

Team-based Control in Process Organisations

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Abstract

Teams are increasingly important in process oriented organisations. Ideally, self-directed work teams (SDWT) in production are responsible for both planning and execution but even more for improving and developing core production and business processes. However, establishing a team-based organisation requires substantial changes regarding the entire control and information systems. Based on a tentative design model the transition towards a team-based organisation is analysed from a socio-technical perspective in a current research project. The preliminary findings from the case studies show that SDWT require specific team-based management control characterised by team visions, empowerment, co-operative work forms, balanced control, team integrated improvements and learning, team competence and workshop oriented information systems. A focus is on how to design and implement team-based Balanced Scorecard, balancing self-directed work teams controlling their own performance (horizontal control) within the framework of the company-wide co-ordination (vertical control).

Keywords

Process Management, Team-based organisation, Improvements, Balanced Scorecard, Control

1 Introduction

In general, business competition asks for continuous renewal of work organisation and control systems. By the end of the 1990's, the concepts of Process Management, Learning organisation and Balanced Scorecard have had significantly strong impact in Sweden (Ernst & Young, 1998). The trend towards process orientation has made different kinds of teams increasingly important. Forming of team-based organisation has become a key strategy to improve productivity, flexibility and learning through motivated employees. However, process oriented and team-based organisations require adequate information and control systems. The objective of the current project is to define team-based structures and management control instruments supporting self-directed production teams to manage both planning and co-ordinating daily work as well as contributing to improvement of core business processes. A specific focus is on how to design and implement team-oriented Balanced Scorecards.

2 Theoretical framework and methods

One obvious point of departure is the theories and experiences of Process Management, discussing how to organise, control and improve customer-oriented processes in different situations (e.g. Melan, 1992). Process Management theory calls for goal oriented teams that ideally consist of autonomous, flexible and multi-skilled personnel co-ordinating themselves (Rentzhog, 1996). Important are also the concepts of Learning organisation (Senge, 1990; Argyris and Schön, 1996) and Balanced Scorecard (Kaplan and Norton, 1996; Olve et al,

1997). Another frame of reference is the research and practices on how to design and implement team-based organisations (e.g. Mohrman et al, 1995) that go beyond the traditional focus on single teams (e.g. Cohen and Bailey, 1997). Our ambition is thus to elaborate the discussion on how to form Control in the Age of Empowerment (Simons, 1995).

However, our overall theoretical perspective is mainly socio-technical (Emery and Trist, 1969; Sandberg, 1982; Pasmore, 1988). The purpose is thus to define structural and social control systems appropriate to self-directed production groups in process organisations, in order to obtain both good working conditions and high flexibility and productivity. This implies a decentralised perspective on the referred concepts. For instance, the team-oriented approach of Balanced Scorecard as implemented in Swedish ABB is highly relevant to the project (Ewing and Lundahl, 1996). Furthermore, when analysing the need for information systems, the concepts of Human Centred Systems and Anthropocentric Systems are important (Brödner, 1990; Wobbe, 1991). Our perspective is also that improvements and development work to a larger extent should be an integrated task performed by operative teams due to their concrete experiences of the processes (Docherty, 1996; Hart et al, 1996).

The combined analysis and design model used in the project is displayed in Figure 1. The core of the model is the instrument of management control (organisation, structure, leadership, competence and IT systems) which, according to the theories, may support the transition to a team-based process oriented organisation. These control methods are highly related to the visions and images of the desired organisation. The control methods act on two levels, the team level and the organisational level, which are intimate dependents. For example, empowerment (increased authority and capacity) of a team requires a transition into team-based wages and a coaching leadership. The actual design choices form the work process, which is more or less team-based and process oriented. This will finally affect the performance. The marked assessment loop gives a basis for an iterative and learning process.

Our interpretation, and criteria, of a self-directed work team is a group of people with complementary skills that work together and have a common responsibility for both the goals set and for further development of the team capacity (e.g. Yeatts and Hyten, 1998). The contours of a team-based organisation are characterised mainly by two points (see e.g. Mohrman et al, 1995). First, a network of performing units tied to each other. The performance of a team has to be judged in the context of the entire business unit. Second, the domain of authority of each team is defined. Issues that go beyond the authority of a single team should be resolved by an informal forum or an integrating team. This means that authority can be separated from hierarchy, implying that the selection of team members could be based on skills and competence, irrespective of hierarchical rung.

