The Influence of Culture and Structure on Autonomous Teams in Established Companies

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Abstract. *Motivation:* Many companies aim to provide more autonomy to their development teams. While some teams report on successes, others still struggle with the agile adaption, e.g. due to the organisational environment. *Objective:* Our objective was to explore how organisational culture and structure influence team autonomy in bureaucratic companies. *Method and Results:* 30 qualitative interviews from different business divisions at a conglomerate revealed that organisational factors related to hierarchy, specialist culture and functionally departmentalised structure decreased agile team features and consequently resulted in a reduced speed of decision-making. We suggest the Agile Matching Theory which implies that prevalent organisational factors and desired agile team features need to match to allow team autonomy to occur. *Conclusion:* We therefore encourage managers to further work on a learning organisation and a supportive structure within which autonomous teams can grow.

Keywords: Autonomous teams · Challenges · Bureaucracy

1 Introduction

Many companies started the agile transformation by implementing autonomous teams. Team autonomy implies to make team decisions regarding task allocation and execution as well as solve problems independently [12]. While narratives postulate great success stories on agile teams, empirical evidence often reveals how difficult it is for teams to work in an agile way [8, 9, 14].

Specifically teams in bureaucratic companies appear to face obstacles in working autonomously [1, 17]. A mismatch between prevalent organisational factors and agile team behaviour was identified to serve as a major challenge for autonomous teams [9, 15, 21]. This paper specifically focuses on implementing autonomous teams in bureaucratic organisations. This type of organisation contradicts the agile way of working [17]. It is used to rely on a hierarchical culture

as opposed to autonomous teams [14], on rigid planning as opposed to iterative team learning [1] and on operating in a functional departmentalised structure as opposed to cross-functional teams [17]. Thus, we can assume that teams that aim at effectiveness struggle with working in an agile way if the necessary pre-conditions on the organisational level aim at supporting efficiency. Yet, scarce research examines the link between the organisational context and agile team behaviour [2, 9, 21]. Teams that are implemented in rather bureaucratic environments tend to struggle with working in an agile manner due to hindrances on the organisational level without the legitimate power to change their environment. To be able to support agile teams properly, management needs to know how organisational factors influence team behaviour. This study focuses on the influence of a bureaucratic environment on team autonomy. Our research question is therefore: *How do organisational culture and structure influence autonomy of teams?*

We have conducted semi-structured interviews with 30 individuals from 11 different Scrum teams at the Robert Bosch GmbH. Interviewees elaborated on successes but also on challenges. This study reports on the challenges with a specific focus on how the predominantly bureaucratic environment on the organisational level influences the agile way of working on the team level. Data revealed that a strong hierarchy, a specialist culture and functional departmentalised structures decreased agile team features such as psychological safety or team learning and consequently team autonomy. We suggest the Agile Matching Theory which implies a mandatory fit between prevalent organisational context and desired agile team features to enable teams to act autonomously.

2 Background

Agile teams are described to work cross-functionally within and across boundaries [3] with a high level of autonomy based on a common goal [2, 22]. This paper considers the agile team features monitoring [16], psychological safety [5], team potency [18], shared mental models [13], team learning [5] and team orientation [16] to be predecessors of team autonomy.

Autonomy can be clustered into individual autonomy which provides a team member a high level of freedom regarding fulfilling a task [11], team autonomy which refers to shared decision making within teams and external autonomy related to interference by management [10]. External autonomy may not only refer to hierarchical culture [8, 14, 17], but also to a specialist culture [8, 15] or to a functionally departmentalised structure including rigid processes [1, 4, 17] or geographical distribution [22].

Hoda and Noble [9] explain agile adaption by a link between organisational context and agile teams and call for further research on the dependency among the two levels of analysis. Yet, most research does not focus on exploring the relationship between organisational factors and its influence on team autonomy specifically. Furthermore, researchers tend to examine agile team challenges by mainly interviewing managerial positions [4, 9].

We examined the influence of external autonomy on team autonomy by predominantly interviewing team members. Our results suggest the *Agile Matching Theory* which implies that team autonomy depends on the match between the prevalent external autonomy on the organisational level and desired agile team features. If the organisational context does not match with the required agile features on the team level, most likely team autonomy will be low (Table 1).

Table 1. Organisational factors and agile team factors

Bureaucratic organisation	Agile team factors
(1) Hierarchical culture [8, 14, 17]	Monitoring themselves [16] Psychological safety [5] Team potency [18]
(2) Specialist culture [8, 15]	Shared mental models [13] Team learning [5] Team orientation [16]
(3) Functionally departmentalised [23]	Shared mental models [13] Team learning [5] Team orientation [16]
Reality: limited external autonomy	Desire: high team autonomy

Since contextual factors are mostly set by management [9, 15] our results help managers to be aware of the boundary conditions teams should receive to be able to act autonomously.

