

Managing Complexity and Speed of Processes in the Organizations—A Philosophical and Practical Approach

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The business challenges of today are managing complexity and the speed of changes with processes and systems since there are continuously new requirements from market, consumers, suppliers, employees, government etc. For example, when product and service innovations are launched on the market, the relevant processes, policies, people, systems, and technologies should have been prepared and set up in advance. Depending on the business sector, the implementation of new processes and systems as well as their continuous improvement can be easy to very complex and of course very costly. Responding to those challenges, there are several methodologies and approaches like Continuous Improvement Process, Lean Management and Kaizen etc. On the other hand, the application of these methodologies to other industries like service and technology companies is not always successful since their conditions and requirements are different than those of manufacturing organizations. Because of these reasons, the management needs to find out (new) ways of working and to implement new solutions in order to master those challenges and problems. This is not always easy and successful. There are different types of solution options that can be applied situational in every organization. Philosophy can help essentially by asking and answering critical questions in order to provide with solution options to reduce the complexity and to increase the speed of processes. There are several proven and new governance concepts, frameworks, and tools which follow their philosophies. This paper demonstrates how those challenges can be responded and managed as well as how a philosophical approach can help primarily to provide with appropriate solutions.

Keywords: management philosophy, Kyosei, philosophical and practical approach to manage complexity, speed of processes, Continuous Improvement Process, Six Sigma, Lean Management, standard frameworks, best practices and tools

“We can’t solve problems by using the same kind of thinking we used when we created them.”

Albert Einstein

1. Introduction

Like Einstein cited above, can we respond to the business challenges and problems of today and future (if predictable) by the existing principles and approaches?

This question comes up as the business challenges of today are managing complexity and the speed of

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changes with processes and systems since there will be continuously new requirements from management (decisions), market, consumers, suppliers, employees, government etc.¹ For example, when product and service innovations are launched on the market, the relevant processes, policies, people, systems, and technologies should have been prepared and set up in advance. Once this product or service has been launched, there will be continuous adjustments and improvements. Besides that, the local and regional governments can have new requirements, i.e., SOX compliance² and/or environmental policies such as CO₂ emission reduction etc.³

Depending on the business sector, the implementation of new processes and systems as well as their continuous improvement can be easy to very complex and of course very costly. Responding to those challenges, there are several methodologies and approaches like Continuous Improvement Process, Lean Management and Kaizen etc. In many cases, these methodologies help as some organizations have had good experiences like Toyota, General Electric etc.⁴ On the other hand, the application of these methodologies to other industries like service and technology companies is not always successful since their conditions and requirements are different than those of manufacturing organizations. Because of these reasons, the management needs to find out (new) ways of working and to implement new solutions in order to master those challenges and problems. This is not always easy and successful but it will be demonstrated in this paper how this can be managed.

2. Problem

Given this background and in order to understand the problem, it needs to be clarified firstly what the terms complexity and speed are in the context of organizational processes and systems. Complexity implies a situation with numerous dimensions and many factors of an issue or problem. Furthermore, in the complexity, the nature of the challenge is linked to many known and unknown factors. Also complexity relates to multipart interactions and interdependency of involved parties in a hierarchy. On the other hand, the speed of changes is another major challenge and means the number and frequency of changes in the processes and systems within any given time. In turn, the speed of changes contributes to the complexity of organizational processes.

Business processes in general cover strategic, operational, and supporting processes. Strategic processes govern operational processes of a system/organization and include decision making mechanisms. Operational processes build the value stream of a business. Processes like Finance, HR, and ICT are supporting processes. Today, business process environments show the following extreme characteristics:

- Simple and complex processes;
- Slow and fast processes;
- Offline and online processes;
- Manual and automatic processes.

