Summary

This study deals with the issue of work teams and examines the role of the management structure, developmental processes in teams, and their business performance and quality of working life. Nowadays, as far as teamwork is concerned, the focus is more than ever on the “hard outputs” of the organization, its units and its individuals. However, teams do not always meet the expectations.

Part I Introduction

Chapter 1 outlines the background of the study and its research objectives. Different types of teams are distinguished in the literature and several theoretical traditions deal with the concept of teamwork. This study focuses specifically on work teams, either production teams or service teams. The contemporary concept of work teams is embedded in both sociotechnical systems theory (STS) and lean production (LP). The suitability of the two traditions is often discussed, especially within automotive settings. There is a trend in nowadays business, especially in the automotive industry, of benchmarking and best practices, and many organizations seem to return to the “old-fashioned” production line with “lean-practices”. LP might have won the battle, but I argue that the debate has been too narrowly focused on design and has neglected the importance of the developmental processes that eventually provide successful work teams. Moreover, little empirical work is available on such processes and their effects over time. To provide better insight, this study was built around the concept of an input-process-output model for team development, namely (1) responsibilities, the inputs in terms of the management structure; (2) responsiveness, the developmental processes of teams; and (3) the results, i.e. business performance and the quality of working life.

This model, with its three accompanying research questions, was examined at Volvo Trucks Umeå in the North of Sweden. This plant produces cabs in five production departments, from steel plate to completely fitted cabs. A majority of the personnel (2200 employees in total) works in one of these production departments, and the rest (about a third of the personnel) works in one of the supporting departments, ranging from finance to material handling departments.

The three research questions are: (1) how can the team developmental processes be described; (2) what are their effects on business performance as well as on
quality of working life; and (3) what are the management structure’s inputs that generate team responsiveness?

Part II Responsiveness

Chapter 2 examines the central concept of team responsiveness, both theoretically and empirically. Responsiveness is defined as the group process of self-management in terms of actions and behavior in relation to given responsibilities (tasks, goals and challenges, desired outcomes). It forms the heart of the model and therefore is defined and studied first. Next, the concepts of responsibilities and results were related to it.

I distinguish four models as regards developmental processes of teams:

1. “Consultancy phase models”, referring to phase models from popular American consultants, prescribe a number of sequential phases for teams to develop.

2. “Sociotechnical phase models”, based on the four principles of self-organization, also prescribe a number of sequential phases in which teams are expected to develop.

3. “Recurring phase models” are, contrarily, descriptive models of transition and action phases repeating through time.

4. “Process models” describe various processes of teams that are parallel and that each contribute to performance.

There is a lot of criticism towards phase theories, the most important of which is that (1) there is little empirical support by studies of real-life work teams, (2) that teams do factually not develop in sequential phases, and (3) that the outputs of these phases are not clearly defined. Process models withstand the second and third critique and therefore I use their characteristics in the model that I develop in this study.

Despite the criticism, important process elements were found across all models. These elements were combined into twelve key-aspects of developmental processes of teams.

In three measurements between 2001 and 2003, data were collected at Volvo Umeå with a survey among employees (more than 1500 per year) of more than 150 teams. Out of the twelve key-aspects, exploratory factor analyses resulted in three dimensions of team responsiveness. These dimensions turned out to be congruent over the three years of measurement, and also with the data from two other organizations.

- The joint management dimension refers to the extent to which the team manages internal processes and common accountability.
- The dimension of job management stands for the extent to which the team manages the broadening and deepening of its function.
• The dimension of boundary management regards the extent to which the team explores and develops its physical and virtual boundaries, with the first referring to customers and suppliers and the latter to initiating improvement activities and performing advanced managerial tasks.

The Volvo teams appeared to develop backwards and forwards on all three dimensions simultaneously and in no particular order. Some patterns could only be found on the department or plant level, although with very little “growth” and with a certain dominance for job management. These patterns could not be found on the level of the individual team, which shows a very diverse picture, even in teams in the same production line or under the same team manager.

