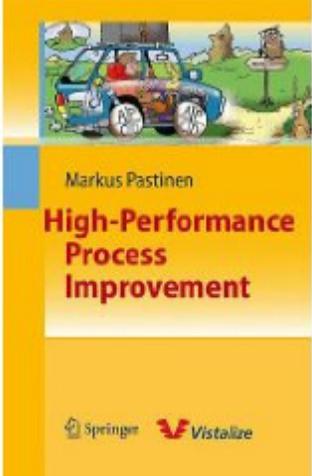


The Concept of High-Performance Process Improvement

How to Catch-Up and Overtake the Best in a Fast and Cost-Effective Way – A Rough Outline

By Markus Pastinen, Dr. Tech., Helsinki, Finland, markus.pastinen@vistalize.fi

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About the Author

Dr. Markus Pastinen is the founder and CEO of Vistalize Oy. He is the creator of the advanced VISTALIZER® process improvement technology that has been applied in a variety of industries. He received his Master's (1993), PhD (1995) and Dr. Tech. (1998) degrees from Helsinki University of Technology (Finland). Mr. Pastinen has been the principal consultant, educator and trainer in some 80 companies in nine European countries. The companies have been operating in different industries, such as electronics, telecom, IT services, transportation, food, travel, defense, plastic and metal. The organizations range from small and middle-sized companies to large multinational companies. He has also been consulting, educating and training organizations in the public sector.

Guidelines to the Reader

This introductory article is positioned between the professional level and applied research. The primary readership include seasoned business or process development/improvement people looking for a substance rich article in the novel field of high-performance process improvement. Many of these persons may have started to ponder if the current improvement methods are, in fact, the final word. Could there be other perspectives and approaches to run the improvement activities more effectively and efficiently?

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1. The Concept of High-Performance Process Improvement

The objective of this article is to form the conceptual basis of high-performance process improvement. This basis is built of nine sections. The first section deals with the reason or driver for writing this article, i.e. the dilemma of low-performance process improvement. This issue is expanded in the second section where the main reason for low-performance process improvement is considered. The outcome of this consideration is formalized in the third section to a simple question the answer of which is the connecting thought throughout the article. To prepare for the answer the current and prospective state of process improvement methods will be discussed in the fourth section. The fifth section provides the background information of the research and development work behind this article. The sixth section will roughly outline the fundamentals of high-performance process improvement and this consideration will be further expanded in the seventh section. The eighth section provides a brief consideration of the performance requirements related to knowledge and the time aspect when aiming at high-performance process improvement. The article is ended with a summary and concluding remarks. The final section explains also the interrelations of the key concepts presented in the previous sections.

1.1 The Dilemma

Plenty of resources are allocated to process improvement¹ initiatives with the aim to increase the performance of the core processes², i.e. the order-delivery processes, and many of the related support processes³ such as e.g. marketing, sales, research and development (R&D) and administration. Much less attention has been paid to truly understanding, creating, running and improving the improvement process itself. Improvement methods⁴ are developed

¹ The term *process improvement* will be defined in this text as a systematic approach for satisfying the organization's stakeholders by enhancing the performance of the organization's activities in terms of time, cost and quality (Pastinen, Markus. 1998. Process Improvement Essentials. Helsinki: Vitalize Oy).

² A logical arrangement of activities that produces cash (value) directly, i.e. processes that influence the cash flow directly.

³ A logical arrangement of activities that produces cash (value) indirectly.

⁴ Besides different approaches to improve leadership and coaching and the utilization of IT (re-engineering), the traditional process improvement approaches or methods include e.g. six sigma, the balanced scorecard, process modeling and simulation, quality award criteria, quality standards, different kinds of maturity levels, hoshin kanri & nichijo kanri (incl. the PDCA logic and quality tools) and Quality Function Deployment (House of Quality, Voice-Of-The-Customer).

and applied with an ever increasing pace because of a strong demand for getting more effective and efficient processes. However, both the companies and the research and development institutes (universities) lack the profound understanding and knowledge of modern process improvement concepts and dynamics, despite of all the research, development, education, training and consulting in the field of process improvement and total quality management.