These processes can be in a spectrum between simple (predictable) and anarchic/chaotic (unpredictable). Simple processes indicate a person, system, and/or a small group of people where their activities can be un-defined or have a minimum set of rules and requirements, for example sending out weekly reports. Simple processes could be between slow and fast. The complexity of processes relates to the multipart involvement of different functions in the hierarchy within a given time. Thus, complex processes involve a group of people and/or systems (different business teams and departments) and their E2E process activities within pre-defined requirements and procedures. Consequently, the objective with simple processes is the reduction of complexity and increasing efficacy of business processes. As simple processes, complex processes also could be between slow and fast.

Whereas the complexity relates to the hierarchical structure of involved parties, the speed refers to the momentum to move or operate those interactive parties and can be categorized qualitatively between slow and fast. However, the speed is also one of many factors of complexity and contributes to getting more complex and in extreme cases more chaotic. A slow process means if actions take a long time and their outcomes will be late and not delivered within a predicted time. Besides that, a slow process could be in use over a long period of time and there is nearly no change (no improvement and/or optimization) since this is still hidden and not identified. The opposite-fast processes are done without waiting or delaying and the outcomes are delivered within a predicted time. A fast process can specify many changes (by improvement and optimization) over short period of time. Furthermore, in processes, different types of resources like man and machine are involved. By the involvement of these resources in different constellations, we can distinguish between offline and online processes. Offline processes are manual human interactions which mean there is no connection and interaction between man and machine. Online processes are computerized and automated workflows. The output/outcome of both process types can trigger an online and/or offline process. Besides that, the term real time process is used when there is no waiting or only a tiny time delay between input and output, i.e., real time data processing, real time enterprise.⁵

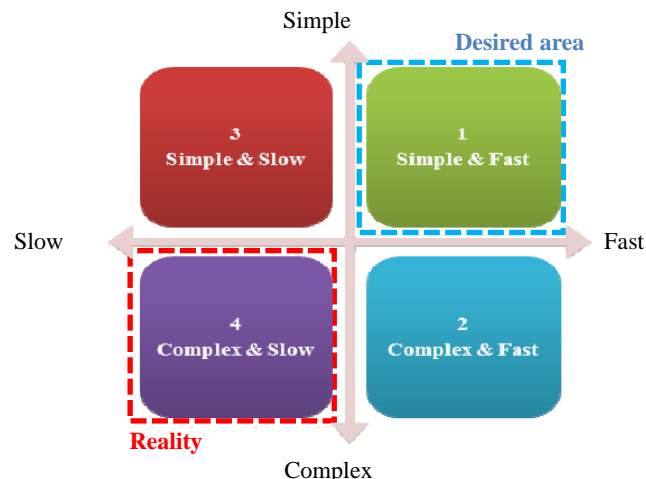


Fig. 1. Correlations of complexity and speed.

These process types explained above can be observed in different combinations and constellations which are illustrated in Figure 1. The focus in Figure 1 is set on complexity and speed since both terms imply also the presence of resources (man, machine etc.). Today, most of processes in the organizations are (very) complex and slow since different industries and technologies are converging (and also diverging) intended or unintended. Therefore, the reality of the processes is to find in the area 4 (Complex & Slow). The consequence of this situation is inefficiency and poor quality in the processes which cause finally suboptimal outcomes resulting in high costs, low motivation of employees, and low customer satisfaction etc. These processes are in most cases very long and can be seen specifically in larger organizations where the value chain consists of many domains and/or subdomains. Once this is identified as a problem, a process engineer, for example, will try to move to the area 1 (Simple & Fast) by improvement actions. Even if this is the objective of the process engineer, it cannot always be achieved easily or successfully. The process which was changed by improvement actions goes usually the long way round over the area 2 (Complex & Fast). That means the engineer optimizes the process

by lean management activities firstly. But, this is still complex which is sometimes unavoidable because of the legal or governance requirements. For example, application of compliance rules in accounting processes.

