State of the Art of Agile Leadership and Management in Agile Organizations

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Abstract. Context: Organizations start understanding the need to become an agile organization in order to fully benefit from agility and be competitive on quickly changing markets. Leaders at every level, not just top managers, need to buy into agility as an organizational value. Since the mid 1990s, many software development teams have very successfully adopted agile methods and proved that agile approaches can deal with continuous change. However, it is not clear what agile approaches look like outside software development. Objectives: The aim of this work is to create a better understanding on what leadership and management can look like in the context of an agile organization. Method: We conducted a systematic literature review to identify the state of the art on leadership and management approaches in the context of agile on the organizational level. Results: We provide an overview of existing work on this topic and present preliminary results. The analysis of the identified papers focused on the definition of and motivation for agile leadership and management. Conclusion: Practitioners can use the results for improvement, while researchers can build on the results to help companies with their agile transformation.

Keywords: Systematic literature review, state of the art, agile leadership, agile management, agile organization, agile enterprise, definition, motivation.

1 Introduction

Leaders at every level, not just top managers, need to buy into agility as an organizational value. Thus, a culture of change must be pervasive at every level. The world is complex and specialized knowledge is an appropriate response [33]. A major downside of specialization is that one views the world from a specialized lens and becomes overly focused on a narrow task area. An agile organization unites organizational processes and people with advanced technology to meet customer demands for customized high quality products and services within a

relatively short time frame [18]. This can only happen when agility is considered a systemic organizational value and a strategy championed by leadership.

People drive a complex and dynamic system with culture, leadership, and systems as key factors affecting organizational success in a rapidly changing environment. The critical factor in adapting to change is how to design organizations to maximize the vast tacit knowledge base within them. Diagnostic tools are necessary to identify underlying strengths and weaknesses to allow initiating targeted discussions and provide a baseline for measurement. Researchers and practitioners have observed that the rate of change powered by this explosion of technology, globalization, and complexity has been increasing for decades [41]. Business leaders throughout the globe, similar to fighter pilots, are faced with continuously changing environments where threats and opportunities appear rapidly making the need for fast, effective adjustments critical for success.

Yet organizations, unlike jet fighters, are not specifically built for speed and are typically unable to make the adjustments needed to quickly adapt to changes. On the contrary, typical organizational designs are essentially anti-change burdened with rigid leadership hierarchies, organizational structures, information systems that are not aligned with current needs, and corporate cultures with an inertia that resists new ideas or processes [16] [42] [43]. The result is that identifying and implementing meaningful change in many, if not most organizations, is more like stopping a supertanker then maneuvering it in a small harbor rather than closing in for a kill at supersonic speeds in a jet fighter. Executives who recognize the critical need for speed in the form of corporate agility when confronted with strong natural forces against agility must find a way to overcome the inertia inherent in leadership, systems, and culture in order to prosper in the twenty-first century [16] [14]. Centralized controls and classical hierarchical structures are ill suited for fast- paced environments [15]. Centralized control may yield increased efficiency in predictable and stable business climates but in the complex volatile business world of the twenty-first century corporate responsiveness is more critical to success than efficiency. Many researchers have concluded that organizations designed using traditional hierarchies with strong command and control structures are inherently anti-change [15] [42] [43]. Part of the typical problem in many organizations is that senior management at the top of the hierarchy takes too long to make effective decisions. Agility therefore requires implicit leadership that facilitates knowledge sharing, seeks consensus, trusts people, delegates more, and provides an environment for people to maximize inherent tacit knowledge [39]. Traditional management that operates from outside the team and controls the team with the help of metrics is no longer appropriate [3].

Haneberg [13] defined agility as the efficiency with which organizations respond to continuous change by consistently adapting. In today's business environment, companies must be agile and adaptable to respond in small increments that ultimately change the leadership, systems, and culture allowing the firm to survive and prosper in a different environment [34].

