Research on Intelligent Party Building Information System Based On Big Data Platform

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Abstract. With the advent of the era of network information, the development of information and network has penetrated into every corner of society. In the social situation, the work of grassroots party organizations is also inseparable from network information technology. In order to adapt to and use the technical advantages in the building of grassroots party organization under the new situation, based on evolutionary game theory, this paper, from the perspective of information platform adverse information and Party building information, establishes an evolutionary game model, and analyzes the dynamic evolution process of information platform adverse information and Party building information strategic behavior, and the dynamic development and change characteristics of information security risk of information platform. Through the analysis of evolutionary game model between the adverse information of information platform and the information of party building, it is found that there is only one evolutionary stable strategy in the whole information platform risk evolution system, that is, all groups will evolve to dishonest groups, and the behavior evolution of party building system will tend to adopt the strategy of keeping faith to reduce the credit risk of information platform.

1. Introduction

In the era of network information, interpersonal communication and information transmission have crossed the limitation of time and space. The characteristics of the development of information content spread through the network show the development direction of liberalization, personalization, infiltration and openness. This has a decisive impact on social information and interpersonal relationship [1]. First of all, because the information content in the network has no strong constraint, it is difficult to judge the authenticity of information, which is easy to cause the flooding of adverse information, which forms an obstacle to people's ability to analyze and judge right and wrong; Secondly, the randomness of network information is very strong. Due to the individual's need for personalization, the virtual identity formed is difficult to restrain personal words and deeds, which is bound to have a negative impact on individual behaviors and behaviors. In addition, in the complex international social relations, there is also a lack of effective shielding and governance means for objectionable content such as adverse speech due to political destinations, which becomes a weapon of destruction for those malicious organizations. Finally, in this open era, we need to make full use of the favorable means of information network to carry out the next step of work, such as how to put ourselves in a correct position, and with the help of the technical means of the network platform to enhance the party building work, give full play to the network advantages to improve the party building work, and thoroughly crush the adverse information such as rumors and slanders.

The informatization work of the party's grassroots building is a major problem of the party's grassroots building. It is required that grassroots party organizations at all levels should recognize the opportunities and challenges they are facing, not only to adapt to the working mode of the information
age, but also to further promote the informatization situation of the work of the grass-roots party organizations by using network technology, so as to create an innovative development of the work of the grass-roots party organizations [5].

2. Building of Evolutionary Game Model

2.1. Basic Hypothesis of Evolutionary Game Model

Hypothesis 1: The participants of evolutionary game are e-commerce adverse information and Party building information, and the game between them is repeated dynamic game.

Hypothesis 2: Adverse information and Party building information randomly and independently choose strategies, and play games on the information platform for many times. The selection strategies of adverse information are trustworthy and dishonesty, and the party building information adopts supervision and non supervision strategies [6].

Hypothesis 3: The probability that adverse information will be found by the party building information is 0 ≤ θ ≤ 1, of which θ is for the supervision of Party building information. The gain profit of adverse information choosing the trustworthy strategy is λ, and the gain profit of adverse information when choosing the dishonest strategy is ηλ, in which η ≥ 1 is the degree of dishonesty of adverse information, that is to say, the degree of dishonesty of adverse information is directly proportional to the gain profit obtained. The greater the degree of dishonesty, the greater the gain profit. When the adverse information takes dishonest behavior to gain ηλ, the total social welfare utility loss is ηλ' [7].

Hypothesis 4: When the dishonesty of adverse information is found by the party building information, the party building information punishes the adverse information, and the gain profit of the party building information punishing the adverse information is βηλ, β > 0, in which β is the punishment intensity of the party building information for the dishonest adverse information, and the supervision cost of the party building information is C [8].

Hypothesis 5: The information in the above hypothesis is common knowledge except the degree of dishonesty of adverse information and the degree of punishment for Party building information.

Hypothesis 6: As long as the supervision strategy is adopted for the party building information, the supervision cost c is large enough to identify all dishonest behaviors of adverse information.

