

# Analysis on Interactive Performance between “Gene Type” and Environment of Monopoly Enterprises

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**Abstract:** the perform type of the monopoly enterprises are diversified, which is caused due to combined action of multiple effects. The interactive performance between “gene type” and environment of the monopoly enterprises is one critical part. Accurate definition can assist to speed up expected benefits of the monopoly enterprises’ reform and construct the salary incentive mechanism of the monopoly enterprises. Based on the interaction principle between “gene type” and environment in the biology, this paper establishes the mathematic model of the interactive performance and correctly evaluates the principal effect “gene type” affecting the performance of the monopoly enterprises, continuous cultivation of “excellent gene type” of the performance of the monopoly enterprises, and innovation mechanism, so the excellent performance “gene type” of the monopoly enterprises can be fully expressed under the most proper environment and the performance of the monopoly enterprises can be improved. This paper also discusses long cultivation of the performance “excellent gene type”, proper acquisition means of performance “excellent gene type” and dynamic match of “excellent gene type” and environment of the monopoly enterprises.

**Keywords:** Environmental performance, “gene type” performance, interactive performance, monopoly enterprises.

## 1. INTRODUCTION

The monopoly enterprises have a big share in the country economy and will correlate the national interest and people's livelihood, national safety and commonwealth business, so they are the “cells” in the country economy and involve the industries such as petroleum, gas, post & telecommunication, transportation, finance, power, information transmission, water production and supply. In 2012, the share of the business revenue of all monopoly enterprises is 40% in GDP. On the whole, the operation efficiency and productivity of the monopoly enterprises is low. It is urgent to deeply drive their reform. The most sensitive and hardest work is the salary regulation reform. Construction and implementation of the salary incentive mechanism of the monopoly enterprises is the foundational work for accurate performance evaluation. The interactive performance between “gene type” and environment is very important in the performance evaluation.

## 2. INTERACTION PRINCIPLE OF “GENE TYPE” AND ENVIRONMENT AND ITS APPLICATION OF OPERATION AND MANAGEMENT PRACTICE OF MONOPOLY ENTERPRISES

“Gene type” and environment interact with each in biology, Generally the linear regression analysis, stability variant method and average level different method, ecological value method and AMMI model analysis method are used. In 1936, Munro proposed that the property of an individual is

the interactive results of specific gene type and specific environment. In 1952, Falconer developed the concept related to inheritance to estimate the interactive effect between the gene type and environment Haldane (1946), McBride (1958) and Yamada (1970) studied interaction between the gene type and environment and studied theory on the classification. Comstock and Moll (1963) classified all factors affecting the properties of the gene type except the gene type into the environment. Guach (1988) first applied the AMMI model into research on the multi-point output in the biology. Based on these research foundation, Zhang Ze (1998) solved the method to quantitatively determine the gene type stability and environment and improve the evaluation accuracy [1]. With deepening of the understanding on the interaction importance between the gene type and environment and quantification of the interactive effect, the performance of some economic properties can be accurately predicted under different environments in biology.

The principle of the interaction between “gene type” and environment has important theoretical and practice meaning for guiding and analyzing the performance of the monopoly enterprises. In essence, the observed statistical performance of the monopoly enterprises is the apparent performance, which can be divided into true performance, environmental performance and interactive performance of enterprise “gene type” and “environment”. The actual performance is created in the actual operation of enterprises, is obtained by the enterprise business team depending on own capability quality, is generated by the “gene type” effect of the operation team, and is also called as “gene type” performance. The environ-

