Agile design options for IT organizations and resulting performance effects: A systematic literature review

Research Paper

Oliver Hohenreuther[1]

[1] University of Bamberg, Chair of Information Systems Management, Bamberg, Germany
oliver.hohenreuther@uni-bamberg.de

Abstract. Agility is a major capability for IT organizations to cope with the ever-changing market conditions in the digital age and to manage increased expectations. Numerous studies have been carried out to identify how to increase agility from an IT organizational perspective. However, a structured overview of design options to increase agility in IT organizations and resulting performance outcomes is missing, and the related literature streams are rather fragmented. To address this, a systematic literature review across 57 papers is conducted, taking a configurational theory view. As a result, a systematic structuring is provided, identifying 20 design options and their performance effects along 4 dimensions.

Keywords: *Agile IT organization design, agile design options, agility benefits*.

1 Introduction

The ongoing digitalization disrupts markets, changes customer demands, and creates new products and services rapidly – increasing uncertainty and complexity (Raabe et al., 2021; Rebentisch et al., 2018). As technology is a key driver, IT organizations are more in focus today (Indriasar, 2020; Teubner & Stockhinger, 2020). The IT organization is seen as a dedicated organizational function that provides and operates IT systems and services within a firm (Haffke et al., 2017). Today, IT organizations transform from a mainly supporting function toward a business model-enabling and -driving function, defining competitive advantage (Buck et al., 2021). In addition to internal employees, customers have become a new stakeholder group for IT organizations (Urbach, Drews, & Ross, 2017). This increases requirements on flexibility, responsiveness, customer centricity, and business alignment (Kusanke & Winkler, 2022; Vlietland et al., 2016). However, traditional IT organizations struggle to keep up with market changes and the new demands of their evolving role (Haffke et al., 2017; Indriasar, 2020; Kusanke & Winkler, 2022). Their structures, processes, and abilities are not designed to systematically enable digital business innovation, due to a rather reactive and service-oriented role (Grawe et al., 2020; Urbach, Drews, & Ross, 2017). Thus, IT organizations must rethink their organization design (Urbach, Drews, & Ross, 2017). Many firms recognize that their design is insufficient and try to transform to agility, which is defined as the capability to respond quickly and efficiently to change while leveraging those changes for competitive advantage (Shafiee Kristensen et al., 2021).

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However, it is shown that an agile transformation is challenging (Denning, 2016). Challenges such as scaling, organizational integration, or cultural change often lead to failed transformations being time- and cost-consuming (P. Gregory et al., 2015; Rebentisch et al., 2018). As such transformation decisions must reflect a cost-benefit ratio, this prompts considerations of the optimal agile IT organizational design options (DOs) and the anticipated performance benefits. Thus, a configurational theory perspective is meaningful for better understanding the performance effects of agile DOs in IT organizations. Furthermore, both the literature and industry provide a variety of agile DOs. However, the literature is somewhat fragmented, and discussions often focus on specific DOs or literature streams. Consequently, a literature review is helpful to consolidate the results. This paper contributes to the discourse on how to design agile IT organizations and their resulting benefits (Yousif et al., 2017). Thus, the following research question is defined:

RQ: *What are agile DOs for IT organizations and the resulting performance effects?*

After background and theory, section 3 explains the review method. Sections 4 and 5 present and discuss the results – closed by further research, limitations, and conclusion.

2 Background and theoretical integration

Agility in IT organizations is widespread, especially at the team level (Diebold et al., 2018). Yet, most firms have just started the agile transition (Gerster et al., 2020). Thus, there is a call to further study the design of agile IT organizations (Yousif et al., 2017).

2.1 IT organization design and agile design options structuring

In general, organization design comprises several dimensions. Studies have found four essential dimensions for IT organizations: processes, structure, people & culture, and governance (Cao, 2010). This study applies these dimensions to structure the DOs. *Processes* describe how IT supports business operations and include IT-specific processes that support value delivery and business interaction (Cao, 2010). *Structure* defines the design between individuals and groups concerning the overall task allocation, responsibilities, and accountabilities in the firm (Lunenburg, 2012). *People & culture* can be seen as the collective behavioral tendency of firms manifesting through values and principles (Yousif et al., 2016). This dimension also encompasses mindsets and skillsets, capturing how people behave, how their actions are determined, and their skillsets. Last, *governance* defines clear roles, responsibilities, and accountabilities in the organization (Elazhary et al., 2022). Moreover, governance addresses communication flows and business and IT alignment (Elazhary et al., 2022).