3 Study Design

3.1 Research Context

We draw our sample from 5 different business divisions at the Robert Bosch GmbH. Founded in 1886 it became excellent in the bureaucratic way of working. Starting its agile journey in 2012 it is now in the middle of its transformation efforts. At present, some 410,000 employees are active in four different business areas each embracing multiple divisions with slightly different sub-cultures. While several divisions are already in the forefront of its agile transformation, others have started its journey just recently.

The sample contains 30 individuals from 11 different Scrum teams operating at 5 different business divisions, mainly active in the automotive industry. The sample contained 5 software and 6 non-software development project teams. We interviewed 6 Scrum Masters (SM), 4 Product Owners (PO) and 20 team members (TM). The age of projects ranged from 2 months up to 3 years. Team size ranged from 5 up to 12 members, often including individuals from different nationalities.

3.2 Data Collection and Analysis Procedure

We chose Grounded Theory because it allows for an exploratory approach in rather new scientific fields [7]. Additionally, we observed teams in their daily activities to understand the context of interviewees better. To answer the research question, we conducted qualitative semi-structured interviews of 45 min on average. We asked participants to elaborate on challenges concerning their current Scrum project. The questionnaire can be found online [19].¹ We audio-taped and transcribed each interview. We openly coded transcripts sentence-by-sentence and aligned codes that appeared to be alike to one concept and constantly reflected those concepts critically [7].

The organisational level contained the three categories high power distance, expert culture and functionally departmentalised structure which each consisted of a bundle of concepts. For example, the category *high power distance* involved the concepts *several hierarchical layers included in decision making*, *positional legitimacy* and *management overrules*. Those categories influenced six agile features on team level and decreased team autonomy.

Through constant comparison of various interviews we identified a mismatch between organisational factors and the core features of agile teams as major challenge in our research context. Based on three propositions we suggest *The Agile Matching Theory* which implies that a low team autonomy results from a misfit between prevalent organisational factors and desired agile team features.

Limitations: Since we only draw data from one company our results are limited to our research context and cannot be generalised. Thus, future testing of the propositions should draw data from different conglomerates. Furthermore, our findings are based on qualitative interviews and therefore, need to be confirmed by quantitative testing. More details on the recruitment of participants, the organisational context, validity procedure and limitations of the research are available elsewhere [20].

4 Findings

The findings describe challenges regarding organisational culture and structure and how each factor influenced autonomous teams.

Interviewees often mentioned that **organisational culture** linked to high power distance and specialised knowledge workers reduced external autonomy. **High power distance** was exemplified by several hierarchical layers which all needed to be included in decision-making processes even though some were said to not even add value, by management or Product Owner that felt to have the right to overrule team decisions or told the team what they had to do and by status legitimacy. As a result, sometimes team members reported to be frustrated, demotivated or to fear that management or Product Owner would overrule their

¹ The collected data are drawn from a broader research project on the Scrum Master role [20].

decisions anyways. Thus, low external autonomy resulted in a low level of self-monitoring, of psychological safety and of team potency. Which led to a lack of willingness and capability to make team decisions.

If think, maybe if the Product Owner would not tell me everyday what I have to do, maybe I would be more intrinsically motivated to do my tasks, maybe I would chose my tasks voluntarily. But like this. . . I just deliver a status report to my Product Owner every day! (TM)

But you don't necessarily receive decisions, you don't get information if you go there and say: hey, I am a team member of the agile team. If you go there as a common team member, you only get the information if you are in the proper hierarchical layer, only if you talk to a person at the same hierarchical level. That are the power plays. (TM)

We therefore suggest the following proposition:

(P1) High power distance leads to a low level of team autonomy (1a). This relationship is moderated by monitoring (1b), psychological safety (1c) and team potency (1d).

A **specialist culture** was described by territories and by a lack in readiness to experiment. Some managers were said to prefer teams to follow a strict plan that was thoroughly thought through in advance and were reluctant to apply an inspect and adapt approach.

Territory refers to an expert who enjoys a sovereign right to keep specific knowledge and even the respective task all to him- or herself without sharing it. Therefore, other team members did not feel responsible or allowed to learn the specific knowledge. Interviewees also referred to a lack of willingness to learn things unrelated to the personal field of expertise or to a lack of discipline to not dig too deep into an expert topic.

