

Proactive use of risk management in consulting

VE is a really useful tool for work improvement

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BIOGRAPHY

Born in July 1954, in Osaka, Japan, and currently lives in Chiba Prefecture. Graduated from Kobe University in Civil Engineering Department and joined CTI Engineering, Ltd. in 1978. His fields of specialty include planning, design, construction supervision and quality control of dams. Got CVS certification in 2011.



ABSTRACT

Consultant service involves various risks and requires more effort than expected. However, in addition to achieving business objectives, resolving these risks at an early stage, can result in high evaluation from the client, and in many cases, future business developments are likely to be expected. By analyzing the risk and defining the solution as a function, it is possible to think of many ideas that will serve as means to achieve the objective and propose an effective solution.

KEYWORDS

Consulting, risk management, risk cause, function analysis, basic function

1. INTRODUCTION

VE is applied in many fields not only for business improvement, business plan review, design verification, but also it motivates improvement activities, and clarifies judgment criteria for problem solving. The great benefits obtained from this powerful tool are reported in past cases studies. VE is applicable to any theme, and depending on its application method, the result is often greater than expected. This paper emphasizes that the knowledge gained by VE activities solves the risks faced by the consultant, and explains how to obtain many opportunities and returns from that knowledge by showing an actual case study.

2. WHAT IS THE RISK OF CONSULTING SERVICE?

Because the work provided by construction consultants serves to public interest, there is a potential for risk such as the social impact of project outcome. Risk management begins with assessing and identifying potential risks in construction projects and plays a role as a guide for taking

necessary measures. When dealing with risks, it is necessary to determine the severity and probability of occurrence, conduct risk assessment, identify the type of risk, and take effective measures according to its characteristics. Risk management requires management ability and professional ethics of engineers, but skills and experience to understand the sequence of processes from contract to completion are essential for each engineer. Difficult judgments may be required on what kind of decision should be made by engineers in quality management, process control, safety management, etc. in the business process. In fact, an issue solved by implicit agreement between the consultant and the client may eventually create a big problem. This is due to the fact that the content of the service is unclear, k the client and the consultant think differently which results in a serious problem in the end.

3. VE-ORIENTED THINKING IS USEFUL FOR RISK MANAGEMENT

3-1 Risks in work

Figure 1 shows the number of complaints and mistakes that occurred in the past several years at the company I belong to, analyzed for each type of business. I roughly divided the work of the construction consultant into three; research, planning, and design, then compared the proportions of mistakes and complaints that occurred in each work. According to this, in the research work, it is obvious that there are many accidents and troubles involved in on-site work, and in the design work, there are many troubles during construction (problem of constructability etc.), but for planning work, more detailed investigation based on the business characteristics may be required to understand the potential risks