2.2 Configurational theory as an analytical lens for the literature review

In configurational theory, patterns and combinations of design elements, called configurations, are seen to create certain results (El Sawy et al., 2010). The literature review follows configurational theory by identifying agile configurations of IT organizations,

mapping these configurations to the resulting performance outcomes, and building the foundation for further theoretical propositions of these configurations by studying the causal mechanisms. In organizational science, configurational theory is widespread (Greckhamer et al., 2018). Organizations are defined as a set of interconnected variables manifesting performance effects (Huang et al., 2024; Leonhardt et al., 2018). Thus, organizations are conceptualized as configurations of components aiming for effectiveness and efficiency (Bocken & Geradts, 2020). In Information Systems (IS) research, such configurations were applied to study IS governance or ERP implementation (Schilling et al., 2017). Configurational theory is based on the contingency theory, which postulates that the most effective organization design is when it fits the selected strategy and environment (Donaldson, 2006). Configurational theory increases the understanding of complexity in turbulent environments (El Sawy et al., 2010).

3 Research Method

Research encompasses several literature review types, including narrative, integrative, semi-systematic, and systematic approaches, with the purpose determining the method. This review aims to synthesize agile IT DOs and their benefits; thus, a systematic approach is selected. This method identifies and evaluates the available research to extract and illustrate the relevant results for a specific context (Webster & Watson, 2002). A systematic literature review structures the state of knowledge and can serve as a baseline to identify future research priorities (Page et al., 2021).

3.1 Review scope

The three databases Business Source Ultimate (EBSCO), Google Scholar, and AIS eLibrary were consulted to ensure search breadth. The search took place from December 3 to 7, 2024. As the Agile Manifesto, forming today's agility understanding, was published in 2001, earlier published papers were excluded – further inclusion and exclusion criteria are highlighted in *Table 1*.

Table 1. Overview of inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Peer-reviewed articles and conference papers on agile IT organization design elements	Not English language, gray literature, published before 2001, papers with case-specific designs, papers without organization design focus (e.g., transformation challenges), not focused on IT organizations

Based on an initial scoping, the following keywords (British and American English reflected) were defined:

Agile IT, bimodal IT, two-speed IT, BizDevOps, IT ambidexterity, agile IT organization, agile IT organization design, scaled-agile IT organization, agile IT design principles, agile IT organization structure, agile IT governance, and agile IT operating model.

3.2 Literature screening approach

The literature screening process followed the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) model and its four phases: (1) identification, (2) screening, (3) eligibility, and (4) included (Page et al., 2021). Initially, 8,902 records were identified. Due to duplicates, 2,007 records were removed. During title screening, 6,328 records were removed, and 463 more after abstract screening. After full-text screening, 47 papers were included in the review. The screening of the references increased the amount of papers by 10. Thus, the literature review contains 57 papers.

