






A Literature Review Based Insight into Agile Mindset Through a Lens of Six C's Grounded Theory Model

Necmettin Ozkan¹ , Karen Eilers² , and Mehmet Şahin Gök¹ 

¹ Gebze Technical University, Kocaeli, Turkey

{n.ozkan2020, sahingok}@gtu.edu.tr

² Institute for Transformation, Hamburg, Germany

karen.eilers@in-transformation.com

Abstract. Agile approaches originated in software development. Due to their various advantages, they are being applied to many different industries and functions. Meanwhile, organizations face extreme challenges and obstacles in their Agile transformations and implementations. One of the major factors causing these challenges and obstacles relies on people related factors. As one of the critical human factors in Agile, Agile Mindset impacts all facets of behaviors and activities. Nevertheless, Agile Mindset-related matters are disregarded by several organizations and literature that focus on concrete and industrialized products of Agile. Motivated by this gap, we aimed to provide a thorough investigation of the research on Agile Mindset-related literature and modeled the obtained results by using Glaser's Six C's Grounded Theory coding family. Therefore, we aimed to provide a comprehensive insight into the Agile Mindset construct, which is new yet essential, required but hard to acquire, challenging to observe but important to notice, and cheap to disregard but at an excessive cost.

Keywords: Agility · Mentality · Mind-set · Being agile · Systematic Literature Review · SLR

1 Introduction

Attracted by its various advantages, organizations are transforming and facing extreme challenges in adapting to Agile [13, 14, 19, 54], mostly and mainly caused by the involved actor's mindset [16, 19, 64]. Humans are always one of the key elements that have a direct impact on their organizations and accomplishments of initiatives [11, 13, 19]. They are responsible for implementing Agile, regardless of the tools, methodologies, or frameworks used [32, 54]. Weinberg briefly states: "No matter how it looks at first, it's always a people problem" [61].

An increasing number of researchers have started to focus on internal aspects and the human side of agility [19]. Even though people-related issues' relevance and importance are evident in Agile adoptions, they are still largely disregarded by organizations [13, 19, 41, 54]. Similarly, the literature on Agile continues to emphasize engineering viewpoints,

methods, and processes [31, 50] rather than the aspects pertaining to people. In addition to that, the industrialization effects driven by the Agile marketing and selling Agile™ products and “Fake Agile” to organizations have caused to prevent organizations from properly understanding the real and market-independent agility [7, 23, 31]. As a result, Agile teams are more commonly doing Agile rather than being agile [31].

The mindset which is one of the most important human factors reflects individuals’ beliefs, assumptions, perceptions, conventions, attitudes, and conceptions, [3, 63]. It has an inherent impact on systems, processes, and tools that people design and use. It affects how people behave [55], make decisions [3], think, believe, and act [35], and consequently molds how organizations operate [3]. People bring their (agile) mentality to organizations, processes, and tools they design [49]. These all make it an important subject to research. Owing to its importance, the construct of mindset and its underlying major roles and implications are the subject of research in several fields, including information systems and beyond [45].

Agile Mindset, which prioritizes people, sits at the core of Agile [13, 21, 59], as Agile is mainly regarded as a social process [38]. Agility is often referred to as having an agile mindset [13, 34]. When compared to any technique, process, certification, system, platform, or organizational structure, Agile Mindset occupies a unique space [42, 64]. Targets cannot be attained by directly applying any Agile approach or without a mental shift [27]. Beyond the prescribed set of processes, methods, and rituals, the path to agility should begin with developing an appropriate and correct Agile Mindset, the spirit of agility [44, 64]. An agile culture should be built on an Agile Mindset [13]. “Without the right mindset, the methods are often adapted in an incorrect way and lose their purpose” [34]. Methods and practices can only lead to a shift in a degree of agility, and they alone do not guarantee being agile [16, 31, 34, 36, 57]. Consequently, living the key values, principles and mindset of agility is necessary for Agile organizations which are viewed as living systems, in information systems and beyond [13, 31, 34, 38, 57].

However, a lot of teams and organizations struggle to create an atmosphere that supports people’s development of an Agile Mindset [55, 60]. Some Agile team members state that developing an Agile Mindset is the most challenging when moving to an agile company and they encounter several difficulties in fostering the development of an Agile Mindset [10, 17, 28]. Even more, it remains unclear what is meant by having an Agile Mindset and how the state of having Agile Mindset can be achieved [34].