It would be too trivial to claim that the reason is that the academic researchers have slipped too far away from the company world and the companies, on the other hand, have been too busy thinking how to manage every-day issues. Such a claim does not contain any proposal or remedy for how to correct the situation. However, the fact is that process improvement initiatives are still conducted in the average company and even in the top-tier companies more or less randomly and without the true desire to achieve significant results on a large-scale basis. According to an analysis conducted by Vitalize Oy, covering some 30 companies in 8 European countries in the very competitive electronics industry, the average score regarding the quality of the process improvement planning was 16%. Likewise, the implementation of the (almost non-existent) plan was on an equally low level (!). This is a clear indication that the root cause for low-performance process improvement is a fundamental issue that deserves attention. The root cause is revealed when analyzing the evident process improvement paradox in more detail.

1.2 The Process Improvement Paradox

A fundamental understanding of the process improvement paradox is the key to getting the process improvement efforts on the right track. The root problem causing the process improvement paradox is the fact that the improvement philosophy has been conceived as the strive for “*making right things right*” (Statement I) in the focus process. This statement recognizes that both issues related to effectiveness and efficiency should be considered at the same time. This should eventually translate into an improvement of the focus process performance in terms of time, quality and costs. These three parameters are the only ones that a company has to master in order to be a high-performance business as these criteria, modified to suit the specific need, can be adapted to all processes, e.g. the strategy process,

the product development process, the marketing process, the sales process, the order-delivery process and the after sales process. This demand is valid in all processes at the same time, regardless process type.

Acting according to Statement I it is fully possible over time to improve the process performance to a good, but not excellent, level. Rapidly changing circumstances and demands influence the competitive situation of most companies. This will accordingly influence how the improvement efforts themselves are organized, implemented and improved. The main causes of the turbulence include new customer requirements and needs, increase or decline of knowledge, skills and motivation, financial issues, the counteractions of competitors and an ever changing legislation. The competitive situation may also change due to new innovations and technologies.

Many directors, developers, consultants and researchers have taken the “making right things right” mantra as the basis for designing and implementing approaches to process improvement. Both strategic (what) and operational issues (how) have been the focus of method design. This has, nevertheless, led to a bias when designing and implementing appropriate approaches and methods to manage the process improvement efforts as no or little emphasis has been put on the improvement process itself in terms of time, quality and costs. In addition, the improvement of already good or excellent processes is very hard as the limitations of the methods restrict the possibility to reveal the full potential of the selected focus process(es). Simply stated, the dilemma is that most improvement methods adopted are of low quality, consume much time and/or cost a lot to implement. Due to the low process improvement knowledge throughout the organization and cultural aspects, the dilemma is not recognized in most companies. These companies have a firm belief that they have the best people attached to the process improvement issues and their process improvement initiatives are state-of-the-art. Consequently, much effort is put on e.g. flow charts, lean management, six sigma, score cards and a countless number of different types of assessments, besides outsourcing initiatives and investments in IT systems. Occasionally one might find at a strategic level the adoption of a policy deployment method (such as hoshin kanri). Likewise,

one might find at the operational level the adoption of the Deming circle or the PDCA¹ logic, but in many cases these issues have been implemented only at a heading level without a true understanding of the underlying logic. If the currently applied approaches and methods should be evaluated using the principle of *“making right things right, in a fast and cost effective way”* (Statement II) very few of them would pass the test².

Comparing Statement I above with Statement II may result in an analysis that the difference is not that big. However, in reality the difference is huge. Statement I requires "only" that the processes are effective ("making right things") and efficient ("making things in the right way") whereas Statement II requires additionally that the improvement efforts themselves should be effective and efficient. This means that one should accomplish the objective with minimal risk, low costs and in the specified time. Such a demand will require a new way of thinking in terms of defining, implementing and updating management systems, how to organize everyday work, how to provide education and training as well as how to manage the organizational change. Analyzing closer the current set of methods used under the umbrella "process improvement" reveals that most methods strive to raise the improvement productivity (e.g. the PDCA logic and six sigma). Those that strive to raise the improvement effectiveness will, however, only provide an analysis that does not provide the required input for producing a proper synthesis leading to an "ad hoc" synthesis that will likely contain severe or even fatal biases. It is also important to consider how to maintain the achieved performance level and improve it further.

