Distribution characteristics of mountain landslides based on heterogeneous network and optimization of human resource management in agricultural enterprises

Ying Xue\(^1\) · Song Jaehoon\(^2\)

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Abstract
In this paper, the propagation loss of heterogeneous network waves causes the heterogeneous network to be blocked with high sensitivity and causes communication interruption. Therefore, it is sustainable to ensure the connection of heterogeneous networks through dual connections. This is a more effective solution. This article adjusts the fairness of heterogeneous network connections. At the same time, with the optimization and optimal configuration of the heterogeneous network system as the main goal, it is pointed out that the problem of power allocation can be solved by judging the dynamic programming algorithm. After a long period of dynamic transformation in the experimental area, the land in the research area was affected by the geological structure, resulting in complex geographical features and structural structures. Research on the geological disasters in the study area with landslide as the main phenomenon and analyze the main influencing factors by investigating the geological structure in the experimental area and the geological disasters caused by the landslide phenomenon. The cultivation and creation of technical agricultural talents can industrialize the agricultural structure, obtain better resource allocation and better structural adjustment, and promote the rapid development of the agricultural economy. The cultivation and attention to technical agricultural talents are also an important prerequisite for the development of agriculture to specialized technology. Through the analysis and research on the positive impact of technical talents in agricultural planting and the status quo of technical talents in planting, this article focuses on the establishment of a storage and management model for agricultural technical talents based on the development of the planting industry in two different provinces. Then, through incentives and incentives, increase the degree of training and attention to technical talents.

Keywords Heterogeneous network · Mountain landslides · Landslide characteristics · Agricultural human resources · Business management

Introduction
With the rapid development of China’s information technology and the application and popularization of intelligent equipment, mobile intelligent terminal equipment has been widely used. At the same time, this will greatly increase the demand for mobile data traffic (Adeleye and Fayose 1978). This paper studies the fairness of heterogeneous networks and the congestion problem of millimeter-wave connections. Its main purpose is to optimize the system in the case of heterogeneous networks and improve network transmission speed (Adetona and Abu 2013). At the same time, a simple framework is set up for the implementation of 5G networks. It means that a user uses a model of a terminal mobile device to create a heterogeneous network enhanced by millimeter waves and then uses a heterogeneous algorithm to reasonably arrange the power in a certain area (Adighije 1981). This algorithm can efficiently enhance the fairness and speed of network transmission in the area (Ajayi and Ajakaiye 1981). At the same time, when
heterogeneous network algorithms are used for data enhancement and millimeter-wave circuit blocking problems, the experimental area is investigated and researched (Akpan 1992). At the same time, based on the sorting and analysis of landslide data in related experimental areas, the use of remote sensing technology and engineering geological detection technology is used to conduct overall research and analysis of geological disasters in the study area (Akpan et al. 2014). A detailed investigation of the geological environment and natural disasters such as landslides in the study area is carried out to find out the hidden dangers of geological disasters and natural disasters in the study area, as well as the triggering factors and the regularity of natural disasters (Allen 1965). Landslides are a kind of natural geological disasters that frequently occur in the study area, which are sudden and harmful (Avbovbo 1978). The research and analysis of the mechanism of landslide initiation and formation found that there are many factors that cause landslides (Benkhelil et al. 1975). The binary regression algorithm is used to analyze the influence of rainfall in causing landslides, and it is found that the degree and size of precipitation have a certain control effect on the formation and distribution of landslides in a small area (Burke and Dewey 1974). In the past few years, China’s planting industry research data showed that China’s planting industry has shown a relatively good form of development (Burke and Whiteman 1972). In the management of agricultural human resources, people attach importance to the application of management methods and methods, and there is relatively little research on psychology. By consulting related materials, we can find that there are relatively few literatures and materials on the research of personnel psychology in human resource management (Burke and Whiteman 1973). This paper conducts research on psychological changes and mental health issues in agricultural human resource management and points out that in the traditional Chinese culture and social background, group psychological effects are obvious and have a very large impact (Burke et al. 1971). Technical human capital refers to training or training for a certain field and can improve people's problem-solving and problem-solving abilities through training (Cratchley and Jones 1965). In the development process of agricultural enterprises, relying only on traditional management methods can no longer meet the requirements of the development of modern agricultural enterprises (Ehinola et al. 2008). The demand for technical and professional talents will increase. In recent years, research and analysis on the development of corporate management strategies and management methods and methods can prove that people in modern society have gradually eliminated traditional management methods and methods (Ekpo et al. 2012). Increasing investment in technical human resources is an inevitable trend in the development of modern enterprise human resource management (Ekpo et al. 2013).