Therefore, it is essential to look at the Agile Mindset construct that is concerned with significant application challenges and holds great importance in the field of information systems and beyond. Considering that research on this subject is still in its initial stages as of right now [19], this need becomes the driving force behind our study that attempts to provide a thorough investigation of the research by conducting a literature review and delivering results via a modeled view. Thus, our research objective (RO) is to investigate Agile Mindset-related literature and to model the results obtained from the literature by using Glaser’s Six C’s Grounded Theory coding family [24]. To have a more comprehensive representation of the construct and to provide it with additional inputs from a wider range of disciplines collected from every field, we preferred to go beyond software development, which heavily utilizes this construct.

This paper extends the conference paper [52]. The previous conference paper addresses the indicators, importance, definitions, characteristics, elements of Agile Mindset, activities for developing it and future directions of research on the topic. It also discusses the demographics of publications. The following are the major points that this paper broadens and deepens the conference paper: (1) The 82 Agile Mindset components found in the six research sources [19, 42, 43, 45, 55, 59] before in the previous conference paper were not elaborated there but now all such items have been investigated thoroughly in this work. (2) We revised our literature data extraction process according to the updated research objective. Accordingly, some of the previously included studies in the conference paper were excluded and some of those that were excluded in the previous study were included in this work (3) We extended our literature review by replaying our search procedure for recently published papers, which resulted in adding three new identified sources into the final set (4) We need to learn more about how Agile Mindset items contribute to Agile Mindset and how they are related to one another [19]. To do this, we utilized one of the theoretical coding families of grounded theory that is the Six C's, as the most pertinent theoretical code among others for conceptualization of the presence of Agile Mindset, unlike in the previous conference paper stating the results without any links between them. This coding family describes a category in terms of its Causes, Context, Contingencies, Consequences, Covariances, and Conditions dimensions and aids in the production and interpretation of the results [24].

In the rest of the paper, we give background information on the topic in Sect. 2. The research design overview, together with the research objective, paper selection and data extraction and synthesis procedure are covered in Sect. 3. The results are presented in Sect. 4. Section 5 delivers the discussions of our results. We present the study's conclusions and limitations in Sect. 6.

2 Background

2.1 Process of Agility

According to [48], Agile process begins with an expected or unforeseen, predicted, or unpredictable trigger, like any other process. The trigger could be an impending change, a realized change, or a requirement to generate necessary actions in anticipation of a potential change. Sensing and anticipating are the next steps. Diagnosing, filtering, and interpreting input data happens after detecting and anticipating the change [62]. After that, the entity decides what kind of answer to get ready for. The next action is to create a change as a response. In proactive activities, this stage occurs initially; in reactive behaviors, it occurs after the change occurs. Deliberately providing no response at all is also possible. The prepared response is put into action in the final phase. An organization might not be agile if it cannot sense and act promptly and appropriately [62], or when it senses and acts incorrectly or not rapidly enough which could be catastrophic for agility [5]. This definition indicates that the Agile process is heavily relied on human aspects and has a great deal of cognitivist, consciousness, and predictivity-related aspects from people. Because of this, dealing with critical thinking, decision-making, comprehension, and perception aspects that produce the most important asset in this process, the output,

is critical to investigate and focus on. Those aspects are closely related to Agile Mindset of individuals.

2.2 Agile Mindset

Dictionaries define mindset as a mental and established set of attitudes, a cognitive understanding and interpretation of the environment, and a person's way of thinking and opinions [3, 8, 39]. Agile mindset is a particular personal attitude, way of thinking and behavior of both individuals and teams [44] embracing change, learning and self-development, with the goal of achieving a state of being agile [45, 53]. As "a way of thinking about things" [39] and "a person's way of thinking and their opinions" [8], it emphasizes collaboration among team members and adaptability to changing environments to be a high-performing team [55] which is necessary for the organization to survive in a changing marketplace [53].

Agile Mindset is an abstract, vague, intangible, and latent (invisible) construct, thus, difficult to measure, even to observe, and demonstrate [3, 17, 21, 23, 46], which makes the transformation and training of it the most difficult part [21, 23]. Thus, it is hard to prove and show when the transformation and training of it is successful. Even though, as an intangible and invisible asset, it influences various visible aspects [21], such as a successful Agile transformation [3].