Companies should start their agile transformation by analyzing their products and services and reorganize them in value streams. Vertical organizational structures and functional departments have to be transformed towards a focus on the value streams and services. This transformation of the organizational design needs to be implemented by leadership and has to involve management on all levels of all areas [26]. The need for intense interactions to rapidly address an increasingly fast-paced and complex business environment became more and more apparent. This observation coincided with the fact that an increasing number of employees are hired for their knowledge and not for their physical contributions to work. The trend toward knowledge workers and knowledge economy has been documented by many researchers and authors for decades [10] [12] [35]. Feedback from business leaders suggested that this changing demographic called for a different leadership style requiring more involvement and engagement throughout their organizations. Creating and maintaining an environment enabling knowledge workers to maximize unique and valuable abilities required focus of attention and constant energy to maintain.

In summary, leadership concepts need to adapt in order to enable agility throughout the organization. There is a lack of understanding how agile leadership and management can look like outside of software engineering. In order to shed light into this topic, we want to identify the state of the art of agile management and leadership beyond development teams, with the help of a systematic literature review. Our analysis focuses on how agile leadership and management are defined, and what reasons the identified sources mention for changing to agile leadership and management.

The remainder of this paper is organized as follows: Section 2 discusses related work and clarifies the background regarding our topic. Section 3 presents the study design, including the research questions and the research procedure. Section 4 presents the results of our study, providing insights into the state of the art concerning our research questions. Finally, Section 5 provides the conclusion and suggestions for future work.

2 Related Work and Background

If one believes the previous studies such as Status Quo Agile [20], Agile Swiss Study [28], the ChaosReports of the Standish Group and the survey by VersionOne [46], many agile initiatives start at the level of clearly defined projects, mostly with a great tendency towards IT or software development projects. The studies mentioned focus on technical areas and not on the agile development of an entire organization [27]. For some years now, the agile trend has been moving more and more in the direction of non-technical areas and thus increasingly leads to the areas of agile organizational development as well as management and management levels [32]. Basically, agile initiatives that are started within an organization can be understood as agile change management. Krieg [25] discussed agile leadership, planning, risk management, QA, budgeting, documentation and contracts. In 2016, a “Maturity Level Model for Agile Corporate Development”

[24] was developed and published. The aim of the model is to provide orientation and an overview of what it means if a company wants to develop in a holistic, agile manner. The model shows that, similar to a company balance sheet, all areas have to be considered and evaluated. Problems at the interface between agile and traditional approaches were collected and classified based on a categorization into interfaces (e.g., to traditional organizational units such as HR department or Sales) and problem areas (such as reporting or budgeting) [45]. So that agile culture is not neglected, an approach to transition must be chosen that takes into account both technical and cultural agility [11]. Furthermore, 50 factors that influence the development of an agile culture were identified [29]. Yet, there is no clear definition of management and leadership beyond agile development teams. This knowledge would be important to facilitate organization-wide change to support an organization's agile transformation.

2.1 Management vs. Leadership

The distinction between management and leadership is often blurred. Kotter [22] coined the term leadership and explored its differences to management. According to Kotter, management's main task is to maintain order and stability, whereas leadership creates change and movement in the organization.

Kotter [22] defines three core processes each for leadership and management. The core processes for management are: *planning* and *budget allocation*; *organizational tasks* and *human resources tasks*; and *controlling* and *resolving of problems*. Accordingly, managers are there to control the processes, review plans and results, coordinate employees, and resolve problems of all kinds. Managers are therefore responsible for the daily business and for friction-less processes.

The core processes for leadership are: *providing goals and vision*; *aligning employees with these goals*; and *motivating and inspiring the employees*. The need for leadership in organizations was also accompanied by the insight that the market situation of companies often changes rapidly and that organizations have to adapt to new situations in order to remain competitive. Therefore, it is the task of leadership to explore new options and directions to stay ahead.

2.2 Traditional Management

Parker et al. [40] explored the characteristics of traditional management in the context of a literature review. In traditional management, strict control procedures are used to cope with change and uncertainties. Hierarchies and vertical organizational structures are established to create order. Rigid hierarchy is seen as a necessity for stability and planning. The assumption is that an increase in control also increases the structure of processes and order and reduces risk. Employees are considered as a resource and are seen as interchangeable. Work is processed by being broken down into tasks and then allocated to an accountable person. Managers deal with risks through extensive up-front planning.