Materials and methods

Data source

Engineering geological characteristics of rock mass

Since the composition of different rocks is very different, when studying the rocks in landslides, a comprehensive and comprehensive analysis should be carried out according to the conditions of each different rock (Ekwok et al. 2019). If the overall performance of the rock is better, it will reduce the occurrence of geological natural disasters. If there are gaps and unreasonable structures in the overall structure of the rock, it is easy to cause landslides under the action of external forces (Ekwok et al. 2020a).

Engineering geological characteristics of soil

In the study area, the exposed rocks, various impact stones, silt, and other materials are collected, and then certain grinding and screening are carried out to make the surface of these materials smooth (Ekwok et al. 2020b). Under normal circumstances, this kind of material is not prone to major landslides, and only a small range of rock falls will occur under the action of geology and external forces (Ekwueme et al. 1995).

Heterogeneous network algorithm design

The most important elements in the Markov decision-making process are the system status, user requirements, and feedback cost design. The following is a continuous design.

At time $t$, the system status is as follows:

$$s_t = \{l, r_t\}$$

(1)

In the formula, $l$ is the user’s search engine at time $t$, and the location information can be obtained by GPS, showing the average transmission speed of the user to the macro mobile network and the millimeter-wave network.

The action of the user at time $t$ is to determine whether the user is driving through the macro mobile network, or whether the millimeter-wave network is used for transmission or use these two types of networks for transmission, and decide how to allocate the transmission power to the two types of user terminals type of network. This article assumes that the time required for decision-making corresponds to the time interval of the time slot system. Therefore, the user impact factor is represented by formula (2).
\[ a_t = (p_t^c, p_t^m) \]  \hspace{1cm} (2)

In the formula, \( p_t^c \) and \( p_t^m \), respectively, represent the power allocated to the macro cell at time \( t \) and the number of millimeters of the wave network. It should be noted that it can be equal to 0 at a given time, which corresponds to two aspects:

1. If there is no base station on site 1, or only the macro mobile network is selected as the decision time, \( p_t^m = 0 \)
2. If the millimeter-wave base station is located at site 1, and only the millimeter-wave network is selected when deciding, then \( p_t^m = 0 \)

When allocating power, the total transmission power of the current user is always limited by the maximum power in the uplink transmission, that is, the total transmission power is allocated to the millimeter-wave system and users at any time, as shown in formula (3).

\[ p_t^c + p_t^m = p_t \] \hspace{1cm} (3)

At any time, the relationship between the user’s condition and his effect vector can be described by Shannon’s theorem in equation (4).

\[ r_t^j(p_t^j) = B_u \log_2 \left( 1 + \frac{|h_u|^2 p_t^j}{N_0} \right), j \in \{c, m\} \] \hspace{1cm} (4)

This formula represents the broadband between the user and the microwave connection and the millimeter-wave connection, which is the increase of the channel between the user and the macro base station and the increase of the channel between the user and the millimeter base station.

In 5G communication, because the millimeter wave connection is very sensitive to congestion, it is estimated that the signal will be interrupted due to congestion during the transmission process, so the congestion of the connection is actually simulated. According to the blocking model, position 1 is the distance between the user and the millimeter base station. If the blocking threshold is the basic millimeter base station, the probability is defined as the following formula:

\[ p_b = \begin{cases} 0, & \text{if } d \leq d_{lb} \\ 1, & \text{if } d > d_{lb} \end{cases} \] \hspace{1cm} (5)

According to formula (5), the connection was not blocked at the time, and the user was able to access the baseline millimeter-wave radio station, that is, when the LOS transmission threshold of the baseline millimeter-wave radio station was overloaded, and the user could not access the millimeter-wave base station, \( p_b=0 \).