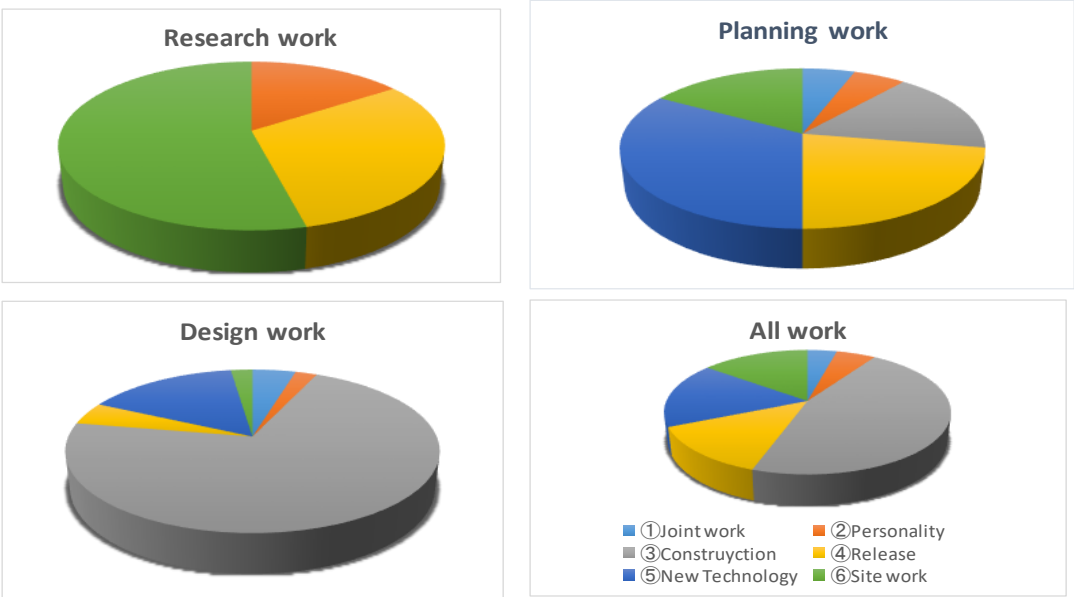


Figure 1 Relationship between type of consulting work and occurrence of mistakes

3-2 Function analysis of risk cause

I tried to organize the cause of risk occurrence according to the characteristics of business. For example, in the work carried out jointly with other companies, the following risks may be occurred due to inadequate contact between companies and disparity in technology capabilities.

- ◆ **Process delays due to difficulty in work adjustments.**
- ◆ **It is not clear who is responsible for the work because no one knows an appropriate reporting line.**
- ◆ **Rework occurs due to an inefficient checking system.**

Table 1 defines solutions necessary to eliminate potential causes of risk for each task as required functions. Of course, consultants do a lot of other tasks, but here I focused on the most frequent risk causes.

Table 1 Function Definitions of Risk Causes and Solutions

Characteristics	Risk	Necessary functions
Collaboration with other companies	Delay in delivery due to difficulty in adjustment Troubles due to unclear responsible location Inefficient inspection, rework occurrence	Perform work coordination Clarify responsibility Enhance efficiency
Person in charge of recognition problem	Difficult requests and instructions Significantly low business rating point Confusion due to insufficient contact	Share recognition Perform a valid evaluation Communication aim
Design result to be used for construction	Mistake pointed out by the constructor Incomplete transmission to contractors	Prevent mistakes check Manage information
Publication work to the general public	Troubles of publication of misinformation Social impact of mistakes	Eliminate misinformation Consider social influences
Committee talks	Delay due to lack of consultation Occurrence of trouble with local Frequent change of implementation policy	Make smooth consultations Fulfill accountability Clarify implementation policy
Important information	Information leak Violation of confidentiality obligation Information processing mistake	Prevent information leakage Protect duty of confidentiality
New technology · Advanced technology	Difficulty dealing with client's request Low business appraisal point	Skill up Get a high reputation
Large delivery term constraints	Delay in delivery due to difficulty in adjustment Increase psychological burden on person in charge	Protect the construction period Enhance efficiency To eliminate the psychological burden
Specification is unclear	Achievement goals Not achieved Increase in correspondence other than specifications and deterioration of profitability	Clarify goals Clarify implementation policy Achieve the target profit
Site work	On-site accident (work accident, traffic accident) Health damage (heat stroke, contamination damage)	Prevent on-site accidents Perform safety management Eliminate health hazard

3-3 Functional diagram of risk management

I decomposed many necessary functions defined as solution of risk, and reconstructed the functional diagram to achieve the target basic function using these functions. The following definition was made as a basic function to be achieved in consulting business.

Basic function = Obtain high evaluation (from both the client and the citizen)

