

Elevating Rural Revitalization and Agricultural Modernization Leveraging Intelligent Big Data Analysis through Digital Marketing Strategies

Nan Su^{1*}

¹School of international studies, Sichuan university, Sichuan,610044, China, <u>sctsg2013@163.com</u>

Corresponding author: Nan Su, sctsg2013@163.com

Abstract. In order to improve the integration effect of rural revitalization strategy and agricultural modernization governance, this paper combines intelligent big data technology to improve the association rule algorithm, and proposes the basic definition of the sequence pattern of anonymous set data and the algorithm of sequence pattern mining of anonymous set data. Moreover, this paper combines intelligent big data technology to analyze the integration of rural revitalization strategy and agricultural modernization governance, proposes a corresponding intelligent platform, and applies the platform to the simulation system to explore the integration path of rural revitalization strategy and agricultural modernization governance.In addition, this paper combines the organization network model to analyze system factors. Finally, after constructing the system model, this paper designs experiments to verify the model of this paper.From the experimental research, it can be known that the integration analysis system of rural revitalization strategy and agricultural modernization governance based on intelligent big data analysis constructed in this paper has certain practical performance.

Keywords: Big data; rural revitalization; agricultural modernization; data fusion; Digital Marketing Strategies **DOI:** https://doi.org/10.14733/cadaps.2024.S4.75-90

1 INTRODUCTION

For agricultural modernization, its connotation is very rich. It is an indispensable and important part of my country's overall modernization, and it is also the core goal that has been pursued by agricultural policies for many years [15].From an objective point of view, agricultural modernization is based on modern science, and it wants to realize the transformation from the development of traditional agricultural industries to modern agriculture.The main manifestation is that it relies on social and economic development and scientific and technological progress to use modern science

Computer-Aided Design & Applications, 21(S4), 2024, 75-90 © 2024 CAD Solutions, LLC, <u>http://www.cad-journal.net</u> and technology and equipment for agricultural production. Moreover, it uses a scientific management model to manage the agricultural economy, creates a high-yield, high-quality, and low-consumption agricultural production system, and rationally uses resources, protects the environment, and establishes an agricultural ecosystem with high conversion efficiency. At the same time, it generates a scientific agricultural management system through the development of modern science and technology, and carries out overall adjustment and planning of the rural economy [13]. In addition, it uses Internet digital technology to integrate with the agricultural industry, and continuously innovates business models and products in accordance with the development of regional economic development in rural areas. Furthermore, it uses the Internet and other new-generation information technologies to achieve high-efficiency integration, and innovate new modern agricultural products, new models and new formats based on the Internet platform. Finally, it uses "Internet + agriculture" to drive and build an upgraded version of my country's modern agricultural development [11].

By embracing digital marketing strategies, agricultural modernization is not only propelled forward but also benefits from increased market access, improved customer engagement, and enhanced brand visibility. The integration of digital marketing in the agricultural sector opens up new avenues for growth, collaboration, and knowledge exchange, contributing to the overall success of modern agricultural development in the country.

From the perspective of system innovation, it is necessary to create more fair and reasonable market opportunities for agricultural development in a market economy environment, and build new production relations on the basis of ensuring the stability of agricultural labor. On the one hand, we must actively build a model that encourages agricultural reforms to match the market economic environment and policies.

China's agriculture is not only considered from China's rural areas, it is not only to solve agricultural problems, but more importantly, to solve the problem of supporting the majority of farmers. Only the simultaneous realization of agricultural and rural modernization can bring greater well-being to the hundreds of millions of farmers living in the countryside, and finally achieve a harmonious state in which the development of the countryside and the modern society are coordinated. Agricultural and rural modernization is the overall goal of implementing the rural revitalization strategy. To grasp this general goal, we must adhere to the integrated design and advancement of agricultural modernization and rural modernization, implement the idea of giving priority to agricultural and rural development, and actively build a long-term mechanism for highquality agricultural and rural development. Our country's agricultural production mode has realized a historic transformation from human and animal power to mechanized operation. In contrast, the problem of lagging rural development in our country has become increasingly prominent. Therefore, the report of the 19th National Congress of the Communist Party of China regards it together with agricultural modernization as the goal of the implementation of the rural revitalization strategy, which will enable the two to advance simultaneously and complement each other, realize the leap from an agricultural country to an agricultural country, and provide solid support for national modernization. . Therefore, the realization of agricultural and rural modernization is to integrate industry and agriculture, cities and villages, urban residents and rural residents as a whole into the whole process of building a well-off society in an all-round way, and gradually realize the equalization of the basic rights and interests of urban and rural residents, and the equalization of urban and rural public services. The income balance of urban and rural residents, the rationalization of the allocation of urban and rural factors, and the integration of urban and rural industry development.

