Company Standardization Benefit Evaluation Based on ISO Value Chain Method

Cheng-hui TANG¹, Cai LIANG¹, Xiu-qing CUI² and Yuan HU¹

¹State Grid Energy Research Institute, China
²State Grid Corporation of China, China

*Corresponding author

Keywords: ISO Value chain, Standardization benefit, Evaluation.

Abstract. The company standardization benefit evaluation is introduced based on value chain method, which is initially proposed by the International Standardization Organization (ISO). First, the basic conception of ISO value chain method is introduced. Then take a vehicle manufacturing enterprise as an example, the main content and procedures of company standardization benefit evaluation are introduced in this paper, which consists of key value drivers, evaluation scope, standards used in the company's value chain, operational indicators for the assessment and standard system benefits calculation. Finally, the company standardization benefit evaluation based on ISO value chain method is summarized.

Introduction

Standardization refers to the formulation, release and implementation of standards to achieve the best order and social benefits in the reconciliation of things and concepts in the social, economic, technical, scientific and management.

The company standardization is aimed at the company's best production and operation order and economic benefits. Company standardization is a process of repetitive things and concepts within the company's production and operation activities to develop and implement company standards and implement relevant national, industry and local standards. The evaluation of the company's standardization benefits is to quantify the impact of the company's standardization on the company's business and efficiency, finding the major benefits for the company of using standards. It aims to quantify the impact of standardization on the company, and in turn guide the development of the standardization process. In the company's standardized benefit evaluation process, the value chain approach of the International Standardization Organization (ISO) is a feasible and effective method.

The concept of the value chain was first proposed by Michael Porter, a professor at Harvard Business School in the United States. It refers to a series of companies that produce valuable products or services to customers. A collection of activities that create value or value added [1]. Whether each activity within the enterprise creates value depends on whether it can provide the necessary activities for subsequent activities, and whether it contributes to the cost reduction and quality improvement of the follow-up activities.

Since 2012, the ISO value chain methodology has been applied to standardized benefit assessments. The main research method of ISO is to evaluate the economic benefits brought by the implementation of standardization based on the comparison before and after the standard in use [2].

In 2010, ISO adopted the value chain approach developed by Roland Berger, and conducted a standardized evaluation of the benefits of individual organizations on a global scale. ISO believes that it is based on this globally unified assessment method that can be used to compare the standardization benefits of different organizations in different countries. The general idea of the method is to first determine the value chain of an industry and the position of the enterprise in the industry value chain, and analyze the enterprise value chain. Second, determine the impact of standards on the economic benefits of activities in the enterprise value chain. Third, analyze the value drivers. Fourth, determine
the standard economic benefit evaluation indicators, evaluation and integration results. Finally, use the comparison method to compare the economic benefits of the relevant indicators in the value chain before and after the standard use [3].

Taking a vehicle manufacturing enterprise as an example, this paper evaluates the company's standardization process based on the ISO value chain method, and introduces the basic steps of the ISO value chain method.

This paper systematically summarizes the process and specific methods of the company's standardized benefit evaluation through the ISO value chain method. Taking a vehicle manufacturing enterprise as an example, it introduces the content and steps of the value chain analysis. Finally, the shortcomings of the ISO value chain method in the process of evaluating the company's standardized benefits are analyzed.

**Industry Value Chain**

Assume that the manufacturing enterprise's industrial value chain is shown in Figure 1. The value chain of the vehicle manufacturing enterprise mainly includes exploration, generation, passenger vehicle market, commercial vehicle market and truck market.

![Figure 1. Industry value chain of vehicle manufacturing enterprises.](image)

**Company Value Chain**

For a company, the value chain consists of a major function (also called a “strategic process”) and a support function (“process support”). Figure 2 shows an example of a typical industrial value chain. The process support consists of administrative management, human resource and financial management, technical management, procurement and logistics process, quality control, information management and communication management. The strategic process consists of customer demand, vehicle manufacture, vehicle maintenance and customer.

![Figure 2. Industry value chain of vehicle manufacturing enterprises.](image)

**Key Value Drivers**

For the vehicle manufacturing enterprise, the following areas could be identified as key value drivers. 1) Efficiency improvement of the products. 2) Cost-efficient extension of the current product portfolio. 3) Products should meet a wide variety of customer needs in the high-value, high-performance segment. 4) Ensure high quality & reliability. 5) Development of tests to
demonstrate the high quality levels that exceed the provision in the relevant standards. 6) Cultivation & further improvement of company reputation.

**Evaluation Scope**

The scope of this evaluation is limited to the use of more obvious features and activities closely related to the company's value drivers, such as vehicle design, vehicle manufacture and customer demand, as shown in Figure 3.

![Evaluation scope](image)

**Standards Used in the Company's Value Chain**

There are many standards that related to the vehicle manufacturing enterprise. Some are of special practical importance and are addressed by the assessment. We used an example to clarify this as shown in Table 1.

<table>
<thead>
<tr>
<th>Business function</th>
<th>Standards</th>
<th>Comment or definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle manufacture</td>
<td>QC / T 524-1999</td>
<td>Automobile engine performance test method</td>
</tr>
<tr>
<td>Vehicle manufacture</td>
<td>GB / T 34402-2017</td>
<td>Automobile product safety risk assessment and risk control</td>
</tr>
<tr>
<td>Vehicle maintenance</td>
<td>GB / T 35260-2017</td>
<td>Bus maintenance technical specifications</td>
</tr>
<tr>
<td>Vehicle maintenance</td>
<td>JT / T 1029-2016</td>
<td>Hybrid electric vehicle maintenance technical specifications</td>
</tr>
<tr>
<td>After-sales service</td>
<td>GB / T 15746-2011</td>
<td>Automobile repair quality inspection and evaluation method</td>
</tr>
<tr>
<td>After-sales service</td>
<td>GB / T 36686-2018</td>
<td>Automobile after-sales service specification</td>
</tr>
</tbody>
</table>

**Operational Indicators for the Assessment**

Operational indicators can be divided into quantitative indicators and qualitative indicators. In order to reduce the complexity of the model, it is usually only necessary to list the main indicators. Operational indicators are designed to quantify the effect of the standards used in the company's value chain, such as labor costs reduction, increase in sales and customer satisfaction rate.

**Calculation of Standard System Benefits**

According to the operational indicators for the assessment, the standard system benefits can be calculated.

**Methodological Decisions and Challenges for the Assessment**

Most of the standards have been in use for many years and most of the standards are incorporated in regulations and sales of vehicle without the use of these standards would be impossible. This results that it is not possible to compare a situation in the vehicle manufacturing enterprise “before the use of the standards” with a situation “after the introduction and the use of the standards”. Then the decision for the assessment approach is to evaluate the incremental benefits that are generated by new editions of standards over previous editions of the same standards [4].
**Benefits Assessment of the Value Chain**

Computational compliance and effective use of standards can bring benefits to the company, such as reduced production costs, increased company revenue, and improved customer satisfaction. However, the development and implementation of standards also require a certain economic cost. Therefore, the effect of the evaluation criteria should take into account the benefits of the standard and the cost of developing and implementing the standard itself.

**Summary**

Most studies that based on ISO value chain method only focus on the simple analysis of the company's individual business in the research of the company's standardization benefit evaluation. There are fewer studies to evaluate a large number of companies' business or the business system for a large number of standards adopted by a company. The research will carry out further research work in this area in the future.

**Acknowledgement**

This research was financially supported by the SGCC Science and Technology Project “Research on Benefit Evaluation Technology of Technical Standards Systematic Implementation of the State Grid Corporation”.

**References**