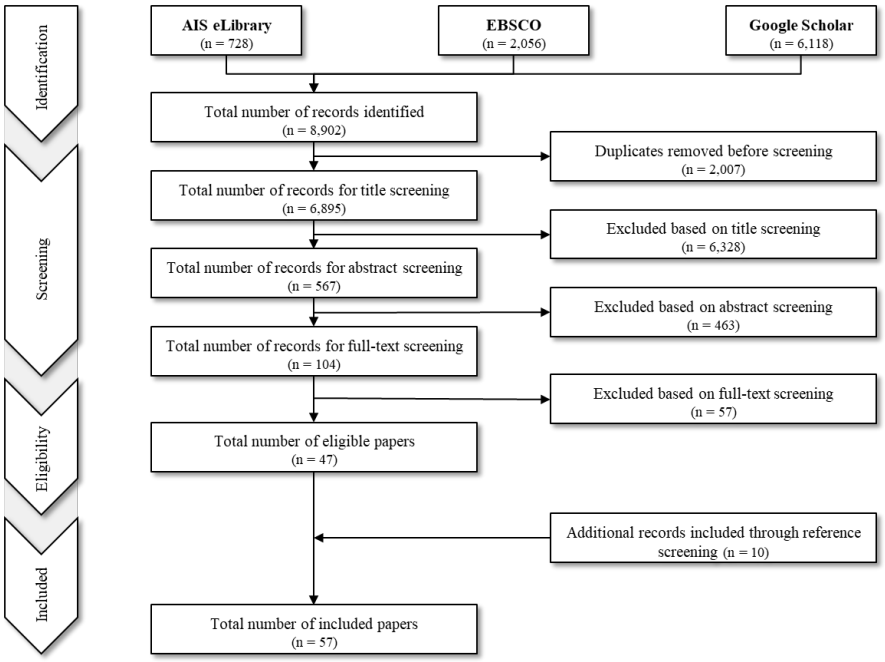

Figure 1. PRISMA flowchart for literature screening process based on Page et al. (2021)

3.3 Synthesis of agile design options

As Webster & Watson (2002) outline a systematic literature review follows a structured approach and is concept-centric – in this review the agile DOs. To identify the DOs, the papers were screened for design elements contributing to an agile IT organization. It was assessed if these elements were generic to some extent or too context specific. Thus, too specific design solutions, such as specific global setups of IT sites, or the detailed design of agile roles, were not considered. Further, it was checked if the identified DOs are discussed in a broader scientific context. Along this, several drop-outs occurred. Finally, the DOs were bundled to avoid too much variety, and a label, if not yet existing, was defined. The identified DOs were grouped into the four dimensions: processes, organization structure, people & culture, and governance.

4 Results

Following the 57 included papers and the conducted synthesis approach, 20 agile DOs for IT organizations were identified. *Table 2* provides an overview of these DOs, a clustering in the four design dimensions described, and offers a structured overview of the references.

Table 2. Overview of the identified agile DOs for IT organizations

Dimension	Design option	Paper mapping (*sources*)
Processes	#1 Dual development approach	11, 15, 27, 31, 32, 53
	#2 Value stream orientation	42, 43, 48, 51, 54
	#3 Platform steering	18, 15, 27, 32, 38
	#4 Agile portfolio management	2, 23, 42, 43, 50
Structure	#5 Bimodal IT/digital unit	1, 2, 12, 17, 22, 25, 31, 32, 33, 35, 36, 37, 40, 41, 45, 46
	#6 Networks/ecosystems	8, 10, 18, 29, 37
	#7 DevOps	8, 38, 41, 44
	#8 BizDevOps	34, 41, 42, 43, 55
	#9 Product orientation	3, 13, 42, 43
	#10 Scaling approach/framework	1, 2, 6, 9, 16, 19, 28, 48, 49, 51
	#11 Overarching teams	1, 2, 3, 9, 41
	#12 Communities of practice	16, 42
People & culture	#13 T-shaped skillset/capability	8, 17, 19, 21, 29, 52
	#14 Transformational leadership	10, 11, 16, 21, 23, 24, 30
	#15 Team coaching approach	11, 16, 29, 51
	#16 Agile values and principles	11, 16, 18, 19, 21, 23, 24, 29, 56
Govern-ance	#17 Team autonomy	8, 11, 20, 24, 29, 42
	#18 CIO/CDO relationship	14, 22, 39
	#19 Decentralized decisions	7, 10, 11, 24, 29, 30, 42, 57
	#20 Agile governance principles	4, 5, 10, 12, 13, 19, 23, 29, 48, 57