This article combines the intelligent big data technology to analyze the integration of rural revitalization strategy and agricultural modernization governance, proposes a corresponding intelligent platform, and applies the platform to the simulation system to explore the integration path of rural revitalization strategy and agricultural modernization governance.

2 RELATED WORK

Theliterature [3] believes that the problem in rural democratic autonomy is that the relationship between the subjects of rural democracy is not straightened out, and it often appears that villager autonomy is responsible to the superior at the institutional level, but in fact it is not responsible to the villagers. Theliterature [14] believed that full self-government of villagers requires the guidance and supervision of the party organization and the government, otherwise there may be issues such as election bribery that seriously threaten the fairness and justice of rural democratic governance in the election process. From the perspective of institutional arrangements and policies, the literature [10] critically pointed out that there are serious lags in the electoral system, the relationship between the village committee and the party branch, the relationship between autonomous organizations and the grassroots government in the construction of the new countryside.Literature [19] affirmed the political awakening and promotion of farmers. Moreover, it affirmed the progress in the "election mobilization mechanism", "election authenticity", "diversity of means of election competition", and "political effectiveness of election results" in the village elections in the past ten years. The literature [4] mainly conductedresearch on the theory and countermeasures of grassroots democracy from the levels of high-level political phenomena and policy making process, grassroots government reform and rural public affairs, grassroots democracy, rural governance, and farmers. Moreover, it advocated a comprehensive analysis of the status quo of comprehensive rural reforms, with the focus on promoting the transformation of the powers and responsibilities of township governments. Through the research on rural governance in the past ten years, the literature [8] showed that the rural politics and governance operation logic have undergone tremendous changes, but the related institutional structure has not undergone timely changes. Theliterature [16] conducted in-depth research on villager autonomy based on rural governance, social capital and public services. The literature [17] elaborated on the positive effects of urbanization on rural reforms under the current situation, and conducted an in-depth analysis of the problems that rural reforms have on cities in the process of urbanization. Moreover, it affirmed that "urbanization" is conducive to promoting the process of urban-rural integration and China's economic development. At the same time, it analyzed the problems of the relationship between urban and rural areas in the new era, the main body of urbanization, namely "migrant workers", and the overall planning of urban and rural areas.

Literature [1] believes that the main task of the construction of "New Socialist Countryside" is to help rural people organize, find a non-agricultural way of survival, and promote the emergence of "urban China" as soon as possible. The law of rural development determines that the promoter of the "new countryside" is the farmers themselves, and the construction of the new countryside depends on promoting the development of the farmers themselves. Literature [18] believes that upholding and perfecting the system of villager autonomy and promoting the democratization of rural management are important content and internal requirements for the construction of a new socialist countryside. At the same time, the implementation of the new countryside construction development strategy also provides new opportunities for the further development of villager autonomy, and affects the future trend of villager autonomy. The literature [2] pointed out that the reason for the current "formalization" of new rural construction is that the construction of rural politics in the five requirements of new rural construction is very lacking, and that political construction in the construction of new rural areas is the basis and prerequisite. The literature [7] affirmed the positive role of the new rural construction instructors sent by the central government, and believed that such experience is worth spreading across the country. Literature [12] pointed out that to analyze the reasons for the failure of grassroots governance, it is necessary to analyze the historical sources and characteristics of the formation of relevant governance roles and their responsibilities, as well as the relationship with the new social environment and governance objects, and that special attention should be paid to organization The role of channels in establishing social equality. Literature [6] puts forward that emphasizing the positive role of village community

rationality in the construction of a new socialist countryside is conducive to avoiding the outbreak of collective conflicts in village communities, is conducive to the formation of a rural democratic governance framework with multiple subjects, and is conducive to improving the rural economy and rebuilding a good rural governance system. Literature [5] systematically explained the relationship between rural governance and national security. It is believed that the construction of a new countryside is of positive significance to national security. One of the theoretical innovations is "the internalization theory of rural society in response to externalities." This theory aims to build a microfoundation of national security by improving rural governance, thereby promoting the "three rural areas". "To take advantage of the negative impact of absorbing and weakening the import of international risks into the country. Literature [9] expounds the significance of rural grassroots democracy from a macro-theoretical point of view, and at the same time analyzes the difficulties and causes of the practice of villager autonomy. Literature [13] analyzes the content of rural democracy from multiple case studies, and at the same time seeks the legitimacy roots for rural grassroots democratic governance in our country, expounds the value of rural grassroots democracy and the organization system, mechanism construction and development direction of grassroots democracy.