Agile Mindset is a soft and dynamic asset, resource, and capability and a kind of trigger that can influence various tangible assets of organizations [3, 19, 21]. It is inherently a psychological, socio-cultural, and human-related matter [45, 46, 59]. Like other human-related assets, it presents complex interactions of social, cultural, and psychological perspectives of individuals with other people. This makes it challenging to understand, substitute, and emulate [3]. The nature of it also creates challenges for organizations in terms of finding and developing their Agile Mindset as an individual endeavor [3, 34].

Being abstract, vague, intangible, latent (invisible), and difficult to observe, and demonstrate construct [3, 17, 21, 23, 46], it is challenging to define Agile Mindset. Like the definitions of the term agility that have no consistent, complete, precise, and agreed definition yet [48], the current situation regarding the definitions of Agile Mindset remains unclear regarding what Agile Mindset is on various levels and perspectives [19, 34, 45]. Another issue with the previous Agile Mindset definitions is that people use different terms other than mindset to describe similar or identical constructs, such as Agile culture [45]. Regarding the key features of Agile Mindset, the most used source is the Agile Manifesto [6], exemplified in the study of [45], although the manifesto does not include a reference to mindset but just a certain overlap with the Agile Mindset construct [15, 23, 45]. Moreover, [23] proposes going beyond the manifesto and not solely relying on it for Agile Mindset in this regard.

2.3 Other Constructs Related to Agile Mindset

Agile leadership focuses primarily on empowering individuals in organizations to take on responsibility through a bottom-up strategy that includes transparency, leading, encouragement, inspiration, motivation, emotional intelligence, a shared vision, and collective

decentralized decision-making [13, 53]. Agile workforce mostly concerns with behaviors, attitudes, and prerequisites of a workforce that is or is becoming agile and entails proactive, adaptive, and resilient behaviors of employees [53]. Agile people are those who have aptitude, know-how, and skills to proactively seek opportunities and who can quickly adjust to changing circumstances [53]. The Growth mindset theory of Carol Dweck [18] is related to Agile Mindset by some Agile practitioners. By focusing on the learning process, it reveals how a growth mindset rather than a fixed mindset can improve performance of individuals, foster self-esteem, and lead to accomplishment.

2.4 Grounded Theory and Six C's Model of Glaser

Grounded Theory (GT) is the systematic generation of theory from data analyzed by rigorous qualitative research method developed by sociologists Glaser and Strauss [12, 24]. With GT, we can investigate social interactions and behaviors, particularly in areas of inquiry that have not been thoroughly examined previously including those of Agile teams [30]. The goal of GT is to produce a theory, which is an integrated set of hypotheses, by continuously comparing data at progressively higher abstraction levels [30].

As soon as some data is gathered, the data analysis process, known as coding in GT, can start [30]. There are two types of coding in GT: Substantive coding and Theoretical coding. The substantive codes are “categories and properties of the theory which emerges from and conceptually images substantive area being researched [24]. Theoretical codes “implicitly conceptualize how the substantive codes will relate to each other as a modeled, interrelated, multivariate set of hypotheses in accounting for resolving the main concern” [24].

The Six C's coding family [24] is one of the common structures of theories that Glaser classifies as theoretical coding families used in GT. According to Glaser [24], the Six C's coding family describes a category in terms of its six dimensions (each starting with the letter C) encapsulating the core category at the center that is the “main theme” or “main concern or problem” [24]. Context refers to the setting and ambiance of the study. Condition outlines prerequisite factors [30] to manifest the consequent core concept [24]. The cause-consequence axis often stands out as a closely related duo in studies as causes that lead to the occurrence of the core category and outcomes or effects of its occurrence. The idea of contingency asserts that the concept depends on the contingent elements to occur [24]. Study [30] describes it as the moderating factors between causes and consequences. Covariance refers to correlations between various categories when one category changes with changes in another category [30].

