Evaluation Method for Enterprises’ EPR Project Risks

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Abstract. This paper explains the studies of recent years on development of EPR system and the project risk and then illustrates respectively the external risks and internal risks of EPR project based on the theory. Taking the EPR project of G company the author actually took part in as an example, the author firstly applies fuzzy evaluating method to evaluate project risks and draw a clear distinction between the primary and the secondary to achieve overall evaluation for project risk. And then the author worked out a plan for the main risks of the project and applied multiple management methods to control. And in practical implementation steps, the author implemented management method in every segment and did supervising and controlling to gain the lowest negative influence resulting from risks. Lastly, the author concluded the effects of risks management, learned lessons and proposed perspectives.

Keywords: ERP; Fuzzy evaluating method; Project risk; Risk evaluation

1 Introduction

Risks refer to various potential, uncertain factors of activities or events which may cause results that people do not expect. Project risk is the uncertainty of project during its implementation process. When study on risks, people pay more attention to the loss or damage of activities or events. To avoid loss or damage, one must grasp the reasons and internal and external conditions of risk events. The source of risks is the reason which create opportunities for project to bring about loss or damage. The source of risks can be classified into the internal and external sources of organization or projects. Risk is potential and can only bring about risk event after possessing certain conditions which are called transformation conditions. Even the transformation conditions are possessed, risks may also not evolve into event risks and some other conditions are needed to bring about the actual risk events and the latter conditions are called trigger conditions. Grasping the transformation conditions, trigger conditions and their process which make risks convert into reality from being potential is very important to control risks. Controlling risks is actually to control the transformation conditions and trigger conditions of risk events.
2. Risk Indicators of Small and Medium Enterprises’ EPR Project

To achieve the goals of small and medium enterprises’ EPR project, risks of small and medium enterprises’ EPR project can be divided into two aspects according to the reasons of risks, the one is the external risk of project, i.e. The risks resulting from the external environmental conditions that the company lives on, and the other is the internal risk of project, i.e risks resulting from the internal reasons of project. The external risks of project can be separated into risks of social environmental conditions and risks of external resource conditions, and the internal risks of project can be separated into four types, the first one includes decision risk such as risks of software and hardware selection, etc.; the second one includes management risks and risks of organizing structural adjustment, transforming management ideas and reforming performance assessment system, etc.; the third one includes implementation risk such as risks in project organization stage, risks in the aspect of time and progress control, risks of cost control and quality risk, etc.; the fourth one includes operation risks, system switching risks and risks of disasters or accidents. The particular risk structure is showed by figure one.

Fig. 1. Risk structure frame of small and medium enterprises’ ERP project
3 The Selection of Risk Evaluation Methods for ERP System of EPR Enterprises

The performance assessment for small and medium enterprises’ ERP application refers to comprehensively, systematically and roundly evaluating enterprises’ changes in various respects after applying ERP in advantage of the established indicator system. For ERP is a responsible system engineering including many functional modules and involving each department of enterprise, thus there are some problems when the performance assessment for enterprises’ ERP application is progressed, for example considerations of a large of factors, the obscure relationship among factors, demands of particular data from each department in enterprise to be samples and the difficulties in solving the weight problem among various indicators, etc. For these many characteristics, this study selected fuzzy comprehensive evaluation to evaluate small and medium enterprises’ ERP risks.

Take the set constituted by various influential factors of ERP system as factor sets and signify it by $U$:

$$U = \{u_1, u_2, u_3, \ldots, u_m\}$$

Among which $u_i$ represents ith influential factor and $m$ represents the number of factors.

Generally speaking, each factor has different importance and important factors should be paid more attention while for those unimportant factors, even though one should pay attention to them but there is no necessities for one to value them too much. To reflect degree of importance of each factor, a corresponding weight $a_i$ should be allocated to each factor $u_i$.

$$a_i \geq 0, \sum a_i = 1$$

So, each weight $a_i$ constitute a fuzzy set above $U$:

$$A = (a_1, a_2, \ldots, a_m) = \frac{a_1}{u_1} + \frac{a_2}{u_2} + \cdots + \frac{a_m}{u_m}$$

For the same factor, if different weight is took, the result of assessment will also be different. To improve the suitability of weight, the author compared the influential factors of small and medium enterprises’ financing efficiency and recorded the estimated value of relative importance of ith indicator to jth indicator as $d_{ij}$ by which the score results formed a group of fuzzy judgment matrix and then the author
transformed this scoring matrix into one comprehensive judgment matrix and finally obtained the weight of each indicator.

To define relative importance more clearly between two arbitrary indicators, this paper adopted ratio scale method of 1~9 to present it. (see Table 1)

Table 1. 1~9 ratio scale method

<table>
<thead>
<tr>
<th>Relative importance</th>
<th>Definition</th>
<th>Explanation</th>
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<tbody>
<tr>
<td>1</td>
<td>Equally important</td>
<td>Two indicators are equally important</td>
</tr>
<tr>
<td>3</td>
<td>Slightly important</td>
<td>Be a little important</td>
</tr>
<tr>
<td>5</td>
<td>Quite important</td>
<td>Confirm to be important</td>
</tr>
<tr>
<td>7</td>
<td>Obviously important</td>
<td>Be Uncertainly important</td>
</tr>
<tr>
<td>9</td>
<td>Absolutely important</td>
<td>Be important without doubt</td>
</tr>
</tbody>
</table>

notice: 2, 4, 6, 8

Note: 2, 4, 6, 8

The median between two adjacent judgments

Strike an average when there are two adjacent judgment values which are difficult to be fixed.

4 The Conclusion and Perspectives of Small and Medium Enterprises’ ERP Project Risks Management

Small and medium enterprises’ ERP project in our country generally needs several months to be completed. Although it’s system automation is in constant promotion, risks management has obvious effects in ERP project and has certain actual significance. It promoted the smooth transformation of management level’s ideas. The implementation of ERP is the challenge to existing management ideas which has changed company’s management inertia following the old routine and is a set of advanced and effective management ideas and methods. In the implementation of ERP project, there unavoidably will be reformation needs in company’s some aspects. Reformation may cause the reorganization for responsibility power of original organization structure which may bring about conflicts among administrators. At this moment, leadership team in company must own overall consciousness and achieve agreement through communication, then take the management ideas of ERP system as the guiding and apply relevant scientific management method to promote the all-round improvement of company’s management level. Only in this way, the subjective risks of project can be reduced which can make a positive environment for the implementation and construction of project.

References