In summary, traditional management is characterized by a command and control structure and strict compliance with processes and plans.

2.3 Agile Organization

An agile organization unites organizational processes and people with advanced technology to meet customer demands for customized high quality products and services within a relatively short time frame [18]. This can only happen when agility is considered a systemic organizational value and a strategy championed by leadership.

3 Research Design

As the concepts of agile management and leadership are not clearly defined, we performed a literature review to gain more insights into what constitutes agile management and leadership and why companies should change from a traditional leadership approach to an agile one. In the following, we will describe our research procedure, first presenting the research goal and the research questions. Then we will describe our research method, including the selection of the search database, the definition of the search strings, as well as the definition of inclusion and exclusion criteria. Next, we will present our selection, including the sequential steps, remaining papers, and inter rater agreement. Finally, we will explain how the literature was analyzed and what threats to validity exist.

3.1 Research Questions

The goal of our literature review was to get an overview of agile management and leadership. Therefore, we formulated the following two research questions:

RQ1: What is the definition of agile leadership and management beyond development?
With this first research question we want to understand how agile management and leadership is defined in the literature. There is already a lot of work that deals with the management of the development team. But it is widely recognized that companies need to embrace agility on all levels so that the whole company is able to react to market changes. Therefore, we are interested in agile management and leadership beyond the development team.

RQ2: What is the motivation for agile leadership and management beyond development?
A lot of companies want to be more agile and change their way of working, but they only transform the software development department and leave the rest of the company untouched. This means that these companies are still traditionally managed on a high level. With this second research question, we want to show the need for companies to change to an agile management and leadership approach on all levels in order to completely embrace agility. We will do this by analyzing the benefits of agile leadership and management, as well as the drawbacks of traditional approaches.

3.2 Research Method

In order to answer the research questions, we conducted a Systematic Literature Review (SLR). For the process of an SLR, it is important to systematically choose the right databases, to accurately specify the keywords, respectively the keyword string(s), and to clearly define the inclusion and exclusion criteria [19]. In the following, we will describe each of these aspects in more detail.

Search database Scopus contains 57 million articles, primarily in the fields of engineering and computer science. For this SLR, Scopus was selected because it covers many important software development and project management conferences, such as ICSSP, ICSE, PROFES, and XP. At these conferences, a lot of scientists and practitioners present and discuss the most important und newest topics and results in software engineering and agile approaches.

Definition of the search string After selecting the databases for our SLR, we started to collect the keywords that best represent our research topic. Initially, we made the assumption that there is not much research yet on this topic. For this reason, we chose keywords at a high level of abstraction. The keywords and the search strings were tested with several pilot searches on Scopus and were iteratively improved based on an analysis of the results and discussion of the keywords with an independent expert on agile approaches from Fraunhofer IESE. We constructed two search strings to (1) cover management concepts in agile organizations and (2) agile leadership concepts. The first search string deals with management concepts.

(agile OR agility) AND (organization OR enterprise OR company) AND ("modern management" OR "management 3.0" OR "management 4.0" OR "management cybernetics" OR " viable systems model")

We were interested in publications dealing with management concepts in large-scale agile organizations. Therefore, we added *agile* and *organization* to our search string. In order to reach publications that do not use these terms, we added synonyms for both term, e.g., agility and enterprise. The term management was too generic to be used efficiently. New management concepts are often described by using the terms *management 3.0* or *management 4.0*. Therefore, in order to get a more focused result, we decided to use these expressions and also added synonyms.

(agile OR agility) AND (organization OR enterprise OR company) AND leadership

We used the second search string to collect publications dealing with agile leadership concepts. Therefore, we added the term *leadership* to our search string. The other expressions were similar to our first search string.

Definition of inclusion and exclusion criteria. In order to have guidelines during the selection process of the literature review, we formulated detailed inclusion and exclusion criteria. The concrete criteria are shown in Table 1. As our focus was on analyzing the state of the art of management and leadership at the organizational level, we excluded papers where management concepts are only described at the level of a single team. Since our paper has a practical background, we excluded papers with a teaching background. Our focus was also on the underlying concepts of management and leadership, so we excluded papers where only technical solutions for these concepts are discussed.

