be used to ensure the safe operation of the computer and the timeliness of all work [5]. In other words, in the process of big data development, computer technology will take security, timeliness, and systematicness as an important development direction, so that it can give better play to its efficiency in the upcoming era of big data.

The dissemination of tea culture is related to the inheritance and development of traditional tea culture and the sustainable development and progress of China's tea industry. Therefore, we must attach great importance to it [6]. The relevant research of blockchain technology in the field of information dissemination is also developing. Swan *m*, a foreign scholar, first studied the characteristics of information dissemination in blockchain, and he proposed a technology to show the authenticity of digital media based on blockchain; Rehman Su and others used blockchain technology to enhance the functions of existing solutions to prove the origin of digital media; Soto *h* and others pointed out that the unreasonable application of blockchain technology will affect the dissemination of information and the behavior of users receiving information, and they proposed a routing mechanism combined with incentive mechanism; Fu *D* and others carried out trusted computing based on blockchain in social networks, used credibility proof score to improve the system, and analyzed the attack. Domestic scholars have also done relevant research in the field of public opinion information. The more important literature is as follows [7]. Jia pandou and others have studied the information dissemination characteristics and laws of blockchain social networks, providing theoretical guidance for public opinion supervision of blockchain social applications; Zhao Dan and others deconstructed the blockchain public opinion communication network structure and studied the communication characteristics and laws; Liu Qi studied the application of blockchain technology in social networks, and they proposed a prediction model of information protection based on private blockchain to protect the security of sensitive information; Lin Haohan's research shows that blockchain technology can effectively control network rumors; Guo Sulin studied the public opinion dissemination and risk management of blockchain network; Wang Xiwei and others built a blockchain based on an online rumor screening model, which promoted the development of rumor governance and public opinion guidance; Bin Sheng and other scholars proposed a public opinion communication model for social networks based on blockchain technology; Cui zengle and others optimized the information dissemination model of blockchain social networks and analyzed the information dissemination law of blockchain social networks.

Although scholars at home and abroad have carried out more research on blockchain technology, the field of network public opinion mainly focuses on the theoretical research and application level, and has not formed a systematic system [8]. Therefore, the information dissemination model based on blockchain technology is still in the development stage, and will be studied gradually in the future [9].

2. Basic Concepts and Related Models

2.1. Blockchain-Related Concepts

2.1.1. Blockchain Technology. The concept of blockchain originates from bitcoin. In a narrow sense, blockchain is a specific data structure that packs data up to a specified size in chronological order to form blocks and combines them in the form of a chain, and a nontamperable and nonforgeable decentralized shared ledger guaranteed by cryptography. Generalized blockchain technology is a new distributed infrastructure and computing paradigm that uses block chain data structure to verify and store data, uses distributed node consensus algorithm to generate and update data, uses cryptography to ensure the security of data transmission and access, and uses intelligent contract composed of automatic script code to program and operate data.

The data structure of blockchain is composed of block header, transaction quantity, and block body, as shown in Figure 2. The block header includes hash value, timestamp, and other information [10]. The block body contains the transaction data of the block. The transaction quantity is the number of transaction data.

Blockchain is the integration of a variety of existing technologies, which makes it decentralized, distrusted, tamperable, traceable, and so on. Blockchain network is a point-to-point network, with nodes separated from each other and no need to build other trust intermediaries, ensuring decentralization and disintermediation of trust; the data are stored on the time stamped blockchain, and the connected blocks have cryptography-related verification relationship, which ensures the traceability and nontamperability of the data; the network allows any user to participate, which also improves the openness and transparency of the whole system.

2.1.2. Blockchain Classification. According to the different opening permissions and application directions of blockchain, blockchain can be divided into public chain, alliance chain, and private chain [11]. There is no central server in the public chain, which is completely decentralized, allowing everyone to participate in maintenance. Users can freely enter and exit the blockchain network, publicly send transactions and participate in consensus, but the transaction efficiency is low [12]. The public chain is applicable to digital currency, finance, and other scenarios. The typical applications are bitcoin and Ethereum [13].

