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Introduction
to Management
Cybernetics

System-orientated process design and stabilizing feedback mechanisms

The Consumer Goods FORUM

End-to-End Value Chain

Dr. Boysen Management + Consulting

Learning Objectives
Session VI

In this section...

- You will learn how to design processes in an output-orientated way

- You will learn how to avoid “blind” effort, errors and redundancy by aligning demand and possibility at the interfaces

- You will learn how to design processes as nature does

- You will be introduced to the significance of feedback mechanisms in processes and you will learn how to establish effective feedback in practice

Index VI

The processes bear tremendous unreleased potential for financial results and stabilization

1. Where can cybernetic processes help?

- Do you sense that the potential of your staff is only partially used?
- Do you want to ensure that resources are deployed even more sustainably than so far?
- Do you want to considerably reduce the friction in the interaction between your teams?
- Do you want to see that your staff finds a rewarding meaning in their activities and that managers give their employees a comprehensible orientation?
- Do you want to make sure that relevant information is regularly absorbed, channeled and processed in your organization?
- Do you want to keep your organization adaptive and punchy?
- Do you want future solutions to be holistically set up to make sure that the corporate result is optimized?

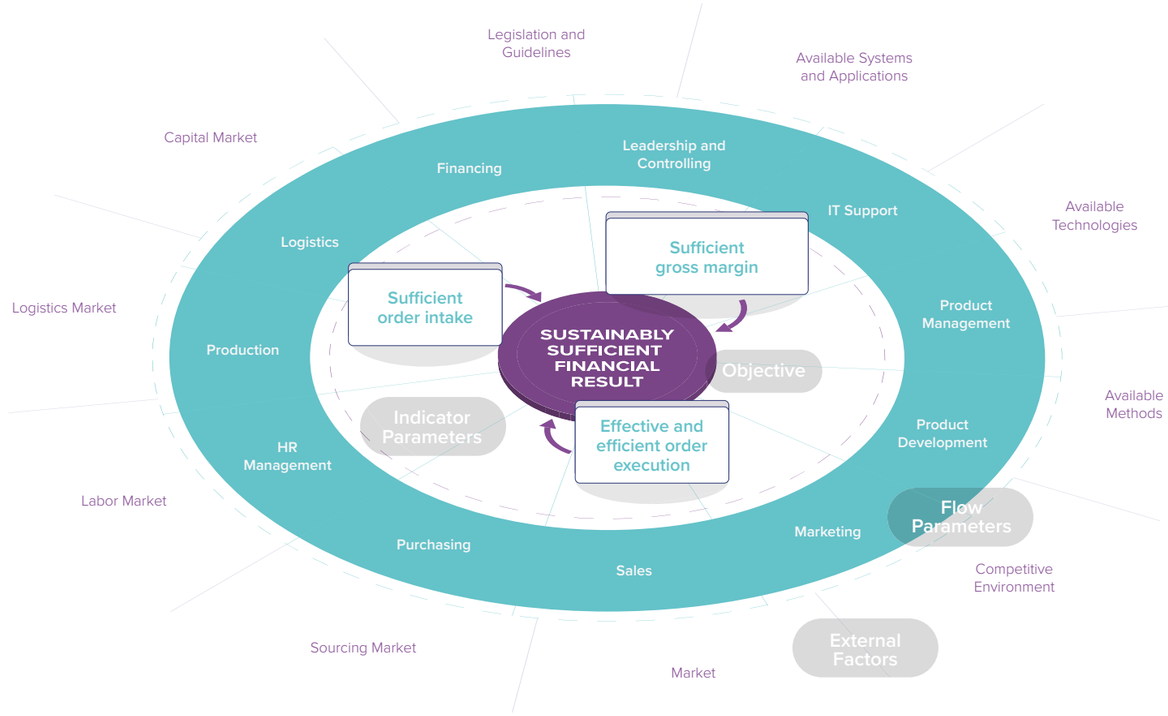
Holistically designed processes can be kept stable and agile by real-time feedback mechanisms.