If the connection is disconnected at time \( t \) and the user is still distributing power to the grid, it will inevitably lead to resource loss. To avoid this situation, the penalty function is designed to impose a penalty immediately. The definition of the penalty function is

\[ g_t(s_t) = g_t(l_t, r_t) = \begin{cases} g(p_t^m), & \text{if } p_b = 0 \\ 0, & \text{if } p_b = 1 \end{cases} \] \hspace{1cm} (6)

Among them, \( g(\cdot) \) has a non-negative and non-decreasing function, which represents the power transmitted to the millimeter-wave connection.

**Results**

**Geological structure analysis of the study area**

The research area is mainly based on plateau and mountain topography. There are many high and low mountain peaks around the study area. The growth of plants in the study area is restricted by topographical conditions and has a vertical distribution specific as shown in Fig. 1.

The highest point in the study area has an altitude of more than 5,000 meters, and the lowest point is more than 2,000 meters above sea level. The altitude difference between the highest point and the lowest point is nearly 3 kilometers. The details are shown in Fig. 2.

It can be seen from Table 1 that there are a lot of faults in the study area, and the specific fault characteristics are shown in Table 1.

**Analysis of landslide occurrence**

According to the size of the landslide, the landslide can be divided into four types of landslides, such as small landslide, medium landslide, large landslide, and giant landslide, as shown in Table 2.

By processing and filtering the collected relevant data, it is drawn into Fig. 3. It can be seen from Fig. 3 that the landslides in the study area are mainly concentrated in two sections.

**Temporal and spatial distribution characteristics of mountain landslides**

Figure 4 shows the spatial distribution of landslides in the study area. From Fig. 4, landslides are mainly concentrated in the center of the study area and the eastern region, and landslides also have certain regularity from north to south.

According to the slope direction of the mountain slope, the vegetation coverage and rock weathering conditions can be affected by the precipitation and sunlight in different directions and intervals. See Table 3 for details.
From Fig. 5, it can be found that the main direction of the landslide in the study area is restricted by topographical conditions. According to Fig. 5, it can be found that there is a vertical distribution between the main sliding direction of the landslide and the flow direction of the river.

From the perspective of time distribution, geological disasters mostly occur during summer and autumn rainy periods. In winter, there are relatively few geological disasters such as landslides. This also shows that the occurrence of natural geological disasters such as landslides is directly related to the amount of precipitation. The details are shown in Fig. 6.

It can be seen from the time distribution diagram that the precipitation is relatively large from June to September each year, especially in July and August. At the same time, this period is also a time when natural disasters such as landslides occur frequently. It can be seen that the occurrence of natural disasters such as landslides has a certain relationship with the degree and amount of precipitation.
Discussion

Current status of human resource management in agricultural enterprises

Technical talents mainly refer to training and training for a period of time, so that these trained people can master the corresponding knowledge and technology in a certain aspect, so that they can independently apply the knowledge and technology to carry out effective production or overcome difficulties (Essien et al. 2005). Make production efficiency and troubleshooting smoother. In modern agriculture, agricultural planting no longer simply depends on people's hard work, but needs to use modern technical equipment and facilities for modern planting (Esu et al. 2009). Therefore, the increase and emphasis on technical talents play a very important role in the development of modern agriculture. The main performance is as follows:

The role of technical agricultural human capital

(1) Saving labor scale

Fig. 2 Elevation map of a certain area
In the past, agricultural planting in China was mainly engaged in planting in the form of family. The farmers in each family are engaged in agricultural production according to their own planting methods and planting techniques. However, such planting efficiency is relatively low, and because the technology is relatively weak, the output of food crops is also very low, and a lot of labor is required to engage in agricultural production and planting. After training in agricultural technology, farmers have mastered certain professional knowledge and ideas. When conducting agricultural production, they can rationally arrange planting time and types of crops by using the planting knowledge and technology they have mastered. Scientific and reasonable calculations can be carried out in different links. While saving labor, it also makes the types of crops planted more scientific and reasonable, which can effectively increase the family income of farmers.