The alliance chain is jointly initiated and maintained by member institutions. The accounting nodes are selected in advance to participate in the consensus verification process. Therefore, it is partially decentralized. Other nodes joining the network can also conduct transactions and data queries, but have no right to account. Typical applications include super ledger, R3 alliance, etc. [14].

Private chain is a private organization that limits the scope and controls the permissions of nodes. Only licensed nodes can join the network for transactions. The private chain is not open to the outside world, but only open internally, with fast transaction efficiency, fewer nodes, and more effective consensus. Table 2 shows the comparison of different types of blockchains [15].

2.2. Blockchain Core Mechanism

2.2.1. Consensus Mechanism. The consensus algorithms of blockchain mainly include POW algorithm, POS algorithm, dpos algorithm, distributed consistency algorithm, etc. Table 3 shows the comparison of common consensus algorithms in blockchain:

(1) *POW Algorithm.* POW algorithm, namely, proof of work, ensures data consistency and consensus security by introducing the computing power competition of distributed nodes. It was first used in bitcoin system for mining [16]. Its advantages are complete decentralization and free access of nodes. Its disadvantages are waste of resources, long consensus cycle, and 51% attacks.

(2) *POS Algorithm.* POS algorithm, i.e., proof of stake, the node with higher equity has a higher probability to obtain the bookkeeping right. The equity is expressed as the ownership of digital currency, which is commonly measured by the number of currencies and holding time [17]. The advantage is to reduce the waste of resources and shorten the time to reach a consensus. The disadvantage is that it is vulnerable to network attacks. Nodes with high rights and interests are easier to keep accounts and lose impartiality [18].

(3) *Dpos Algorithm.* Dpos algorithm, i.e., delegated proof of stake, the node selects the authorized proxy node using the share equity voting. The proxy nodes selected by the vote are bookkept in turn. The advantage is to greatly shorten the time for consensus. The disadvantage is that when the number of nodes is small, the selected proxy nodes are not representative and cannot be completely decentralized [19].

(4) *Distributed Consistent Algorithm.* Distributed consistency algorithms include Byzantine fault-tolerant algorithms, such as BFT mechanism and pbft mechanism, as well as non-Byzantine fault-tolerant algorithms, such as Paxos mechanism and raft mechanism. These algorithms are more traditional and are not suitable for public chain

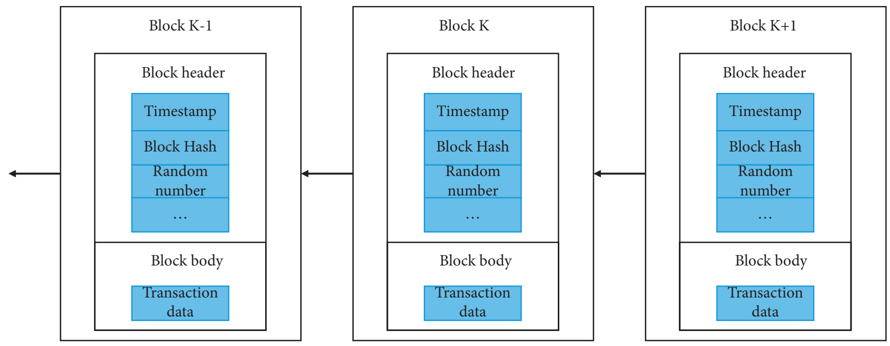

Figure 2: Block chain structure diagram.

Table 2: Blockchain classification and comparison.

Parameter	Public chain	Alliance chain	Private chain
Degree of centralization	Completely decentralized	Partially decentralized	Centralized
Participant	Anyone	Alliance member	Designated person
Bookkeeper	All participants	Participant negotiation	Custom
Advantage	Completely solve the trust problem	Controllable permissions and high scalability	Low energy consumption and fast transaction speed
Shortcoming	Slow transaction speed and high security	Can not fully solve the trust problem	Access node is restricted
Application	Bitcoin	Hyperledger	Centralized exchange

Table 3: The consensus algorithm comparison.

