

# An Optimization Model of Resistance of Enterprise Reform in E-business

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## KEYWORDS

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## ABSTRACT

Enterprise reform is a kind of management tools for the enterprise to adapt the environment change in e-business. However, the enterprise is often faced resistance in the course of enterprise reform. The key problem of enterprise reform is an interest adjustment. They will be an important source of resistance in the enterprise who lost interest absolutely and obtained interest relatively lesser. An optimization model of resistance of enterprise reform is presented in this paper, which goal function is the resistance to minimum and the condition is totals of interest adjustment.

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## 1 Introduction

Enterprise reform is a very common phenomenon. In the environment of e-business, the speed between enterprise and the customer getting and spreading information is faster and easier than that in the traditional environment. There exit opportunities and challenges for the enterprise in e-business. When resources are limited, the enterprise reform is a course of adjustment membership interest distribution. The goal of enterprise reform aims to meet the objective needs of adapting the environment of e-business and encourage the staff. In human resources management (HRM), due to limited by the costs and economic strengths of enterprise, it is very difficulty to meet all employees' requirement of interest distribution. The principle of enterprise interest distribution should be reasonable adjusted according to come true the goal of encouragement and optimization HR. The keystone of allocation is that the key staff and the most need of the interests of the employees get a reasonable distribution. There are many literatures discussed the encouragement, especially related to its role and how to applied in different organizations. An optimization model of resistance of enterprise reform is presented in this paper, and the basic thought of this model is transfer the resistance of enterprise reform to the interest distribution, and the objective function is built through the resistance to minimum.

## 2 Basic Concepts

In order to build the model of resistance of enterprise reform, it's necessary that the basic concepts are explained in this paper. The basis concepts are interest group, reform resistance and so on.

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## 2.1 Interest group

The interest group is a crowd that has the same or similarity interest. For any interest group  $A_i$ , we use the average interest  $\bar{P}_A$  and the number of human being ( $n$ ) to describe. For example,  $A_i(\bar{P}_{A_i}, n_{A_i})$  denotes the interest group  $A_i$  and its average interest are  $\bar{P}_{A_i}$  and the number of human being is  $n_{A_i}$ . For the same interest group, we have  $\forall x \in A_i, |P_{Ax} - \bar{P}_{A_i}| \leq \delta$ , there  $\delta$  is a coefficient that is given to judge the group of interest. In the scope of discussing enterprise  $S$ , if preset  $\delta$ , there exist  $m$  interest groups, and have:

$$1) \text{ if } i \neq j, \text{ then } A_i \cap A_j = \phi$$

$$2) A_1 \cup A_2 \cup \dots \cup A_m = S$$

We call  $A_1, A_2, \dots, A_m$  is in the condition of  $\delta$  to divide  $S$ .

## 2.2 Reform resistance

The enterprise reform resistance is strength of being against the reform, and it includes explicit resistance and tacit resistance. The explicit resistance is produced when own befits of the group interest are reduced absolutely, and it mainly destroys the initial stage of reform. The tacit resistance is produced when the newly increased befits of different groups of interest are partial, and it mainly affects the quality of reform.

The reform resistance is determined by the utility reduced of the interest group and the number of human being. For one of enterprise reform, there maybe exist three cases as following:

- 1) It will make some interest group (set the number of group of interest is  $m_1$ ) newly increasing their befits absolutely, and they support the reform.
- 2) It maybe make some interest group (set the number of group of interest is  $m_2$ ) reducing their befits, and they are against the reform in the initial stage.
- 3) It maybe make some interest group (set the number of group of interest is  $m_3$ ) new increasing befits but is less, and they affect the quality of reform.

This paper mainly discuss the resistance, according to the concept of resistance, for one of enterprise reform, the resistance of reform

is consist by explicit resistance and tacit resistance.  $F_o, F_{o1}$  and  $F_{o2}$  denotes the resistance of reform, explicit resistance and tacit resistance of reform respectively, we have:

$$F_o = F_{o1} + F_{o2} \quad (1)$$

Actually, the action of gather will be produced in the course of enterprise reform, we use  $h_2(\sum_{j=1}^{m_2} F_{o1j}, m_2)$  and

$h_3(\sum_{k=1}^{m_3} F_{o2k}, m_3)$  denote the result of gather of explicit resistance and tacit resistance of reform respectively, set:

$$F_{o1} = \sum_{j=1}^{m_2} F_{o1j} + h_2(\sum_{j=1}^{m_2} F_{o1j}, m_2) \quad (2)$$

$$F_{o2} = \sum_{k=1}^{m_3} F_{o2k} + h_3(\sum_{k=1}^{m_3} F_{o2k}, m_3) \quad (3)$$

In (2), the factors of deciding  $F_{o1j}$  mainly are the principle of adjust encourage of enterprise reform  $w$  (it reflects the factor of reducing relatively, the utility reduced of group of interest  $v_o$  (it reflects the factor of reducing absolutely) and the number of human being of group of interest  $n$ , then  $F_{o1j} = f_{o1}(w, v_{oj}, n_j)$

In (3), the factors of deciding the  $F_{o2k}$  mainly are the principle of adjust encourage of enterprise reform  $w$  and the umber of human being of group of interest  $n$ , then  $F_{o2k} = f_{o2}(w, n_k)$

### 3 Basic Assumptions

#### 3.1 Assumption of total quantity of investment restriction

The interest adjustment of enterprise reform is limited by the total quantity of investment, and the result of newly increasing is a limited value  $P_1$ , and  $P_1 \geq 0$ . The total of interest adjustment is consist of the present value and newly increasing value, and it is more than the present value.