a. Bullwhip Effect and Processes

> "Low operative performance and the often observed "bullwhip effect" are usually the consequence of processes not interacting well with each other rather than a consequence of market variabilities."
>
> Jay Wright Forrester

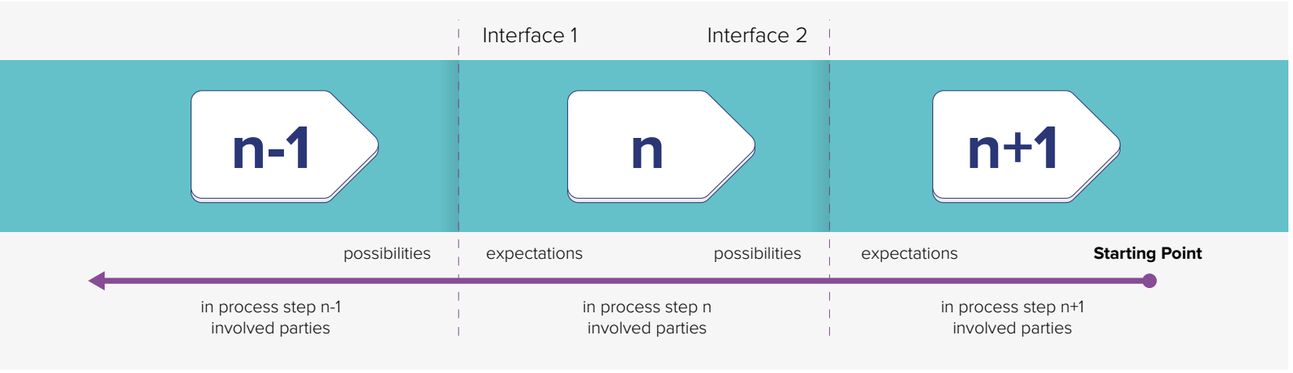
The performance can be considerably improved by a well-aligned dynamic-complex interaction of the operative functions along the business process.

b. Contribution of Business Processes



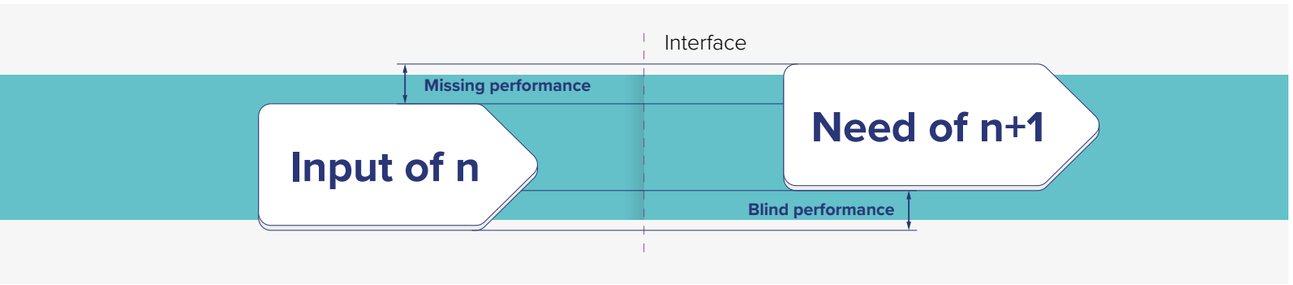
Think and design processes in the stress-field of expectations and possibilities at the interfaces!

c. Interfaces



- Focus your attention on the interfaces along your processes.
- (Internal) customer expectations should be aligned with the possibilities of (internal) suppliers.

Avoid „waste“ by alignment at the interfaces by thinking and designing processes starting from the customer expectations!



- Missing performance has to be added later, often by the subsequent parties along the process. Consequence: Additional cost, delay and fading motivation!
- Blind performance is not used by anybody later in the process. Consequence: Useless cost and unnecessary work load!

The expectations at the process end (customer expectations) should define the process chain. Therefore, processes should be thought through and designed starting from the end!