Parameter	PoW algorithm	PoS algorithm	DPoS algorithm	Pbft algorithm
Degree of centralization	Completely decentralized	Completely decentralized	Partially decentralized	Partially decentralized
Performance efficiency	Low	Higher	High	High
Node fault tolerance	<50%	<50%	<50%	<33%
Fork situation	Easy to fork	Easy to fork	Not easy to fork	No fork
Eventual	No finality	No finality	No finality	Final
Application scenarios	Public chain	Public chain	Public chain	Alliance chain

scenarios. The advantages are high consensus consistency and fast consensus speed [20]. The disadvantage is that the degree of decentralization is not high, and the algorithm is more complex, as shown in Table 3.

2.2.2. Incentive Mechanism. Incentive mechanism is another important mechanism of blockchain technology, which is consistent with incentive compatibility, that is, recognizing people's selfishness, and participants will take actions to maximize their personal interests. The design of bitcoin system uses this theory to reward the accounting nodes that record transactions and package blocks, so as to encourage each node to participate in the competition for accounting rights and ensure the spontaneous operation of the system. At present, studies have confirmed that economic benefits will affect the transmission probability of information in blockchain social networks; Hu Yuancong and others analyzed the types of blockchain technology incentive mechanism, divided it into three basic types, empowerment incentive, income increasing incentive, and reputation enhancing incentive, and discussed their respective incentive contents; He Yunhua and other scholars studied the transaction form, classification and evaluation criteria of blockchain incentive mechanism, and divided the incentive mechanism into three types: incentive mechanism based on reputation, auction and quality contribution. Among them, the incentive mechanism based on reputation and quality contribution is the more commonly used mechanism at present.

2.3. Information Dissemination Model. At home and abroad, the research on information communication model mainly includes infectious disease model, influence communication model, communication model based on game theory, and so on, as shown in Figure 3.

2.3.1. Infectious Disease Model. Infectious disease model generally divides the nodes in the network into susceptible state, infected state, and recovered state according to the different categories of people in infectious diseases.

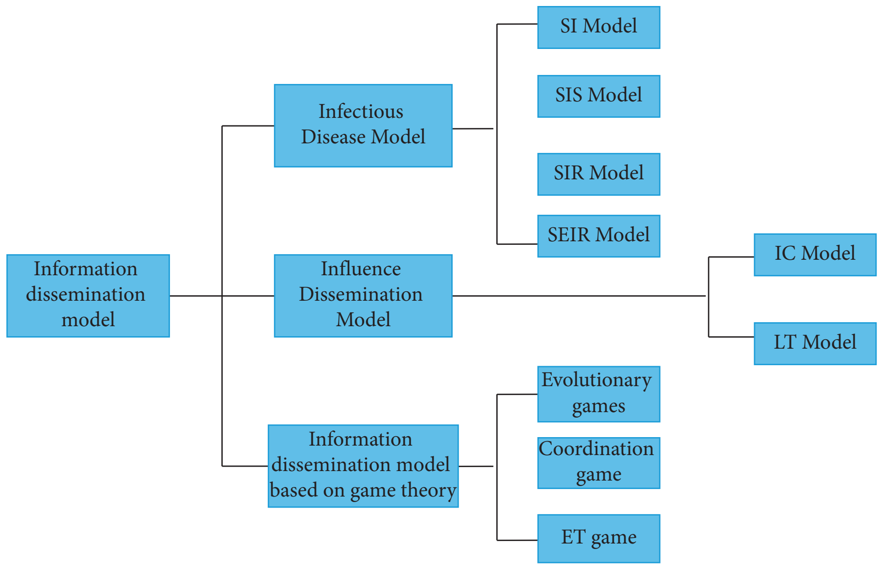

Figure 3: Classification of information propagation models.