#### 3.2 Assumption of economic rationalist

As vested interests are reduced, human being will produce a mental struggle, through the negative impact on the work against enterprise reform. When one of the newly increasing interests is less than others, he will have a mental struggle, through the negative impact on the work against the enterprise reform.

#### 3.3 Assumption of change of interest group

Set the interest group is the basic unit of affecting the enterprise reform. Interest groups within the enterprise with the readjustment of interests to regroup, when reduce or increase the interest group vested interests level, we use  $A_1(P_3, n_2) \rightarrow A_s^*(P_s, n_2)$  to denote the statue transfer, that is from  $A_1(P_3, n_2)$  to  $A_s^*(P_s, n_2)$ , and  $A_s^*$  is the newly increasing the number of human being from the formerly  $A_s(P_s, n_s)$ , and become the new  $A_s(P_s, n_s + n_2)$ . There is not exit resistance among interest groups before the enterprise reform, i.e. the reform confirms to the assumptions of Markov process. The model of resistance of enterprise reform is related to the interest groups that are produced by the adjustment interest through the relation of state transfer.

#### 3.4 Assumption of duality of resistance of reform

The assumption of duality is that the resistance not only to reduce the interest group vested interest, but with the other interest group produced some effects also. The duality is conducted by the effect of gather.

## 4 Analysis on Resistance of Enterprise Reform

#### 4.1 Model of resistance of enterprise reform

The model of resistance of enterprise reform is divided into two basic especially model, and one is in the case of not newly increasing interest, to increase some interest groups' befits and reducing another interest groups' befits, i.e. the model of resistance based on the present interest adjustment(is called model 1). Another is in the case of having newly increasing interest but the distribution is not average, i.e. the model of resistance based on the distribution not average (called model 2).

The reform relates to the adjustment interest about three interest groups are shown in figure 1 and figure 2 respectively.

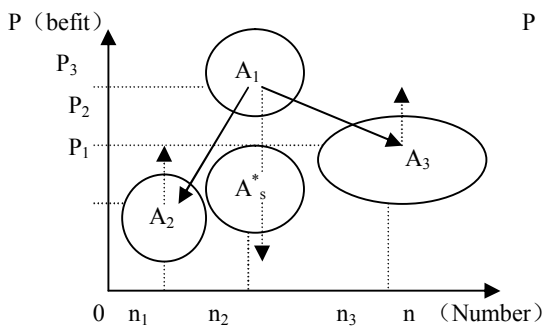


Figure 1 Model 1

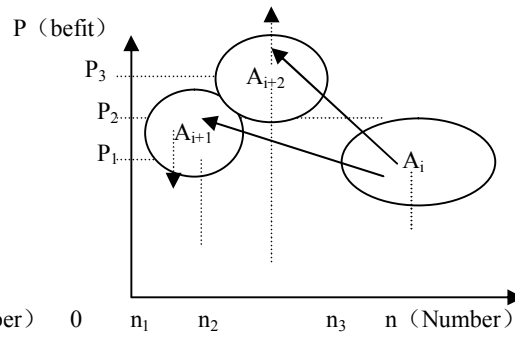


Figure 2 Model 2

In the model 1, we have

reducing:  $A_1(P_3, n_2) \rightarrow A_s^*(P_s, n_2)$ ,

increasing:  $A_2(P_1, n_1) \rightarrow A_i^*(P_i, n_1)$ ,  $A_3(P_2, n_3) \rightarrow A_j^*(P_j, n_3)$ ,

The source of resistance of enterprise reform is produced by  $A_s^*(P_s, n_2)$ , and the condition is the total of increasing is not more than the reducing.

In the mode 2, we have

increasing:  $A_i(P_1, n_3) \rightarrow A_{i+1}^*(P_{i+1}, n_1) + A_{i+2}^*(P_{i+2}, n_2)$ , and  $P_{i+2} > P_{i+1}$

The source of resistance of enterprise reform is produced by  $A_{i+1}^*(P_{i+1}, n_1)$ , and the condition is the total of increasing is not more than the newly increasing.

#### 4.2 Calculate the resistance of enterprise reform

The resistance will be produced in two cases, one is the vested interests are reduced, which is called absolutely distribution resistance, and it belongs to the explicit resistance. Another is the increasing interests are partially, which is called respectively distribution resistance, and it belong to the tacit resistance.