2.1 Methods

The empirical basis of the project comprises mainly three main case studies and a survey concerning companies within the engineering industry characterised by process orientation and/or empowered work teams. The project started during late fall 1998 and the first phase will be concluded in December 1999. The results discussed here are based on the first assessment in one case study and the results from three additional reference case studies. The data presented are based on interviews with people on all levels, from top management to operative work teams, complemented with analysis of internal company documents.

The main case study concerns a telecom company producing radio base stations. The plant has about 2 000 employees. Automated and manual assembly and testing dominate the production. In order to increase flexibility, customer focus, quality and productivity, and to get motivated employees, the company recently (in 1999) carried out a reorganisation. One explicit strategy is to create a team-based and process oriented organisation. Balanced Scorecard has been introduced, characterised by scorecards and measurements on four levels that are vertically integrated.

The first reference study is a company with about 250 employees that develops and manufactures (mainly assembly) electro-technical components. In order to cut lead times and improve quality, the company has put a lot of effort into building self-directed work teams in production during the past ten years. Furthermore, the company has implemented Balanced Scorecard on production team level. The second reference study concerns a company with about 200 employees producing heat exchangers. This company has about the same organisational direction as the former. The third reference study is a company producing electro-technical components with about 260 employees. Self-directed teams were here established about ten years ago, and these have been relatively stable since then, due to a stable market situation.

3 Results and discussion

Since the project is in progress, we can only present some tentative results. We will concentrate the discussion on the following control areas: Visions and images of team organisation, Integrating team structures, Balanced Scorecard, Improvement structures and Competence strategies. We will also briefly mention the role of wage systems, information systems and leadership.

3.1 Visions and images of a team-based process organisation

Visions, images and strategies concerning the entire team-based organisation are crucial to guide the organisational development. However, such visions and images, are mostly lacking in the studied companies. The focus is more on the individual teams than on the network of teams. For instance, in the main study, different kinds of teams are being implemented all over the company on all levels, i.e. Management teams, Operative production teams, Support teams and Cross-functional improvement teams. But, comparing the two main characteristics of a team-based organisation, it is obvious that the roles and authorities of all these teams are obscure, and so is the relationship between them. The visions and strategies of the entire team-based organisation remain to be articulated.

The work teams in production are in the main focus in the studied companies. The ideas of how to build production teams and their role has mainly followed a model frequently applied in Sweden, at least during the past ten years (Bengtsson, 1998). The ambition is thus to build empowered teams that manage tasks which can be separated into four levels:

- Level 1. The primary task for the production teams is to conduct the direct and value-added work processes (such as manual assembly and testing).
- Level 2. The teams plan, co-ordinate, administrate and follow-up the direct work according to the targets set up (e.g. productivity, on-time delivery and quality) . This is the core of process ownership, which includes both the internal planning of work flow and work distribution, and the contacts and co-ordination with internal and external customers and suppliers.
- Level 3. The teams contribute actively to continuous improvements of the team-internal production processes, based on the fact that the teams possess and master the most genuine knowledge about their own process.
- Level 4. The teams are involved in the development of the entire business processes, through the creation of new process conditions. They participate in formulating visions, strategies and goals for processes exceeding the single team.

So far, some but very few teams in the studied companies actually perform tasks on all four levels. Most teams are located between level two and three.

3.2 Integrating team structure

To develop a team-based process organisation requires co-ordination by more or less interdependent and empowered teams working along the core process chain. It is essential to

meet differentiation by forming an integrated structure (Mintzberg, 1983), i.e. creating a kind of network. The basis for this is a process analysis, which can clarify the extent and character of the relationships and the need for co-ordination. The studied companies failing this basic analysis. On the other hand, the companies in fact possess some mechanisms and team links that are used for handling the integration need. Two approaches could be discerned. In the main study, it is primarily management teams that co-ordinate the production teams. On the contrary, the first reference study has chosen a decentralised approach. Dedicated roles, concerning production planning, supply, quality and engineering, are authorised to co-ordinate their work with corresponding roles within other production teams. Thus one important choice seems to be between hierarchically oriented co-ordination and boundary management as an integrated task in production teams (horizontal co-ordination). The latter seems most adequate for a well-developed team-based process organisation.