3 ASSOCIATION RULE MINING BETWEEN TOWNSHIP REVITALIZATION STRATEGY AND AGRICULTURAL MODERNIZATION GOVERNANCE

Definition 1. We set $I = \{i_1, i_2, ..., i_m\}$ as a collection of m different attributes, where the element (i = 1, 2, ..., m)

(j=1,2,...,m) is called an attribute item, and its abbreviation is item. The number k of items included in an item set is called the size or length of the item set, and an item set with a size of k is called k-itemset for short.

Definition 2. We set $D = \{t_1, t_2, ..., t_k, ..., t_n\}$ as a transaction data set, where $t_k (k = 1, 2, ..., n)$ is a transaction and X is an item set. If $X \in t_k$, it is said that transaction t_k contains itemset X. The number of transactions containing itemset X in transaction set D is called the support number of itemset X, denoted as ∂_x , and the ratio of the total number of transactions in D is called the support of itemset X (Support), denoted as s (X), namely [11]:

$$s(X) = \frac{\partial x}{|D|} \times 100\%$$
⁽¹⁾

Definition 3. If X and Y are itemset, and $X \in I, Y \in I$ and $X \cap Y = \emptyset$, then the implication $X \to Y$ is called an association rule.

Definition 4. If D is a transaction set, X and Y are itemsets, and there is an association rule $X \rightarrow Y$, then the support of $X \rightarrow Y$ refers to the ratio of the number of transactions containing both X and Y to the total number of transactions in D, denoted as s ($X \rightarrow Y$), that is:

$$s(X \to Y) = s(X \cup Y) \tag{2}$$

Computer-Aided Design & Applications, 21(S4), 2024, 75-90 © 2024 CAD Solutions, LLC, <u>http://www.cad-journal.net</u>

Definition 5. If D is a transaction set, X and Y are itemsets, and there are association rules $X \rightarrow Y$, then the Confiderce of $X \rightarrow Y$ refers to the ratio of the number of transactions that include both X and Y to the number of transactions that include X in transaction set D, denoted as c(X-Y), namely:

$$c(X \to Y) = \frac{s(X \cup Y)}{s(X)}$$
(3)

Definition 6. If D is a transaction set, X and Y are itemsets, and there is an association rule $X \rightarrow Y$, then the expected confidence of $X \rightarrow Y$ refers to the ratio of the number of transactions containing Y in D to the total number of transactions, denoted as ec(X-Y), namely:

$$ec(X \to Y) = s(Y)$$
 (4)

Definition 7. If D is a transaction set, X and Y are itemsets, and there is an association rule $X \rightarrow Y$, then the Lift of $X \rightarrow Y$ refers to the ratio of the confidence of the association rule to the expected confidence, namely:

$$Lift(X \to Y) = \frac{c(X \to Y)}{ec(X \to Y)} = \frac{c(X \to Y)}{s(X)s(Y)}$$
(5)

Support is a measure of the importance of association rules, which means the frequency of association rules (Frequency); support shows how representative the rules are in all transactions. Generally, the greater the degree of support, the more important the association rules. Credibility is a measure of the accuracy of an association rule, and it represents the strength of the rule. If the credibility of the association rule is very high, but the support is very low, it means that the chance of the association rule being practical is very small. Conversely, if the support of the association rule is very high and the credibility of the association rule is very low, it means that the association rule is unreliable. The expected credibility indicates the degree of support for transaction set Y itself under the effect of transaction set X. The action degree indicates the influence of the transaction set X on the transaction set Y. When the action degree is equal to 1, the preceding and following items are independent; when the value is less than 1, it indicates that the appearance of one item set decreases the other The probability of an itemset appearing is called a negative correlation rule; when its value is greater than 1, it indicates that the occurrence of one item set will increase the probability of another item set, which is called a positive correlation rule. Among the four parameters described for association rules, support and credibility are the two most commonly used parameters[3].