It is clear that it is very hard to measure, improve and manage process improvement efforts without a systematic and result-oriented process improvement process in place. Without such a process, only suboptimized results can be achieved at best. Moneywise, adopting the wrong methods, potentially in the wrong way will make companies lose considerable amounts of money each year. It is easy to see that the cumulative sum lost during a period of some years will be comparable to or even exceed the annual revenue of the company. This is the

¹ Plan, do, check, act.

² One practical way of testing a method's suitability to process improvement is to implement the method to the process improvement process itself. If the process improvement process is improved in terms of time, quality and costs, then the method might prove useful.

price of the process improvement paradox or the cost of low-performance process improvement. The price is considerably higher than the quality costs as the quality costs “only” consider such costs related to not doing things correctly in the first place¹. The costs related to the process improvement paradox include also the costs of unrealized potential that can be made visible using high-performance approaches to process analysis and synthesis.

1.3 The Main Question

A process is the interaction of people, technology (machines), information and materials to produce a certain output². Broadly speaking process improvement means in the business world that you should make more money by delivering more value to stakeholders using less time and costs.

However, it is symptomatic that the available time for conducting improvement efforts has been cut down to increase the share of “real work”. In such a setting, where the rat race is running faster and faster, and where improvement budgets are getting tighter and tighter, also the improvement methods need to adapt to the time and cost demand, without sacrificing the quality aspect along the way. It is not interesting how some well-cited landmark company or organization has improved some part of its operations, because only a small fraction of the companies truly improve their processes in a systematic and result-oriented way. Much more interesting is the main question, i.e. how to catch-up and overtake the best in a fast and cost-effective way, despite company unique prerequisites. This calls for both evolutionary and revolutionary thinking to take process improvement to the next ambition level, i.e. high-performance process improvement.

The crucial following question is, consequently, how to implement the Statement II in practice (cp. previous section). Based on management literature it would be pretty easy to come up with a reasonable answer if one were to consider Statement I. When the requirement is focused on Statement I, one realizes soon that there will not perhaps be 4 months annually

¹ Spending occurs usually in four areas: internal and external costs, appraisal costs and prevention costs.

² Fromm, H. 1992. “Das Management von Zeit und Variabilität in Geschäftsprozessen.” CIM Management. 5, pp. 7-14.

available to define the improvement plan or 5 years of calendar time available for the implementation to reach the next ambition level. Furthermore one will soon find out that it is not possible to hire an army of skilled consultants, educators and trainers to speed up the efforts. Besides, very few (key) persons have in real life the time or patience to attend tens of meetings, seminars, etc.

Due to not knowing of anything better the low-performance methods will continue to be applied resulting in a great waste of resources and unrealized potential. This, if anything, will cost a lot and will therefore affect negatively all stakeholders (customers, employees, owners, suppliers, society, investors and the environment). The burning question from a company perspective is that for how long can the companies afford to apply low-performance process improvement approaches?

1.4 The Current and Prospective State of Process Improvement Methods

Due to a large-scale lack of understanding covering the companies themselves and their external advisors such as consulting companies and research institutions, it is no wonder that most of the companies stick to methods that are more or less isolated islands on the process improvement map. The use of fragmentary, inflexible and stiff improvement methods will lock the improvement work into a certain mould that will restrict the possibility to reach an optimal solution in terms of time, quality and costs – both in the focus process and the improvement process itself. Obsolete methods will not disclose the true potential of the processes leading to monumental cumulative losses. The executives might feel comfortable with the on-going process improvement efforts because of not knowing of anything better. A 20% increase of the performance level of a certain part of a process might be exciting and satisfy most executives. However, if the whole process could have been improved 40% with only half of the time required and with only half of the costs, then the deed seems less impressive, especially when the deed needs to be replicated continuously as the ambition level of both the process and the produced output have to be raised to the next once the current level has been reached. Another point is that a large corporation may have easily more than 100 key processes delivering value in a global perspective. This provides a clue that the cumulative gain of implementing high-performance process improvement solutions is very attractive even

from the corporate perspective (board of directors, CEO). Even small companies have a fair amount of key processes that need to be highly competitive as a whole. In fact it seems that companies are competitive not because of having high-quality processes throughout the organization but because the competitors are potentially doing even worse in terms of process improvement.