Table 1. Inclusion and Exclusion Criteria

	Criteria	Description
Inclusion	*IC1*	The paper describes agile management and leadership concepts, practices, etc. at the organizational level.
	IC2	The paper describes management and leadership concepts for large-scale development environments.
	IC3	The paper describes the benefits of agile management and leadership.
Exclusion	*EC1*	The paper is not written in English or German.
	EC2	The paper is not a peer-reviewed contribution to a conference or journal.
	EC3	The paper describes management and leadership at the development team level, e.g., in Scrum or Kanban.
	EC4	The paper describes knowledge management, e.g., teaching methods.
	EC5	The paper deals with technical solutions of existing concepts, e.g., tools, algorithms, or AI.

3.3 Selection Method

The search was conducted on the 19th of June 2019. The search string for "leadership" led to 329 papers, while the search string for "management" led to 12 papers. Overall, 341 papers were identified. The first selection of the papers was done by the first and second author. In this process, the inclusion and exclusion criteria were first applied to the titles of the identified publications. Five publications were selected for the "management" search string, while 89 publications were selected for the "leadership" search string for further investigation. The selection of the publications by title was performed together by the first and second author. Both authors rated the titles resulting from the "management" search string. The titles resulting from the "leadership" search string were mainly rated by the first author. The second author also rated one third of the papers to evaluate the filtering process. For that, we calculated *Cohen's Kappa Statistic*, which calculates the agreement between two raters [6]. We reached a value of 0.76 which indicates *substantial* agreement [30].

In the second step, we read the abstracts of all selected papers. The abstracts of the publications resulting from the "management" search string were all rated by the first and second author. In this filtering step, two papers remained. The abstracts resulting from the "leadership" search string were mainly rated by the second author. For the evaluation of the abstract selection process, the first author read one third of the abstracts. We again calculated *Cohen's Kappa statistic* and reached a value of 0.51, which indicates *moderate* agreement [30]. After this step, 38 papers remained for the "leadership" search string.

In the next step, we had to exclude some of the publications because they were not available or were not peer-reviewed contributions to a conference or journal. After this step, two papers remained for the "management" search string and 19 papers remained for the "leadership" search string.

In the last step, the first three authors thoroughly read the whole papers and analyzed their content. In this process, both papers for the "management" search string were excluded. From the "leadership" search string, 14 papers remained. In cases of uncertainties, the inclusion and exclusion of papers was discussed among the first three authors. Figure 1 shows the process of paper selection.

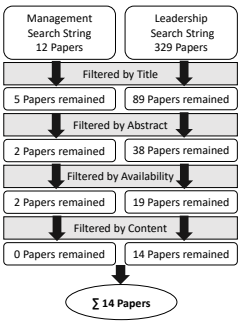

Fig. 1. Representation of the search and filtering process

3.4 Data Analysis

For the qualitative analysis process of the identified publications we used an extraction sheet. This was a MS Excel sheet containing the research questions including certain concrete aspects we wanted to analyze. The extraction sheet was used to collect text phrases from the publications that were directly assigned to the respective research question. Finally, each of the first three authors who extracted information from the final set of papers put the relevant information about their respective papers from the extraction sheet into the corresponding section of an online word processing file. Afterwards, text parts that describe similar aspects were grouped together and discussed by the authors in multiple video conference sessions.

3.5 Threats to Validity

Our literature review is subject to some threats to validity. According to Wohlin et al. [47], we will discuss construct, internal, conclusion, and external validity.

Construct Validity. Construct validity concerns the creation of the search string and the selection of the database. In order to mitigate the threat caused by the creation of the search string, we tested different search strings before we started our database search. In this way, we avoided choosing the wrong keywords. To cover further publications we added synonyms for different keywords, e.g., agility or enterprise.

Internal Validity. The literature review was performed by the first three authors in order to decrease mono researcher bias. The decision about the inclusion and exclusion of a publication is subjective. In order to mitigate this threat, we established a comprehensible decision process and formulated concrete inclusion and exclusion criteria. To evaluate our research process, we calculated *Cohen's Kappa statistic* [6]. The results show that agreement was at least *moderate* throughout the whole selection process [30]. In situations where the inclusion or exclusion of a publication was unclear, the paper was peer-evaluated by at least one of the other authors.