Definition 8. We set D as the transaction set, X and Y as the item set, and Smin and Cin are the minimum support and minimum credibility thresholds specified by the user. If the rule XY has

support s and credibility c, and satisfies: $S(X \to Y) \ge S_{\min}$ and $C(X \to Y) \ge C_{\min}$, then XY is called a strong association rule, where X is called the antecedent of the rule, and Y is called the subsequent part of the rule.

Generally, given a transaction set D, if the support and credibility of the association rules are not considered, there will be a lot of association rules. In fact, people are only interested in those association rules that meet certain support and credibility thresholds. Therefore, the key to mining association rules is to find those strong association rules whose support and credibility are greater than a given threshold from the database.

Definition 9. If the item set X satisfies the minimum support degree, that is $S(X) \ge S_{\min}$, then X is called the frequent item set. Frequent itemsets are also called large itemsets, and infrequent itemsets are also called small itemsets.

Association rule mining is to find all association rules whose support is greater than or equal to minsup (the minimum threshold of support) and whose credibility is greater than or equal to minconf (the minimum threshold of credibility) from a given transaction database D.

A more intuitive method for mining association rules is to find all possible association rules from the transaction database D, and then calculate the support and credibility of each association rule. However, because this method requires too high a computational cost, people give up. The reason is that the number of candidate association rules will increase exponentially according to the number of "items".

The key to improving the performance of the association rule mining algorithm is to split its support and credibility requirements. According to the definition of the support of association rules above, the support of an association rule $X \rightarrow Y$ only depends on the support of the union rule x UY, that is,

 $S(X \rightarrow Y) = S(X \cup Y)$. Therefore, the strategy adopted by many association rule mining algorithms is to decompose the task of association rule mining into the following two sub-problems:

(1) Firstly, the minimum support threshold mirstp of the association rules to be mined is given, so as to find out all the frequent itemsets contained therein. In this step, the properties of the itemset will be fully utilized to prune the itemset to reduce the search space generated by frequent itemsets. The basic process is to first calculate candidate 1-itemsets to find frequent 1-itemsets, and then generate candidate 2-itemsets based on frequent 1-itemsets to find frequent 2-itemsets,.... Through this loop, until no more candidate item sets are generated, all frequent item sets are found.

(2) The minimum credibility threshold C_min is given, and all strong association rules are generated from the frequent item set. For each frequent itemset L, all non-empty subsets x are found. If $(S(L)/S(x)) \ge c_{min}$, then the rule " $x \rightarrow (L-x)$ " is outputted to meet the strong association rules of support and credibility thresholds.

Among these two problems, the second is relatively easy. The overall performance of association rule mining algorithms is usually determined by the first one. Therefore, association rule mining algorithms are almost all designed for this sub-problem.

We set the transaction database for mining association rules of anonymous set (AS) data as D, $D = \{t_1, t_2, ..., t_k, ..., t_n\}$ $t_k = \{i_1, i_2, ..., i_m, ..., i_p\}$ $t_k (k = 1, 2, ..., n)$ is called a transaction, that is, a single AS: $i_m (m = 1, 2, ..., p)$ is called a data item. That is, the spatial information of the spatiotemporal grid (Clbaking Region: CR), the time period information of the spatiotemporal grid

(Delay Period: DP>, and the pseudonym identification of the user (User Pseudonym: UP).

We set $I = \{i_1, i_2, ..., i_m\}$ to be the set of all anonymous set (AS) data items in D, and any subset X of I is called the item set in D.We set t_k and X to be the transaction and item set in D, respectively. If $X \in t_k$, then transaction t_k contains the item set X.

The number of transactions in D that contains itemset X is called the support number of itemset X, denoted as ∂_x , and the support degree of itemset X is denoted as Support (X), which is defined as the following formula:

$$S(X) = \frac{\partial_x}{D} \times 100\%$$
(6)

Among them, |D| is the number of transactions in the transaction database D. If Support (X) is not less than the minimum support threshold mirsup specified by the user, then X is called a frequent item set, otherwise it is an infrequent item set.