Chapter 3 is another theoretical chapter and theorizes on the results of teams in relation to the three dimensions of team responsiveness. A review of the literature showed the limited amount of empirical work examining the performance of work teams. At most, these studies relate teamwork to workers’ perceptions and self-rated performance of managers or workers. Only a few studies apply objective business performance measures, such as productivity and product quality.

I distinguished two main types of team results: business performance (BP) and quality of working life (QWL). The latter is divided into behavioral and attitudinal outcomes, and I defined a number of measures for each. The general assumption was that team responsiveness positively affects team results, and in line with this I formulated six hypotheses regarding the relationship of each of the responsiveness dimensions with both BP and QWL.

The first three hypotheses concern the direct, or cross-sectional, effect of responsiveness on results. In the literature, joint management is considered a basic team process, and therefore it was proposed that joint management positively affects both BP and QWL (Hypothesis 1). Next, it was proposed that job management has a positive main effect on QWL (Hypothesis 2), whereas boundary management was expected to have a positive main effect on BP (Hypothesis 3).

The other three hypotheses concern the longitudinal relationship between responsiveness and results (Hypotheses 4, 5 and 6) and were defined similarly as hypotheses 1-3. A last hypothesis predicted that the explanatory power of the longitudinal models is not improved by adding cross-sectional effects (Hypothesis 7).

The end of Chapter 3 discusses the methodological aspects of my study. In order to test the first three hypotheses, a cross-sectional hierarchical regression model was applied to describe the relationship between responsiveness and results. For the BP measures, joint, boundary and then job management were added to the model (see Chapter 4); whereas for the QWL measures, joint, job and then boundary management were added to the model (see Chapter 5). Further on, longitudinal hierarchical regression models were used to test hypotheses 4-6. These models are, in essence, comparable to the cross-sectional models, although
only the responsiveness of earlier years is used to predict results in later years. Questionnaire data on team responsiveness were related to objective data on product quality, cost-index and utilization (BP), and the number of sick-occasions and amount of long-term absenteeism (QWL), as well as related to survey data on QWL for satisfaction, involvement and burnout.

Part III Results

Chapter 4 presents the outcomes of testing the hypothesis concerning BP results. All BP measures were positively affected by one or more of the responsiveness dimensions. The cross-sectional analyses showed a strong significant direct effect of boundary management on product quality; in addition, job management reported a significant positive effect on product quality, as well as a significant reducing effect on costs. Joint management reported a significant positive effect on utilization. Hypotheses 1 and 3 were not supported for all used BP measures. Instead, the effects of team responsiveness on BP results were much more nuanced. The outcomes of the longitudinal analyses for BP did not support hypotheses 4 and 6 either. Not enough data were available to perform a longitudinal analysis for costs. The longitudinal model for utilization explained more variance than the cross-sectional model. In case of the two longitudinal models, one model showed a stronger longitudinal effect for product quality, whereas the other model showed a stronger cross-sectional effect. As a result hypothesis 7 could also not be supported by the BP data.

Chapter 5 presents the outcomes of testing the hypothesis concerning QWL results. All QWL measures were positively affected by one or more of the responsiveness dimensions. For the cross-sectional analyses of the behavioral outcomes, the data showed a strong positive effect of boundary management on the number of sick-occasions. Joint management reported a positive effect on long-term absenteeism. For the cross-sectional analyses of the attitudinal outcomes, the data showed strong significant effects of boundary management on satisfaction and involvement. Job and joint management also showed significant positive effects on satisfaction and involvement. Burnout was not strongly affected by team responsiveness, whereas job management and boundary management did affect burnout in a positive direction. An important main effect was found for the difference between teams in production and supporting departments, with production teams having significantly lower QWL. In total, hypotheses 1, 2 and 5 were supported by the data on QWL, whereas hypotheses 4 was not. Again, the relationships between team responsiveness and QWL results were more nuanced. Hypothesis 7 was clearly supported by the data: the cross-sectional effects add little explanatory power to the longitudinal models for QWL.