(2) Use knowledge and skills

After a period of training or training, farmers have mastered some scientific planting techniques and planting knowledge. When conducting agricultural production, they can understand and solve the problems themselves, so that the crops will be free from more difficult interference, thereby improving the planting efficiency of crops.

(3) Improve the level of operation and management

As far as China’s original crop planting is concerned, the techniques and methods used by farmers in the process of planting have been inherited from generations to generations, without advanced ideas and techniques. And through agricultural technology training, farmers can master advanced ideas and technologies, especially after the establishment of agricultural production cooperatives, farmers are not only producers, but also managers. You can allocate time and various facilities scientifically and reasonably according to your own situation to make planting more scientific and reasonable.

(4) Improve the quality of workers

During the initial training and training of technical talents, a certain amount of funds will be invested in training and training. At the same time, after training, these people have mastered advanced management knowledge and planting techniques, which will significantly improve the effect of planting. This will make more people willing to master more planting techniques and skills through learning and training, so that the overall quality of agricultural producers can be effectively improved.

Insufficient investment in overall education of technological human capital in Northwest China

When technical talents are engaged in agricultural production and planting, they can not only reflect the value and function of technology in their own cultivation and planting but also can obtain greater benefits through scientific and effective planting. It can also be seen from the education level of the population in eastern and western China that the education level of people in western China is significantly lower than that in eastern China. This also shows that eastern China is richer than western China and has a higher degree of

| Fault number | Fault name                  | Towards Zone length (km) | Fault occurrence inclination angle | Fault characteristics   | Nature                |
|--------------|-----------------------------|--------------------------|------------------------------------|--------------------------|-----------------------|
| F1           | Extend to the fault         | NW ≥119                  | SW                                 | 46 The stratum is interrupted, displaced, missing. | Reverse fault         |
| F2           | Deri Niuchang Fault        | NW 39                    | SW                                 | 66 Stratum breaks, missing | Reverse fault         |
| F3           | Wenza fault                 | NNW >41                  | SW                                 | / Missing and broken stratum | Reverse fault         |
| F4           | Chuande nuclear fault      | NNW 8                    | /                                  | / Stratum misalignment, missing / |                      |
| F5           | Lado Cattle Farm Fault      | NW 63                    | SW                                 | 51 Missing and misplaced fault lines | Reverse fault         |
| F6           | Jigang Fault                | NW 19                    | /                                  | / Stratum dislocation, missing, broken / |                      |
| F7           | Jin Gu Niuchang fault      | NNW 49                   | SW                                 | / Missing fault, broken / | Normal fault           |

Table 1 Summary of fault characteristics in a county

| Landslide scale | Small landslide | Medium landslide | Large landslide | Giant landslide |
|-----------------|-----------------|------------------|-----------------|-----------------|
| Quantity (place)| 44              | 24               | 28              | 4               |
| Proportion (%)  | 44.78           | 23.97            | 28.14           | 3.13            |

Table 2 The scale of landslide
economic development. Among them, talents play a big role, as shown in Table 4.

It can be seen from Table 4 that in terms of education level and education expenditure, there is a big difference between the western region and the eastern region. The number of educated people in the western region is much lower than that in the eastern region. This situation has directly led to a relatively small reserve of technical talents in the western region, and people’s overall educational quality is relatively low. In recent years, the state has successively introduced many policies and measures to encourage economic development in the western region. Because people’s ideology is relatively backward, they cannot fully enjoy the development benefits brought about by the policy dividend. Therefore, the economic development of the western region is still at a relatively backward level, and some talented people choose to work in the east or a more economically developed region after acquiring relevant knowledge and technology, because of the poor conditions and environment in the western region. As a result, the number of technical talents in the western region has decreased even more.

The construction mode and effect of human resources in agricultural enterprises

Cultivate new agricultural business entities

For the new type of agricultural business entities, they emerged after the economy had developed to a certain extent. The specialization and technical level of this new business entity is significantly higher than that of ordinary farmers, and the marketization and informatization of this business entity are also significantly higher than that of ordinary farmers. The new agricultural business entities also operate in a variety of ways, as shown in Fig. 7.