3 Research Design

This research process has been undertaken as a Systematic Literature Review (SLR) based on the guidelines proposed by Kitchenham et al. [33]. The following section describes the implementation of this SLR. The research process starts with defining the research objective. After defining the search objective and searching in the Scopus and Web of Science (WoS) digital libraries, we gathered 1954 potentially relevant publications. For scanning the retrieved studies, we developed and applied inclusion/exclusion

criteria and obtained a final pool of twenty-one sources. In addition, the references in the identified twenty-one studies were examined (backward snowballing) and two other related study were added. Finally, twenty-three studies were identified. After extracting the data from the sources, the obtained data were coded (Level 1/L1) and then grouped at Level 2 (L2) according to the model used. The results of this study were then analyzed, and the findings were discussed. The remainder of the section concerns the research objective, publication selection process, and data extraction and synthesis.

3.1 Research Objective

This study aims to review studies that focus on Agile Mindset. Thus, we set the main goals related to our research 1) identify the studies which focus totally or partly on Agile Mindset and 2) analyze and synthesize the studies' relevant results. We raise and investigate the research objective accordingly. Based on the research objective, we have maintained some contents from the previous conference paper and removed some data in the analysis stage. The removed data regards the definitions, characteristics of Agile Mindset, publication demographic-related data including country of authors, publication year, publication venue, authors' affiliation type, and paper citation, and future directions for research. We used the remaining data to identify the Six C's dimensions [24]. We thereby started by investigating the relevance of Agile Mindset from the data for different contexts, conditions, causes, consequences, contingencies, and covariance to address insights, which are necessary for organizations to build effective surroundings and concrete activities to achieve Agile Mindset for individuals. Consequently, we have identified our research objective (RO) as *"to investigate Agile Mindset related literature and to model the obtained results from the literature by using Glaser's Six C's Grounded Theory coding family"*.

3.2 Publication Selection Process

The search process is the same as that conducted in the previous conference paper [52]. It follows the main procedure in [33] and as detailed out in Table 1, it includes Scopus and Web of Science (WoS) with the identified search strings, without any filter in the year range to gather a full overview. Based on the scope of this study, the search string is without any "population" related keyword referring to the application area, to access the largest population set of data.

The initial list obtained included duplicate records. After removing them, a total number of 1954 distinct peer-reviewed studies were reached. Based on the scope and context of our study, for the selection of papers, the propositions of inclusion criteria (IC) and exclusion criteria (EC) were specified and applied to those papers. The papers in English and fully or partially focusing on Agile Mindset in any field from conferences, workshops, journals, and book-chapters were included. Duplicate and extended papers and those not accessible by the authors were excluded.

During the application of inclusion/exclusion criteria, the papers were examined according to the procedure detailed in the previous conference paper [52] and the renewed RO in this study to identify whether they were within our scope. Every Agile practice, value, and principle is supposed to be theoretically and practically related to Agile

Table 1. Search strings and libraries.

| Library | Place | Search strings | Number of Initial Results | Number of Selected |
|-------------------|---------------|---|---------------------------|--------------------|
| Scopus | TITLE-ABS-KEY | TITLE-ABS-KEY (“be* of agil*” OR “be* agil*” OR “agile mindset” OR “agile mind set” OR “agile mind-set” OR “agile mind” OR “agile mental” OR “agile mentality” OR “mental agility” OR “agility mindset” OR “agility mind set” OR “agility mind-set” OR “agility mind” OR “agility mental” OR “agility mentality”) OR TITLE (“be” OR being OR becom* OR became) OR (mind* OR mental*) AND agil*) AND (LIMIT-TO (DOCTYPE, “cp”) OR LIMIT-TO (DOCTYPE, “ar”) OR LIMIT-TO (DOCTYPE, “ch”)) AND (LIMIT-TO (LANGUAGE, “English”)) | 1706 | 21 |
| WoS | All Fields | (“be “ OR being OR becom* OR became) AND agil* (Title) OR (mind* OR mental*) AND agil* (Title) OR (“be* of agil*” OR “be* agil*” OR “agile mindset” OR “agile mind set” OR “agile mind-set” OR “agile mind” OR “agile mental” OR “agile mentality” OR “mental agility” OR “agility mindset” OR “agility mind set” OR “agility mind-set” OR “agility mind” OR “agility mental” OR “agility mentality”) (All Fields) and English (Languages) and Article or Proceeding Paper or Book Chapters (Document Types) | 1105 | 15 |
| Snowballing | References | – | – | 2 |
| Total in Distinct | | | 1954 | 23 |

Mindset. Considering this, the content was excluded if it was not explicitly related to Agile Mindset in the paper. Regarding the search place and taking our inclusion criteria IC2 into account, we searched in meta-data and titles instead of the full texts. Finally, twenty-three papers were identified as relevant.

