Research on Evaluation Model of Department Responsibilities Conflict Based on DRCI

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Abstract—**The definition of department responsibility conflict evaluation is first given in the paper. Following the analysis of the evaluation process, which is generalized to assess extent of the responsibility conflict among different power departments, the department responsibility matrix is established and the construction of the evaluation model is presented. Then an application case is introduced to illustrate the progress and the methodology of department responsibilities conflict evaluation. The conclusion of the research may build a sound foundation for optimizing department responsibilities.**

Keywords-brief list of responsibilities; department responsibility conflict; evaluation model

I. INTRODUCTION

The responsibility boundaries are sometimes unclear among different power branches. There are also such pheromones as in consistences between power and responsibilities, conflicts among responsibilities, and the abuses of power. In order to effectively solve these realistic problems, this paper construct the model of department responsibilities conflict based on DRCI (Department Responsibilities Conflict Index). The conclusion may build a good theoretical and methodological foundation for evaluating department responsibilities conflict.

Department responsibilities is defined as the scope of duty and the tasks to be assumed in order to fulfill the responsibilities of an organization, as well as the corresponding responsibilities for accomplishing these tasks. Conflict is defined as contradictions, strife and disputes. The department responsibilities conflict evaluation is defined as making the department responsibilities optimization as the goal, used the scientific and feasible methods for giving objective, fair and systematic value judgment to the department responsibilities conflict and related problems, based on full information of department responsibilities .

Department responsibilities conflict evaluation process is shown in Figure 1.
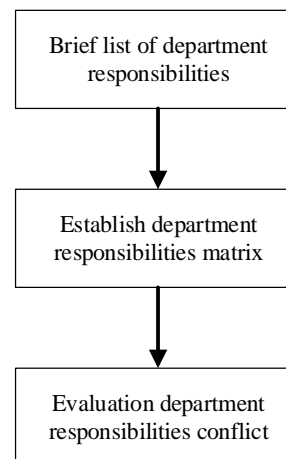

FIGURE I. DEPARTMENT RESPONSIBILITIES CONFLICT EVALUATION PROCESS

1. Brief list of department responsibilities. According to the department tasks, break down department responsibilities by the method of work breakdown structure, established the department responsibilities list, explicit "responsibility family property" of department. At the same time, draw "responsibility boundary" and "behavior boundaries".

2. Establish department responsibilities matrix. Establish department responsibilities matrix between departments, described two departments as row vector and column vector respectively.

3. Evaluation department responsibilities conflict. According to the evaluation standard, used experts survey method to evaluate the conflict between the predicate, attributive, object, and range of department responsibilities. On this basis, calculated the value of department responsibilities conflict.

II. DEPARTMENT RESPONSIBILITY EVALUATION MODEL

According to the department responsibilities conflict evaluation process, analyzed the evaluation model.

A. Combing the List of Department Responsibilities

Combing department responsibilities established department responsibilities list, and decomposed department responsibilities into predicates, attributive, object and range, which are shown in Table I. The predicate is defined as describe the subject，how the subject is or what it is. The attributive is defined as modified components of the name,

which indicate the name by owner, nature, quantity, etc. The object is subject to verb, indicated the person or thing involved in the action. The range is defined as the action target of a person or thing. For example, the A department original responsibility of company is described as: "responsible for the department document file management." Then, the predicate of this responsibility described as: "Responsible"; the attributive of this responsibility described as: "Document file"; the object of this responsibility described as: "Management"; the range of this responsibility described as: "A department".

TABLE I. DEPARTMENTAL RESPONSIBILITIES LIST

No.	Responsibility Subject	Responsibility Basis	Responsibility Describe			Range	Joint Implementation of The Main Body
			Responsibility Predicate	Responsibility Attributive	Responsibility Object		
Fill in Description	1.Responsibility Subject is defined as the responsibility of the sector; 2.Responsibility Basis is defined as the responsibilities assigned by the higher authorities; 3.Responsibility Describe, including predicate, attributive and object of responsibility; 4.Range is defined as the object of responsibilities ; 5.Joint Implementation of The Main Body is defined as the responsibility of the main implementation by a number of subjects.						

B. Establish Department Responsibilities Matrix

In this paper, two departments responsibilities are described as row vector and column vector, established predicate matrix, attributive matrix, object matrix, range matrix and responsibilities matrix of two departments .The department responsibilities matrix is n×m matrix, which are shown in Table II. It consists rows, columns, and elements. The rows shown specific responsibilities of department b; The columns show m specific responsibilities of department a.

TABLE II. DEPARTMENTS RESPONSIBILITY MATRIX

Department a / Department b	Responsibility 1	Responsibility 2	......	Responsibility m
Responsibility 1				
Responsibility 2				
......				
Responsibility n				

C. Department Responsibilities Conflicts Evaluation

Invite experts to evaluate the responsibilities conflict of predicate, attributive, object, and range between two departments, and then calculate the value of department responsibilities conflict[1].