We discuss the factors of determine the explicit resistance ( $F_{o1j}$ ) and tacit resistance ( $F_{o2k}$ ) in the formerly of this paper, and put

forward the relation of  $F_{o1j} = f_{o1}(w, v_{oj}, n_j)$  and  $F_{o2k} = f_{o2}(w, n_k)$ . To calculate the explicit resistance, First of all is

giving a relatively sort of the interest group vested interest in reducing in enterprise inside, set a sorted result (reduced is

decreasing) is  $A_1, A_2, \dots, A_{m2}$ , and their utility function are  $U_{A_1}, U_{A_2}, \dots, U_{A_{m2}}$ . Secondly, according to certain principles,

namely, to reduce insensitivity interest group vested interests priority, and the result of utility reduced is almost same, i.e. the result of

reduced meet:  $U_{A_1}(w_{A_1}) \approx U_{A_2}(w_{A_2}) \approx \dots \approx U_{A_{m2}}(w_{A_{m2}})$ , and have:  $F_{o1j} = n_j U_{A_j}(w_{A_j})$ . For the tacit resistance,

we use the comparison utility of interest distribution to denote the result, set  $W_{\max(A_k)}$  is the  $A_k$  interest group the maximum

allocation, we have:  $F_{o2k} = n_k \{U_{A_k}[W_{\max(A_k)}] - U_{A_k}(w_{A_k})\}$ . The affect of gather of distribution resistance should be

according with the principle of 1+1>2. This shows that the existing interests of the distribution of adjustment will not involve too many interest groups, or the distribution resistance is too large. In the same way, for the case of having newly increasing interest but inequality distribution, the distribution is not in too many interest groups making multilevel differences, otherwise there will be faced

too large resistance. set  $h_2(\sum_{j=1}^{m_2} F_{o1j}, m_2) = (\sum_{j=1}^{m_2} F_{o1j})^{\lambda_2 m_2}$  and  $h_3(\sum_{k=1}^{m_3} F_{o2k}, m_3) = (\sum_{k=1}^{m_3} F_{o2k})^{\lambda_3 m_3}$ , there  $\lambda_2$  and  $\lambda_3$  is the relatively importance of the interest groups of vested interest in reducing and new distribution of interests in being partial of enterprise reform, and  $\lambda_2, \lambda_3 \in [0,1]$ .

The (2) become

$$F_{o1} = \sum_{j=1}^{m_2} n_{Oaj} U_{Oaj}(w_{Ai}) + (\sum_{j=1}^{m_2} n_{Oaj} U_{Oaj}(w_{Aj}))^{\lambda_2 m_2} = (\sum_{j=1}^{m_2} n_{Oaj} U_{Oaj}(w_{Aj}))^{1+\lambda_2 m_2} \quad (4)$$

The (3) become

$$F_{o2} = \left\{ \sum_{k=1}^{m_3} n_{Ojk} \{U_{Ojk}[W_{\max(Ak)}] - U_{Ojk}(w_{Ai})\} \right\}^{1+\lambda_3 m_3} \quad (5)$$

According the (4) and (5), have

$$F_o = (\sum_{j=1}^{m_2} n_{Oaj} U_{Oaj}(w_{Aj}))^{1+\lambda_2 m_2} + \left\{ \sum_{k=1}^{m_3} n_{Ojk} \{U_{Ojk}[W_{\max(Ak)}] - U_{Ojk}(w_{Ai})\} \right\}^{1+\lambda_3 m_3} \quad (6)$$

## 5 Model of Resistance of Enterprise Reform and Explanation of Solution

Integrated the basic concepts and assumptions, the model of resistance of enterprise reform is put forward is as following.

$$\min : F_o \quad (7)$$

$$s.t : 1) \sum_i^{m_1+m_3} w_{aAi} n_{aAi} \leq P_1 + \sum_{j=1}^{m_2} w_{dAj} n_{dAj}$$

$$2) m_1 + m_2 + m_3 = m$$

$$3) w_{aAi}, n_{aAi}, w_{dAj}, n_{dAj} \geq 0; m_1, m_2, m_3, m \in Z^+$$

The explanation of the model: the goal function denotes the resistance to minimum, i.e. the comparison of the power and the resistance to maximum. The condition is the total of resource interest groups obtained is not more than the total allocation.

The explanation of the parameters of (7):  $w_{aAi}$  and  $n_{aAi}$  denotes the benefit allocated and the number of human being of interest group

respectively;  $w_{dAj}$  and  $n_{dAj}$  denotes the benefit reduced and the number of human being of interest group respectively;  $P_1$  is newly

increasing quantity;  $m_1$ 、 $m_2$ 、 $m_3$  and  $m$  denotes the number of interest group encouraged, the number of interest group reduced absolutely, and the number of interest group reduced relatively respectively.

## 6 Conclusion

The model of resistance of enterprise reform was present in this article, which aims at solving the problem of resistance of enterprise reform to minimum in the case of resource limited. The goal of enterprise reform is to come true the aim of enterprise, the author put forward a thought in this paper is that by using the utility change of interest groups and the affect of gather to explain the principle of distribution support the enterprise reform, and the result of distribution should be the comparison power and resistance to maximum.

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