Because of efficiency (cost reduction) and effectiveness (customer satisfaction) of the processes, the preferred area for management is the area 1 (Simple & Fast) where the process is as simple as possible since this is predictable and everyone knows what to do and what will be the result/outcome of the process. On the other hand, this is also as fast as desired since there is no delay or waiting between input and output. This is a competitive advantage which brings huge benefits for the organization and the cost structure will be optimal. Since this is a continuous process improvement, further questions need to be asked in order to understand the problem and thus to solve it. Specifically how can the complexity be managed and moved towards the simple and fast process in order to contribute to the organization's success and sustainability? Do we need a new philosophy for a solution? If yes, how it works? All of those questions will be explained in the next section.

3. Solution Approach

3.1. Significance of Philosophy of Management

Before the solution approach is explained, it needs to be short illustrated where the philosophy is positioned and in relationship with other entities in an organization. As shown in Figure 2, philosophy which includes also a vision and mission statement is the starting point and general orientation for organizations and management and describes a set of values by which the organization should be managed. Based on the (right) philosophy of management, strategy can be defined which describes a high level plan to achieve business objectives under certain and uncertain conditions. Then the business objectives need to be refined in operational and tactical plans how and who to achieve the individual goals. Once the experiences are made, it can be reviewed in feedbacks whether the business objectives were achieved successfully and the organization still has the right philosophy.

David P. Norton, one of the gurus of the Balanced Scorecard concept, mentions that business leaders need to be educated about the philosophy of management, the "schools of thought" and select the right philosophy for their organization and embed in their management system.⁶ Canon's corporate philosophy is Kyosei which means "harmoniously living and working together in happiness into the future." Kyosei shapes Canon's mission and values in business management activities together with employees and customers as well as with governments and communities in order to contribute to prosperity of the world and happiness of the humanity.⁷



Fig. 2. Position and relationships of philosophy in management.

3.2. Solution Philosophies

In the previous section, the significance of Philosophy of Management is described briefly. In this section, this needs to be explored, how philosophy can help the management to find out solution options for the business challenges and problems and what would be the approach to achieve those objectives. In Figure 3, an approach is illustrated which shows how business problems are converted in philosophical ones in order to identify solutions for them.

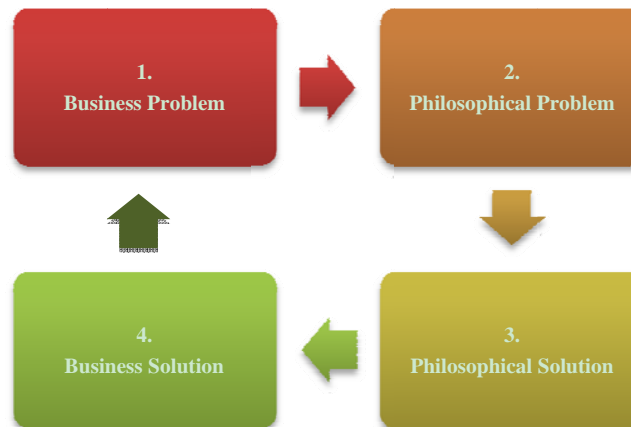


Fig. 3. An approach to solve business challenges and problems by management of philosophy.

In the first step, business problem or issue should be described by the characteristics of business challenge. What is the business challenge or problem to be solved? In the second step, this business problem is translated in a philosophical problem. With other words, this business problem is described in philosophical terms asking further questions in order to understand the problem nature with its background by critical and systematic analyses. In the third step, once the vital points of this problem are identified, the philosophical problem is solved by thought experiments and with basics of philosophical ideas, attitudes, principles, and concepts. There are huge variety of philosophies, i.e., Total Quality Management and Kaizen which can help to solve such complex business challenges and problems.⁸ In the fourth and last step, the philosophical solution is adapted to the problem as business solution. Once the philosophical solution is available, then this can be implemented in the real business environment as pilot or overall solution.