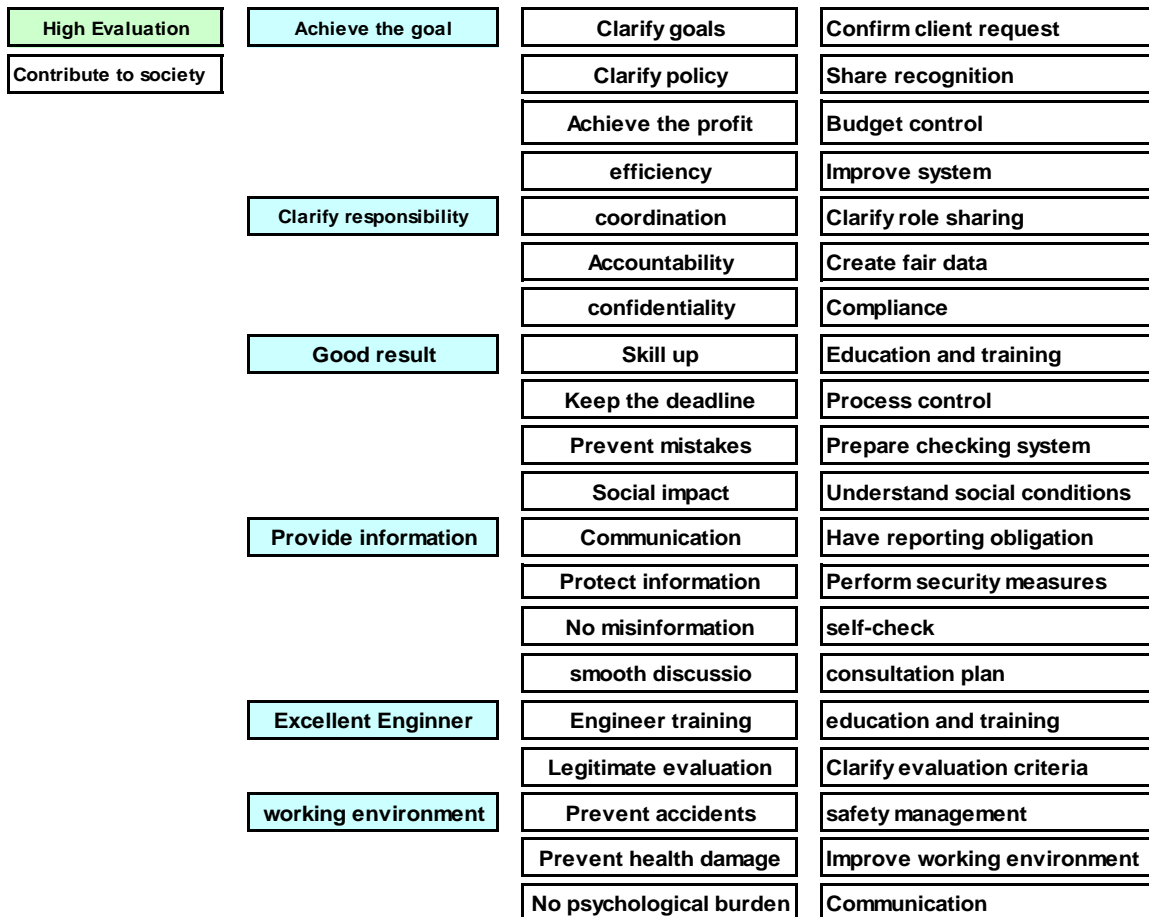


Figure 2 Functional diagram of risk management

3-4 Improvement method seen from functional diagram

The functional diagram in Figure 2 shows the action guidelines necessary for a consultant to do a good job and obtain high evaluation from the client or the public. That is, many hints for avoiding various risks occurring on business in advance are shown. An important functional field in the functional diagram will be the achievement of goal, clarification of responsibility, good result, information sharing and training of technicians. Whichever of them lacks, it is impossible to achieve good work. It is a shortcut for business improvement to think how to improve these functions.

4. Resolve risks and make use of this to opportunities

4-1 Think about the principle of value improvement

I introduced functions to solve various risks. Below, I show the principle of value improvement which is the VE basic philosophy to attain function improvement.

The relationship between risk measures and their effects (opportunities and returns) can be expressed as well.

$$\text{VALUE} = \frac{\text{FUNCTION}}{\text{COST}} = \frac{\text{Opportunity and return (positive factor)}}{\text{Risk management (negative factor)}}$$

Here, opportunities and returns are as follows.

- 1) **Opportunities for new orders can be expanded**
- 2) **Acquire profits and achieve goals**
- 3) **Earn trust from customers**
- 4) **Business results and technical assets can be secured**
- 5) **Gain opportunity to improve technology**

A consultant is a career requiring a challenging spirit to acquire opportunities as described above by solving various risks of business. In addition, there is no risk-free consultancy work, thus an engineer's technical and management skills are judged by how well he/she addresses risk countermeasures.

4-2 Acquire opportunities and returns

Risk management is strategic actions to be taken before the crisis occurs. In other words, it is important to know the cause of the risk early and anticipate the effects of various measures. Some examples are shown below.

◆ **Short delivery period**

Here, we discuss risk management of a project term with time constraint from the beginning of the contract sufficient period for the work is not given. Under normal process control, obviously the delivery period cannot be met, and the project team is held responsibility for the result. Therefore, the business administrator takes the following risk measures.