References: [1] Gerster et al., 2018, [2] Gerster et al., 2019, [3] Gerster et al., 2020, [4] Luna et al., 2014, [5] Luna et al., 2010, [6] Diebold et al., 2018, [7] Hong & Lee, 2018, [8] Indriasar, 2020, [9] Theobald & Schmitt, 2020, [10] Vejseli et al., 2018, [11] Vejseli et al., 2019, [12] Vejseli et al., 2020, [13] Vlietland et al., 2016, [14] Seeher et al., 2020, [15] Bygstad, 2015, [16] Dikert et al., 2016, [17] Tallon & Pinsonneault, 2011, [18] Tallon et al., 2019, [19] Ullah & Lai, 2013, [20] Urbach, Jöhnk, et al., 2017, [21] Wendler, 2016, [22] Horlach et al., 2017, [23] Johansson & Rusu, 2019, [24] Rebentisch et al., 2018, [25] Yousif et al., 2017, [26] Ross et al., 2017, [27] Sena et al., 2009, [28] Kovynyov et al., 2021, [29] Shafiee Kristensen et al., 2021, [30] Worley & Lawler, 2010, [31] Bygstad, 2017, [32] Bygstad & Iden, 2017, [33] Godefroid et al., 2021, [34] Grawe et al., 2020, [35] Kusanke & Winkler, 2022, [36] Liang & Wang, 2022, [37] Raabe et al., 2021, [38] Stamoulis, 2022, [39] Tumbas et al., 2017, [40] Haffke et al., 2017, [41] Drews et al., 2017, [42] Horlach et al., 2020, [43] Lohrasbinasab et al., 2020, [44] Sanjurjo et al., 2020, [45] Lee et al., 2015, [46] Werder & Heckmann, 2019, [47] R. W. Gregory et al., 2015, [48] Almeida & Espinheira, 2021, [49] Frey et al., 2022, [50] Korpivaara et al., 2021, [51] Limaj & Bernroider, 2022, [52] Teubner & Stockhinger, 2020, [53] Syed et al., 2020, [54] Harvey et al., 2024, [55] Antunes & Tate, 2024, [56] Neumann et al., 2024, [57] Vejseli et al., 2022

For processes, four DOs were found: (#1) Dual development approach, (#2) value stream orientation, (#3) platform steering, and (#4) agile portfolio management.

A *dual development approach (#1)* creates two types of development processes in the IT organization for heavy- and lightweight systems (Bygstad, 2017; Bygstad & Iden, 2017). Heavyweight systems are rather waterfall-based developed and lightweight systems with an agile approach (Bygstad, 2015; Sena et al., 2009). As performance effects improved delivery speed and an increased effect of IT investments on firm results (profitability; market value) are seen (Syed et al., 2020). Regarding speed, Vejseli et al. (2019) also add a faster prototype delivery. Further, organizational agility is increased by facilitating operational ambidexterity (Lee et al., 2015). Finally, improved innovativeness, especially via a lightweight approach, can be observed (Bygstad, 2015).

Value stream orientation (#2) sees the alignment of activities on central value-creating steps needed to deliver products or services (Limaj & Bernroider, 2022). Organizations must streamline the value flow from strategy to delivery and operations enabled by IT (Almeida & Espinheira, 2021; Lohrasbinasab et al., 2020). Following this, value stream orientation can support a continuous value flow to the business (Almeida & Espinheira, 2021). Further, Harvey et al. (2024) show that value stream orientation contributes to business and IT alignment via three principles: (1) seeking value, (2) fostering transparency, and (3) enabling proximity. Finally, value stream orientation can increase the organizational focus (e.g., customer centricity) (Horlach et al., 2020).

Platform steering (#3) applies platforms as an integration capability (Ross et al., 2017). Digital platforms are employed to build integrated systems from commoditized IT components that enable fast scalability, flexibility, and adaptability (Stamoulis, 2022; Tallon et al., 2019). Concerning performance effects, platform capabilities are positively associated with increased organizational agility (Tallon et al., 2019). For example, this can be realized by a reduction of silos (Stamoulis, 2022). Further, platform-based design can reduce complexity, decrease dependencies, and coordination levels (Sena et al., 2009). Moreover, platforms are suitable for connecting bimodal parts of IT organizations by providing integration options (Bygstad, 2015; Sena et al., 2009). Finally, sourcing efficiency can be realized using platforms (Sena et al., 2009).

Agile portfolio management (#4) changes from plan- to value-driven; thus, customer value, delivery time, and quality are important measures (Korpivaara et al., 2021). This increases the understanding of value creation and customer satisfaction (Korpivaara et al., 2021). In agile portfolio management, planning and budgeting are continuous tasks, instead of annual tasks, which block fast responses (Lohrasbinasab et al., 2020). Techniques, such as OKRs (*Objectives & Key Results*) can be used to break the overall portfolio targets down to teams, increasing the level of alignment (Korpivaara et al., 2021).

