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Economic benefits of ISO / IEC 29110 Standard: a Case Study

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Editor's Note

What is the cost benefits ratio of implementing standards? A division of an Engineering firm have used the *ISO Methodology to assess and communicate the economic benefits of standards*following the implementation of the ISO / IEC 29110 Standard for its project management processes. This article is following the preceding article: ISO / IEC 29110 to Reduce Overruns and Delays in Project Management which describes the implementation process.

Introduction

A Canadian division of a large American engineering company wanted to reduce cost overruns and project delays, standardize practices to facilitate the integration of new managers, increase the level of customer satisfaction and to reduce risk-related planning deviations. The engineering division was already using a robust project management process for their large-scale projects, but needed to implement project management processes for their small-scale and medium-scale projects. The ISO / IEC 29110 standard was used to fulfill these objectives.

After the implementation of ISO / IEC 29110, an analysis of the cost and the benefits was performed using the ISO economic benefits of standard methodology. The key objectives of the *ISO Methodology to assess and communicate the economic benefits of standards* are to provide (ISO 2010):

- A set of methods that measure the impact of standards on organizational value creation.
- Decision makers with clear and manageable criteria to assess the value associated with using standards.
- Guidance on developing studies to assess the benefits of standards within a particular industry sector.

The approach used by the engineering division, to estimate the cost and benefits, comprised four steps:

- Understanding the company's value chain,
- Analyzing the value drivers,
- Determining the impacts of standards,
- Assessing and consolidating results.

The four steps of the ISO methodology are described below.

Step 1: Understanding the company's value chain

The "value chain" is a concept described by Porter (Porter 2008). Porter describes the value chain as a tool to understand the competitive advantage that a company can have in the actions it undertakes. The value chain is a representation of the different steps for an organization to create value in the form of goods or services to customers.

The performance of a project management activity can have an impact on cost and create a differentiation from competitors. Hence the advantage of using this tool is to determine the impact of the project management practices in the engineering division. Figure 1 illustrates the value chain of the company according to Porter's model.

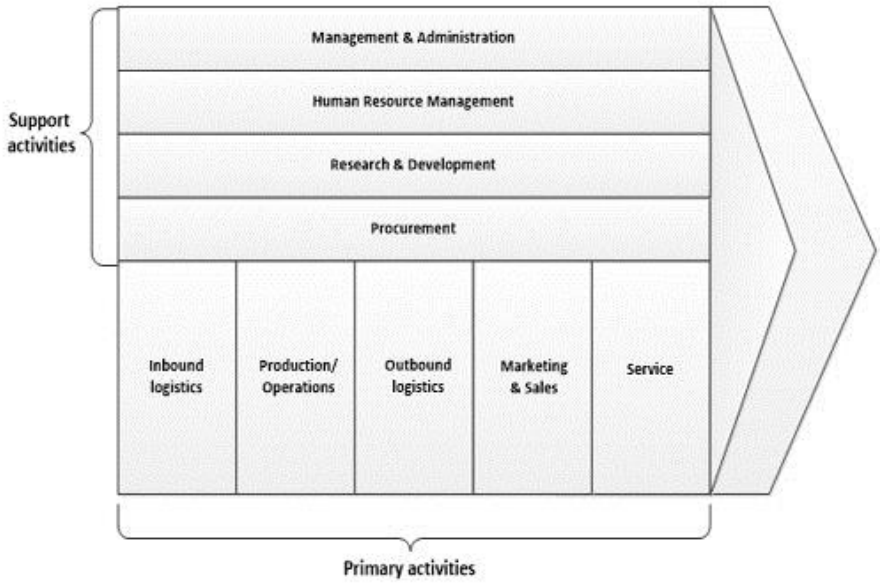

Figure 1 Value chain of the engineering division (adapted from ISO 2010)

In this model, the competence domains of the engineering division of the company are:

- Operations;
  - detailed engineering including the design of plans and specifications,
  - engineering linked to the achievement of specialized studies.
- Marketing and sales;
  - activities related to business development,
  - the development of contractual agreements,
  - assessment of services.
- Service;
  - activities related to procurement of construction and installation phases of a project,

- monitoring of construction and implementation activities,
- activities related to the management of strategic assets.

Step 2: Analyzing the value drivers

After discussing with the company's governance board, the elements shown in table 1 were identified as the main value drivers for the engineering consulting firm. The importance (i.e. important (3), largely important (2), very important (1)) of each driver was also determined.