If X, Y are itemsets, and $X \cap Y = \Phi$, then the expression $X \to Y$ is called an association rule.X and Y are respectively called the premise and conclusion of the association rule $X \to Y$. The support degree of the item set $X \cup Y$ is called the support degree of the association rule $X \to Y$, denoted as Support ($X \to Y$), and its definition is as follows:

$$S(X \to Y) = \frac{S(X \cup Y)}{D} \times 100\%$$
⁽⁷⁾

The confidence level of the association rule $X \rightarrow Y$ is denoted as $Confidence(X \rightarrow Y)$, and its definition is as shown in the formula:

$$Confidence(X \to Y) = \frac{S(X \cup Y)}{S(X)}$$
(8)

If Support $(X \to Y) \ge minsup$ and Confidence $(X \to Y) \ge minconf$, the association rule $X \to Y$ is called a strong association rule, otherwise, the association rule $X \to Y$ is called a weak rule. Among them, minsup and minconf are the specified minimum support threshold and confidence threshold respectively.

Generally, given a transaction set D, if the support and credibility of the association rules are not considered, there will be a lot of association rules. However, in reality, people are only interested in those association rules that meet certain support and credibility thresholds. Therefore, the key to mining association rules is to find those strong association rules whose support and credibility are greater than a given threshold from the database. Anonymous set AS mainly includes anonymous area CR, anonymous user set (UIDS), query time P, AS, CR and UIDS are defined as follows, $AS = \{CR, UIDS, P\}, CR = \{Cell_1, Cell_2, ..., Cell_m\}, UIDS = (U, U, ..., UL)$

 $UIDS = \{U_1, U_2, ..., U_k\}$. Usually we define a CR to contain at most 9 anonymous cells, that is, at most it can be combined with the 8 nearest cells around it. A series of snapshot queries and a continuous anonymous query will generate an anonymous set sequence ASs (SAS), and SAS is

 $SAS = \{AS_1, AS_2, ...AS_m\}$ A grid cell can only appear once in an anonymous set AS in SAS, but it can appear multiple times in different anonymous sets AS in SAS. The number of anonymous sets contained in the anonymous set sequence is called the length of the anonymous set. For example, a sequence containing 1 anonymous set is called 1-SAS.We assume that there are

two SASs, $A = \langle AS_1, AS_2...AS_n \rangle$ and $B = \langle AS_1, AS_2...AS_n \rangle$. If there is an integer $1 \le i_1 < ...i_m \le i_n$ that satisfies B.ASK=A.ASK, and all K satisfies $1 \le K \le m$, we call B a subsequence of A.

Database D is a collection of tuples $\langle ID,SAS \rangle$, ID is the identifier of SAS, if a is a subsequence of SAS, then the tuple $\langle ID,SAS \rangle$ is said to contain a, and the inclusion rules are defined as follows:

The support of a in database D refers to the ratio of the tuple containing a to all tuples, which is defined as follows:

$$SAS.containment = \begin{cases} \prod_{i=1}^{n} \frac{SAS_{i}}{\alpha_{i}}, \alpha_{i} \in SAS\\ 0, \alpha_{i} \notin SAS \end{cases}$$
(9)

The support of a in database D refers to the ratio of the tuple containing a to all tuples, which is defined as follows:

$$\sup(\alpha) = \frac{\sum_{i=1}^{count(\alpha \in SAS)} SAS.containment}{count(SAS)}$$
(10)

We give a minimum positive integer minsup as the minimum support threshold. If the sequence a in the database D satisfies $sup(\alpha) \ge minsup$, then the sequence a is said to be the sequence pattern of the database D.The support degree of sequence a in database D is defined as follows:

$$conf(\alpha) = \frac{\sum_{i=1}^{count(\alpha \in SAS)} SAS.containment}{count((\alpha - 1) \in SAS)}$$
(11)

4 INTEGRATION OF RURAL REVITALIZATION STRATEGY AND MODERN AGRICULTURAL GOVERNANCE BASED ON BIG DATA ANALYSIS

Under the conditions of a market economy, compared with previous bureaucratic organizations, various rural intermediary organizations or rural intermediary organizations at all levels in the inner circle of the rural intermediary organization network have established a broader and more dimensional structural system, and all members are The important components of the organization network play different roles, undertake corresponding tasks, and exercise their respective rights. The influence of key members of the inner circle (such as a production cooperative, community economic organization, farmer economic man, etc.) in the process of market transactions has declined, and to a large extent they have only played the role of coordination and contact. These members enjoy certain decision-making powers in production and operation, and have strong adaptability and crisis avoidance awareness when facing agricultural product market risks, thus avoiding losses to farmers when agricultural product prices are low. In order to better achieve the development goals of the organization network, members no longer stick to the traditional rigid and rigid reporting mechanism, but build various forms of contact in accordance with the needs of agricultural production, which stimulates the vitality of the rural market.