Part IV Responsibilities

Chapter 6 is another theoretical chapter, relating team responsibilities (explorative) to team responsiveness. The management of teams plays an important role in the literature on semi-autonomous teams. However, most attention is paid to the
internal management of teams, while there is little attention for the managing structure external to teams. A literature study revealed that there is some knowledge concerning the division of regulation tasks between the team and the team manager. I developed a model, based on the available literature, that considers the complexity and location of regulation tasks throughout the organization. Instead of two levels for location (team and team manager), I took into account the location of authority and expertise for the regulation tasks on organizational levels. The complexity of regulation tasks is divided into the frequency and predictability with which regulation tasks need to be performed, and the dependency on numbers of other teams that are involved with the task performance. Three hypotheses were formulated concerning the relationships between these characteristics of team responsibility and the three dimensions of team responsiveness. It was proposed that with lower complexity of regulation tasks, the location of authority and expertise is also lower in the organization (hypothesis 8). Next, it was proposed that locating authority and expertise for a specific regulation task lower in the organization, called proximity, affects team responsiveness positively (hypothesis 9a). Generally, it is proposed that there is a positive relationship between the number of regulation tasks that is delegated to the team and the team’s responsiveness (hypothesis 9b).

The end of Chapter 6 discusses the methodological aspects of my study, which consists of a number of steps. This part of the study is only carried out for teams in the production departments. First the crucial regulation tasks were determined, for which team managers were interviewed in 2001. Following, a survey among all team managers was used to collect data on the frequency, predictability, dependency, authority and expertise of each regulation task and for each team in 2002 and 2003. A correlation model and two regression models were then used to test the three hypotheses.

Chapter 7 presents the results of testing hypotheses 8, 9a and 9b. Based on interviews with 7 team managers from various production departments, 12 crucial regulation tasks were determined. A survey (with response by more than 30 managers, responsible for about 110 production teams) provided data on the complexity and location of these tasks in 2002 and 2003. The data did not support hypothesis 8, since there was no correlation between task complexity and task location. The data also did not support hypothesis 9a, whereas for some tasks locations lower in the organization indeed supported team responsiveness, and other tasks supported team responsiveness only located higher in the organization. Hypothesis 9b is supported by the data: larger numbers of regulation tasks located at the team predicted higher team responsiveness.

Part V General conclusions

Chapter 8 provides a further discussion of the results, examines the strengths and weaknesses of the study, proposes suggestions for further research and also discusses practical applications of the model. The general conclusions are that team responsiveness predicts positive team results in terms of both BP and QWL.
and that cross-sectional effects are less important in longitudinal models, at least for QWL. Finally, teams experience higher responsiveness with a higher number of regulation tasks, although some tasks provide positive results when located higher in the organization.

The empirical and longitudinal character of this study, the use of objective team results and the testing of a number of hypotheses endorse my contribution to the theory on semi-autonomous work teams. The rejection of several hypotheses shows that many relationships are more nuanced than is often assumed in the literature. Limitations of the study include the data sample, which was obtained from only one organization, with predominantly production personnel. Future research could be conducted in other settings, such as the service industry, to validate the three responsiveness dimensions and the concept of team responsibilities. Finally, the overall model (see Figure) presented for practical applications proposes to start with the determination of team results. Once you have defined these results, the outcomes of this study provide insight as to which responsiveness dimension(s) need(s) to be focused on. Hence, one can determine which responsibilities need to be located on team level to increase the team’s responsiveness on this dimension(s).

Instead of developing teams by following a number of phases, team development needs to be regarded as a result-oriented approach; which supports teams and managers in making work teams more successful, while focusing on inputs, processes as well as outputs.
Joint management

Boundary management

Proximity
of expertise and authority
(specific regulation tasks)

Expertise
(number of regulation tasks)

Authority
(number of regulation tasks)

Consider the effect of specific regulation
Both positive and negative effects in longitudinal model

Results
BP: Product quality
BP: Cost index
BP: Utilization
QWL: Sick occasions
QWL: Burnout
QWL: Involvement
QWL: Satisfaction

Responsiveness
Joint management

Responsibilities