The processes are required to operate in a systematic and result-oriented way, but the process for achieving this is not subject to such criteria. Very few companies, if any, have perceived the process improvement efforts as a process that can and should be improved just like any other process in terms of time, quality and costs. For instance, the much cited cases of the Japanese car manufacturers (cp. e.g. Toyota), and their successes in the field of process improvement field are impressive and provide a clear vision what is achievable for other companies as well. However, those production systems and practices have evolved over many decades and have been customized to fit the specific culture and case.

From a process improvement process perspective the achievements are less impressive. This suggests that other companies in *any* industry can create as competitive systems and practices with only a fraction of the time and money used by, e.g. the Japanese car manufacturers, without copying the show-off cases. To do so, the concept of high-performance process improvement should be fully understood and implemented.

It should be observed that whereas the core processes and most of the support processes might be continuously measured in terms of quality, time and costs, at least to some degree, the process improvement or the related initiatives are usually not. The top-management will never receive facts about the revitalization agility of the company and is therefore also more exposed to making bad decisions that are potentially not discovered before it is too late.

By understanding the main concepts (the “DNA”) related to high-performance process improvement it is possible to create momentum and implement optimal improvement efforts with the best leverage on the object process despite the magnitude of change required, current performance level or line of business and process type. Additional benefits of these

concepts include the ease of management and systematic and result-oriented process improvement even in turbulent, complex and large settings.

1.5 The Conducted Research and Development Work

The research and development work conducted by me and my company (Vitalize Oy) has been striving to develop the theory and practice behind high-performance process improvement. This includes also the definition, creation, implementation, verification/testing and improvement of a high-performance generic process improvement process (Figure 1-1).