Therefore, researchers have constructed several classical infectious disease models using differential dynamic equations, such as Si model, SIS model, SIR model, SIRS model, SEIR model, and so on. Several commonly used infectious disease models are introduced as follows:

(1) *Si Model.* Si model divides individuals in the network into susceptible and infected people. The probability of susceptible persons S(t) and the proportion of susceptible persons I(t) after exposure are expressed in t λ It is infected and cannot recover. The dynamic equation formula of Si model is as follows:

$$\begin{cases} \frac{dS(t)}{dt} = -\lambda S(t)I(t), \\ \frac{dI(t)}{dt} = \lambda S(t)I(t). \end{cases} \quad (1)$$

(2) *SIS Model.* The individual classification of the network in the SIS model is the same as that in the SI model, but there is a situation where the infected person turns into susceptible person through cure in transmission. *S(t)* will be infected with probability after contacting the infected person, but *I(t)* will also change to *S(t)* with recovery probability β. The dynamic equation formula of SIS model is as follows:

$$\begin{cases} \frac{dS(t)}{dt} = \beta I(t) - \lambda S(t)I(t), \\ \frac{dI(t)}{dt} = \lambda S(t)I(t) - \beta I(t). \end{cases} \quad (2)$$

(3) *SIS Model.* SIR model is the most widely used, which divides the population into three categories: susceptible, infected, and immune. The model assumes that the total population of the population remains unchanged, the susceptible person S(t) will be infected with probability after contacting the infected person, and the infected person I(t) will also be transformed into the immune personR(t) with recovery probability. The immune person will not be infected again after recovery. In the model, S(t) + I(t) + R(t) = 1. The dynamic equation formula of SIR model is as follows:

$$\begin{cases} \frac{dS(t)}{dt} = -\lambda S(t)I(t), \\ \frac{dI(t)}{dt} = \lambda S(t)I(t) - \mu I(t), \\ \frac{dR(t)}{dt} = \mu I(t). \end{cases} \quad (3)$$

2.3.2. Influence Communication Model. In addition to infectious disease models, there are also some influence propagation models based on network structure. The most used are independent cascade model and linear threshold model.

(1) *Independent Cascade Model (IC Model).* In the probability model, each node has only one chance of being activated and the inactive node has only one chance of being activated.

(2) *Linear Threshold Model (LT Model).* LT model is based on the threshold model. Each node in the LT model has a specified random threshold, and the weight will be assigned between the edges to represent the influence between the two nodes. When the sum of the influence from the adjacent nodes exceeds the specified threshold, the node will be activated.

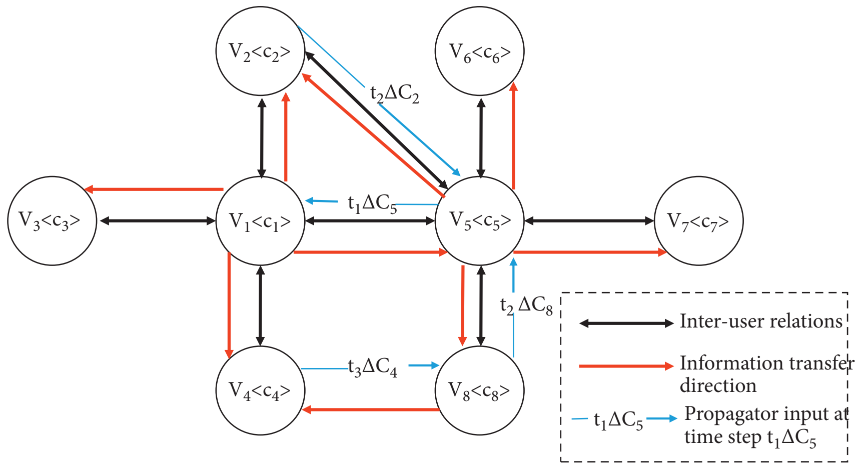

Figure 4: Information dissemination process of blockchain social network.