3.3 Team-based Balanced Scorecard

Setting directions and aligning goals, vertically and horizontally, are other central, and integrating, themes when designing a team-based process oriented organisation. It is necessary to find an effective balance between the horizontal control performed by self-directed and customer oriented work teams, and the company-wide need of co-ordinated development and performance. This balance is highly relevant to define when it comes to the concept of Balanced Scorecard (BSC). Our question is: how can BSC be implemented to support self-directed work teams?

Again, the case studies show two different strategies to implement BSC. This has also been discussed to some extent in literature (e.g. Ewing and Lundahl, 1996; Meyer, 1994). The first strategy is close to the original ideas formulated by Kaplan and Norton (1996). The purpose is to create an instrument that provides top management with better information and decision support to control both business and organisation. This approach is often reflected in a hierarchical scorecard structure. Strategies, measures and targets are formulated at the top and distributed down the organisational hierarchy. Reports on performance are aggregated upwards. The other strategy is characterised by process orientation and empowerment. The purpose is to provide a development tool for the local team. Each team develops its own scorecard, detached from other cards. This means that the teams formulate their own strategies, measures, targets and action plans, however, based on the common vision and long-term goals of the company.

The second, decentralised, strategy of implementing BSC is probably the most adequate in order to support a team-based and process oriented organisation (Bengtsson, 1998). The latter also shows a way for handling the desired balance between vertical and horizontal control. The clear recognition of team autonomy and authority and the broad participation that follows, creates a basis for motivation and local ownership for goals aligned and balanced against company goals. The process of developing the scorecards, and assessing the performance, also provide a basis for team-based learning and improvements.

3.4 Team-based improvements

One basic idea in Process Management is improvements. Supporting process improvements require both a methodology, an improvement structure and management support. One limitation of BSC, confirmed in the case studies, is that the scorecards are unit-based, irrespective of implementation strategy. The problems and the improvements that have to be solved, to a large extent exceed the authority of the single unit or team. In the main case the company has implemented a model for systematic improvements. Most teams in the plant, however, not yet all production teams, are regarded improvement teams, using a specified methodology to identify problems and change elements to formulate action plans based on the targets set up. Above this, more or less temporary "cross"-improvement teams are put up and

defined out of identified tasks, problems or causes. The leadership, and the manning, in the latter kind of teams is based on competence, not hierarchy, which is a specific feature of a team-based organisation.

Today, inspired by the principles of total quality management (Bergman and Klefsjö, 1995), most people agree on the benefits of involving all personnel in improvement work. One question, however, is if improvements should be organised as an integrated task of operative work teams, or handled by separate improvement teams (often called kaizen teams, TQM teams or task force teams), or both. The studies so far indicate that production teams in fact are getting an extended role when it comes to process improvements. But this requires certain effort and changes that mostly lacking in the case studies. Management must clearly recognise production teams as process owners, and establish a vision and culture that encourage learning. And furthermore, which seems to be more problematic, especially when it comes to improvement work done by production teams, management must identify and provide the time, areas, information and resources needed for reflection and development. To provide proper conditions is crucial if the improvement should concern more than minor changes and daily rationalisations.

3.5 Team-based competence strategies

The need for both deeper and broader competence is quite clear in a team-based process organisation. The need for specific strategies for developing competence and team roles is thus obvious. The case studies display two different competence strategies. One strategy, used in the main study and the third reference study, is to promote the training of multi-skilled workers, and in parallel, define specific posts responsible for different tasks, such as team co-ordination (team leader), quality, planning, supply etc. These posts are rotating, often on a weekly basis. The rationale behind this strategy is mainly to increase flexibility. In a rapidly changing environment like telecom, this could be of great value when the composition of both products and teams are changing almost every year. The other strategy, appearing in the first and second reference studies, promotes team members with different skill profiles that possess specialised posts that do not rotate. The rationale behind this strategy is that the variety in skills required in the production team is so vast that uniform competence among the team members is hardly possible. The outcome in terms of team work and process focus remains to be evaluated in the project.

Another notion is that a lot of training has been carried out in all companies, however mainly concerning technical skills. And more important, despite that some team-building has been part of the training, all studied companies fall short in defining the specific competence necessary for fostering a co-operative and team-based work style.