3.3 Data Extraction and Synthesis

The data extraction and synthesis process by applying detailed and thorough examinations of the relevant studies and the quality assessment to validate the quality of the selected candidate papers by ensuring each paper was of adequate standard were done according to the procedure detailed in the previous conference paper [52] and the updated RO in this study. We revised our literature data extraction process according to the updated research objective. Accordingly, some of the previously included studies in the conference paper were excluded and some of those that were excluded in the previous study were included in this work. No studies existed lower than the threshold score and no elimination regarding the quality assessment was done. This is most likely due to the venue of publications being well-qualified and generally well-known.

Our study uses a content analysis method. We used a specific version of content analysis, thematic content analysis. Content Analysis in general includes three stages: selection of the focal texts, coding the texts, and interpreting the results of the coding [1]. The common steps in the processing of coding include transcription, coding, and category creation [14]. Transcription is the process of converting what is obtained through interviews, observations, audio recordings, or field notes into text [14]. Regarding transcription, we used the papers' contents. For coding and category creation, we used the method proposed by Glaser [24]. This GT method provides a three-level coding process yielding categories at the end.

In our case, the raw data was extracted from the sources as-it-is, and then put into an Excel file. Then those raw data were coded (L1). During this stage, it is seen that some raw data items can serve for multiple L1 codes, then they are duplicated under different L1 codes. Those codes were then grouped into L2 according to the model used. During this grouping into L2, it was possible that some items were included in more than one category in terms of their meanings (for example, the increase in performance could be both a cause and a consequence). In this case, the context and meaning in which the original study used the relevant item were considered. If such an insight was not expressed and could not be inferred from the study directly, then the closest category to which the relevant item would be suitable was selected by the authors. Our study has been shaped around a main phenomenon (Agile Mindset) from the outline, rather than focusing on discovering an emergent main phenomenon. Thus, the Level 3 item in our model refers to Agile Mindset which is the main concept.

4 Findings

We present the results and findings of this SLR study concerning the identified RO. As a result of our SLR, we identified relevant studies as [3, 6, 13, 16, 17, 19, 21, 23, 25, 26, 34, 37, 38, 42, 43, 45, 46, 53, 55–57, 59, 64].

After reaching the list of identified papers, the data from each paper were collected as described in the Research Design section resulting in 282 items achieved. These items were then coded into 96 distinct items (L1). These L1 items were then classified under Six C's (L2) categories, according to their descriptions. As a result of this process, the obtained tree is depicted in Fig. 1 (by using "<https://miro.com>" application) bearing