- **Prioritize important items and report intermediate results to the client.**
- **Increase the number of staff to work promptly, and produce results before the delivery period.**
- **Carry out additional work in the remaining period and gain approval of revised contract at an increased price.**

In order to solve the risk of time shortage, there are many opportunities such as improving work procedures and increasing personnel will gain trust of the client, but also increase in contract price and technical skills can be obtained.

◆ **Project with unclear specifications**

If the project specifications are unclear at the time of the contract, the expected performance outcome, and implementation policies of business are not well-understood by the contractor, the business administrator takes the following risk measures.

- **Propose a clear business practice policy and share understanding with the client.**
- **Propose a sustainable implementation policy with a view to future developments.**

As a result, trust of the client can be obtained, and chances of expanding the business opportunity in the future can also be expected.

◆ **Project requiring impossible demands from the client**

Such a client is called a “monster client” in Japanese. (“over-demanding client”) As a consultant, it is not prudent to express a view that it is not possible to deal with such demands, even though they are difficult demands. For in-house workshops, I offer to present the following views and advise my students to tell their client:

- **I can satisfy your requirements under "Such conditions".**
- **Can you accommodate “such conditions” in order to respond to your request?**

VE is very useful to find "Such conditions". It is because we can draw back various ideas and find out how the client is satisfied by returning to the required function.

Figure 3 shows the countermeasure flow when consultants perform risky business.

My company is working on daily work while following this way of thinking, sharing guidelines that can systematically manage risks.

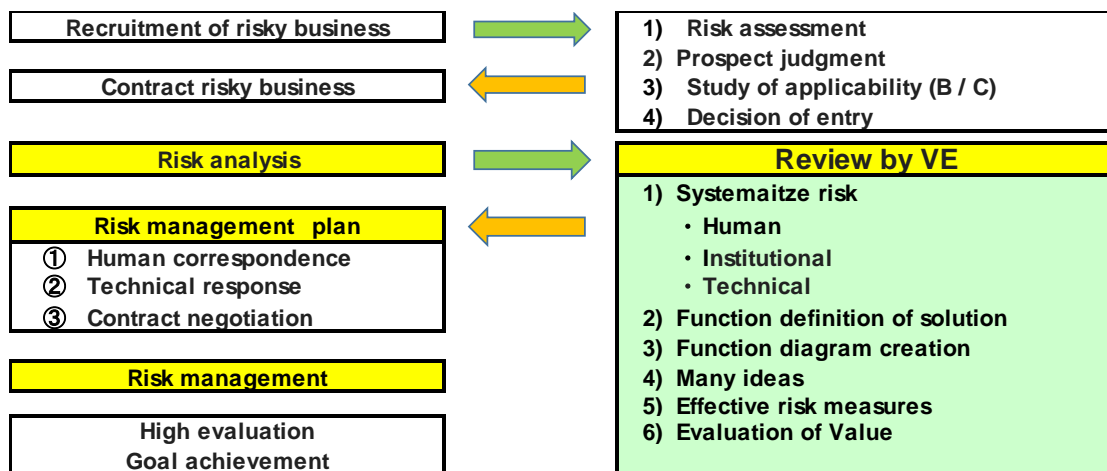


Figure 3 Flow of countermeasures for consultant risk work (draft)

5. Application example of VE to risk management

5-1 Theme

The dam construction project in which I involved had the following difficult technical challenges. There was a danger of collapse everywhere due to the geological cause of the slope of the construction road from the material sampling place to the dam site, and it was necessary to take measures before the start of construction. The outline is shown below.

Extension distance ; L = about 4 Km

Collapse spot ; all sections

Expenses ; about 1 billion yen

Construction vehicle ; Large dump truck

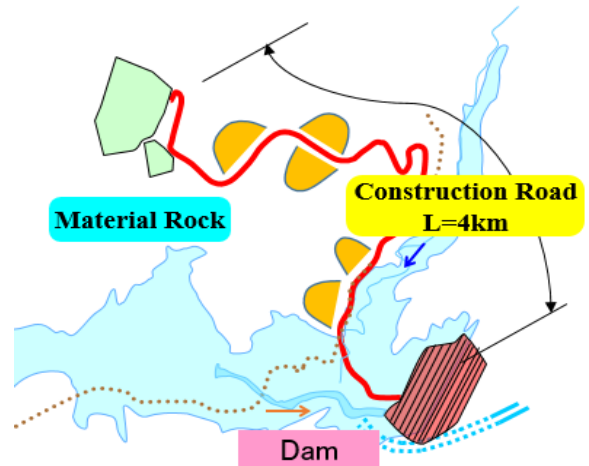


Figure 4 Overview drawing of construction road

The request from the client was to inexpensively take measures against the collapse of roads and to enable safe traveling of the truck. Moreover, the cost to be taken for the countermeasure was extremely small, and it was with no doubt that the target could not be attained at all with a slight cost reduction measure. Obviously it was "a project with unreasonable demands from the client".