Well, there are clearly defined areas in this team. Territories which are well hidden. You need some time to recognize them. [...] certain people are in certain territories which is simply inflexible. You realize this when there is one topic dropped, it is not considered. And than there are the people waiting and have nothing to do, even though there actually needs quite a lot to be done. Because there are the territories that you are not allowed to enter and than one does not work together. (SM)

While some team members appeared to own high individual autonomy regarding tasks, they had a low team autonomy. Thus, a specialist culture resulted in weak team learning, shared mental models and team orientation and consequently lead to low team autonomy. We therefore suggest the following proposition:

(P2) A specialist culture leads to a low level of team autonomy (2a). This relationship is moderated by shared mental models (2b), team learning (2c) and team orientation (2d).

Some interviewees described the **organisational structure** as functionally departmentalised. It involved the categories departmental silos, department-oriented goals, geographical distribution and rigid processes.

Teams reported that they had to rely on external know-how due to processes which slowed them down. Some teams that depended on external support had difficulties in receiving a timely response or even at all.

If a team is not both at the same time - a self-organized team and the company itself - you always need interfaces, stuff from other people. And especially big companies are often divided into silos, which makes it very very difficult. You always need to wait for stuff. You ask for something and then you don't get it. And you do something, you show it to someone and then they don't respond. [...] or because they simply don't have time to respond. (PO)

Sometimes, different sprint goals or contrasting departmental goals resulted in slow decision-making. For example, purchasing would try to reduce costs while developers searched for the technically best solution which would be more expensive. Some agile teams reported to clash with traditional teams that followed a classic project plan in contrast to iterative learning. Those neighbouring project teams were considered to be slow and inflexible in relation to agile teams, which made it difficult to synchronise project goals and milestones. Interviewees also said that it was a challenge to include external experts for the up-coming sprint in advance. Furthermore, geographical distribution limited knowledge exchange, synchronisation of progress, visualisation, discussions about critical topics and decision making.

Therefore, a functionally departmentalised structure resulted in weak shared understanding, team learning and team orientation. This leads to slow team decision-making. We suggest the following proposition:

(P3) A functional departmentalised structure leads to a low level of team autonomy (3a). This relationship is moderated by shared mental models (3b), team learning (3c) and team orientation (3d).

5 Implication for Research and Practice

We found that high power distance, specialist culture and a functional departmentalised structure decreased team autonomy. Since people behave according to the context within which they operate [2] we suggest that teams can only act autonomously if they face the necessary preconditions on the organisational level. For example, management can destroy the self-organising nature easily (e.g. [8, 9, 14]) by making decisions on behalf of the team. Therefore, even

though companies aim at implementing agile teams, team autonomy will remain low when a company does not simultaneously provide a high level of external autonomy by changing the organisational culture and structure.

The agile way of working is based on shared values, believes and a common goal, a normative approach while bureaucratic organisations are based on written rules, standards, processes. Therefore, established companies that have already started its agile transformation by implementing agile teams have to increase its efforts even further to empower real autonomous teams by putting even more effort into changing the organisational structure and culture.

We have observed several promising initiatives in established companies to start an agile transformation by setting up autonomous teams in protected yet even isolated clusters. Providing a guarded environment to let teams, management and the surrounding structures try, experiment, learn and accept new ways of collaboration for too long brings the risk that those “islands” will only exist as such. Established companies that have made first experience with working in an agile way and that have created valuable insights must take the next challenging step to introduce their individual learning episodes to a broader organisational level and to expand their activities to those structures that seemed not ready yet, by providing similar values, believes as well as goal setting and to nourish from the success of their protected test teams.

Companies should foster a learning organisation [6] that encourages employees to continuously share knowledge openly and to learn from each other unrelated to their position or functional structure. This requires tools and communities to allow for transparency, e.g. social business platforms that are easily accessible. The opportunity to contribute and to be acknowledged for knowledge sharing among team members and communities intrinsically motivates individuals and fosters team learning and creativity [22]. Therefore, management needs to foster knowledge management tools and experiments to incentive those that actively share or promote knowledge and to provide more work time for communities of practice and open space meetings.

The Scrum method suggests dedicated full-time team members that own all competences needed to fulfil a given task. Yet, since this is often not possible: In reality teams have to call in experts according to their sprint goals. This requires an open organisation with easy access to different competences and skills.

We contribute to existing research by providing more insights on how organisational factors can challenge team autonomy. While many companies report on success stories on autonomous teams this research provides a brief insight on the challenges. This study is one further step to help management understand how culture and structure limit autonomy of agile teams. More research is needed to understand supporting and hindering factors and to how they apply in reality.

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