Install all five core functions of living systems in the processes!

d. The “Viable System”-Approach According to Stafford Beer

Core functions of living systems according to Stafford Beer
(observed in living beings in the nature):

- **Function 1:** Value-creating direct activities (fulfilment, responsibility)
- **Function 2:** Co-ordination of the value-creating direct activities (communication, processes, recursion and circularity)
- **Function 3:** Optimizing of the value-creating direct activities “here and now” (monitoring, auditing, agility, continuous improvement)
- **Function 4:** Adaptation of the value-creating direct activities (“the world of the options”: market research, strategy development, R&D, organization development, cognition, innovation, evolution and creation, sustaining and changing of structures)
- **Function 5:** Principle Decisions (governance, policies, intervention in exceptional cases)

Each of these functions should be installed in the processes of organizations.
Any delegation of these functions into staff positions usually does not work.

With the “Viable Systems Model” Stafford Beer laid the foundation stone for management cybernetics.

The Viable Systems Model (VSM) is a reference model for viable systems, derived from observations in nature and from system thinking

Cybernetics and Management, 1959

Stafford Beer

Ideally, co-ordination is effected by direct interaction between the operative functions; only sometimes, coordinators can help to see “the big picture”.

e. Co-ordinators as Exceptional Solutions

If the processes are still not defined according to Stafford Beer or the organization is not yet ready for them, **coordinators** at the interfaces can help.

To illustrate this, look at the following examples:

1. Management of inventory volume

The management of the inventory is a typical interface topic. Purchasing adds materials, production and sales withdraw materials and warehousing monitors and books the ins and outs of the inventory. There is usually no responsibility for the inventory volume/value and for the “quality” or composition of the stocked items for operations. The stock is floating and is not optimized.

2. Customer Project Management

Customer projects should be executed along the process. Nevertheless, competing projects cause priority issues, ideally to be solved by the involved parties. In transition periods coordinators can be helpful to manage critical paths across different projects.

3. Coordinated Contract Management

Contracts with customers are usually signed by sales managers, while contracts with suppliers for fulfilling sales contracts are signed by purchasing managers. Unfortunately, both contracts are often not linked with each other “end-to-end”. Financial damages from customer claims caused by non-conforming material cannot, therefore, often be passed on to suppliers. If sales and purchasing are (still) not aligned, a coordinator is useful to carry out an integrated contract management.

Pro-actively defined (stabilizing) negative feedback mechanisms help to avoid surprises.

f. (Stabilizing) Negative Feedback Mechanisms

- Not even the best designed process runs without mistakes or delay.
- Problems are usually the result of deviations which have been recognized either too late or not at all.

- The earlier mistakes or delays are detected, the lower is the probability that these mistakes or delays have an effect on subsequent process steps and the lower is the cost of corrective measures.
- Deviations should be made visible and actionable.

Examples of topics for pro-active “foresight feedbacks”:

- Will the pre-conditions (expectations) for the next process step be fulfilled?
- Will the customer’s expectations – from today’s view – be fulfilled?
- Will the relationship between value and effort be within the pre-calculation/budget?
- Will there be bottlenecks or unused resources?
- Will all necessary information and tools be available in time?
- Are quality issues becoming apparent?

Feedback mechanisms, firmly installed in the processes, can help to avoid negative surprises.

(stabilising) negative feedback loop

Negative feedback loops are the essential component of control circles. They are **necessary to achieve equilibrium states**, in particular floating equilibriums, and to lead to stability.

In organizations, **networked control circles with negative feedback loops should be installed**.

Install foresight-feedback: “Will this activity be finished in-time?” **to allow for preventative corrective actions**.

Oscillation in negative feedback loops (hysteresis) are no reason to worry, they are **a necessary characteristic of regulation**.

In practice, a mix of feedback options is recommendable. They do not only reduce costly mistakes, but also foster learning effects.

Create opportunities for feedback!