Take the example of planting selenium-enriched rapeseed in a new agricultural business entity in a province in western China. Through the introduction and purchase of advanced technology and equipment, as well as the purchase of better quality raw materials, the quality of rape flowers has been improved. With the guidance of relevant agricultural experts and agricultural technicians, farmers have gained a general understanding of basic common sense of rapeseed flowers and the basic principles of prevention and control of diseases and pests. At the same time, it has also focused on cultivating large rapeseed growers. These people can help other farmers effectively solve some of the problems and difficulties in the process of rapeseed planting while they are planting rapeseed flowers by themselves. Through the creation of this new type of agricultural business entity, the way of planting crops has been developed from decentralized operation with households as a unit to intensive operation. At the same time, through the cultivation and use of technical talents, the way of planting is made more scientific and rational, so that the economic income of farmers can be effectively increased.

Promote new-type professional farmer training

When training and training technical agricultural talents, it is necessary to formulate some training objectives, methods, and methods so that more farmers can receive technical knowledge and training. Planting through farmers’ technical knowledge and the knowledge they have learned and mastered after training can greatly increase the yield of planted crops, thereby increasing farmers’ economic income. The specific mode for technical talents is shown in Fig. 8. By formulating scientific and effective personnel training programs and plans, the government will enable more farmers to receive relevant professional knowledge and training. At the same time, in the process of planting, pay attention to the cultivation of large planters and leading enterprises, so that these enterprises can
provide technical guidance and help to the surrounding people while developing themselves. At the same time, driven by these big growers and leading enterprises, farmers’ products can have more sale channels. And agricultural experts and technicians regularly go to farmers for on-site teaching and training, which also enables farmers to better master planting techniques and planting knowledge. It can be seen from Fig. 8 that the cultivation and emphasis on technical talents can

Table 3  Slope aspect interval table in a certain area

| Direction       | North (N) | Northeast (NE) | East (E) | Southeast (SE) | South (S) | Southwest (SW) | West (W) |
|-----------------|-----------|----------------|----------|----------------|-----------|----------------|----------|
| Interval range  | 337.6     | 22.6           | 67.6     | 112.6          | 157.6     | 202.6          | 247.6    |
|                 | ~         | ~              | ~        | ~              | ~         | ~              | ~        |
|                 | 22.6      | 67.6           | 112.6    | 157.6          | 202.6     | 247.6          | 292.6    |
greatly increase the quantity and quality of agricultural planting and can promote the development of the agricultural economy.

Analysis of the contribution of technological human capital to the planting industry

Agricultural technical talents play a very important role in increasing agricultural output, increasing farmers’ income, and promoting agricultural economic development. Through the research of this article, it can be understood that, in terms of cultivating new agricultural economic entities and technical training for farmers, agricultural planting is developing in the direction of modern technology.

1. Increase the output of the planting industry

By training local farmers with certain professional knowledge and planting techniques, farmers can get rid of the original simple planting methods, and scientific planting through modern advanced planting techniques and techniques can optimize planted varieties and improve planting crops.
(2) Promoting the industrialization scale of agriculture

After training, farmers have mastered relevant agricultural planting techniques and knowledge, and at the same time, they have also changed the way they sell their crops. By connecting with large planters and leading enterprises, farmers’ planting can be closely linked with market supply and demand, forming a unified industrial chain of production, supply, and marketing. Farmers can learn about the supply and demand on the market through large growers and leading enterprises and then provide operators with high-quality agricultural products. This can expand the farming area of farmers, increase farmers’ enthusiasm for planting, and make agricultural planting more in line with market needs.

Optimization strategies for human resource management in agricultural enterprises

Formulate encouraging policies for the development of technical planting

(1) Enhance scientific research in technical planting industry

As far as agricultural planting is concerned, the use of scientific and technological means to engage in agricultural planting can enable the agricultural economy to develop more rapidly. The state has also introduced certain policies and measures to encourage and support farmers’ technical training, and more training funds and research costs are invested in agriculture. Through the joint efforts of all parties, the varieties of agricultural planting are optimized and the structure of agricultural planting is more reasonable. Agricultural technology plays a vital role in the development of agriculture.