mental performance is generated due to the environmental effect, e.g. the performance obtained by the monopoly enterprises depending on the monopoly position. The interactive performance is generated by interaction between “gene type” and environment of the monopoly enterprises. The performance of monopoly enterprises is special. Most performance of monopoly enterprises is from the environmental performance and interactive performance between “gene type” and environment. The “gene type” affects the performance of monopoly enterprises and the environmental conditions of monopoly enterprises are correlated differently [2]. Discuss such association, performing correlative analysis between “gene type” and environment, and establishing the performance evaluation model can assist to properly revise the performance. Accurate evaluation of the performance of monopoly enterprises is closely associated with analysis on the interaction between “gene type” and environment affecting performance in the operation and management practices of monopoly enterprises. The value of the performance indicator selection is also huge. When the interactive effect exists significantly, it is necessary for monopoly enterprises to cultivate some “gene type” affecting the performance to adapt different environment and exist the maximum performance expression potential of these “gene type”. On the one hand, it is necessary for monopoly enterprises to cultivate the excellent performance “gene type”. On the other hand, it is required to discuss the most proper environment for expression of these excellent “gene type” expression, fully exert excellent “gene type” potential, and make performance of the monopoly enterprises reach the top performance level.

### 3. CONSTRUCTION OF MATHEMATIC MODEL OF INTERACTIVE EFFECT BETWEEN PERFORMANCE “GENE TYPE” AND ENVIRONMENT OF MONOPOLY ENTERPRISES

Interaction between the gene type and environment is a universal biology phenomenon (Wu Jixiang and Zhu Jun, 1994). Deviation of the gene type effect from its genetic effect under different environmental conditions is called as interactive effect between the gene type and environment. When this effect is applied into the operation and management of the monopoly enterprises, it can be understood as deviation of the enterprise operators from own actual performance effect under different environment conditions (different enterprises, different ownership, different areas, different scale and different stages) is called as the interactive performance between the operators and environments. Stronger the interactive effect between the performance gene type and environment of the monopoly enterprises is, stronger the influence of the environment on the performance of monopoly enterprises is. The performance differences of operators under different environments should be especially noticed, so the operators of the monopoly enterprises can select the enterprise operators with better performance in different enterprises, different areas and different times. We can analyze the interactive effect between gene type and environmental in two cases. One case is the interactive effect between the performance “gene type” and environment of different monopoly enterprises under same

external environment. Another case is that the interactive effect between the performance “gene type” and environment of one monopoly enterprise under different external environments [3]. The least square analysis method is used to establish the evaluation model and the statistical analysis software SAS or SPSS is used for computing.

#### 2.1. Analysis on the Interactive Effect Between Performance “Gene Type” and Environment of Different Monopoly Enterprises Under Same External Environment

$H_{ijk} = \mu + B_i + L_j + F_k + (BL)_{ij} + (BK)_{ik} + (LF)_{jk} + (BLF)_{ijk} + E_{ijk}$   
 The mathematical model is based on

Where in  $H_{ijk}$ --- performance of “gene type” under the environment i, j and k condition

$\mu$ --- Overall average in case of equal repetition number

$B_i$ --- gene type effect

$L_j$ --- effect under j environment

$F_k$ --- effect under k environment

$(BL)_{ij}$ --- interactive effect of gene type and environment j

$(BK)_{ik}$ --- interactive effect of gene type and environment K

$(LF)_{jk}$ --- Interactive effect of environment j and k

$(BLF)_{ijk}$ --- interactive effect of gene type, environment j and k

$E_{ijk}$ --- random error.

2. Analysis on the interactive effect between performance “gene type” and environment of one monopoly enterprise under different external environments

$H_{jk} = \mu + L_j + F_k + (LF)_{jk} + E_{ijk}$

The mathematical model is based on  
 $H_{jk} = \mu + L_j + F_k + (LF)_{jk} + E_{ijk}$

Where in  $H_{jk}$ --- performance under the environment j and k

$\mu$ --- Overall average in case of equal repetition number

$L_j$ --- effect under j environment

$F_k$ --- effect under k environment

$(LF)_{jk}$ --- interactive effect of environment j and k

$E_{ijk}$ --- random error

For the significant difference effect, the linear comparison between the least square means is used for multiple comparison [4].

Based on the above established mathematical model, the interactive effect of the “gene type” in same environment of different monopoly enterprises and interactive effect of “gene type” of same monopoly enterprises in different environments can be obtained, so we can get the influences of “gene type”, environment and their interactive effect of the monopoly enterprises on enterprise performance.