- Stimulate foresight-feedback in meetings
- Install Kanban-based feedback along the IT-supported workflow without any “opt-out” possibility
- Implement “traffic-lights” in regular reports
- Spread simplified “living” Gantt charts
- Have managers report on Key Performance Indicators (KPIs) in short intervals
- Work with results of filled-in checklists
- Manage by means of defined intermediate objectives (e.g.: in the form of “sprints” (scrum)) and measure the results
- Use peer-reviews of results and mutual definition of the next steps

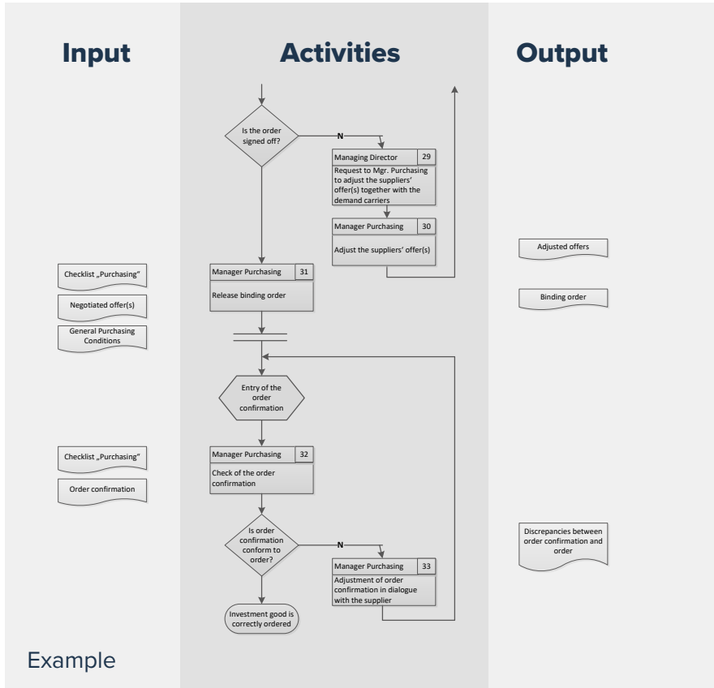
Implement a culture where all available resources are immediately activated to solve appearing problems

Hold project reviews to activate the learning circle

Make sure that all activities lead to productive results taken up in the process. Define the links of the specific process to other processes.

g. Responsibilities and Documents

- Carefully segregate the specific process and interfaces to other processes.
- Document the process in a graphic way.
- Define each value-creating activity needed in the process.
- Define clear responsibilities for each of these activities.
- Define “specification documents” such as checklists, standards, results from previous steps or from other processes etc.
- Define output documents for each process step (“record documents”).
- Carve out needed decisions.
- Make clear who should be informed about what.



Make sure that defined processes are really “implemented” in your organization.

h. Implementation

- Define “**Process Owners**” who are responsible for keeping “their” processes up to date.
- Edit your processes in suitable workflow software; **processes should become executable directly via the IT-supported workflow** and the information flow will be channeled as defined.
- Prevent the “actual” interaction from differing from the defined processes while the processes “sleep” in a drawer. Improvement potential will continuously be realized because shortcomings directly hurt.
- Make sure that the resources along the process are well sized and flexible enough **to lead** simultaneous or overlapping **parallel projects through the process** (see also: “Right-sizing”).

Questions for Reflection

1. **Where do you see blind performance, redundant performance, or lacking performance along the processes of your organization?**

2. **Which activities carried out in your organization do not contribute to your customers' expectations?**

3. **To which extent are the five functions of viable organizations, according to Stafford Beer, really implemented in the processes of your organization?**

4. **Which feedback mechanisms are installed in the processes of your organization? Do they effectively contribute to avoiding surprises?**

5. **Are the process owners clearly defined?**

6. **Are the responsible parties for all activities along the processes clearly defined? Are there any deviations between the documented processes and the "implemented" practice in your organization? Why?**

Summary of Section

- Holistically designed processes can be kept stable and agile by real-time feedback mechanisms.
- The performance can be considerably improved by well-aligned dynamic-complex interactions of the operative functions along the business process within the market conditions.
- Think and design processes in the stress-field of expectations and possibilities at the interfaces.
- Avoid “waste” by a thorough alignment at the interfaces, thinking and designing processes starting from the customer expectations.
- Install all five core functions of living systems (according to Stafford Beer) in the processes. Ideally, coordination is effected by direct interaction between the operative functions; only sometimes, coordinators can be installed to optimize the work from “the big picture” perspective.
- Pro-actively defined (stabilizing) negative feedback mechanisms help to avoid negative surprises.
- Feedback mechanisms, firmly installed in the processes, can help to avoid negative surprises.
- In practice, a mix of feedback options is recommendable. They do not only reduce costly mistakes, but also foster learning effects.
- Make sure that all activities lead to productive results taken up in the process. Define the links of the specific process to other processes.
- Make sure that defined processes are really “implemented” in your organization.