In light of significance and approach of philosophy of management, we need to think about what philosophy can lead us to find the right direction and the right solution approach in the jungle of complexity and related problems. There exist some standard approaches proven in the past and present successfully. Usage of some of these approaches can be taken into consideration certainly. However, additionally, we need to explore new solution approaches if the existing approaches are not sufficient to solve the problem mentioned above alone. Therefore, the question here is whether solution approaches in general can fulfill the criteria “problem solving capability,” “sustainability,” and “robustness” to realize consistent results over long period of time. To answer this question, we need to look at the character of the business challenges and to understand business requirements. Then we need to find out how we can develop solution strategies which will be explained in the next section.

3.3. *Solution Strategies*

3.3.1. Complex to Simple

The first thing what can be used immediately in order to reduce the complexity is the usage of the analytic approach to solve the problem or at least to demonstrate solutions options. That means the problem needs to be dismantled to its (smallest) parts in order to analyze them one by one. Then the original problem will be solved by the combination of solutions of each part. Otherwise it would be a quiet big challenge to analyze and solve the problem as one piece. This approach is known also as Divide et Impera (Divide and Rule) philosophy which is used in politics and military since ancient times.⁹ Besides the question whether or not this is a right philosophy for the management and its organization, we need to ask also the question whether or not there are enough time and resources (money, people, and tools) to apply this philosophy. Even if we have all of these opportunities and resources, we can manage only standard and/or known/certain part of challenges. On the other hand, we cannot manage unknown/uncertain parts of challenges if we are not prepared or it is impossible to control them.

In this context, further questions need to be answered: Can the philosophy Divide et Impera alone help in dealing with our challenges? What would happen if the challenge turns in unknown dimensions? Can we still respond with all of our capabilities? Or we need to learn to live in a certain degree with unpredictable events, risk, and problems which can occur anytime, i.e., catastrophes like Tsunami in 2004, BP oil disaster etc.¹⁰ Will we be still capable to solve those unpredictable events?

3.3.2. Slow to Fast

In the previous section, it is discussed that the speed refers to momentum to move or operate interactive parts and can be categorized in a qualitative spectrum from slow to fast. Accordingly, the processes can have different speeds between slow and fast. Today, most of processes are not as fast as desired. If process outputs and results are not controlled in terms of any agreement and/or requirement (i.e., SLA) then those processes will be most probably slow and suboptimal. The quality of those processes and their outputs will not be as expected by customers and stakeholders.

Slow processes in general can be characterized as irregular, effortful, manipulative, and sensible which normally take long time to complete the outcomes since they are mostly manual and offline processes with massive human interactions. If exists, review and decision making processes are also slow, status quo, and hierarchy-emphasized as well as nontransparent. Incentives are unclear to be more efficient and transparent. The communication is rare and not effective as required. Resources are not allocated according to a plan since this is missing or if exists; this is not controlled over time. Besides that, a slow process could be in use over a long period of time and there is nearly no change (no improvement and optimization) since any inefficiency is still hidden and not identified such as. Typically, deliveries to customers will be late and not on (predicted) time. Consequently, slow processes are inefficient, manipulative, and costly.

In contrast, fast processes are on the other end of the speed spectrum and mostly online, automatic, well defined, and transparent. The outcomes are delivered on predicted time without waiting or delaying. Review and decision making processes are clear for everyone. Status quo and hierarchy levels are reduced, removed, and/or optimized as minimal as required. There are lean management, flexible organizational structures, and flat hierarchies. Fast decisions, open style communication and friendly working culture are typical characteristics and requirements for fast processes. Also they can experience many changes (by improvement

and optimization) over short period of time, for example, in the course of continuous improvement measures.

After slow and fast processes are characterized, the question needs to be answered how to move from a slow process to a fast process and what would be the requirements and consequences of these changes in terms of quality, customer satisfaction for the customers as well as benefits and costs for the management. This question will be answered in the next section.