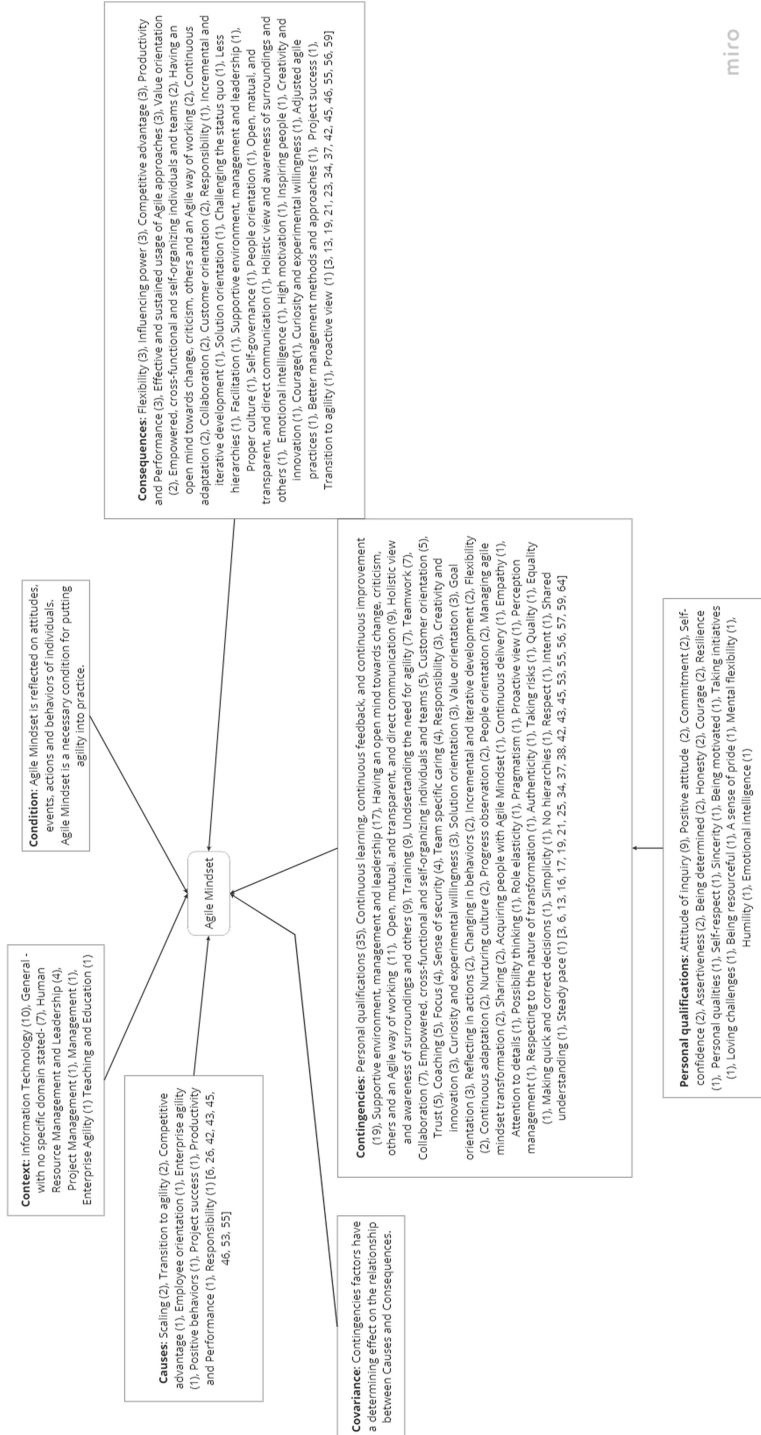


Fig. 1. The Model of Results Through the Six C's Grounded Theory

items names (L1), items' number of occurrence in the sources, L2 categories derived from those items and L3 category (Agile Mindset in our case).

According to the results, the **contexts** of the studies include information technology with ten papers at the top, General (with no specific domain stated) with seven papers, Human Resource Management and Leadership with four papers, Project Management, Management, Enterprise Agility and Teaching and Education with one paper each. This distribution shows, again, Agile is popular in the Information Technology discipline, meanwhile, it has started to spread to other management areas as well.

Agile Mindset is a necessary condition for putting Agile into practice, but we can only talk about its existence in **conditions** that require changes in attitudes, actions, and behaviors of individuals as reflections. It reminds us that Agile Mindset is not sufficient for being agile [3]; the existence of an Agile Mindset should activate people and cause some things to emerge.

Numerous studies have discussed the **causes** of having an Agile Mindset and its role in achieving a variety of outcomes. Those causes include competitive advantage to survive in a changing marketplace, especially when responses to crisis are needed, shift to agility, employee orientation such as onboarding for newcomers, attainment of enterprise agility, assisting team members in increasing positive behaviors, project success, productivity and performance of Agile teams, and responsibility, and scaling Agile.

When it comes to the **consequences** that may reflect the existence of Agile Mindset, having an Agile Mindset supports having a people, customer, value and solution orientation, and changes in thinking. Agile Mindset affects individual and team-related dimensions such as self-governance, leading to less hierarchies and more empowered, cross-functional, and self-organizing individuals and teams, having more responsibility, courage, high motivation, and collaboration. For individuals, it opens more avenues for creativity, innovation, curiosity, experimental willingness, emotional intelligence, having an open mind towards change, criticism, others, and an Agile way of working and open, mutual, and transparent, and direct communication.