3. Tea Culture Information Dissemination Model Based on Blockchain Social Network

Comparing the differences between traditional social networks and blockchain social networks, it is found that the characteristics and mechanisms of blockchain social networks will have an impact on the dissemination of information and public opinion, but the existing research has not conducted in-depth research on its specific dissemination process and mechanism. This article analyzes the mode of information dissemination on the network in detail, puts forward an information dissemination model based on blockchain social networks, calculates the dissemination probability quantitatively by designing algorithms, and verifies the effectiveness and rationality of the model.

3.1. Analysis of Information Dissemination Mode of Blockchain Social Network. Social networks are usually complex networks with users as nodes and various relationships between users as edges. The relationships between users can be friends and concerns established for behaviors such as attention, likes, comments, and so on. Blockchain social network is a scale-free network, which also provides a relationship-based network communication mode. Users have different roles. When receiving a message, they will decide whether to spread the information through their own strategies, so as to determine whether the neighbor node can obtain the message. Considering the characteristics of blockchain's reputation mechanism and economic incentive, when a disseminator transmits messages to neighbor users, users will take the reputation value of "investment" in information as guarantee based on their own judgment of information and consideration of disseminator's reputation, which will affect their economic benefits.

Therefore, the blockchain social network can be expressed as G=($V_{(c)}$, E), where $V(c)$ represents the set of user nodes in the social network, c represents the credit asset value of the node, the user's credit asset value is related to the reputation value and token value owned by the user, and represents the edge set formed by the social relationship. The information dissemination mode of social network is shown in Figure 4.

3.2. Blockchain Social Network Tea Culture Information Dissemination Model. SEIR model has been improved on the basis of SIR model and added latent state. SEIR model abstractly describes the crowd in the spread of tea culture as easy to spread state, latent state, spread state, and nonspread state. It is assumed that an individual who is in a transmissible state in a unit time (recorded as S) is transformed into an individual in a latent state with an average probability λ after contacting the disseminator (recorded as E), an individual in a latent state with an average probability δ due to the extension of time (recorded as I), and an individual in a transmissive state finally transformed into an individual in a transmissive state with a probability R. The differential equations of SEIR model are expressed as follows:

$$\begin{cases} \dfrac{\mathrm{d}S(t)}{\mathrm{d}t} = -\lambda S(t)I(t), \\ \\ \dfrac{\mathrm{d}E(t)}{\mathrm{d}t} = \lambda S(t)I(t) - \delta E(t), \\ \\ \dfrac{\mathrm{d}I(t)}{\mathrm{d}t} = \delta E(t) - \mu I(t), \\ \\ \dfrac{\mathrm{d}R(t)}{\mathrm{d}t} = \mu I(t). \end{cases} \tag{4}$$

Considering the structural topology of blockchain social network, we record individual users as nodes. The definition and explanation of transition probability between states of nodes in blockchain social network are shown in Table 4.

Since the number of users in the blockchain social network is basically unchanged in a short time, assuming that the total population in this model remains unchanged, let the total number of network nodes in the time period be N(t), and use $U(t)$,$E(t)$,$C(t)$,$S(t)$,$R(t)$ to represent unknown state nodes, latent state nodes, consensus state nodes, and propagation

Table 4: The UECSR model parameter table.

Parameter	Definition	Explain
P_{UE}	Latent probability	When the unknown state node U contacts a propagating node S, the probability of the unknown node transitioning to the latent state node *E*
P_{UC}	Consensus probability	When the unknown state node U contacts a propagating node S, then the probability of the unknown node transitioning to the consensus state node C
P_{ES}	Latent-transmission probability	Probability of latent state node *E* transitioning to propagating state node S
P_{CS}	Consensus-propagation probability	Probability of consensus state node C transitioning to propagation state node s
P_{ER}	Latent-removal probability	The probability that the latent state node *E* transitions to the removed state node R
P_{CR}	Consensus-move out probability	Probability of consensus state node C transitioning to move out state node R
P_{SR}	Removal probability	Probability of propagating state node *s* transitioning to move out state node R