3.4. Solution Tactics

In the previous sections, it is shown that the reality of the processes can be found in the area 4 (Complex & Slow) and the management prefers to work in the area 1 (Simple & Fast) because of its benefits. In this section, tactical ways to move to the desired area need to be explored. Since those actions can be seen as a continuous process improvement, further questions need to be asked in order to understand the problem and to solve it. Specifically how can the complexity be managed and moved towards the simple and fast process in order to contribute to the organization's success and sustainability? Basically, there are different routes to follow for the reduction of complexity and increasing speed in the organizational processes. Figure 4 shows these two different routes to move a process from the area 4 to the area 1: direct and indirect routes. Direct route is one step track whereas indirect routes consist of two steps track which needs to be explained firstly.

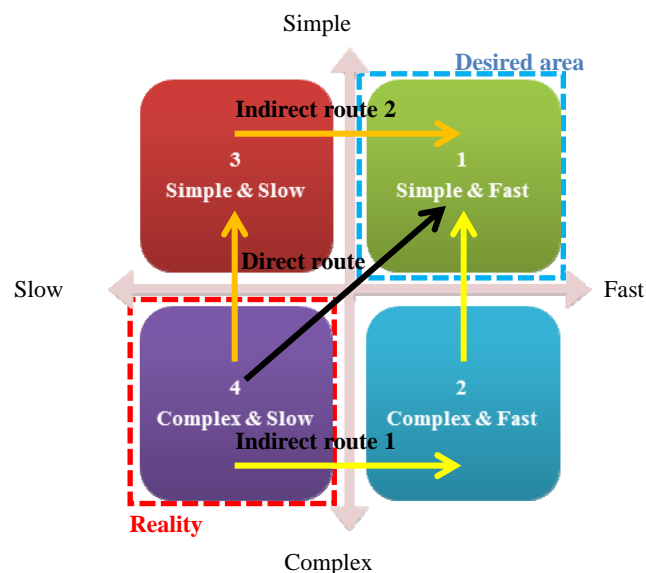


Fig. 4. Routes to reduction of complexity and increasing speed.

3.4.1. Indirect Routes (Long Tracks)

One of these routes is the indirect route which moves from the area 4 (Complex & Slow) to the area 2 (Complex & Fast) initially. The speed in the area 2 is now faster than before. Once the process is stabilized, in the second run, i.e., process engineer can move towards the area 1 after the complexity of this process is reduced by appropriate improvement measures which will be explained later on. Another indirect route from the area 4 (Complex & Slow) to the area 1 (Simple & Fast) leads via the area 3 (Simple & Slow). In this route, the complexity is reduced in the first step whereas the process still is slow. In a further step, also the speed of the process is adjusted accordingly in order to make the process both simple and fast as desired.

3.4.2. Direct Route (Short Track)

On the other hand, a further option to reach the desired area 1 (Simple & Fast) is using the Direct Route (Short Track) where the complexity and speed are improved and optimized at the same time. In this option, the efforts, risks, and consequently its costs would be more than those from the both indirect routes. However, if time is an issue which has to be handled with a higher priority, then this could be selected as preferred option.

4. Best Practices and Tools

Which route can be recommended is situational and dependent on the management decision which should consider the circumstances in terms of business background, objectives, and strategy. Management should consider always time, resources, costs, and quality. On the other hand, even different organizations show similar structure and processes though the selection of best practices and tools can be also very different because of their objectives, strategies, and operations as well as their market conditions.

The option with direct route is a radical and overall solution, which entails its benefits and risks. If time to market is a critical point, then this can be chosen as a solution rather than following the indirect route. The main benefit is, if every action went well in the course of direct route, that the organization is ready to response to customer and market requirements. Though, there are also some risks if the organization, specifically people, can be worried and confused because of unclear direction and missing leadership etc. If a decision for the selection of the direct route is difficult to make then alternatively, the other option, indirect routes, can be selected.