From the process-oriented viewpoint, having an Agile mindset encourages incremental and iterative development, effective and long-term application of Agile approaches, continuous adaptation, flexibility, and adjusting agile practices according to the specific needs and contexts. All these are needed because there is no "book of truth" for how to be agile [46]. Consequently, after these all, it brings more influencing power to inspire, facilitate, lead, and direct people, productivity, performance, project success, possessing an appropriate culture, better management methods and approaches, and competitive advantages to organizations that may require challenge the status quo. It facilitates the transition to agility with a holistic view and awareness of surroundings and others.

Nevertheless, Agile Mindset is an abstract, vague, intangible, and latent (invisible) construct, thus, difficult to measure, even to observe, and demonstrate [3, 17, 21, 23, 46], which makes the transformation it the most difficult part [21, 23]. Agile mindset transformation and development is not a clear, straightforward, and painless process. For reasons like these, organizations and teams experience difficulties or fail to enable an Agile Mindset of individuals [60]. One of the main reasons for this is that the transition between causes and consequences is **contingent** upon several factors, independent

of context. Thus, we assert that Contingency factors have a determining effect on the relationship between Causes and Consequences.

The contingent factors include strategic, management, leadership, personal qualifications, process, communication, transformation, and behavioral aspects. From the **strategic** perspective, it demands value, goal, solution, and customer orientation. For **behavioral habits**, it requires changing behaviors, reflecting on actions, making quick and correct decisions, proper intent, continuous learning, getting, and providing feedback, continuous improvement, creativity, innovation, focus, taking risks, proactive view, trust, empathy, respect, taking responsibility, equality, pragmatism, authenticity, possibility thinking, curiosity, experimental willingness, attention to details, continuous adaptation, teamwork, sharing and collaboration. Although it is difficult to observe, not only the outcomes of the behaviors but also the person's intentions should be considered. Agile Mindset also demands open, mutual, and transparent, and direct communication.

In terms of **personal qualifications**, certain qualifications, prerequisites, and attitudes are critical for people to have. They include having an open mind towards change, criticism, others, and new ways of working. Other personal qualifications include attitude of inquiry, positive attitude, commitment, self-confidence, self-respect, determination, motivation, courage, resilience, sincerity, willingness to take initiatives, resourcefulness, a sense of pride, assertiveness, mental flexibility, honesty, emotional intelligence, and humility.

From the **process** point of view, Agile mindset requires a holistic view, awareness of surroundings and others, role elasticity, flexibility, incremental and iterative development, continuous delivery, steady pace, simplicity, and quality.

A supportive environment, **management and leadership** providing people orientation, acquired people with agility orientation, equality, shared understanding, sense of security, a nurturing culture across the organization and empowering the teams and individuals are critical. This calls for no hierarchies, cross-functional and self-organizing teams, teamwork, and leading Agile Mindset transformations by the management.

In Agile Mindset **transformations**, ensuring an accurate understanding of the need for agility, perception management, respect for the nature of transformation, team-specific caring during the transformations, providing permanent training and coaching, progress observation are mentioned.

5 Discussions

The study's findings demonstrate that there should always be a driving factor behind Agile and Agile Mindset transformations, which is the motivation behind the question "Why". "Why" should be the first question to ask, before the question "How" or "What". The transformations also ought to be based on people. It is important to acknowledge the human factors and their transformations. The human-centered transformations should also be supported by mutual and transparent communications across the organization. Especially while transforming to Agile Mindset, organizations need to be persistent and patient. It is crucial to organize the transformation well and observe results of it in practice and behaviors of individuals and teams including the leaders. It is required to allow people and teams to create their space and freedom. Therefore, it should be normal

and even expected for practices of teams to go beyond the classical Agile methods such as Scrum [40]. Like in every transformation, the leaders should first be transformed, and their support should be obtained.

Humans, with their equally sophisticated talents, are faced with managing the complex world of reality and its contextual changes. Processes, documentation, and plans are examples of human-made proxy entities that are unable to compensate either reality or human capabilities. Thus, as one of the most powerful attributes of people, a person's mindset is something that organizations and leaders should and will always invest in.

According to our results, **individual personalities** have a unique place and capacity to support Agile Mindset. To investigate what kinds of companies and individuals are better equipped to apply Agile Mindset, it would be fascinating to integrate studies on Agile Mindset with research on personality, social elements [34], and experiences and maturity of practitioners [45, 46]. It is recommended that practitioners and managers should pay greater attention to candidate selection processes, with a particular emphasis on personality traits, cognitive abilities, beliefs, and attitudes toward change by applying proven tests and customized interviews used to evaluate these qualities [53]. Moreover, agility could be emphasized in job advertising to draw applicants with more Agile personalities and mindsets [53]. Further research should be done on job rotation, job expansion, and job enrichment initiatives in agile organizations [47].