The structural characteristics of the inner circle of the organization network can be summarized as: core organization, miniaturized member structure, diversified management style and internal market for transactions, as shown in Figure 1



Figure 1: The relationship structure of the inner circle members of the rural intermediary organization network.

The outer layer network is a "one core + multiple agents" structure. Among them, a certain network member is the core, and the members of other links are in different sections of the industry chain according to different division of labor, and each member complements their own advantages to generate economies of scale. It can ensure that the average profit of each link of agriculture before, during and after production is generally obtained, thereby significantly improving the economic benefits of farmers. The structural characteristics of the outer circle can be summarized as: core

organization, symbiotic relationship structure, perfect contractual relationship, and trust between members, as shown in Figure 2.



Figure 2: The outer layer structure of the rural intermediary organization network.

The members of the rural intermediary organization network are organized in accordance with the "Rozidale Principles" to implement free access to the network, democratic management, and serve the "agriculture, rural areas and farmers". As shown in Figure 3, each member is at a key position in the production value chain of agricultural products, performs its own functions, has the attributes of clear goals and compliance with agreements, and shows the relationship of "production interaction, value complementarity, and service mutual assistance".



Figure 3: Rural intermediary organization network.

The project alliance type rural intermediary organization network mainly has two forms: alliances with core nodes and alliances without core nodes. The difference between them mainly depends on whether they carry out activities around members of a core organization network. The organization network members in these two forms are the same in terms of qualifications, and there is no difference between the better and the worse. It's just that due to the different collaboration methods of various network members and the different products they operate, certain differences may occur in actual operations. Its structure is shown in Figure 4.



(b) Center-led alliance network

Figure 4: Membership of the project alliance-type rural intermediary organization network.

The alliance-type organization network is composed of rural professional cooperative organizations, leading agricultural products companies, product sellers, rural brokers, farmers, and government management departments. Through the alliance organization network formed by the above-

mentioned members, the main development goal is to stabilize the existing rural market towns and other agricultural and sideline products markets, and strive to open up sales in high-end markets such as restaurants and hotels in cities, as shown in Figure 5.



Figure 5: Network structure of alliance-type organizations led by core members.

The virtual rural intermediary organization network is closely related to modern information technology, as shown in Figure 6. The system integrates agricultural entity information of different types and structures, through content analysis, knowledge-related disclosure, and adopts a unified integration model framework to realize a unified data database building system for self-service database building. Through the establishment of a unified and standardized agricultural information data warehouse, various agricultural market information resources, database resources, and multimedia resources can be integrated into an organic whole, so that the originally dispersed agricultural information resources of the virtual network.



Figure 6: The agricultural information data warehouse platform in the virtual network.

This type of virtual organization network uses information technology to process and virtualize the core capabilities of non-organizational organizations, such as intermediary organizations, farmers, governments, and enterprises, through information technology. Moreover, it only retains its core capabilities and virtual organizations that cannot be informatized. This organizational network does not have a fixed organizational structure and work location, and adopts a decentralized management method, as shown in Figure 7.



Figure 7: Institutional virtual organization network.

This paper applies big data technology to the research on the integration of rural strategic revitalization and agricultural and modern governance, and combines the organizational network model constructed in this paper to verify system performance.

This article counts agricultural data from 2010 to 2020 and inputs it into the system model of this paper. Moreover, this paper combines the rural revitalization strategy with modern governance to calculate the reliability of the model in this paper, and detects the performance of the system analysis data and formulating strategies, and the results shown in Table 1 and Figure 8 are obtained.