Table 3. Performance effects of agile DOs for the process dimension

DO	Performance effects
#1	1. Increases product or prototype delivery speed; 2. Moderates the effect of IT investments on the firm results; 3. Increases organizational agility via operational ambidexterity; 4. Improves innovativeness
#2	1. Increases operational business and IT alignment; 2. Enhances the organizational focus setting; 3. Streamlines the organizational flow of value; 4. Supports the continuous flow of value to the business

#3	1. Increases organizational agility and reduces organizational silos; 2. Reduces complexity, dependencies, and coordination efforts; 3.Possibility of connecting bimodal parts; 4. Provides sourcing efficiency
#4	1. Increases focus setting by breaking goals directly to team level; 2. Supports fast response via flexibility in planning and budgeting; 3. Increases the focus on value creation and customer satisfaction

Organization structure contains eight DOs: (#5) Bimodal IT/digital unit, (#6) networks/ecosystems, (#7) DevOps, (#8) BizDevOps, (#9) product orientation, (#10) scaling approach/framework, (#11) overarching teams, and (#12) communities of practice.
Bimodal IT (#5) splits IT organizations in two modes: a traditional one for stability and an agile one for rapid innovation (Haffke et al., 2017). This allows IT organizations to leverage existing competencies while exploring new capabilities (R. W. Gregory et al., 2015; Haffke et al., 2017). Bimodal IT gains much attention; however, some argue that these are only transitional structures to full scaling (Gerster et al., 2019). Digital units are specific IT units with high freedom to deliver digital solutions with customer and partner interaction (Drews et al., 2017; Raabe et al., 2021). Research shows that bimodality supports transformation efforts, but the effect is less important in emerging markets (Kusanke & Winkler, 2022; Werder & Heckmann, 2019). As performance effects, an increase in flexibility and speed is seen (Haffke et al., 2017). Further, it increases innovation through new working methods and structural business alignment (Haffke et al., 2017). Horlach et al. (2017) discuss such alignment mechanisms in a bimodal IT. Research shows that the benefits of bimodal IT are stronger for larger firms and those facing high environmental uncertainty (Lee et al., 2015; Werder & Heckmann, 2019).
Network structures (#6) describe designs where work is done in teams, loosely coupled with flat hierarchies (Shafiee Kristensen et al., 2021). Organizational boundaries and exclusive allocation to functions are gradually disappearing and turning to cross-functional structures (Indriasar, 2020). External networks – called ecosystems – allow organizations an external view of their capabilities, resources, and business partnerships, to foster agility (Tallon et al., 2019). An increase in innovation power is one performance effect of this DO (Vejseli et al., 2018). Ecosystems offer opportunities to test business models and capabilities (Tallon et al., 2019). Shafiee Kristensen et al. (2021) see an effect of such structures on organizational effectiveness and efficiency.
DevOps (#7) closes the gap between development and operations via close collaboration, often realized in integrated teams (Sanjurjo et al., 2020). DevOps contains technical aspects such as automation, continuous integration and deployment, and the alignment of people, processes, and technology (Sanjurjo et al., 2020). Close collaboration, constant communication, and smooth integration between development, testing, and operations are central benefits (Drews et al., 2017). DevOps enables IT organizations to release software frequently and automatically with higher quality – having technical prerequisites such as CI/CD pipelines (Drews et al., 2017; Indriasar, 2020). Finally, a more effective knowledge sharing is seen as performance effect (Indriasar, 2020).
BizDevOps (#8) further integrates the business and thereby ensures higher consistency from business strategy to delivery (Lohrasbinasab et al., 2020). Here, business is directly integrated in the agile teams to represent customers actively while creating digital products or services (Drews et al., 2017; Horlach et al., 2020). Another performance

effect of the systematic integration of business, development, and operations is higher end-to-end responsibility (Lohrasbinasab et al., 2020). Last, the knowledge exchange between business and IT is accelerated (Drews et al., 2017).

Many IT organizations switch to *product orientation (#9),* with teams taking over end-to-end responsibility for IT product delivery (Gerster et al., 2020; Vlietland et al., 2016). This DO offers the opportunity to increase market focus, time-to-market, and team autonomy (Gerster et al., 2020). These highly autonomous product teams can independently deploy their loosely coupled components, reducing dependencies (Gerster et al., 2020; Vlietland et al., 2016). Further, Horlach et al. (2020), Lohrasbinasab et al. (2020), and Gerster et al. (2020) argue that business is thinking in end-to-end perspectives and with product orientation, teams can be designed around this focus, increasing customer focus and end-to-end responsibility.