1) Predicate Conflict Evaluation

The conflict value of each element i n the predicate conflict matrix is calculated by:

$$l(ij) = \frac{\sum_{k=1}^{n} l(ij)_k}{n} \qquad (1)$$

$l(ij)$ show the predicate conflict value of i th row, j th column, $l(ij)_k$ show the predicate conflict value of i th row, j th column by kth expert, n show the number of experts.

$l(ij)_k$ had three levels: No conflict, general conflict, big conflict , the corresponding quantitative values are: 0,0.5,1. Similarly, get the conflict value of attributive, object and range, which are shown by $m(ij)$, $n(ij)$, $p(ij)$ respectively.

2) Department Responsibilities Conflict Evaluation

According to the conflict value of elements about the responsibility matrix, the attributive matrix, the object matrix and the range matrix, used following equation to get conflict values of elements about department responsibilities matrix:

$$c(ij) = Z(ij) \times (w_1 \times l(ij) + w_2 \times m(ij) + w_3 \times n(ij) + w_4 \times p(ij)) \qquad (2)$$

$c(ij)$ show the conflict value of the i th row and j th column, w_1, w_2, w_3 and w_4 show the weight of the responsibility predicate conflict, the responsibility attributive conflict, the responsibility object conflict and the responsibility range conflict respectively. $Z(ij)$ means the adjustment factor, the value of $Z(ij)$ is 0 or 1, when the $l(ij)$, $m(ij)$, $n(ij)$, $p(ij)$ any value is 0 (no conflict), the value of $Z(ij)$ is 0 ,and the other case the value of $Z(ij)$ is 1.

According to the conflict value of elements about responsibility matrix, the value of responsibility conflict evaluation is obtained by following[2]:

$$c_{ab} = \frac{\sum_{i=1}^{m} \max c(ij) + \sum_{j=1}^{n} \max c(ij)}{i + j} \qquad (3)$$

c_{ab} show the value of responsibilities conflict evaluation between department a and department b, $c(ij)$ show the conflict value of the i th row and j th column.

3) Conclusion of Department Responsibilities Conflict Evaluation

The conclusions of department responsibilities conflict evaluation include quantitative conclusion and qualitative conclusion.

1. Quantitative Conclusions

According to the equation 3, get the conclusion of department responsibilities conflict quantitative evaluation.

2. Qualitative Conclusions

Assuming that there are four types of department responsibilities conflict qualitative evaluation conclusions: no conflict, small conflict ,general conflict ,big conflict, The corresponding evaluation criteria $E = \{e_1, e_2, e_3, e_4\}$ = {no conflict, small conflict ,general conflict ,big conflict}={0,0.15,0.6,0.9}. The qualitative evaluation conclusion of department responsibilities conflict is calculated by following equation[3]:

$$l_i = \frac{1 - |c - e_i|}{\sum_{i=1}^{4}[1 - |c - e_i|]}, i = 1,2,3,4 \quad (4)$$

III. CASE STUDY

In this paper, used the administrative department and the development department of A company as an example, evaluated department responsibilities conflict between these two departments.

A. Combing the List of Department Responsibilities

A list of administrative department responsibilities is shown in Table III.

TABLE III. A LIST OF ADMINISTRATIVE DEPARTMENT RESPONSIBILITIES

No.	Responsibility Subject	Responsibility Basis	Responsibility Describe			Range	Joint Implementation of the Main Body
			Responsibility Predicate	Responsibility Attributive	Responsibility Object		
1	Administrative Department	Take the lead in writing the company development strategy	Lead	Company Development Strategy	Write	Company	None
2	Administrative Department	Responsible for formulating company policies and regulations	Responsible	Company Policies And Regulations	Formulate	Company	None
3	Administrative Department	Responsible for company administration logistics and external relations	Responsible	Administration Logistics	Work	Company	None
4	Administrative Department	Responsible for company administration logistics and external relations	Responsible	External Relations	Work	Company	None
5	Administrative Department	Responsible for publicity planning	Responsible	Publicity	Planning	Company	None
6	Administrative Department	Organize company project management	Organize	Project	Management	Company	None
7	Administrative Department	Responsible for file management	Responsible	File	Management	Company	None

A list of Development Department responsibilities are shown in Table IV.

TABLE IV. A LIST OF DEVELOPMENT DEPARTMENT RESPONSIBILITIES

No.	Responsibility Subject	Responsibility Basis	Responsibility Describe			Range	Joint Implementation of the Main Body
			Responsibility Predicate	Responsibility Attributive	Responsibility Object		
1	Development Department	Responsible for the administration of this department	Responsible	Administration	Management	Development Department	None
2	Development Department	Organize company policy research, development strategy research	Organize	Policy	Research	Company	None
3	Development Department	Organize company policy research, development strategy research	Organize	Development Strategy	Research	Company	None
4	Development Department	Responsible for project pre - feasibility study and project declaration	Responsible	Project Pre - Feasibility	Research	Company	None
5	Development Department	Responsible for project pre-feasibility study and project declaration	Responsible	Project	Declaration	Company	None
6	Development Department	Responsible for capital operation research and management of company assets	Responsible	Capital Operation	Research	Company	None
7	Development Department	Responsible for capital operation research and management of company assets	Responsible	Company Assets	Management	Company	None

B. Department Responsibilities Conflict Evaluation

Assuming three experts are invited to evaluate the department conflicts of the predicates, attributive and object respectively, on this basis,get the conflict evaluation conclusion between administrative department and development department of A company.

