

Paper Company

Reengineering Working Paper 3

Problem identification

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Methodological steps

There are many approaches to problem solving, building on different paradigms. While we can conclude, that there is no one best way to solve a given problem, in the same way as there is no single best way to organize, one can try to develop a situation specific methodological approach that enables a structured approach to the problem domain and the development of possible solutions. In this paper, we will briefly outline an approach to identifying the problems that *Paper Company* currently encounters in the Swiss operations. We will use a six step methodology, that comprises techniques from different areas, in order to provide some guidelines.

The methodology consists of the following steps, which in the following will be described more detailed with respect to their implications, and the techniques used.

1. Assemble team
2. Define problem domain
3. Identify problems and causes
4. Select, categorize and prioritize problems
5. Develop possible solutions
6. Turn solution into plan for action

Define problem domain

The problem domain can be defined with varying width and depth. Since most problems are of non-linear character, i.e. that there are no simple, straightforward solutions, it often might be called problem space.

Identify problems and causes

There is a multiplicity of techniques for problem identification. We have chosen to use Ishikawa diagrams, even called fishbone diagrams, due to their ease of use, and the clear depiction of causes and their effects. In general, an Ishikawa diagram looks as following.

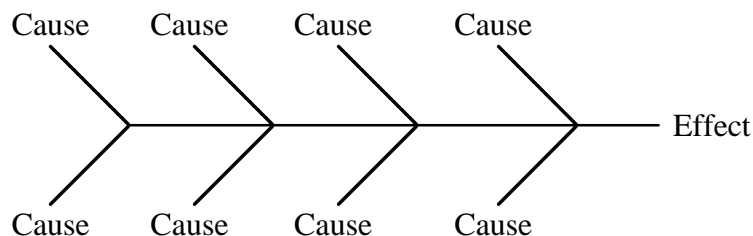


Figure: Basic Ishikawa diagram

In addition, the different branches (“bones“) can be described more detailed, by including further branches. The choice whether to use one or multiple levels depends (1) on the

encountered complexity of the problem, and (2) on the intention of the identification session. If only a common image of reality shall be established for a number of people with different frames of reference, a lower level of complexity may be desirable, while the identification of detailed solutions may require an in-depth cause effect analysis.

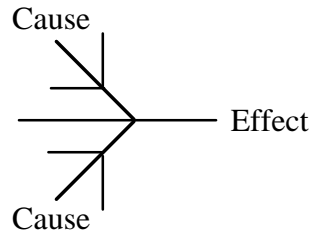


Figure: Ishikawa diagram, two levels

On a white- or blackboard, one can draw a basic fishbone structure where the main effect is written down, and then ask the session participants to use Post-it notes to describe possible causes to the effect.

Important. In this concern it is necessary to point out, that the team should consist of representatives from different parts of the organization, at least from those who are affected by the effect. This includes shop-floor personnel with detailed knowledge about specific areas, but even manager, who can contribute with their bigger picture.

Select, categorize and prioritize

Based on the previously identified causes and their impact on the problem space, the problems must now be categorized according to their relevance. However, before this is done, it might be useful to distinct the problems that can be dealt with locally from those that require an effort from other parts of the organization, which are located outside the own direct influence. One might use the following classification scheme.

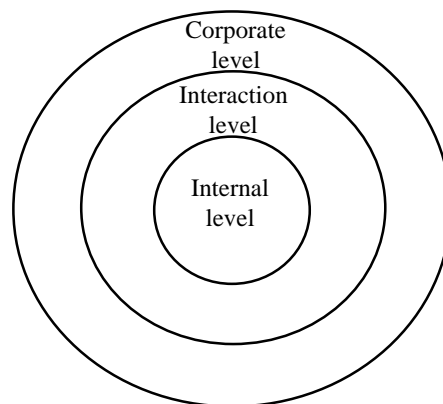


Figure: 3-level classification

By drawing this model on the board, the team can now classify the problems according to the three levels, by sticking the notes into the relevant field. The three levels are described in the following way.

- **Internal level.** Refers to problems that can be solved within the own part of the firm. This might include a redesign of invoicing procedures, customer services, and other aspects that do not require the involvement of other parts.
- **Interaction level.** Problems that are related to the interaction with other parts of the firm, but that can be solved by minor adjustments, belong into this category, e.g. delivery scheduling.
- **Corporate level.** Here we find problems that only can be solved in close cooperation with other parts of the company, and where the own influence is small, such as the implementation of new information technology.

After this selection process is executed, the internal problems are categorized according to different measures of performance, basically time, quality, and cost. These performance measures named above, are common in the quality management field, as well as in the reengineering area.

Important. The problems on the interaction and corporate level may not be neglected, and considered as being unsolvable. They must be addressed and discussed with the relevant units of the company. The reason for not taking them into consideration is mainly to avoid long discussions about aspects that can not be addressed and dealt with locally at the present time.

The TQC impact classification

When looking at the abbreviation TQC, we can note, that it can stand for two different, but nevertheless closely related things.

TQC: Total Quality Control

TQC: Time, Quality Cost

This is no coincidence, since the performance measures are closely related to quality work. There is a close interaction between quality control, or quality management, and one must remember this relationship.

The problems, now reduced to only include those problems for which solutions can be developed locally, are now marked according to their impact on these performance measures. Based on this categorization, they can be ranked and prioritized. However, this process is not easy, and several difficulties may occur.

- A problem has a considerable impact on multiple performance measures.
- There are problem interdependencies, which are not obvious.

- The performance measures are interrelated, e.g. long cycle times are generally considered as having a negative impact on quality.

Unfortunately, there is no simple solution to this. If this kind of problems is encountered, it must be solved in discussion. However, it is important not to let this discussion consume too much time, since valuable dynamics in the overall problem solving process may be lost.

Develop possible solutions

After the categorization and prioritization process is finished, and the problems have been ranked according to their relevance, possible solutions must be developed. In this context it is important to remember to keep an open mind. There are no bad solutions in itself. A brainstorming session can be a valuable tool for collecting a large number of solutions in a short period of time. Remember the basic rules for brainstorming:

- All ideas are collected.
- No discussions during the collection process.

When all ideas have been collected and written down, they are discussed and selected according to their feasibility. Once again, the performance measures are used, and the following questions can be asked.

- What is the impact of the solution on time, quality, and cost?
- Which resources are required to implement? Manpower, cost, time scope?
- What is the effect on day-to-day operations?
- Are there alternatives that can be implemented with lower resource consumption?

After this selection process, a relatively small number of solutions will remain. Those are now described more detailed, and a decision is taken, which of them that should be subject for implementation.

Turn solution into plan for action

Once it has been decided which solutions that will be implemented, it becomes important to develop a plan for turning the concept into action. This implementation plan should work with multiple time frames and feedback loops. Despite the fact that a full-scale implementation may take a considerable amount of time, it is important to achieve first results quickly, in order to sustain the dynamics of the change process. It has even become imperative that the solution, and the implementation process, are actively supported by management. The action plan should even contain an emergency exit, i.e. a plan for project termination in case of failure, which can be controlled by using a number of checkpoints during the process.