Hypothesis 7: The proportion of adverse trustworthy information is R, then the proportion of adverse dishonesty information is 1-R. In party building information, the proportion of choosing supervision strategy is Q, and the proportion of not supervising is 1-Q.

2.2. Establish the Replication Dynamic Equation of Evolutionary Game Model

According to the above hypotheses, an evolutionary game gain benefit matrix is constructed between the bad information of e-commerce and the information of party building, as shown in Table 1:

| adverse information | Party building information | Supervise | Not regulated |
|---------------------|---------------------------|-----------|--------------|
| Trustworthy         | λ,−c                      | λ,0       |              |
| Dishonesty          | S1, S2                    | ηλ,−ηλ    |              |

Table 1: Evolutionary game gain profit matrix

In Table 1, when adverse information chooses dishonest strategy and party building information adopts regulatory strategy, the expected gain benefit of adverse information is S1, and the expected gain benefit of Party building information is S2. The specific values of S1 and S2 are shown as follows:

S1 = ηλ − βηλ (1)
The expected gain benefit of keeping faith strategy in adverse information is:

\[ \sigma_{11} = Q\lambda + (1 - Q)\lambda \]  

(3)

The expected gain benefit of dishonest strategy in adverse information is:

\[ \sigma_{12} = QS1 + (1 - Q)\eta\lambda \]  

(4)

The average gain benefit of the whole adverse information is as follows:

\[
\bar{\sigma} = R\sigma_{11} + (1 - R)\sigma_{12} = R(1 - R)(\lambda + Q\theta\eta\lambda - \eta\lambda)
\]  

(5)

The replication dynamic equation of the whole adverse information is as follows:

\[
\frac{\Delta R}{t} = R(\sigma_{11} - \bar{\sigma}) = R(1 - R)(\lambda + Q\theta\eta\lambda - \eta\lambda)
\]  

(6)

3. Experimental Analysis

3.1. Experimental Environment

This paper uses the method of numerical simulation to simulate and analyze the evolutionary game model between the party building information and the adverse information by setting specific parameters. This experiment verifies the effectiveness of the evolutionary game model between Party building content and adverse information, and simulates the evolution process of Party building content and adverse information strategy selection, and analyzes the evolution process of information risk in Party building system from the perspective of Party building content and adverse information [9].

In the evolutionary game between Party building content and adverse information, the key parameter is the probability that the monitoring behavior of Party building content is found by adverse information, that is, the supervision strength of adverse information and the punishment degree of adverse information for violating party building content. The parameters in the model are assigned and simulated for analysis [10].

Let the supervision of adverse information \( \theta = 0.5, 0.6, 0.7 \) respectively and the parameter setting is shown in Table 2.

| Table 2 Setting of simulation parameters |
|------------------------------------------|
| Project | Parameter |
|-------------------------------------------------|
| Party building content chooses trustworthy strategies to gain benefits | 100 |
| Degree of untrustworthy party building content | 2 |
| Unhealthy information supervision | 0.5, 0.6, 0.7 |
| Punishment of adverse information on untrustworthy party building content | 1 |
| Regulatory costs of adverse information | 50 |

3.2. Analysis of Experimental Results

The simulation results are shown in Fig. 1
Fig. 1 shows that when the supervision of adverse information is relatively small, even if the proportion of supervision in the group of adverse information is relatively high, the proportion of trustworthy party building content group does not increase. With the increase of supervision intensity of adverse information, the proportion of trustworthy party building content group will increase with the increase of supervision proportion of adverse information group, and will increase with the proportion of adverse information supervision. The evolutionary game system can not reach the evolutionary stable equilibrium without an evolutionary stability strategy.

4. Conclusion
It is a long-term and arduous task to promote the informatization building of grass-roots party organizations. Under the guidance of the scientific outlook on development, we should promote this work in a solid, steady and all-round way. With innovative working ideas and methods, we should promote the informatization of grass-roots party organizations to a new level, and constantly create a new situation of grass-roots party building work.

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