Value driver	Description	Performance indicators	Importance
Quality of the design process	Quality in terms of execution time, costs and quality of deliverables	Time spent on corrective engineering work. Cost overruns related to quality control.	Very important (company viability)
Efficiency versus costs	Ability to complete the work at minimum cost	Meeting budgets allocated to each sub-project. Meeting overall project budget.	Very important (company viability)
Project management capacity	Capacity to manage projects according to plans	Cost Performance Index (CPI)	Very important (completing projects is the company's core activity)
Technical expertise	Ability to solve complex problems	Schedule Performance Index (SPI)	Important
Geographic positioning	Geographic proximity of customers	Resource usage time (e.g. overtime)	Average importance
Partnership	Capacity to initiate partnerships with other companies	Number of partnerships Recurring customers	Average importance
Flexibility	Capacity to adapt to different customer needs	Number of services provided Type of service compared with competitors	Important

Table 1 Table of value drivers

Step 3: Determining the Impacts of Standards

The objective of this step was to identify the significant impacts that the improvement project will have on the company. Impacts were selected from the "Standards Impact Map" of the ISO methodology. Table 2 illustrates a subset of the impacts for the production category. Similar tables were also developed for marketing and service categories. The links between the

impacts of standards and the performance indicators identified in the previous step are also presented.

Category	Impact ID	Impact Title	Description	Priority [1-high, 3-low]	Performance Indicator
Production/ Operation	P-1	Improvement of internal information transfer	The use of standardized documents and specifications allows a more efficient transfer of information internally	2	- Meeting budget allocated to each sub-project. - Meeting overall project budget - Cost performance index (CPI)
	P-2	Better training of staff	Staff can be better trained due to the standardization of processes	3	- Meeting budget allocated to each sub-project. - Meeting overall project budget - Cost performance index (CPI)
	P-3	Additional cost of staff	Increased costs due to the implementation of processes	1	- Cost of the process improvement project

Table 2: Subset of Impacts of standard

Step 4: Assessing and Consolidating Results

During this final step, two persons of the enterprise determined the impacts separately: the engineer responsible for the improvement project and his supervisor. Table 3 illustrates the financial impacts due to the use of

standardized documents and specifications on the internal transfer of information.

Impact ID	Description of Impacts		Evaluator #1	Evaluator #2
Production	**Improvement of internal information transfer**			
	What is the overall cost overrun of projects?	Estimation based on the Profitability Report	555,500 $	555,500 $
	What percentage of the project was in trouble due to a problem of information transfer?		25%	20%
	How much does the project management process can improve the transfer of information?		80%	75%
		Financial impact	**111,100 $**	**83,325 $**

Table 3 Assessment of the financial impacts about the improvement of internal information transfer

The improvement program project sponsors did an estimate of anticipated costs and benefits over a period of three years over the other 5 dimensions: better staff training, additional cost of staff, better quality of deliverables, better management of quality and more effective internal standardization. Table 4 shows the results of the 6 dimensions for the first three years of the project management process implementation.

	Year 1	Year 2	Year 3	Total
Implementation and maintenance costs	59,600$	50,100$	50,100$	159,800$
Net benefits	255,500$	265,000$	265,000$	785,500$

Table 4: Anticipated costs and benefits from the improvement program ($ CAD)

Conclusion

The benefits of ISO/IEC 29110 implementation far exceeded its implementation and maintenance costs.

Since the utilization of ISO/IEC 29110 was very successful in the development of project management processes, the recently published systems engineering ISO / IEC 29110 Entry and Basic profiles (ISO 2014, ISO 2015) will be used to redefine and improve the existing engineering process. This process will address the activities required from engineering requirements identification to final product delivery.

Additional information

We invite you to read the following research paper to get more information regarding this project:

Laporte, C.Y., Chevalier, F., An Innovative Approach to the Development of Project Management Processes for Small-scale Projects in a large Engineering Company. 25th Annual INCOSE International Symposium (IS2015). Seattle, July 13-16, 2015.

Laporte**,** C.Y., Chevalier, F., Maurice, J.-C., *Improving Project Management for Small Projects*, ISO Focus+, International Organization for Standardization, February 2013, pp 52-55.

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Authors

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IMAGE REFERENCES

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