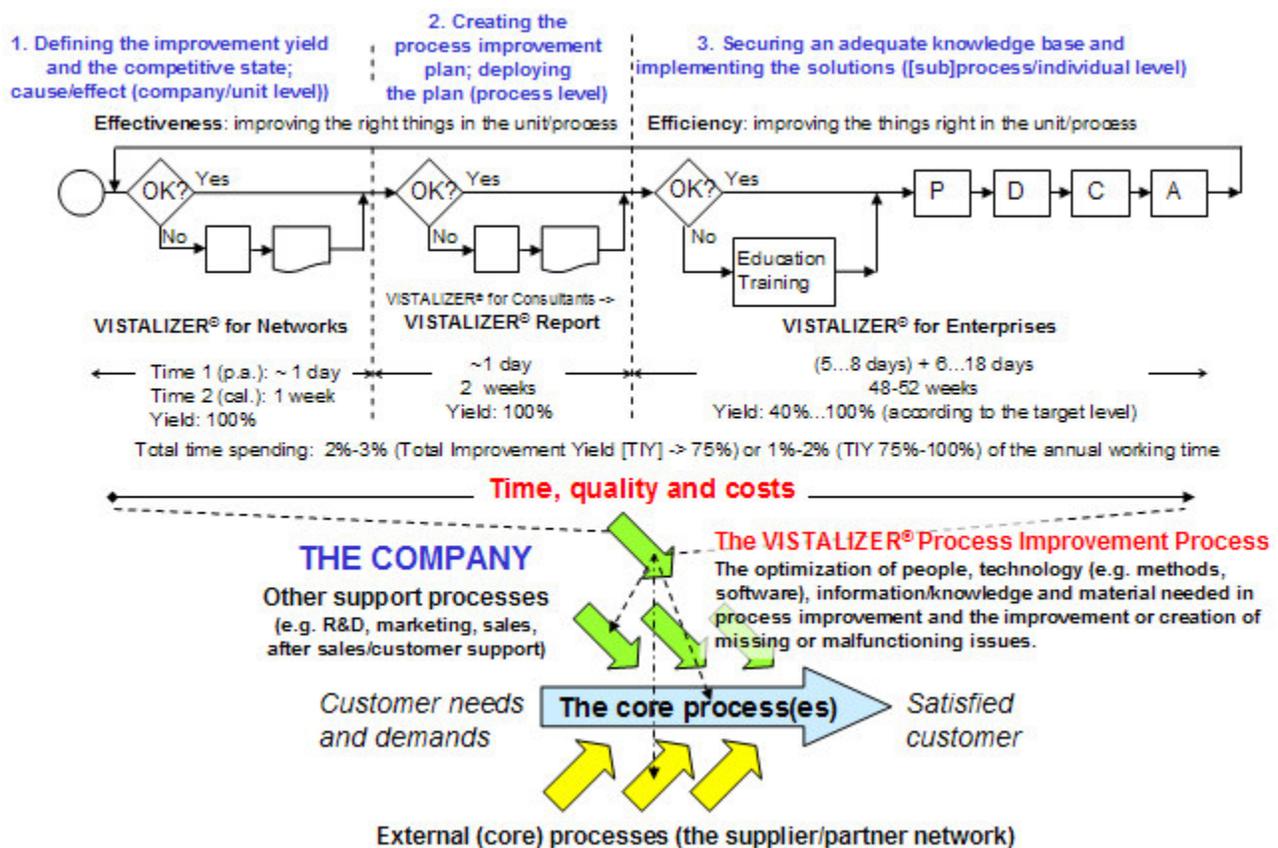


Figure 1-1: The high-performance generic process improvement process powered by VISTALIZER®.

The work regarding the generic process improvement process was initiated in 1993 and finalized twelve years later in 2005. After this the theory and practice have evolved to form a coherent whole. The test setting covered approximately 60 different companies of all sizes in eight European countries. Approximately 75% of the companies were in the electronics, metal and plastic industry. Other industries included telecom, food, transportation, waste

management, defense, IT services and education. Most companies were among the leading companies in their field of business.

1.6 The Fundamentals

The term *process improvement process* could be defined as a logical set of activities that strives to improve in a systematic and result-oriented way the performance of the targeted value chain in terms of time, quality and costs. This set of activities includes the creation of an appropriate improvement plan both on the network (suppliers, own units) and process level, deployment of the plan(s), educating and training people and implementing the solution or solving the problems. The quality level of these improvement activities can be defined by the *process improvement yield*. It is the quality parameter that defines how well any set of improvement methods will contribute to the improvement work in real life (Figure 1-2). The process improvement yield, expressed as a percentage point, will consider both the impact on increasing the process improvement effectiveness and the process improvement efficiency of any given set of improvement methods. A high process improvement yield will assure that the focus processes will be optimally improved in terms of time, quality and costs (=the outcome) using as little resources as possible. Besides the company or corporate level, the concept may be enlarged to cover whole value chains (the total improvement yield).