Indirect route can be considered both radical and marginal solution with own benefits and risks. However, indirect route is rather a marginal solution since it changes an organization step by step. This can be selected as a solution option if the risk of following direct route is higher and activities require more efforts, resources, and costs.

There are several useful frameworks, best practices, and proven toolset which can be used regardless which route is selected. For the managing complexity in the organization where the hierarchy is at a high level, following frameworks and methods could be used:

- MSP (Managing Successful Programs) is a structured framework to manage and control all the activities involved in managing a program and provides advice on organization, processes, communication, and ways of thinking.¹¹

- ITIL (Information Technology Infrastructure Library) is a framework including a set of best practices from Project Management, Six Sigma, CMMI, COBIT, SOX etc., for IT services in alignment with business needs.¹²

- COBIT (Control Objectives for Information and Related Technology) is a framework created for IT management and governance as well as a supporting toolset to align control requirements, technical issues, and business risks.¹³

- BSC (Balanced Scorecard) is a strategy performance management tool—a semi-standard structured report, supported by design methods and automation tools to keep track of the execution of activities by the staff within their control and to monitor the consequences arising from these actions.¹⁴

- Six Sigma is a set of best practices and statistical tools for process design and improvement. It was developed by Motorola in 1986. Then General Electric began to use as central part of business strategy in 1995. Today, it is used in many industrial sectors.¹⁵

- PRINCE2 is a well-accepted project management method and meaning Projects IN Controlled

Environments, version 2. It covers a high level management, control, and organization of a project. Lower level activities such as project cost calculation are not covered.¹⁶

- PMBOK is a global standard for project management which provides project managers with the fundamental practices needed to achieve organizational results and excellence in the practice of project management. PMBOK presents generally recognized good practices and reflects continually evolving knowledge.¹⁷

For the improvement of the speed in the organization where lead time is critical for the business could be used following frameworks and methods:

- Lean is a management philosophy to maximize customer value whereas to eliminate mistakes and waste by applying continuous improvement process to achieve efficiency and quality systematically.¹⁸

- CMMI (Capability Maturity Model Integration) is a process improvement framework that can be used across a project, division, or an entire organization. CMMI defines the following maturity levels for processes: Initial, Managed, Defined, Quantitatively Managed, Optimizing.¹⁹

- Agile is a software development philosophy to time boxed and iterative software development and delivery. The Agile approach works by breaking down projects into little parts of deliverables instead of delivery of the project results at once. Scrum is one of well-accepted and used agile methods.²⁰

Depending on business environment, the definition of strategically directions and the implementation of tactical operations can be provided by using the Balanced Scorecard. Organizational processes can be defined and governed by the governance frameworks and tools like MSP, ITIL, COBIT, CMMI etc.²¹ By Six Sigma, Lean and Agile concepts, the processes can be monitored and improved.²² These frameworks, concepts, and tools can be applied alone or together. Decision making processes (Machine/Man) can follow a multidimensional matrix which consists of a complexity, speed and on-/ offline level. Thus, the best decision option can be selected from this multidimensional matrix by creating morphological solution options.

5. Conclusion

This paper explained that the business challenges of today are managing complexity and the speed of changes with processes and systems. Subsequently, this paper discussed on how those challenges can be responded in order to provide with appropriate solutions specifically using philosophical approaches.

As shown previously, there are different types of solution strategies and tactics that can be applied situational in every form of organizations. Obviously, philosophy can help by asking and answering critical questions in order to provide with solution options to reduce the complexity and to increase the speed of processes; thus, the efficacy of organizations.

Besides solution strategies and tactics which are based on different philosophies of management, there are several proven and new governance concepts, frameworks, best practices, and tools. Each of them follows its own philosophy and can be used to solve the problem with continuously growing complexity and speed of processes and ICT systems. However, some parts of the problem described above will remain still to be challenging. This paper starts with one of quotes from Albert Einstein and concludes in this context with the following quote from him: "Everything should be made as simple as possible, but not simpler."

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