Conclusion Validity. Conclusion validity depends on the papers we selected. We mitigated this threat by using the Scopus database in order to get high-quality publications and excluded publications that are not peer-reviewed.

External Validity. We can not guarantee that we found all relevant papers. We wanted to get an overview of the state of the art of agile management and leadership concepts. Therefore, we intentionally focused our search string on modern organizational management methods and left the generic *management* term out. This narrow focus may be a threat, but also shows that there are not many publications on modern agile management methods.

4 Results

Table 2 shows the list of papers that were selected during the SLR. In the following sections, we answer both our research questions.

Table 2. Selected Publications

Paper	Title	Author	Year	Reference
P01	Doing complexity leadership theory: How agile coaches at Spotify practise enabling leadership	Bäcklander	2019	[5]
P02	Business disruption is here to stay – What should leaders do?	Lang and Rumsey	2018	[31]
P03	Organizational Evolution - How Digital Disruption Enforces Organizational Agility	Jesse	2018	[17]
P04	Asymmetric leadership: Supporting a CEO's response to turbulence	Boxer and Eigen	2018	[4]
P05	Agile Organisation und Führung 4.0: Entscheidungshilfe für unternehmensspezifische Weichenstellungen	Korge	2017	[21]
P06	The challenges of organizational agility: part 1	Appelbaum et al.	2017	[1]
P07	Improvising agility: Organizations as structured-extemporaneous hybrids	Pina e Cunha et al.	2017	[9]
P08	The performance triangle: a model for corporate agility	Nold and Michel	2016	[38]
P09	A model to guide organizational adaptation	Cross	2015	[8]
P10	Influence of large-scale organization structures on leadership behaviors	Moore	2009	[36]
P11	Agile principles as a leadership value system: How agile memes survive and thrive in a corporate IT culture	Baker and Thomas	2007	[2]
P12	Managing a large "Agile" software engineering organization	Beavers	2007	[3]
P13	New leadership strategies for the enterprise of the future	Murray and Greenes	2006	[37]
P14	The human side of organizational agility	Crocitto and Youssef	2003	[7]

4.1 RQ1: Definition of agile leadership and management

This section discusses agile leadership and management, especially what typical responsibilities and traits of agile leaders and managers are.

From economies of scale to economies of scope. Leadership is a part of a foundation to support employees in forming relationships with suppliers and customers. Adaptive organizations move from economies of scale to economies of scope. This involves the ability to handle constant change as well as threats and opportunities [44]. Sharifi and Zhang [44] call this agility or agile manufacturing, while Yusef et al. [48] take a "holistic" view of manufacturing, in which a competitive stance is gained through the synergy of technology, machinery, function, strategy, people and management. Agility is dependent upon leadership's ability to define an agility vision and mission, supported with organizational rewards for adapting to change [7]. Leaders need to promote a learning organization and acceptance of change. Manufacturers may experience an IT challenge as we move to an e-economy. IT allows manufacturers to develop new supply chains that are quicker and reach further than existing chains. However, some manufacturers may be so accustomed to existing IT or manufacturing technology that they may choose not to change, potentially losing competitiveness. Changes in IT and other organizational subsystems have a long and wide reaching impact on organizational processes and relationships and can only happen with the support of top management. Therefore, management must recognize the relationship between such innovations and learning [7]. Implicit in all the theories described is the strategic role of leadership as change agents. In order for an organization to become agile, managers need to promote a strategic paradigm shift. The role of leadership in this process is not really delineated in the literature.

Effective leadership is defined as effective communication and interaction with people at all levels throughout the organization [38]. Nold and Michel [38] report that although studies have been done analyzing leadership behaviors and traits, successful leadership depends on organization and context. A leadership style that is successful in one organization in a specific situation may not necessarily be effective if applied in a different organization or situation. However, Nold and Michel [38] identified that the need for communication skills and interaction with followers are recurring research themes, Those communication and interaction skills need to be natural and unique to the leader and organization.