1) Predicate Conflict Evaluation

The results of the first expert's evaluation of the predicate conflict between administrative department and development department of A company are shown in Table V.

TABLE V. THE RESULTS OF THE EXPERT'S EVALUATION OF THE PREDICATE CONFLICT

Administrative Department / Development Department	Lead	Responsible	Responsible	Responsible	Responsible	Organize	Responsible
Responsible	General Conflict	Big Conflict	Big Conflict	Big Conflict	Big Conflict	General Conflict	Big Conflict
Organize	General Conflict	General Conflict	General Conflict	General Conflict	General Conflict	Big Conflict	General Conflict
Organize	General Conflict	General Conflict	General Conflict	General Conflict	General Conflict	Big Conflict	General Conflict
Responsible	General Conflict	Big Conflict	Big Conflict	Big Conflict	Big Conflict	General Conflict	Big Conflict
Responsible	General Conflict	Big Conflict	Big Conflict	Big Conflict	Big Conflict	General Conflict	Big Conflict
Responsible	General Conflict	Big Conflict	Big Conflict	Big Conflict	Big Conflict	General Conflict	Big Conflict
Responsible	General Conflict	Big Conflict	Big Conflict	Big Conflict	Big Conflict	General Conflict	Big Conflict

In the same way, we can get the results of the other two experts' evaluation of the predicate conflict between administrative department and development department of A company, according to the Eq.(1), we can get the predicate conflict evaluation results between administrative department and development department of A company, which are shown in Table VI.

TABLE VI. THE PREDICATE CONFLICT EVALUATION RESULTS

Administrative Department / Development Department	Lead	Responsible	Responsible	Responsible	Responsible	Organize	Responsible
Responsible	0.5	1	1	1	1	0.5	1
Organize	0.17	0.5	0.5	0.5	0.5	1	0.5
Organize	0.17	0.5	0.5	0.5	0.5	1	0.5
Responsible	0.5	1	1	1	1	0.5	1
Responsible	0.5	1	1	1	1	0.5	1
Responsible	0.5	1	1	1	1	0.5	1
Responsible	0.5	1	1	1	1	0.5	1

2) Department Responsibilities Conflict Evaluation

In the same way, we can get the Attribute Object and Range conflict evaluation results between administrative department and development department of A company. According to

Eq.(2), assume that $w_1 = 0.1$, $w_2 = 0.5$, $w_3 = 0.2$ and $w_4 = 0.2$, get the evaluation result of the department responsibilities conflict matrix elements between the administrative department and development department of A company, which are shown in Table VII.

TABLE VII. THE EVALUATION RESULT OF THE DEPARTMENT RESPONSIBILITIES CONFLICT MATRIX ELEMENTS

Administrative Department / Development Department	Responsibility1	Responsibility2	Responsibility3	Responsibility4	Responsibility5	Responsibility6	Responsibility7
Responsibility1	0	0	0.9	0	0	0	0
Responsibility2	0.37	0.7	0	0	0	0	0
Responsibility3	0.78	0.37	0	0	0	0	0
Responsibility4	0	0	0	0	0	0	0
Responsibility5	0	0	0	0	0	0	0
Responsibility6	0	0	0	0	0	0	0
Responsibility7	0	0	0	0	0	0	0

According to Eq. (2) and Table 10, get the department responsibilities conflict table between the administrative department and development department of A company, which are shown in Table VIII.

TABLE VIII. THE DEPARTMENT RESPONSIBILITIES CONFLICT TABLE

No.	Responsibility Describe Of Administrative Department				Responsibility Describe Of Development Department				Conflict Evaluation Conclusion	
	Predicate	Attributive	Object	Range	Predicate	Attributive	Object	Range	Quantitative	Qualitative
1	Responsible	Administration logistics	Work	Company	Responsible	Administration	Management	Development Department	0.9	Big Conflict
2	Lead	Company development strategy	Write	Company	Organize	Development strategy	Research	Company	0.78	Big Conflict
3	Responsible	Company policies and regulations	Formulate	Company	Organize	Policy	Research	Company	0.7	General Conflict
4	Lead	Company development strategy	Write	Company	Organize	Policy	Research	Company	0.37	Small Conflict
5	Responsible	Company policies and regulations	Formulate	Company	Organize	Development strategy	Research	Company	0.37	Small Conflict

From the table, we can see that there are 5 conflict items between the administrative department and the development department of A company, which there are 2 items are big conflict, 1 item is general conflict and 2 items are small conflict.

According to Eq.(3) and Eq.(4), the responsibility conflict quantitative conclusion between the administrative department and development department of A company is 0.34, and the department responsibilities conflict qualitative conclusion between the administrative department and development department of A company is small conflict.

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