NO	Fusion analysis	Strategic analysis	NO	Fusion analysis	Strategic analysis	NO	Fusion analysis	Strategic analysis
1	94.48	73.86	24	84.67	80.60	47	88.37	79.31
2	86.96	72.64	25	86.67	77.69	48	86.13	75.64
3	88.38	87.87	26	94.27	82.66	49	86.10	82.63
4	93.65	79.28	27	88.29	80.36	50	84.15	86.46
5	92.47	75.81	28	91.50	84.33	51	85.49	90.46
6	87.72	84.92	29	86.69	81.16	52	90.60	77.53

Computer-Aided Design & Applications, 21(S4), 2024, 75-90 © 2024 CAD Solutions, LLC, <u>http://www.cad-journal.net</u>

7	93.17	77.64	30	95.47	80.68	53	87.08	82.00
8	89.51	74.69	31	95.77	78.19	54	85.73	82.67
9	94.37	86.58	32	94.39	74.62	55	89.65	77.30
10	85.02	88.79	33	86.80	77.67	56	84.84	80.67
11	88.34	90.02	34	95.41	87.50	57	93.03	82.71
12	88.15	76.01	35	87.05	89.44	58	87.58	78.03
13	84.69	83.64	36	94.32	86.97	59	84.69	86.71
14	91.24	90.02	37	93.77	87.47	60	93.14	86.80
15	93.73	82.83	38	90.55	80.99	61	90.55	86.98
16	91.64	74.64	39	91.30	78.19	62	88.83	85.41
17	93.06	80.59	40	88.40	83.93	63	86.07	86.66
18	86.25	87.22	41	90.11	84.37	64	94.57	75.31
19	92.11	74.41	42	86.08	78.71	65	87.43	76.48
20	87.59	74.04	43	90.47	86.02	66	89.22	80.85
21	84.78	77.56	44	86.97	85.98	67	86.48	77.98
22	86.82	87.61	45	95.30	84.10	68	95.35	86.70
23	94.44	88.23	46	94.32	89.75	69	87.45	81.09

Table 1: Statistical table of system performance evaluation.



Figure 8: Statistical diagram of the performance of the integration system of rural revitalization strategy and modern governance.

From the above research, it can be seen that the integration analysis system of rural revitalization strategy and agricultural modernization governance based on intelligent big data analysis constructed in this paper has certain practical performance.

5 CONCLUSION

In the new era, we must focus on continuously satisfying the needs of the broad masses of farmers for a better life. To truly achieve this goal, it is of great significance and value to promote the integration of rural revitalization strategy and agricultural modernization governance. It helps to realize the integration of urban and rural areas and promote the modernization of agriculture and rural areas. Moreover, it helps to enhance the international competitiveness of agriculture and stimulates the vitality of rural areas. Therefore, this is a necessary measure for our country to promote the development of "agriculture, rural areas and farmers".

This paper combines intelligent big data technology to analyze the integration of rural revitalization strategy and agricultural modernization governance, proposes a corresponding intelligent platform, and applies the platform to the simulation system to explore the integration path of rural revitalization strategy and agricultural modernization governance. In addition, this paper combines the organization network model to analyze system factors. Finally, after constructing the system model, this paper designs experiments to verify the model of this paper. From the experimental research, it can be known that the integration analysis system of rural revitalization strategy and agricultural modernization governance based on intelligent big data analysis constructed in this paper has certain practical performance.

ACKNOWLEDGEMENT

Sichuan University Research Funding Project: 2020skscuzx-pt58.

Nan Su, <u>https://orcid.org/0009-0001-9764-9978</u>

REFERENCES

- [1] Andreola, F.; Lancellotti, I.; Manfredini, T.: et al. The circular economy of agro and postconsumer residues as raw materials for sustainable ceramics, International Journal of Applied Ceramic Technology, 17(1), 2020,22-31. <u>https://doi.org/10.1111/ijac.13396</u>
- [2] Carus, M.; Dammer, L.: The circular bioeconomy-concepts, opportunities, and limitations, Industrial Biotechnol-ogy, 14(2), 2018, 83-91. <u>https://doi.org/10.1089/ind.2018.29121.mca</u>
- [3] Channe, H.; Kothari, S.; Kadam, D.: Multidisciplinary model for smart agriculture using internet-of-things (IoT), sen-sors, cloud-computing, mobile-computing & big-data analysis, Int. J. Computer Technology & Applications, 6(3), 2015, 374-382.
- [4] Elijah, O.; Rahman, T.A.; Orikumhi, I.: et al. An overview of Internet of Things (IoT) and data analytics in agriculture: Benefits and challenges, IEEE Internet of Things Journal, 5(5), 2018, 3758-3773. <u>https://doi.org/10.1109/JIOT.2018.2844296</u>
- [5] Fytili, D.; Zabaniotou, A.: Circular economy synergistic opportunities of decentralized thermochemical systems for bioenergy and biochar production fueled with agro-industrial wastes with environmental sustainability and social acceptance: a review, Current Sustainable/Renewable Energy Reports, 5(2), 2018, 150-155. https://doi.org/10.1007/s40518-018-0109-5
- [6] Garske, B.; Stubenrauch, J.; Ekardt, F.: Sustainable phosphorus management in European agricultural and environmen-tal law, Review of European, Comparative & International Environmental Law, 29(1), 2020, 107-117. <u>https://doi.org/10.1111/reel.12318</u>