Leaders should seek to create meaning for persons, organization, society to stimulate and sustain innovation to achieve shared value [31]. Lang [31] names four attributes that make the difference to traditional leaders: "humble, adaptable, visionary, engaged". Leaders are responsible to create a vision, communicate meaning and purpose, and "kill and hide bureaucracy". Good leaders are curious and willing to fail fast. They are also good listeners, fast at executing, and continuous learners that accept unpredictability of change [31].

Organizational structures vs. agile Leadership. Moore [36] showed that organizational structure is not as important as having leaders that live and ex-

emplify a set of behaviors, among them the ability to lead the team instead of managing the team. This is done by setting directions and visions, aligning team members as well as mentor and motivate them with the help of one-on-one and team communication. These leaders understand the needs and goals of individuals and consider them when setting up a team. The organizational structures that aligned leaders with their teams (hierarchical and matrix structures with multiple sub-team leaders) tended to influence more managing versus leading as their role was more narrowly focused on these teams and their members. Moore [36] reported that leaders used all capacity beyond fulfilling the normal tasks like resource management or addressing team obstacles was used for deeper engagement with the team, often leading to micro management. Also, when being approached by team members with concerns, the tendency was to try to solve the issue instead of facilitating and enabling the team to find a suitable solution themselves [36].

Productivity vs. flexibility. The leader has to become a coach and enabler for his team or employees. He has to create the optimal environment and purpose to his employees, and trust them that they will take over personal initiative and responsibility. Traditional concepts enable productivity, but limit flexibility and motivation [21].

Transformational leadership is comfortable with experimentation, uses decentralized decision making and is able to align people from a diverse network towards a common purpose [1]. A collaborative community is seen as the opposite of command and control leadership. Leaders need to create opportunities for workers to own the processes they are both responsible and accountable [1].

Agile leadership vs. management. A manager achieves his or her goals through planning and budgeting, organizing and staffing, and controlling and problem solving. In contrast, a leader sets a direction, aligns people, and motivates and inspires to achieve the goals [23]. With a "leader" who focuses on management instead of leadership, team empowerment is reduced due to external control being applied" [36]. Bäcklander [5] argues that leadership roles are common in agile that do not have managerial authority.

Managers should function as facilitator, become creators of conditions favourable for performance, or become enablers of informal network dynamics in complex adaptive systems. Direction, alignment and commitment are needed for self-organizing teams, and support can be provided by a Scrum Master or agile coach as an alternative Leadership role [5]. They also state that leadership roles without managerial authority are common in entrepreneurial firms that practice agile software development.

Agile management is about the empowerment of the development team to trust their abilities. The duty of management is to provide teams with the necessary requirements and prioritization and let them organize themselves [3].

4.2 RQ2: Motivation for agile leadership and management

In this section, we present the results concerning our second research question by discussing what motivations for agile leadership and management could be found in the identified sources. We will first present arguments for why traditional leadership and management concepts do not work anymore and must be changed. Afterwards, we will show the benefits of and reasons for agile leadership and management.

Contra traditional leadership and management. The literature mentions two reasons why traditional leadership and management concepts have to be replaced. First, traditional top-down command and control management is no longer appropriate. Second, new drivers change the way organizations can operate and demand other ways of working.

Top-down command and control is no longer appropriate. Whereas for a long time, productivity was the primary goal, nowadays human factors such as employee motivation also play an important role. An increase in knowledge work and in the complexity of the products to be developed has led to decentralization, autonomy, and self-organization [21]. Traditional management operates from outside the team using metrics to control the work of the team and putting increased pressure on the team when deviations in the plan can be seen. However, management has to be integrated into the team in the form of self-organization [3]. Traditional managerial control is now both less possible and less useful [5] in a setting where teams organize their work in a decentralized manner. Top-down and disciplinarian-style leadership is no longer appropriate and prevents collaboration and innovation [1]. Thus, most traditional management approaches rather interfere with people's ability to perform instead of improving performance [38]. Rigid command and control structures need to be removed in order to move quickly in the future [37].