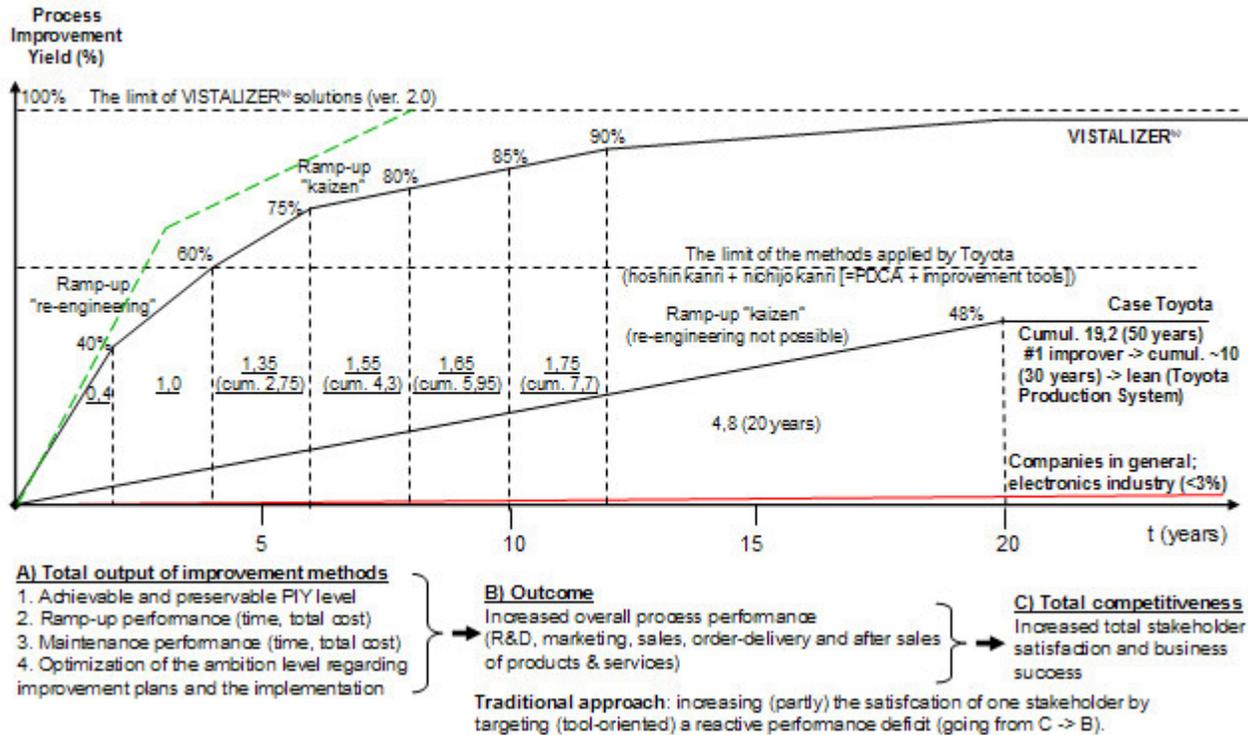


Figure 1-2: The difference between different process improvement approaches and methods (corporate or company level; like-for-like comparison).

E.g., a motivated estimate based on the methods applied by Toyota (hoshin kanri + nichijo kanri) suggests that the maximum figure of Toyota would be slightly below 50% reached in approximately 20 years. It is likely that this figure is somewhat lower in real life because of shortages related to the scope parameter that is inherent in the process improvement yield concept. The average company has a level of about 3% given infinite time (average of 30 companies in the electronics business in 8 European countries). Very few companies will reach a level above 10% given infinite time as the theoretical score of the most commonly used (set of) methods will not exceed that level even if implemented correctly. The high-performance process improvement approaches and methods (VISTALIZER®) related to this article will provide a level of above 75% reached in 6 years (like-for-like comparison with case Toyota). The financial impact of this is for any company substantial and provides leverage in terms of catching-up and overtaking even the best.

From a process improvement perspective there are four issues that form the basis for catching-up and overtaking the best in terms of the improvement methods used:

1. the achievable and sustainable process improvement yield level
2. the ramp-up performance (time, total cost)
3. the maintenance performance (time, total cost)
4. the optimization of the ambition level regarding improvement plans and the implementation

High-performance process improvement methods score highly in all four areas.

1.7 Design Notes

To gain momentum in terms of increasing the process improvement yield in a systematic and result-oriented way it is clear that common sense will not do. This means that a construction (cp. Figure 1-1) is needed to deal with the issue properly. To further understand the nature of the construction it is necessary to outline the general requirements the construction has to satisfy to be useful:

1. It should be scalable. The logic has to deal with any value chain despite the size. It has to be suitable for just one person or a cluster of several hundreds of companies or units.
2. It should be universal. The logic has to deal with any line of business and process, i.e. the solutions need to be fully customized to meet industry and company specific needs.
3. It has to deal with any starting level. The logic should adapt to the current knowledge base, current process performance or level of motivation and change resistance. It should be as useful to a seasoned company as to a company that is just starting with the systematic process improvement efforts.
4. It has to be manageable, copyable and measurable. It should consume as little time and money resources as possible.

Despite the size of the target value chain, the first two requirements deal with the question *what*, whereas the requirements 3-4 deal with the question *how*. A *what* question is typically an indication of that a strategy or some kind of improvement plan needs to be created. To tackle the *what* question an understanding of how to derive an optimal plan should be

considered. Generally speaking, an optimal plan can be created via an information process that contains three main phases.

1. the collection of data
2. cultivating the data into information, i.e. making an analysis
3. cultivating the information into knowledge, i.e. making a synthesis

These three phases are subject to general quality criteria related to information¹. Firstly, the logic applied should assure that the collected data and information are correct and relevant; otherwise the rule “garbage in, garbage out” will apply. Most approaches and methods applied currently provide at best only an analysis or assessment of the current state. These methods include, e.g. quality award criteria, the Balanced Scorecard (BSC) and six sigma. What they do not provide is the synthesis, i.e. what would be the optimal actions to conduct, bearing in mind case specific and unique constraints and priorities that are due to both company external and internal issues. These methods leave the most crucial issue unsolved: as knowledge is the basis for making decisions, the quality of the decisions is subject to a great bias due to the personal constraints of the decision maker. There is thus no systematic and result-oriented way of arriving at the answer. This results in a great loss of momentum at the very early stages of the process improvement efforts as the potentially wrong proposals are being implemented.