#### 4. MEASUREMENT FOR IMPROVING PERFORMANCE OF MONOPOLY ENTERPRISES BASED ON THE INTERACTIVE EFFECT PRINCIPLE OF “GENE TYPE” AND ENVIRONMENT OF MONOPOLY ENTERPRISES

Based on the interactive effect principle of “gene type” and environment of monopoly enterprises, the action path of the dynamic match of the “excellent gene type” and environment of enterprises on the enterprise performance is shown as the Fig. (1).

Fig. (1) Schematic of action path of dynamic match of “excellent gene type” and environment of monopoly enterprises on enterprise performance.

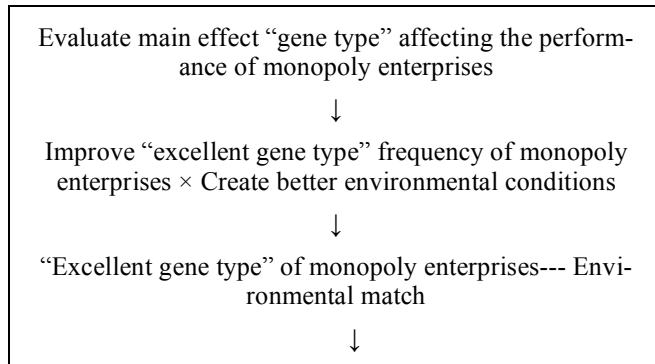


Fig. (1). Obtain higher enterprise performance.

For the action path obtained according to the interactive effect of “gene type” and environment of monopoly enterprises, the following measures should be taken to improve the performance of monopoly enterprises.

##### 4.1. Correctly Evaluate the Main Effect “Gene Type” Affecting the Performance of Monopoly Enterprises

The “gene types” affecting the performance of monopoly enterprises are diversified. The main effect “gene type” affecting the performance of monopoly enterprises are different on different phases of enterprises and the affecting degrees are also different. A scientific method should be used to get the key “gene types” affecting the enterprise performance from multiple factors. On the whole, the key “gene types” affecting the enterprise performance include the following “gene types”: 1 Human resource “gene type” of enterprises: the key for enterprise success is the human resource in the knowledge economy era, which has critical influences on performance of enterprises. The key is how to exert the potential of the enterprise human resource. 2 key technology “gene type” [5]. The key technology is the most critical and important technology of enterprises. Regardless of environmental change, this technology can keep the unique value of products and high adaptation to the environment. 3 Brand “gene type”: The brand “gene type” is based on certain quantity and quality, results from the accumulation of enterprises, can add inherent values to enterprises, and is the intangible assets of enterprises. 4 Marketing network “gene type”. It is the solid network based on users and can bring higher barriers to the followed competitors. Even followers can break through this barrier, they will pay huge costs and expenses. 5 System resource integration capability “gene type”. The key

for competition between modern enterprises is the inter-system competition, which is also the deep competition in modern enterprises and is different from the shallow product competition. 6 Enterprise culture “gene type” [6]. The enterprise culture is based on the common value idea, is finally fused in the idea and behaviors of all staff of enterprises, and forms the common responsibilities and consciousness and common targets, so it is necessary to strengthen the enterprise culture construction at the material level, spirit level and regulation level, which will assist enterprises to realize the performance target of the enterprises.

##### 4.2. Continuous Cultivation of “Excellent Gene Type” of Performance of Monopoly Enterprises

The performance “gene type” among different monopoly enterprises is different, so it brings premise and possibility to further improve the performance “gene type”. From the “gene type” effect analyzed by using the least square method, based on analysis on the empirical data of the monopoly enterprises, the enterprises with high-frequency performance “excellent gene type” will also have higher performance, which is caused by the performance “gene type”. To perform critical and detailed analysis on the main effect “gene type” affecting the performance of monopoly enterprises, continuously cultivate the “gene type” supporting the excellent performance of monopoly enterprises, gradually eliminate the “gene type” with worse performance, and make enterprises continuously present product services and products in a better and quicker manner, the monopoly enterprises can realize sustainable development.

