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Video Security Evaluation based on Metrological Analysis

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Abstract: Current food system prioritizes efficiency and profitability. Despite the efficiency of the system, food insecure and scarcity still occur. In addition, the current food system has left a huge environmental impact. Therefore, a comprehensive assessment of our current food system seems reasonable and urgent. Hence, the re-optimizing food systems have received our attention.we modify the initial model by taking Food Savings (FS) and Environmental Improvement (EI) into account. Then we get **MPFE** model, which satisfy fairness and sustainability. Through utilizing data in China, we get the total score and scores for four aspects in China during the ten-year-period, so that we put forward suggestions for improvement: Increase investment in environmental improvement under the condition of ensuring food production and transportation and steady increase in market profits through publicity and education to enhance consumers' habits and concepts to reduce food waste.

1. Introduction

The current global food system prioritizes efficiency and profitability, but still leads to shortages and food crises. The Millennium Development Goal of “halving the proportion of hungry people by 2015” has not been achieved as scheduled, making the achievement of the goal of zero hunger by 2030 more challenging. [1] The world population will reach 9.6 billion by 2050, when food demand will be 70 per cent higher than it is now. [2] As an important means of global governance, especially global food and agriculture governance, the food security evaluation system has attracted the attention of the international community in recent years, with the participation of various international organizations, research institutions and collaborative mechanisms composed of multilateral interest groups. [3] Meanwhile, the sustainable development of agricultural production resources and ecological environment is ignored because of the pursuit of food quantity security. [4] In view of this, it is urgent to optimize the present food system.

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2. MPFE-Improved Food System

In the original model, the production and transportation efficiency and profitability are related to the advantages and disadvantages of the food system. However, fairness and sustainability can not be taken into account. So we optimize the original model, add some indicators, and collect relevant data.

In the improved Re-Optimizing Food System, we add two main aspects and use the twelve data mentioned above, then we classify them into four main fields: Market Profits, Environmental Impacts, Food Savings and Production and Transport of Food. They affect the Re-Optimizing Food System in different ways.

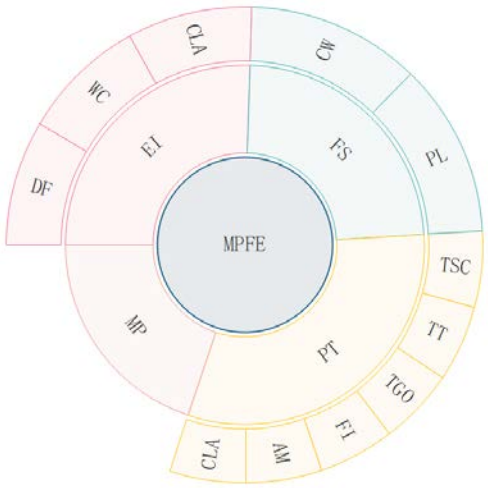

Figure 1: MPFE Index

FS

We use two indicators in ‘Food Savings’ fields. They are CW(Consumer Waste), PL(Processing Losses).

CW represents consumer waste. Chinese people waste up to 200 billion yuan a year on the table, and the food poured out is equivalent to more than 200 million people's rations a year. We collected the consumer waste in China from 2010 to 2019 to express this index.

PL represents processing losses. Food loss refers to the loss of nutrients caused by food processing. The main reason of food loss is that it is not suitable for nonstandard processing, but food loss is inevitable in the process of processing, but there is no problem as long as it is in a reasonable range. We collected the processing losses in China from 2010 to 2019 to express this index.

EI

We use three indicators in ‘Environmental Impacts’. They are DF (deforestation), WC (Water

Consumption) and CLA (cultivated Land Area).

DF reflects deforestation. It means that the cutting of an area of high-density trees by sawing or cutting the trunk with a saw axe. We collected the area of deforestation in China from 2010 to 2019 and calculated it accordingly.

WC reflects water consumption. According to statistics, the water reserves on the earth's surface are about 14 billion cubic meters, but the fresh water resources are only 350 million cubic meters. In this limited fresh water resources, only 0.34% are available to human beings. We collected the amount of water consumption in China from 2010 to 2019 for calculation.

CLA can be expressed by the cultivated land area. Cultivated land is a field that can be used to grow crops and often to hoe. We collected the area in China from 2010 to 2019 and calculated it accordingly.

3. Results

In order to more intuitively see the final score changes in the improved model each year and get the scores of four main indicators, we draw a broken line diagram and a bar diagram from the obtained data as follows:

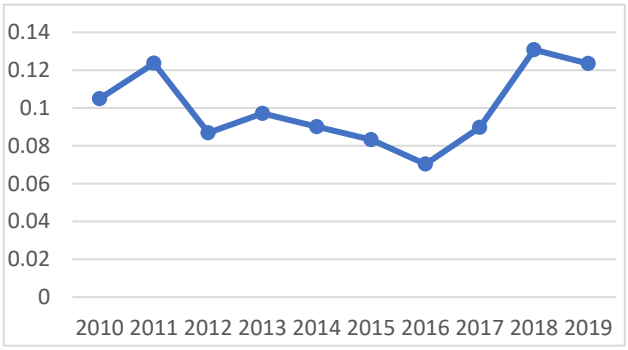

Figure 2: Total scores

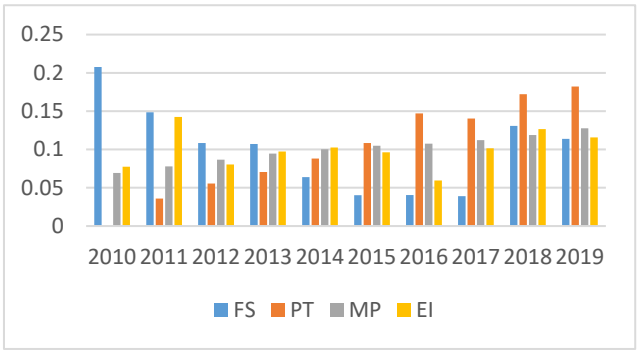

Figure 3: Scores for four aspects

After considering the food savings and environmental impacts, the result has a significant difference compared with the result of the original one. From the above figure, we can see that the improved model scores decreased continually before increased in the later five-year-period. To be more specific, the score in the year of 2011, 2018 and 2019 are much higher than that of 2016.

In 2011, although the figure of production and transportation of food and market profits are low, food savings and environmental protection are much better, so the score is higher.

In 2016, production and transport of food and market profits have been promoted compared with the former five-year-period. But due to poor food conservation and environmental protection, the final score is the lowest.

In the year of 2018 and 2019, production and transport of food and market profits have been greatly improved, but the score of food savings and environmental impacts did not done well, making the total score similar to the figure of 2011.

In conclusion, different from the current system, in the new model, in order to consider sustainability and fairness, we have added two factors: food savings and environmental protection during food production. Through the analysis of the two graphs, we can get the value the four main

aspects, and put forward some suggestions for improvement as follow: Increase investment in environmental improvement under the condition of ensuring food production and transportation and steady increase in market profits through publicity and education to enhance consumers' habits and concepts to reduce food waste.

4. Conclusion

With regard to sustainability, it is closely related to the environment, the expanding occupation of cultivated land in the process of food production destroys the living environment of the original animals, excessive deforestation exacerbates land desertification, and excessive irrigation leads to the waste of water resources. Moreover, sustainability is an inevitable requirement of human survival and development, and it is an important condition for a good food system to run stably for a long time.

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