Relevant Sources for Further Reading

- **Argyris, Chris; Schön, Donald A.:** Die lernende Organisation – Grundlagen, Methode, Praxis, Klett-Cotta Verlag, Stuttgart 2006, 978-3-608-91890-8.
- **Becker, Jörg; Kugeler, Martin; Rosemann, Michael:** Prozessmanagement – Ein Leitfaden zur prozessorientierten Organisationsgestaltung, Springer Gabler, Berlin Heidelberg 2012, 978-3-642-33843-4.
- **Gaida, Ingo; Hirzel, Matthias, Kühn, Frank (Hrsg.):** Prozessmanagement in der Praxis – Wertschöpfungsketten planen, optimieren und erfolgreich steuern, Gabler Verlag, Wiesbaden 2008, 978-3-8349-0275-7.
- **Gleick, James:** Die Information. Geschichte, Theorie, Flut, Redline Verlag München 2011, 978-3-868-81312-8.
- **Nagel, Kurt:** Wertschöpfung, Instrumente, Analysen und Methoden zur Prozessoptimierung, Holzmann Medien, Bad Wörishofen 2014, 978-3-778-30945-2.
- **REFA (Hrsg):** Industrial Engineering – Standardmethoden zur Produktivitätssteigerung und Prozessoptimierung, aus der Fachbuchreihe Unternehmensentwicklung, Carl Hanser Verlag, München 2016, 978-344-643062 4.
- **Schmidt, Evelin:** Unternehmensführung und -organisation. Betriebliche Abläufe erfolgreich gestalten, Holzmann Medien, Bad Wörishofen 2014, 978-3-778-30939-1.
- **Shannon, Claude E.; Weaver, Warren:** The Mathematical Theory of Communication, University of Illinois Press, Urbana and Chicago 1963, 49-11922.

7

Introduction
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Cybernetics

How to right-size resources along the business process

The Consumer Goods FORUM

End-to-End Value Chain

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Learning Objectives
Session VII

In this section...

- You will learn how to right-size the overhead of organizations without suffering from shortcomings afterwards

- You will also learn about the general options for efficient and sustainable direct operations

- You will be introduced to a model for effectively down-sizing staff without losing flexibility and “air to breath”

Index VII

Carefully monitor the development of your overhead while sizing the direct staff according to the expected business volume.

Overhead and Direct Force

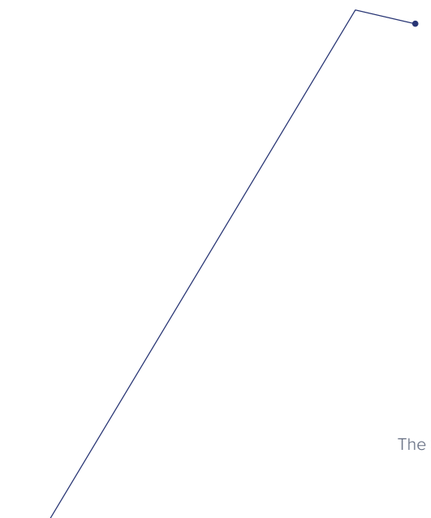
Always monitor the overhead development

- More complex businesses in a world increasingly shaped by “VUCA require more coordination.
- But: Overhead naturally tends to grow as administrative people usually create administrative work for each other.
- Cut all activities which do not contribute to the fulfilment of customer requirements (see: Session IV: Process design), but keep some skills at the borders of your core business to enable the organization to adapt and further develop.

Make sure that direct productive workforce is well-sourced

- Identify the basic quantitative demand for direct workforce.
- Keep the staff flexible by looking for a broad skill profile of the people.
- Add temporary workers who provide flexible capacity at a calculable cost.