state nodes. The proportion of the number of out of state nodes in $N(t)$, then $U(t)+E(t)+C(t)+S(t)+R(t)=1$. The corresponding relationship between node states is shown in the following formula:

$$U(i)+E(j)\xrightarrow{P_{UE}}E(i)+E(j),U(i)+C(j)\xrightarrow{P_{UC}}C(i)+C(j),E(i)+S(j)\xrightarrow{P_{ES}}S(i)+S(j),C(i)+S(j)\xrightarrow{P_{CS}}S(i)+S(j), \quad (5)$$

$$E(i)\xrightarrow{P_{ER}}R(i),C(i)\xrightarrow{P_{CR}}R(i),S(i)\xrightarrow{P_{SR}}R(i). \quad (6)$$

Through the above analysis of the conversion rules between node states, the dynamic equations of UECSR model are constructed, which can be expressed by the following formula:

$$\begin{aligned}\frac{\mathrm{d}U(t)}{\mathrm{d}t}&=-P_{UE}U(t)S(t)-P_{UC}U(t)S(t),\\ \frac{\mathrm{d}R(t)}{\mathrm{d}t}&=P_{ER}E(t)+P_{CR}C(t)+P_{SR}S(t).\end{aligned} \quad (7)$$

To sum up, assuming that the target information has been voted for a total of times since its dissemination, the average reputation value *cavg* of the current consensus node can be obtained:

$$C_{s_{\text{avg}}}=\frac{\sum s_i\in s_k Cs_i}{k}, \quad (8)$$

where *S* is the set of all consensus nodes so far and *Csi* is the reputation value of consensus nodes. The final reputation evaluation of the information can be expressed by the reputation value of the source node and the average reputation value of the consensus node:

$$C_v=\lambda C_{\text{source}}+(1-\lambda)C_{s_{\text{avg}}},\quad \alpha\in[0,1], \quad (9)$$

where λ is the adjustment factor, which can be used to adjust the weight of the reputation value of the source node and the average reputation value of the consensus node. The reputation index *Index*(c) of a node can be expressed by the following formula:

$$\text{Index}(c)=\frac{C_v-C_{\min}}{C_{\max}-C_{\min}}. \quad (10)$$

In addition, because the authenticity of the target information is an important factor affecting the node propagation probability, and most nodes in the network will vote rationally, the results of user nodes voting for and against the information can reflect the authenticity of the information to a certain extent. With the growth of time, the number of voting nodes increases, and the judgment of the authenticity of the information is more accurate. Assuming the true and false nature of the information, the decision information can be simulated through the voting results of the target information by the consensus node. The following formula is designed to represent the true and false nature of the information.

$$\mathbf{F}=\frac{\sum_{F_j\in\text{cred}_{\text{list}}}F_j}{\left|\sum_{F_j\in\text{cred}_{\text{list}}}F_j\right|}, \quad (11)$$

where F is the true and false identifier of the target information, indicating the ratio of the sum of all node voting identifiers to its absolute value. It can be concluded that if the affirmative vote in the node vote is greater than the negative vote, and the sum of all node voting identifiers is positive, then $\mathcal{F}=1$, representing that most consensus nodes consider the target information to be true information; If the affirmative vote in the node voting is less than the negative vote, and the sum of all node voting identifiers is negative, then $\mathcal{F}=-1$ represents that most consensus nodes believe that the target information is false.

4. Experiment and Simulation

In this section, the rationality of the construction of the block chain model and the influence of the social consensus model are discussed, and the rationality of the information dissemination model of the block chain is analyzed. The experimental parameters are set as follows: construct a-scale free network, with the total number of nodes at $N0 = 10000$, set the initial spreading node density at S(0) = 0.01, unknown nodes at $N(0) = 1 - S(0)$, consensus probability $PC = 0.5$, latent probability $PE = 0.5$, latent probability-propagation probability $PES = 0.5$, consensus probability-propagation probability $PCR = 0.5$, removal probability $PSR = PR = PCR = 0.1$, and the simulation time is set to $t = 100$.