Secondly, is very important to master the time dimension when creating an optimal improvement plan. There are two important aspects to consider in this regard. The first is that the selected method might be so time consuming that it is impossible to grab the dynamic time frame that all companies and processes are subject to. The world and the specific and unique conditions might have altered too much before even the analysis is finalized – the wrong remedy is potentially proposed as a consequence. Another aspect is that many of the non-trivial methods applied today consume too much time and will make the people attached to the case too exhausted to implement anything after the analysis phase.

¹ Augustin, S., Oberhofer, A. 1990. Information als Wettbewerbsfaktor: Informationslogistik – Herausforderung an das Management. Köln: Albert F Oberhofer.

Additional requirements target the amount of information (“as much as necessary, as little as possible”), its form and place. Furthermore, the plan has to be designed so that it can be immediately deployed and implemented in practice.

The first *how* issue (issue 3 above) points out that the construction has to define the current ambition level of the focus process. In addition, it has to define the optimal path how to reach the next level within certain unique prerequisites.

The second *how* issue (issue 4 above) demands that the construction has to be manageable, copyable and measurable. All these requirements can be satisfied if the construction can be run as a process. If such a process is improved enough, it is possible to satisfy also the performance requirements.

The claims communicated via the design notes can be satisfied by a generic process improvement process that utilizes high-class information processes. To get a rough guidance related to the performance requirements of the construction, it is necessary at this stage to briefly outline the general performance requirements, especially related to the time and knowledge aspects.

1.8 Performance Requirements

Not more than approximately 4% of the effective overall working time should be allocated to process improvement efforts annually. If the available process improvement time would annually be, let’s say roughly ten working days, some eight to nine days (80%-90%) are typically allocated to planning (data collection, analysis and synthesis) whereas only one to two days (10%-20%) would be left to implementation – in an ideal case! This is especially true in large corporations, whereas the ratio might be quite the opposite in small companies, where process improvements are done “ad hoc” without any prior planning. In these cases if the process is still competitive it is not necessarily due to a systematic and result-oriented improvement work but more thanks to pure luck and the fact that the competitors are

performing even worse. With the methods applied it is not possible to switch the ratio the other way around without sacrificing the quality of the planning considerably.

Another practical rule of thumb is that at least 40% of the staff should understand in practice the process improvement philosophy, approaches and practical tools before large-scale gains may be realized. Usually this figure is below 2%.

Not mastering the time and knowledge requirements causes another problem that affects negatively the possibility to realize large-scale gains and the full potential. In many companies most of the time is allocated to planning whereas the implementation phase usually receives much less attention. The improvement work is organized usually via some internal consultants or improvement managers that represent only a fraction of the staff. Some of these improvement experts might even understand the improvement philosophy, approaches and practical tools, but these experts represent still only a fraction of the whole staff. The improvement work will be more or less driven by external or internal experts (consultants) that tend to affect negatively the level of commitment among the people working in the process and could potentially cause unnecessary change resistance.

Finally, it should be noted that every improvement activity needs to be customized, verified, prioritized and implemented optimally.

1.9 Summary and Concluding Remarks

Many companies, and potentially even countries, will find out that the conducted process improvement efforts, despite of all the bells and whistles, will be of little help when responding to the increased performance requirements. Low-performance process improvement methods communicate a false feeling of pleasure. This exposes the companies to options with a considerable risk level. Such options include out- or insourcing, change of IT systems, shutting down or moving operations to other countries.

In some cases the government may even provide help in terms of governmental protectionism. It is worth noticing that such actions are not process improvements in a true

sense as external factors, such as lower wages or a penalty duty, constitute the basis for the relative productivity rise.

The concept of high-performance process improvement may seem as an objective that is impossible to reach due to the demanding constraints and requirements attached to the subject. Adapting duly designed concepts, approaches and methods makes it possible to reach the required critical mass to solve the obstacles related to high-performance process improvement. Simply put there are only three things to understand and master in order to achieve the objective:

1. the process improvement yield
2. the generic process improvement process
3. high-performance process improvement

These three issues are strongly interrelated and thanks to their mutual interplay they will provide a very solid platform for continuously improving both the performance of the focus processes (the outcome) and the improvement work itself (Figure 1-3).