Cyclically cut the overhead like a hair-dresser!



Clearly decide whether to avoid, outsource or scale up activities which currently disturb the workflow and are not profitable.

General Options

Avoid by Specializing

- Be creative in order to avoid activities which disturb the core workflow by re-designing the portfolio of your own market services or the depth/breadth of the services – even if you reduce contribution margin.

Keep by Outsourcing

- Think about outsourcing activities which are only occasionally necessary and which disturb the core in-house workflow.
- Think about “in-plant” factories of specialists for activities which require highly specific resources (e.g.: for print color processing in the packaging industry or for tooling in a mechanical engineering company)
- Think about co-operation with competitors (e.g. for steel hardening) instead of currently keeping own capacity available.

Scaling up

- Draw up a business plan to develop special activities originating from your own business process, and offer them to the market to scale the volume and spread the overhead cost.
- Standardize and automate repetitive activities to increase efficiency.

The productivity of your direct staff depends on the quality of the process flow and the effective planning and preparation of the activities.

Right-Sizing Human Capacity

How to right-size required direct staff

- Measure the workload of each direct function (by applying REFA methodology)
- Try to optimize not only the work method, the tools and auxiliary materials in each function, but also the overall workflow and the interfaces to other functions and “labor systems”, a REFA term.
- Standardize and automate repetitive activities.
- Eliminate bottlenecks in some areas and unused personnel capacity in other areas by adjusting the personnel capacity according to the expected workload along the process flow. Often it is not a reduction which is effective, but a re-allocation.
- Make sure that the resources along the process are well sized and flexible enough **to lead** simultaneous or overlapping **parallel projects through the process**. (see also Learning Unit VI: “Process design”)
- If a personnel reduction is necessary and unavoidable, best follow these three steps:

1. First make offers to people willing to leave voluntarily
2. Secondly, make offers to people close to retirement
3. Then start a selection according to social criteria

Ensure that resources are sized in a way that it allows parallel projects to easily run through the process; if it is unavoidable, reduce personnel in a social way.

Questions for Reflection

1. **Is the overhead in your organization really well dimensioned? What would be missing for your customers or for you if you were to reduce the overhead?**
2. **Does your direct workforce have sufficient capacity?**
3. **Where can you find capacity and competence bottlenecks along the business process of your organization?**

Summary of Section

- **Carefully monitor the development of your overhead** while sizing the direct staff according to the expected business volume.
- Clearly **decide whether to avoid, outsource or scale** up activities which currently disturb the workflow and are not profitable.
- The productivity of your direct staff depends **on the quality of the process flow and the effective planning of the activities**.
- Ensure that resources are sized in a way that **allows parallel projects to easily run through the process**.
- **If it is unavoidable, reduce personnel in a social way**. That usually also saves money.

Relevant Sources for Further Reading

- **Doppler, Klaus; Lauterburg, Christoph:** Change Management – Den Unternehmenswandel gestalten, Campus Verlag, Frankfurt am Main 2014, 978-3-593-50047-8.
- **Faulhaber, Peter; Grabow, Hans-Joachim:** Turnaround-Management in der Praxis – Umbruchphasen nutzen, neue Stärken entwickeln, Campus Verlag, Frankfurt/New York 2009, 978-3-593-39001-7.
- **Leoprechting, von (Hrsg.):** Unternehmenssanierung – Praxishandbuch für Unternehmer und Berater, Verlag Neue Wirtschaftsbriefe, Herne 2010, 978-3-482-57712-3.
- **Lippold, Dirk:** Aspekte und Dimensionen der Personalfreisetzung, Springer Gabler, Wiesbaden 2017, 978-3-658-16493-5.
- **Maier, Philipp J.:** Restrukturierungen im Arbeitsrecht, Manz Verlag, Wien, 978-3-214-01925-9.
- **Vollmer, Günter R.:** Personalmanagement, Teil 2: Personal führe und entwickeln, Holzmann Medien, Bad Wörishofen 2018, 978-3-778-31353-4.