- [7] Gontard, N.; Sonesson, U.; Birkved, M.: et al. A research challenge vision regarding management of agricultural waste in a circular bio-based economy, Critical Reviews in Environmental Science and Technology, 48(6), 2018, 614-654. <u>https://doi.org/10.1080/10643389.2018.1471957</u>
- [8] Kimaro, A. A.; Mpanda, M.; Rioux, J.: et al. Is conservation agriculture 'climate-smart'for maize farmers in the high-lands of Tanzania?, Nutrient Cycling in Agroecosystems, 105(3), 2016, 217-228. <u>https://doi.org/10.1007/s10705-015-9711-8</u>
- [9] Kouhizadeh, M.; Zhu, Q.; Sarkis, J.: Blockchain and the circular economy: potential tensions and critical reflections from practice, Production Planning & Control, 31(11-12), 2020, 950-966. <u>https://doi.org/10.1080/09537287.2019.1695925</u>
- [10] Liu, J.; Chai, Y.; Xiang, Y.: et al. Clean energy consumption of power systems towards smart agriculture: roadmap, bot-tlenecks and technologies, CSEE Journal of Power and Energy Systems, 4(3), 2018, 273-282. <u>https://doi.org/10.17775/CSEEJPES.2017.01290</u>
- [11] Newell, P.; Taylor, O.: Contested landscapes: the global political economy of climate-smart agriculture, The Journal of Peasant Studies, 45(1), 2018, 108-129. <u>https://doi.org/10.1080/03066150.2017.1324426</u>
- [12] Peng, W.; Pivato, A.: Sustainable management of digestate from the organic fraction of municipal solid waste and food waste under the concepts of back to earth alternatives and circular economy, Waste and Biomass Valoriza-tion, 10(2), 2019, 465-481. <u>https://doi.org/10.1007/s12649-017-0071-2</u>
- [13] Rameshaiah, G.N.; Pallavi, J.; Shabnam, S.: Nano fertilizers and nano sensors-an attempt for developing smart agricul-ture Int J Eng Res Gen Sci, 3(1), 2015,314-320.
- [14] Scherer, L.; Verburg, P.H.: Mapping and linking supply-and demand-side measures in climatesmart agriculture, A review Agronomy for Sustainable Development, 37(6), 2017, 1-17. <u>https://doi.org/10.1007/s13593-017-0475-1</u>
- [15] Steenwerth, K.L; Hodson, A. K.; Bloom, A. J.: et al. Climate-smart agriculture global research agenda: scientific basis for action, Agriculture & Food Security, 3(1), 2014, 1-39. <u>https://doi.org/10.1186/2048-7010-3-11</u>
- [16] Terdoo, F.; Adekola, O.: Assessing the role of climate-smart agriculture in combating climate change, desertification and improving rural livelihood in Northern Nigeria, African Journal of Agricultural Research 9(15), 2014, 1180-1191. <u>https://doi.org/10.5897/AJAR2013.7665</u>
- [17] Thakur, A.K.; Uphoff, N.T.: How the System of Rice Intensification Can Contribute to Climate-Smart Agriculture, Agronomy Journal, 109(4), 2017, 11631182. <u>https://doi.org/10.2134/agronj2016.03.0162</u>
- [18] Trendov, N.M.: Index of circular agriculture development in the Republic of Macedonia, Visegrad Journal on Bi-oeconomy and Sustainable Development, 6(1), 2017, 35-38. <u>https://doi.org/10.1515/vjbsd-2017-0006</u>
- [19] Zougmoré, R. B.; Partey, S. T.; Ouédraogo, M.: et al. Facing climate variability in sub-Saharan Africa: analysis of cli-mate-smart agriculture opportunities to manage climate-related risks, Cahiers Agricultures, 27(3), 2018, 1-9. <u>https://doi.org/10.1051/cagri/2018019</u>