Traditional organizations cannot cope with new demands. Traditional organizations aim at increasing productivity and stability, e.g., by centralizing decisions, specialization and functional silos, or by using experts to plan the work for other workers who blindly follow instructions. These organizational and leadership concepts have proven their success over the last decades [21]. However, drivers like changing markets and increasing expectations on the part of employees pose new requirements that traditional concepts can only address to a certain degree. External influences like digitalization, globalization, demographic change, and trends towards individualization increase complexity and pose new challenges to organizations [21]. Traditional leadership approaches must change in order to be competitive in this environment [37]. Therefore, it is necessary to replace slow, hierarchical organizations with more fluid, adaptable, social networks [37].

Pro agile leadership and management. The literature mentions three reasons why agile leadership and management concepts have to be adopted. First,

innovative and agile leadership approaches are needed to handle new market demands. Second, enabling leadership is needed to empower teams in order to allow for fast decision making and innovation. Finally, agile leaders function as change agents to drive cultural change in the organization.

Agile leadership needed to cope with new demands. It has been proven that innovative organizations and leadership address the following three future demands [21]: increase the agility of the organization; design good working conditions that foster employee motivation and health; and master complexity. Situational management of complex tasks and unexpected changes will replace upfront planning due to the requirements of VUCA (volatility, uncertainty, complexity and ambiguity) [21]. The goals of "innovative" organizations and leadership are flexibility, adaptability, and innovation. Autonomy and decentralization push responsibility to where the actual work takes place. A self-organizing team is then enabled to take decisions. Only then can decisions be made timely and using the expertise of the right people [21].

Enabling leadership. Adaptive organizations need enabling leadership [5]. It is up to leaders to build organizations that are dedicated to fulfilling the needs and values of their employees, so that people can reach their full potential and creativity [38]. Interactive leadership is an important tool for creating a work environment where people feel comfortable and satisfied with themselves and their work [38].

Agile leaders as change agents. Business disruption is only possible with the help of agile leaders [31]. Management plays an important role in moving to an agile culture [7]. For a successful adoption of organizational change, leaders have to describe the mission, vision, and values of an organization so that people share the goal and believe in the higher purpose [38].

5 Conclusion and Future Work

Agile approaches are increasingly being used beyond software engineering where they originated. Leadership and management throughout the whole organization play an important role as key enablers for an agile transition. Many companies and key players did already make experiences with agility, while implementing parts of it in their enterprises. Many ideas and experiences from the area of software engineering can be used. However, to run the whole organization in an agile way, some questions in the area of organizational structures, modern management and leadership are still not answered. For more than 70 years, researchers and practitioners have been researching on new organizational structures, the understanding of modern leadership, management and communication to find solutions for the industrial age of the economies of scope. For the age of the economies of scale, it was important to define standards, vertical organizational structures, as well as clear hierarchies. Inside these companies, managers

were needed to drive the business through planning and managing the company with the help of plans and by following strict processes. However, in a more volatile and unstable time, these ideas might no longer be the right choice for economical success, as more and more markets are driven by constant changes, and companies need flexibility and the ability for quick change. The structures and managing models from the economies of scale appear unhelpful and even blocking. Modern leadership has to take over to navigate teams and companies with flat structures, empowered and self-managed through an unstable industrial times with continuously unexpected changes in many branches.

However, it is not clear what leadership and management should look like in order to support agility throughout the whole organization. We therefore investigated the state of the art of agile leadership and agile management applied at the organizational level with the help of a systematic literature review. The identified sources provide an overview of the research field and allow us to discuss preliminary results. In this work, we focused on the definition of agile leadership and agile management at the organizational level, and also analyzed the motivation for the usage of agile leadership and management. It is a first step towards understanding agility at the organizational level. Practitioners can use the insights to improve their agile transformation, and researchers can build on the results to conduct further investigations into the topic of organizational agility.

In future work, we want to extend and detail our analysis of the identified papers from this literature review. A possible next step could be to consult non-scientifc work on agile leadership, and to speak with agile experts about the results of this study and identify the gap between research and practice. Based on this knowledge about agile leadership and management concepts, we also plan to conduct an analysis of the state of the practice with the help of interviews and survey research.

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