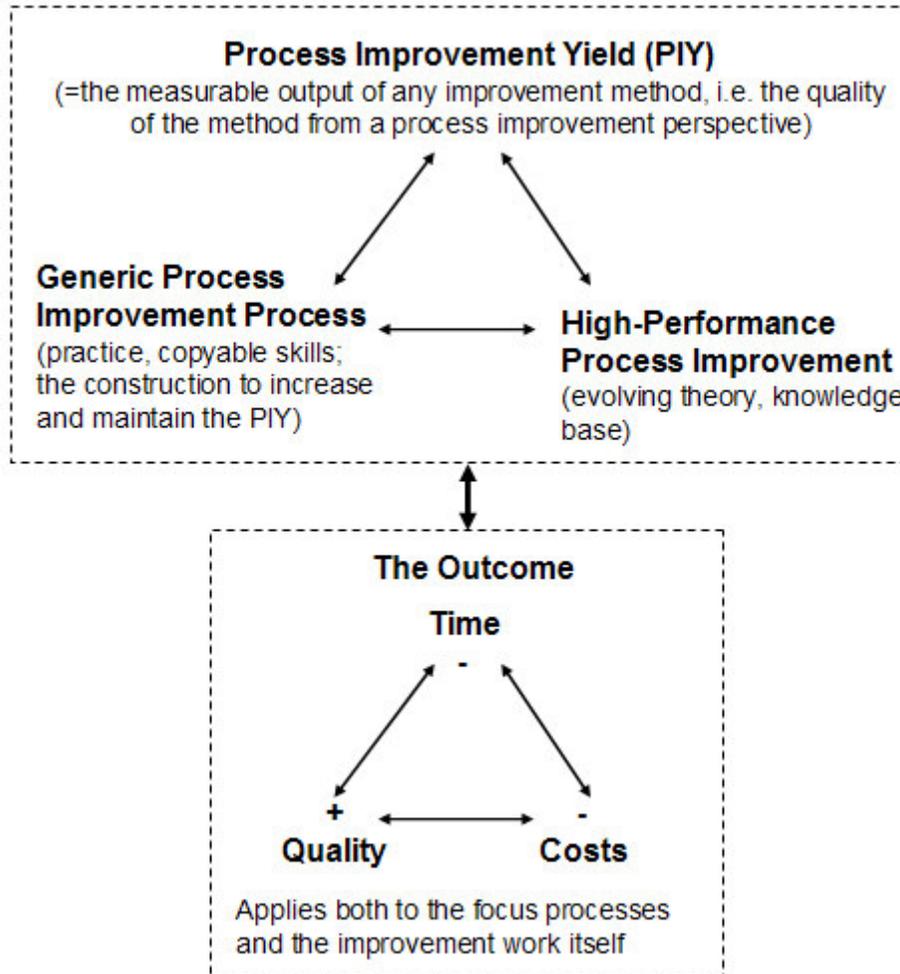


Figure 1-3: The relationships between the different concepts.

If the knowledge related to high-performance process improvement increases, i.e. the theory evolves, then both the metrics for defining the process improvement yield and the generic process improvement process and related skills to run said process have to be updated accordingly. On the other hand, based on the practice of the generic process improvement process, it might be evident that the process improvement yield and the knowledge base related to high-performance process improvement have to be updated. In this way the practice will be continuously considered besides the evolving theory and vice versa. Depending on the level of the process improvement yield it will, on the other hand, affect the generic process improvement process and the knowledge base in terms of adjusting and scaling up to the optimal ambition levels. Also, the improvement of the time, quality and costs

parameters are strongly interrelated and needs to be considered properly in all improvement activities (data collection, analysis, synthesis; education, training and implementation).

Until now there has been no systematic and result-oriented process (construction) that would provide organizations with a customized solution in a fast and cost effective way to realize in a classy way the concept of high-performance process improvement. Fortunately times have changed as the missing pieces (cp. Figure 1-3) have been identified and properly cultivated to form a coherent whole that does the job.