4.1. Impact of Consensus Nodes on Information Dissemination. According to the UECSR model, the influence of the addition of the consensus state node to the information transmission is verified. By setting $PC = 0$ and $PUE = 0$, respectively, the influence of consensus node on the node state of information transmission was discussed. Other Settings in the experiment were the same as before, and the remaining probabilities remained unchanged. The result is shown in Figure 5.

Figure 5 shows the influence of whether there is a consensus node in the model on information dissemination. In Figure 5, the consensus probability PC = 0 indicates that the unknown node will not be transformed into a consensus node, that is, there is no consensus node in the model. When $t = 15$, the maximum density of propagation nodes is about 0.55; In Figure 5, the latent probability PE = 0 indicates that the unknown node will not be transformed into a latent node, that is, there is no latent node in the model. When $t = 25$, the proportion of propagation nodes is the largest, about 0.4. The simulation results show that the peak value of information propagation in the model without consensus nodes is higher than that in the model with consensus nodes, and the propagation and diffusion speed is faster. This shows that there will be more rational users in the blockchain social network, who are more cautious when spreading information. They decide their own communication strategy by participating in the voting consensus, so they will not spread information at will, which leads to slower transmission speed and smaller transmission range of public opinion information in the blockchain social network, reducing the spread of rumors in the network. The above proves the importance of adding consensus nodes to blockchain social networks to analyze the information dissemination process.

4.2. Impact of Consensus Probability on Information Dissemination·. In blockchain social networks, with the increase of the number of users participating in voting consensus, more rational users will make their own objective judgment on the target letter and have an impact on the transmission probability PS of the target information. Therefore, the number of users participating in voting consensus will also have an impact on the dissemination of information. This can be expressed in the UECSR model by the change of propagation probability PC from unknown state node U to consensus state node C. Assuming that the experimental parameters are set with different values such as PC = 0,0.2,0.4,0.6,0.8,1, other settings are the same as before,

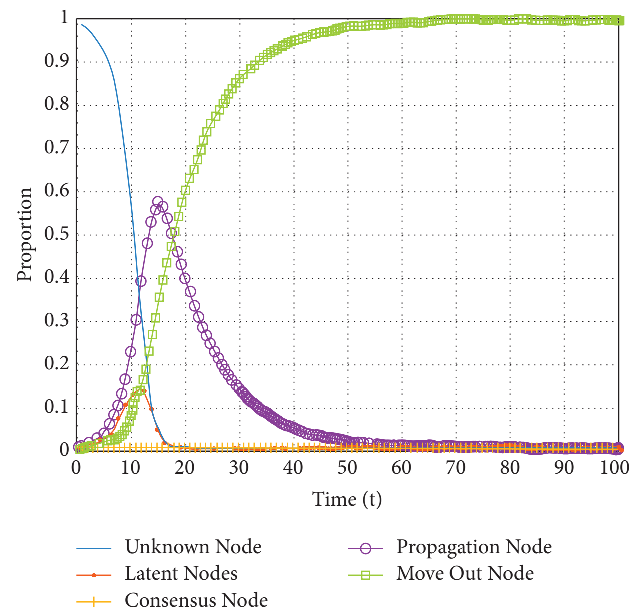

Figure 5: Effect of consensus nodes on information propagation.