(2) Improve the publicity of technical planting industry

The yield in agricultural planting is relatively low, and the main reason is that there are problems in planting technology. After farmers obtain relevant planting technology and planting knowledge through training, they can apply relevant technology and knowledge to agricultural planting and agricultural management in practice. At the same time, farmers are repellent to new technologies and methods to a certain extent. Therefore, it is necessary to increase publicity to eliminate the troubles in the hearts of farmers.

Increase investment in technological human capital

(1) Formulate relevant policies to encourage college students to return to their hometowns for employment

There are relatively few technical talents in Northwest China. The main reason is that local students, especially college students, are reluctant to return to their hometown to work after graduation, but choose to go to economically developed cities and regions. In this way, the number of talents in the northwestern region, which has fewer technical talents, is even smaller. Local governments can actively attract college students to work in their hometowns after graduation by formulating relevant policy dividends and incentive measures.
At the same time, the government can also cooperate with local agricultural schools to help graduates find better jobs locally.

(2) Increasing the training of technical talents and cultivating agricultural compound talents

The government will also set up some special training institutions to provide technical training and technical guidance to talents in related majors and fields and pass the assessment to give certain technical certificates. The local government can cooperate with relevant schools and institutions to increase the set of courses related to agricultural planting technology, so that students can learn more about the basic knowledge of agriculture, and lay a good foundation for students to engage in agricultural technology work in the future. Using the current advanced Internet, local governments and departments can also organize relevant experts and technical personnel to teach farmers online knowledge courses through the Internet and improve their technical knowledge and skills.

(3) Encourage technical talents to develop into entrepreneurs

For China’s agriculture, agricultural technical personnel should also be able to have corresponding agricultural management knowledge and management experience. After mastering the relevant knowledge of agricultural technology and other aspects, they should also have certain management experience and management knowledge. Therefore, when the local government trains and trains some agricultural technical talents, it must not only teach the professional knowledge of agricultural technology but also teach the knowledge of agricultural operation and management to make these technical talents more comprehensive. After these technicians pass the training, they will not only become experts in planting but also

Fig. 7 A model diagram of technical human capital for rapeseed planting in a certain area

Fig. 8 A model of technological human capital in apple planting
in management. When these people are engaged in agricultural production and planting, they will carry out a full-chain scientific management of agricultural production, planting, and sales according to the economic development, so as to make production, operation, and sales scientific and reasonable, and improve the yield of crops. At the same time, it also expands the sales of crops and truly realizes the rapid development of high-quality crops.

Conclusion

This paper studies the power distribution in heterogeneous networks, creates a discrete Markov decision process, and studies the congestion of millimeter-wave connections in heterogeneous networks and the fairness of heterogeneous networks. In this paper, maximizing the transmission speed of a heterogeneous network system is the optimal goal, and points out that the congestion in the transmission in the heterogeneous network is predicted to implement solutions. So that the heterogeneous network system can obtain the optimal solution and maximum fairness. By creating a heterogeneous network model, the optimal strategy algorithm in the heterogeneous network can be reversed. Further research is needed on the related complexity in the heterogeneous network. The landslide situation in the study area is studied and analyzed. Through research, it can be found that the landslide in the study area has a great relationship with precipitation, delay performance, and slope inclination. There is a lot of precipitation in the study area. There is a long-term running water under the mountains in the study area. Due to the large amount of water erosion, the rocks in the mountains appear cracks and the rocks are transformed under the mountains in the study area. There is a lot of precipitation in the study area. The rainwater from the long-term running water under the mountains in the study area is studied and analyzed. Through research, it can be found that the landslide in the study area has a great relationship with precipitation, delay performance, and slope inclination. There is a lot of precipitation in the study area. Through research, it can be found that the landslide in the study area has a great relationship with precipitation, delay performance, and slope inclination. There is a lot of precipitation in the study area.

Conflict of interest The authors declare no competing interests.

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