##### 4.3. Innovation Mechanisms Make Excellent Performance “Gene Types” of Monopoly Enterprises be Fully Expressed Under the Most Proper Environments

The performance of monopoly enterprises results from the comprehensive actions of the microcosmic, medium-cosmic and macrocosmic environment factors inside enterprises. Generally it is called as the apparent performance, is not determined by the plentiful “gene type” inside the enterprises related to the performance, and is affected by the actual operation effect of enterprises and interaction between other “gene types” and environment. To truly improve the performance of monopoly enterprises, the most valuable means include three means. 1 Improve actual performance; 2 Improve the environmental performance; 3 Improve interactive performance of “gene type” and environment [7].

The monopoly enterprises with similar “gene types” will have different performances under different environmental conditions, which fully indicates interactive effect between the performance “gene type” and environment of monopoly enterprises, so the monopoly enterprises should establish different mechanisms to make the excellent performance “gene type” of monopoly enterprises be fully expressed under the most proper environment, especially the excellent talent “gene type” affects the performance of the monopoly enterprises [8]. The talent-oriented idea should be erected, especially different incentives should be taken for the kernel talents of monopoly enterprises to dine the potential to most extent and make the talent “gene type” be utilized to most extent under the most proper environment.

## 5. FURTHER NOTICES FOR THE INTERACTIVE EFFECT PRINCIPLE BETWEEN THE PERFORMANCE “GENE TYPE” AND ENVIRONMENT OF MONOPOLY ENTERPRISES

### 5.1. Long Cultivation of the Performance “Excellent Gene Type” of Monopoly Enterprises

The performance “excellent gene type” of monopoly enterprises can not be cultivated in a short time and requires a long-term process. Regardless of human resource, kernel technologies, brand, network, resource integration and culture “excellent gene type” frequency increase and quality improvement, they are beyond the specific products and services and can not be completed at once. It should be cultivated for a long period [9].

### 5.2. When the Performance “Excellent Gene Type” of the Monopoly Enterprises is Cultivated, the Proper Acquisition Means Should be Noticed

Based on the wooden barrel principle, if the key performance “gene type” affecting performance of monopoly enterprises requires long cultivation period, one quickest method is introduction from outside, so the missing part of the wooden barrel can be fixed. No “excellent gene type” is introduced from outside in the previous enclosed cultivation method. Another means is that the enterprises can cultivate the performance “excellent gene type” inside them and make them seamlessly integrated with the environment inside the enterprises [10]. The performance “excellent gene type” cultivated inside the enterprises can be matched with the internal environment, so the performance “excellent gene type” can be better expressed and the higher interactive performance can be generated.

### 5.3. Dynamic Match of “Excellent Gene Type” and Environment of Monopoly Enterprises

The enterprise “excellent gene type” can be fully expressed under the proper environment, so the institutional conditions suitable for enterprise “excellent gene type” should be established inside the enterprises and should be changed with change of the internal and external environment to realize dynamic match of the internal and external environment, improve the match degree of the “excellent gene type” and environment (including general match force and special match force) and continuously improve the performance of enterprises.

## CONCLUSION

Many reasons lead to low performance of monopoly enterprises. The first reason is to check if “excellent gene type” affecting the performance of monopoly enterprises is enough and the second reason is to check if these “excellent gene types” have proper environment, namely match with the environment and match degree. The reasonable match between

the “excellent gene type” and environment affecting the performance of monopoly enterprises should be regarded as a breakthrough to improve the enterprise performance and should be gradually improved. Now even if the “excellent gene type” affecting performance of monopoly enterprises has a very high frequency under the specific conditions in China, but when we do not create the proper institutional conditions, the better performance “excellent gene types” will not be better expressed and the performance of monopoly enterprises is not high. Based on the interactive effect principle of the performance “excellent gene type” and environment, we should gradually cultivate the performance “excellent gene type” of the monopoly enterprises, create proper institutional conditions, and make the performance “excellent gene type” be fully expressed, which are the most important work in operation and management practices of monopoly enterprises.

## CONFLICT OF INTEREST

The author confirms that this article content has no conflict of interest.

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