To organize more agile teams in parallel, IT organizations *scale agility (#10),* with or without a framework. Scaled agility is constantly replacing structures, such as bimodal IT (Gerster et al., 2018). Scaling frameworks, such as Large Scale Scrum (LeSS), Scrum of Scrums, Scaled Agile Framework (SAFe), Nexus, Spotify, and Scrum at Scale, are becoming more popular and aim to realize agile principles, values, and practices on a scaled level (Kovynyov et al., 2021; Limaj & Bernroider, 2022). Scaled agility is linked with increased speed and flexibility compared to traditional structures (Gerster et al., 2018). Further, these frameworks provide guidance for the complex scaling challenge (Theobald & Schmitt, 2020). This supports a realization of agile values, principles, and practices on the firm level (Kovynyov et al., 2021).

In addition to agile, DevOps, and BizDevOps teams, other *team types (#11)* exist. Similar services are often bundled in teams to provide services efficiently across other teams (Gerster et al., 2018). Often, product teams do not have all the required resources; thus, they require specialists who are rarely available or only needed temporarily (Gerster et al., 2020; Theobald & Schmitt, 2020). Further, system teams offer support to set up and maintain a proper environment or CI/CD pipelines for development, testing, or integration, increasing product delivery (Theobald & Schmitt, 2020). Another performance effect is that such teams can support consistency and compliance with standards, such as architectural ones (Gerster et al., 2019).

Community of practice (#12) are loosely coupled communities typically used to align activities, approaches, define overarching guidelines and standards, and learn in the context of specific topics (Horlach et al., 2020). For example, this could be done for test management to align the overall principles within the teams. This increases cross-team alignment, collaboration, and knowledge exchange (Horlach et al., 2020). Dikert et al. (2016) identify that these communities positively influence transformations.

Table 4. Performance effects of agile DOs for the organization structure dimension

DO	Performance effects
#5	1. Exploits existing competencies while exploring new ones; 2. Increases flexibility and speed of IT organizations; 3. Increases innovation competencies of IT organizations; 4. Supports structural alignment with business and IT success; 5. Supports digital business strategy and transformation

#6	1. Increases innovation competencies of IT organizations; 2. Possibility of testing the business model and market position; 3. Increases operational effectiveness and efficiency
#7	1. Close collaboration and organizational integration; 2. Increases release frequency and software quality; 3. Improves communication/knowledge sharing
#8	1. Supports end-to-end responsibility; 2. Streamlines workflows from strategy to product delivery; 3. Increases the customer focus in agile teams; 4. Provides the business with a more active role in creating digital solutions; 5. Accelerates knowledge exchange of business and IT
#9	1. Supports end-to-end responsibility and customer focus; 2. Increases market focus and time-to-market; 3. Supports team autonomy; 4. Reduces dependencies between teams
#10	1. Increases speed and flexibility compared to traditional structures; 2. Provides guidance for scaling agility; 3. Supports agile values, principles, and practices at the firm level
#11	1. Groups similar services or skills for knowledge bundling; 2. Provides other teams with scarce resources efficiently; 3. Supports product delivery via technical foundation; 4. Ensures consistency/compliance with standards
#12	1. Increases cross-team alignment and collaboration; 2. Fosters knowledge exchange; 3.Positively influences agile transformation success

People & culture has four DOs: (#13) T-shaped skillset/capability, (#14) transformational leadership, (#15) team coaching approach, and (#16) agile values and principles. Dynamic work environments demand multi-skilled employees (Wendler, 2016). Today, employees require a broad knowledge base and specializations, called *T-shaped skills (#13)* (Indriasar, 2020). A lack of business insight in IT and limited IT understanding in business hampers alignment (Ullah & Lai, 2013). Agility is improved by people moving frequently between teams and roles vertically and horizontally (Shafiee Kristensen et al., 2021). Moreover, shared knowledge drives IT and business alignment, helping to define a joint course of action (Tallon & Pinsonneault, 2011). Further, Tallon & Pinsonneault (2011) and Wendler (2016) argue that a broad skillset facilitates and increases resource flexibility in response to organizational change.

Transformational leadership (#14) is key for agility to motivate people and build the system they are working in (Vejseli et al., 2018; Vejseli et al., 2019). Thus, leadership is evolving from an individual ability to an organizational capacity (Worley & Lawler, 2010). Hence, IT managers must live and promote an agile culture (Rebentisch et al., 2018). A lack of management support is a primary barrier to agility (Dikert et al., 2016; Johansson & Rusu, 2019). Transformational leadership raises the success of transitions to agility (Vejseli et al., 2019). Further, such a leadership style empowers people to live and promote an agile culture (Vejseli et al., 2018). Moreover, this leadership style shifts from satisfying internal management to satisfying customers (Rebentisch et al., 2018).