3.6 Some other control areas of importance

Besides the control methods described, there are a number of other conditions that have to be altered to support a team-based process organisation. The preliminary findings in our project indicate the following:

- There is a need to develop wage systems that foster skill development for both teams and individuals. Furthermore the wages should encourage process-oriented work, a co-operative work style, as well as stimulate reflection and learning.
- The decentralisation of responsibility to the workshop requires new forms of controlling and handling information. Visualisation is a key word (Greif, 1989), meaning that information should be easily accessible to everybody, but also that the organisation must allow and encourage local discussion and decisions based on common information. Thus there is a need to develop specific workshop-oriented information systems that may support the planning of daily work processes as well as stimulate and enhance internal and external co-operation. Decentralised process planning systems must not least allow

different teams in the process chain to co-ordinate their actions avoiding sub-optimisation. These systems must also provide tools for evaluation and reflection in order to develop the processes.

- A strong support from top management is of vital importance since the changes must concern the entire organisation and management control system.

4 Concluding remarks

In this article we have tried to define the specific features of team-based control supporting design and development of self-directed work teams in process organisations. It is too early to evaluate the effects and performance of the evolving team-based organisation in the case studies. This is a task in the ongoing research project. However, the preliminary findings according to our analysis model indicate that several changes in the management control systems and the organisation must be made. We have pointed out some of the specific team-based control methods. On the other hand, there is no best way. Indeed, there are a number of choices and alternatives that are influenced by the overall perspective of how to manage a team-based process oriented organisation. The study indicates that these alternatives are mainly choices specifying the balance between vertical and horizontal control.

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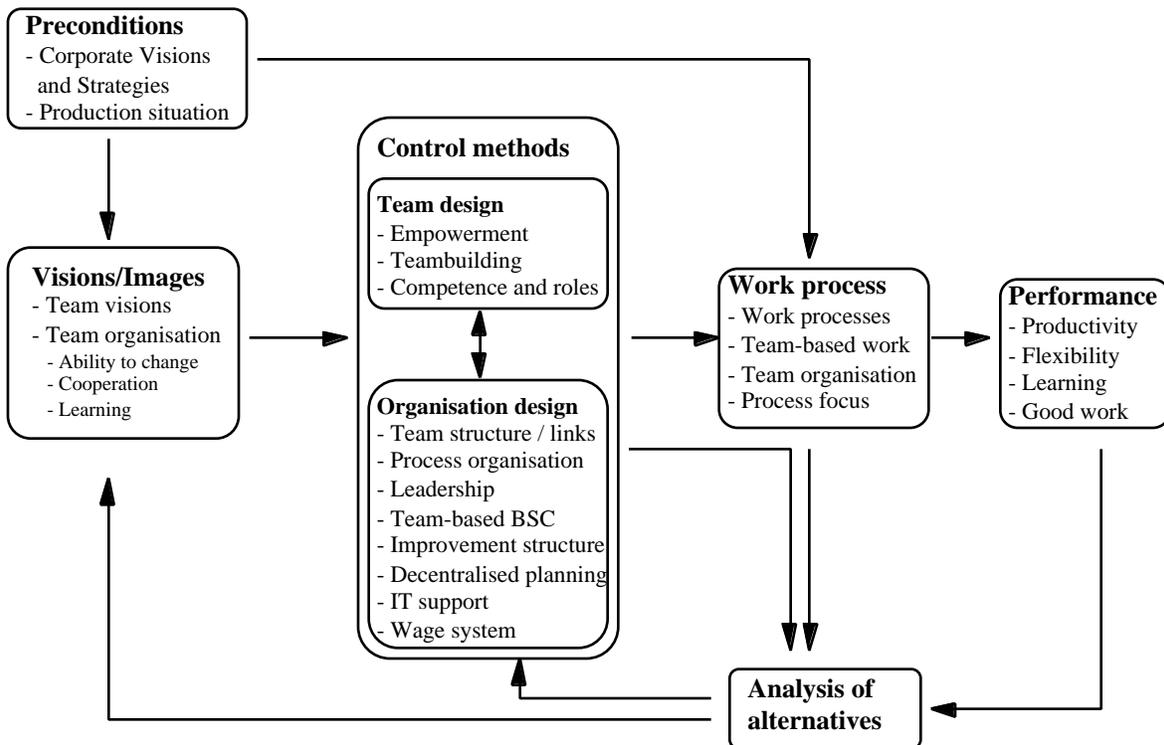


Figure 1 Analysis model used in project