5-2 Risk management

1) Risk assessment

Potential risks in this project were serious enough that they affected not only the dam construction work due to delay in restarting the access of construction vehicles because it was unable to reduce the construction period and cost, but also the reliability of the consultant in charge was inevitably decreased.

I evaluated the danger level of the road associated with the slope collapse as a risk against the unavailability of the road access of dump truck. In other words, I noticed that depending on the topographical conditions, even if large-scale collapse occurred, one way traffic of truck was possible, or in other case, the road got completely closed even with a slight collapse.

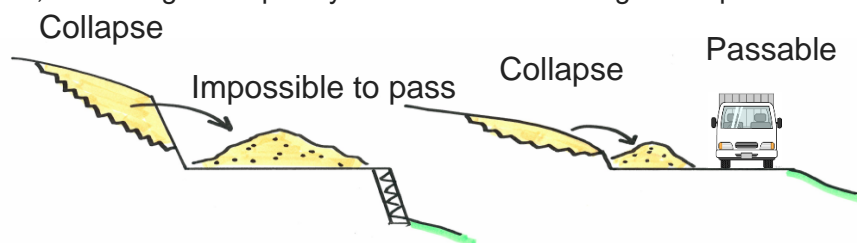


Figure 5 Collapse of road slope and dump truck passable possibility

2) VE proposal

The purpose of the construction road was defined as the basic function. If the basic function is "stabilize the slope", the function that becomes the means for achieving this would be limited such as the reinforcement method or scope of measures. On the other hand, if the primary purpose of the road "restore promptly" is defined as the basic function, as shown in Figure 6, the means to achieve it can be broader and its scope can be expanded.

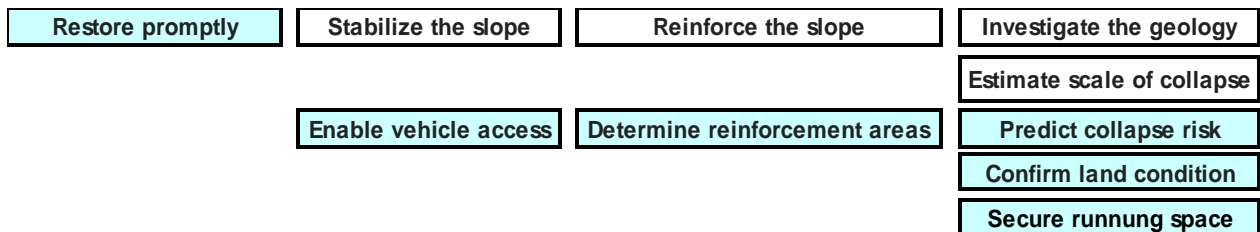


Figure 6 Functional diagram of construction road

I proposed to take early measures on priority only in places where the possibility of driving the car after collapse is impaired, as shown in Fig.6. As a result, out of 52 target sites, 10 sites were taken for countermeasures, 8 sites came under scrutiny totaling 18 locations at 35% of the total. In other words, not only shortening of the construction period, but also a drastic reduction of less than half of the initial estimated cost became possible. With the application of VE, not only risks were avoided, but also high evaluation was received from the client. The key points of risk management is to analyze risks, return to the purpose of the project and define the basic function.

6. Recommendations for future risk management

This paper explained that new opportunities can be obtained by overcoming the various risks latent in consulting work. Good / bad of risk management is an important indicator to evaluate the technical strength as a consultant. However, not all risk management will produce high appraisals. The consultant is important to carry out the following.

- 1) Consider the occurrence and impact of risks since the time of the contract till the completion.
- 2) Understand the essence of the purpose and focus on expanding the scope of means and strive to make proposal to achieve them.
- 3) Analyze the risk and make organizational efforts to deal with priority issues using VE-oriented thinking.

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