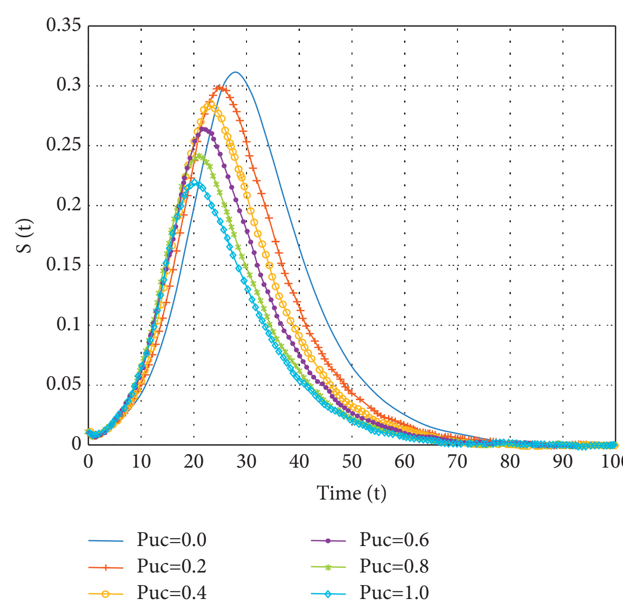

Figure 6: Effect of consensus probability on propagating and removed nodes.

and the other probabilities remain unchanged. That is to study the change trend of the proportion of propagation nodes and removal nodes when the number of voting consensus users in the network is different.

As can be seen from Figure 6 with the increase of the consistency probability PC, the earlier proportion of propagation nodes in the network S(t) reaches the peak in the same period, and the maximum value is small; in addition, the proportion of outgoing nodes in the network continues to increase, and the time to reach a stable state is also earlier. This shows that with the increase of consensus probability, more and more users have a consensus to

Table 5: Comparison table of the three different models.

Parameter.	SEIR model	BSEIR model	UECSR model
Network type	Traditional social network	Blockchain social network	Blockchain social network
Number of propagation nodes	3062	2342	2064
Transmission susceptibility ratio	1.065	0.7942	0.4957
Move out percentage	0.9150	0.9481	0.9704

participate in network communication, which makes the speed of information transmission between users faster, and the time when the transmission reaches the highest point will be advanced, and the time when they are tired of information will be advanced accordingly. If the target information is a rumor, more users will vote against the information, which will reduce the transmission peak in the network. The initial change of the propagation node *S (t)* is small because the blockchain consensus node has little impact on information dissemination in the initial stage, but with the passage of time, the consensus node begins to affect subsequent nodes, and then the gap begins to grow. The above proves that the number of consensus nodes in blockchain social networks has an impact on the information dissemination process.

4.3. Consensus-Impact of Propagation Probability on Information Dissemination. With the passage of time, the removal proportion in each model continues to increase, while the removal proportion of nodes in the UECSR model increases faster than that in the SEIR model and BSEIR model, and the removal proportion when reaching the steady state is also larger. This shows that the nodes in the UESCR model have less propagation of false information, are more transformed into moving out nodes, and enter the steady state earlier. This shows that the model is more sensitive and the diffusion of information is less.

Table 5 illustrates the comparison of false information dissemination in the three models. Compared with the SEIR model of traditional social networks, the number of nodes propagating information in the UECSR model is reduced by 9.98%, the transmission susceptibility ratio is reduced by 0.5693, and the proportion of removal is increased by 5.54%. Compared with the BSEIR model considering incentive mechanism in a blockchain social network, the number of nodes transmitting information decreased by 2.78%, the transmission susceptibility ratio decreased by 0.2985, and the proportion of removal increased by 2.23%.

5. Conclusion

In the context of big data, the dissemination and development of tea culture needs the effectiveness of computer technology, so as to build an ideal cultural communication platform, create a good tea culture communication environment, optimize communication channels, and guide the construction of the actual tea culture communication system, so as to make the inheritance and development of tea culture enter a more ideal state. By studying the impact of blockchain technology consensus mechanism and incentive mechanism on the dissemination of public opinion information in the network, this paper proposes an information dissemination model, the UECSR model, based on blockchain social network. By adding a new consensus node state, the model accurately simulates the information dissemination process under blockchain social network, and analyzes the information dissemination mode of the network. Through the designed node reputation value algorithm, the influence of consensus mechanism and incentive mechanism on the communication behavior of tea culture is reasonably quantified.

Data Availability

The labeled data set used to support the findings of this study is available from the corresponding author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

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