Team coaching (#15) has received little attention in the literature. Emphasizing that agility is a mindset rather than a detailed blueprint to follow, coaching is an important factor for agility (Dikert et al., 2016). Coaching helps employees to adopt agile skills and thinking (Vejseli et al., 2019). Moreover, it supports people in understanding agile

values and principles, making them feel more motivated and supportive of the transformation (Dikert et al., 2016). Last, an agile coach can increase team performance (Dikert et al., 2016).

Building a culture that shares fundamental values might be the most important for agility (Wendler, 2016). *Values and principles (#16),* such as trust, respect, openness, continuous learning, enabled people, information sharing, and servant leadership, build the baseline (Rebentisch et al., 2018; Vejseli et al., 2019). Research shows that, if a culture is well-aligned it will positively influence the vision and mission of a firm (Ullah & Lai, 2013). Further, an agile culture embraces change, and organizations can create a proactive intention to cope with change (Wendler, 2016). Finally, Shafiee Kristensen et al. (2021) see higher employee empowerment, motivation, entrepreneurial drive, and innovation as its performance effects.

Table 5. Performance effects of agile DOs for the people & culture dimension

DO	Performance effects
#13	1. Improves alignment of business and IT; 2. Supports business/IT understanding and joint course; 3. Increases resource flexibility to react to changes
#14	1. Increases the success probability of agile transformation; 2. Empowers people to live and promote an agile culture; 3. Shifts the focus from satisfying internal management to satisfying external customers
#15	1. Supports employees in adopting agile skills/thinking; 2. Drives adoption of agile values and understanding for change; 3. Increases team performance
#16	1. Reflects positively on the organizational vision and mission; 2. Supports proactive intention to cope with change; 3. Increases employee empowerment, motivation, entrepreneurial drive, and innovation

For governance, four DOs are identified: (#17) Team autonomy, (#18) CIO/CDO relationship, (#19) decentralized decisions, and (#20) agile governance principles.

Agility is based on teams with high *autonomy (#17)*. To outperform traditional structures and realize the advantages of cross-functionality, teams need a high autonomy level in decision-making (Indriasar, 2020; Shafiee Kristensen et al., 2021). Hence, a performance increase is one outcome of highly autonomous teams. Empowered team members make strategic decisions, as a result organizations react more dynamically (Urbach, Jöhnk, et al., 2017; Vejseli et al., 2019). Shafiee Kristensen et al. (2021) and Horlach et al. (2020) state that such teams push value delivery and are very productive.

Introducing a *CDO (#18)* as an executive role can increase agility – with CDO roles discussed by Seeher et al. (2020). A CDO can buffer IT and business supporting bimodality (Horlach et al., 2017; Tumbas et al., 2017). Thus, the performance effects of bimodal IT organizations are apparent. Moreover, a CDO can complement an IT unit by focusing on end customers and digital initiatives, increasing agility (Tumbas et al., 2017). Finally, rapid-paced digital innovation can be observed (Tumbas et al., 2017).

Decentralized decision-making (#19) is key enabling agility (Horlach et al., 2020). This includes a broader distribution of the decision power, enabling agile teams to push lateral coordination further across hierarchies or functions (Shafiee Kristensen et al., 2021). This allows organizations to gain speed in making decisions and is mentioned as a performance effect by Vejseli et al. (2019) and Shafiee Kristensen et al. (2021).

The frequency of making decisions can also be increased (Rebentisch et al., 2018). Further, this improves the flexibility in decision-making processes (Vejseli et al., 2019). Finally, decentralized decision-making fosters leadership and management skills in an organization by involving more people (Worley & Lawler, 2010).
It was found that rigorous governance frameworks are blocking agility (Johansson & Rusu, 2019). *Agile governance principles (#20)* include a focus on the organizational context; decisions and actions are business-driven, and people need to feel valued and incentivized (Luna et al., 2014). Agile governance is constituted via lean structures, a fast information flow, short decision-making processes, and direct communication (Vejseli et al., 2018). There is a positive effect of agile IT governance principles on firm results (financial results, operational excellence, customer focus) (Vejseli et al., 2022). Further, the effect of agile governance principles is higher than that of traditional ones (Vejseli et al., 2022). Moreover, agile governance can mitigate collaboration issues and increase delivery speed (Vlietland et al., 2016). Last, clear roles drive operational effectiveness and speed (Shafiee Kristensen et al., 2021).

Table 6. Performance effects of agile DOs for the governance dimension

DO	Performance effects
#17	1. Increases overall team performance; 2. Leads organizations to react more dynamically; 3. Increases customer value delivery and productivity level
#18	1. Supports bimodality performance effects; 2. Increases end customer focus; 3. Supports rapid-paced digital innovation
#19	1. Gains decision-making speed; 2. Increases frequency and flexibility in making decisions; 3. Fosters leadership and management skills in the firm
#20	1. Positively affects firm performance (higher than traditional ones); 2. Mitigates collaboration issues and increases delivery speed; 3. Supports operational effectiveness and speed

5 Discussion

Next, this paper presents three key findings, including future research needs. Further, this section outlines the theoretical and practical implications and limitations.
The review reveals that the design of an IT organization is a powerful lever to increase agility. However, the *first finding* outlines that the design of an organization must consider its unique organizational context. Therefore, the DOs must be tailored to the specific organizational context (Limaj & Bernroider, 2022). Consequently, future research must provide answers on the organizational context in which these agile DOs are most suitable. For IT organizations, this means identifying crucial parameters that determine the context and analyzing the DOs within that context.
Second, designing an agile IT organization is not a standalone task of single DOs; they must be combined. This matches with the understanding that interconnected variables drive performance effects, as per configurational theory (Huang et al., 2024; Leonhardt et al., 2018). For example, Neumann et al. (2024) outline that, with strong hierarchies, agile values and principles are blocked. Hence, future research must better understand which DOs are frequently combined, and, in combination with the first finding, which

is the right organizational context for these combinations. Further, it is of interest if specific combinations can be aggregated into agile IT organizational archetypes. Such archetypes can provide further guidance for IT organizations on their agile transformation, deriving their ambition level, and can be empirically validated in further research. This simplifies complexity, offers strategic clarity, and fosters consistency.
The *final finding* focuses on measuring the performance effects. When reviewing current literature and checking for performance effects, it turns out that the effects are mainly not measured quantitatively. Instead, most of the effects are qualitatively observed and identified. Consequently, the measurement of the resulting performance effects must be measured via quantitative methods to strengthen agile cost-benefit discussions. This is the best way to objectify discussions, enhance understanding, and improve design decisions. Quantitative measurement provides a basis for comparison, enabling benchmarking, progress tracking, and the development of predictive models.
This paper contributes to IS research by providing a systematic review of studies on agile IT organization design. Moreover, it contributes to configurational theory by identifying IT agile design patterns and their performance effects. A particularly high contribution is seen in this area, as various performance effects occurred in several DOs, for example, the effect of increasing innovation (*see* DOs #1, #5, #6, #16, #18). Based on the second finding, models can be defined to detail the configurational theory, studying the interactions of the DOs and the resulting effects on the performance. It could be exciting to study whether performance effects can be enhanced using a systematic combination of DOs. If such effects can be measured, these models can also be used to provide valuable decision-making support in practice regarding the cost-benefit discussion mentioned in the introduction. Furthermore, a high practical relevance for IT management as an overview of possible agile DOs and their resulting performance outcomes to challenge the status quo for their IT organizations is given.
This study is not without limitations. A keyword search might miss relevant papers if they do not explicitly include the search term. Additionally, during selection, researcher bias may have influenced the study selection. The analysis of the selected papers focused on overarching DOs and their clustering across the four dimensions. Thus, it was necessary to determine whether a DO is case-specific and should be included or excluded. Finally, the DOs were generally described. The application of the identified DOs should be reviewed and adapted to a specific organizational context.

6 Conclusion

This systematic literature review gives an overview of DOs for IT organizations to improve agility from an organization design perspective. In total, 20 DOs were identified, and performance effects were shown. Based on the analyzed literature, clear evidence is missing in which specific organizational contexts the DOs are most suitable. Further, a quantitative measurement of the performance effects is mainly not available. Hence, further research on measuring the effects of agility is needed to better understand the organizational context in which the DOs are best applied and how to combine them. Both topics support cost-benefit discussions of agility in IT organizations.

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