Like in the job-related **flexibility** forms, investing in the invisible—that is, the flexibility that fosters agility—is equally essential. Static structures, team utilization, and other inward-looking technical debt issues are examples of factors that should be examined in addition to the outward-looking viewpoint to the customer.

We note that internalizing the Agile values and principles is essential to becoming agile [57], as recognized by the Agile community and practitioners. The Agile Manifesto [4] and many others underline the importance of people and human factors [9]. However, it seems from our study that the increased interest in Agile in the academic field focuses more on **tangible entities** like practice, method, and frameworks; the addiction of Agile to the **concrete** has been proven again. Numerous studies have been conducted to explore the technical aspects of agile development even though such aspects are on the “less valuable side” of the Agile Manifesto. The interesting thing is how little attention has been paid to the social facets of agility and Agile Mindset [19]. Thus, it is obvious that further research is necessary to examine the “soft aspects” of Agile including Agile Mindset.

Many elements found in our study associated with Agile Mindset remain at the practical level. Instead of investigating the Agile Mindset itself, there is a focus on elements circling around and relating to it. In this sense, the sociological and psychological dimensions of Agile Mindset have not yet been explored. This may be because Agile emerged from engineering fields such as software and manufacturing sectors, not from **social sciences**. However, there are novel studies that go beyond these areas in terms of context. We think that there will be more studies towards these dimensions of Agile Mindset in the future. Although the “What” about Agile Mindset has mainly emerged, it would be beneficial to make room for more studies on “How” and even “Why” they should be achieved.

Value and collaborating with clients who are closest to the point to represent value are the cornerstones of having an Agile Mindset. As a result, the goal is to be as close as possible to customers, who are more aware of their needs and demands. Being close to customers means that customers and end users are real owners and users of systems to be developed, which serves as a reminder to keep the focus on customers, value, quality, and goal at the center.

As the similarities at the level of practices increase and Agile practices equalize across different organizations, it will become more difficult to distinguish between a successful Agile transformation from an unsuccessful one. In this and all other similar cases, the distinguishing feature will be about the change in **value orientation**, value production, and focus on goals by individuals, teams, and organizations. Agility, and Agile Mindset should serve a greater purpose—value creation—rather than encouraging aimless behaviors [51]. Otherwise, agility may become a matter of “How”, rather than serving for a greater whole (What) and purpose (Why). Regarding the question “How”, after a while, when Agile practices will be largely equalized for organizations, organizations will make a difference with people [2] and with their mindset, not with practices, but with the value creation. Thus, the focus on the people side and having a proper Agile Mindset will be more important and the predefined practices will have less place in the future [23], which requires the intellectual capabilities of people’s minds to make practices evolve more originally and organically.

Like development in every context, it is important to nurture the question “**Why**” for the development of Agile Mindset. Every stakeholder who is or will be affected by the change should understand the benefits and rationale behind the change, and they should participate in the transformation processes [17]. Therefore, individuals, teams and organizations should understand “Why” Agile and Agile Mindset is needed, to internalize the agile values, principles, and practices. For instance, teams should get an explanation of why each respective agile practice is helpful and should be implemented to comprehend the vision and rationale behind using an agile way of working [34]. Even though this reason of “Why” can be reasonable for organizations, it should be meaningful and reasonable for the individuals as well (the goals of the organizations and the individuals cannot always be aligned by default).

Keeping this “Why” in their heads, people should adjust practices when needed and combine them with existing elements. Since reality frequently changes based on the **context**, it is necessary for each distinct practitioner to establish a space appropriate for their context and to mold their own agility within it [51]. Agile transformations in general and Agile mindset-specific transformations in organizations are an individual activity as well as a collective one. Therefore, every part in organizations should take a holistic view and awareness of surroundings and others, have open, mutual, and transparent, and direct communication, and collaboration with others.

The results show that changing one’s mindset to one that is more agile is a challenging process that calls for perseverance and hard work. Managing Agile Mindset **transformation** requires meticulous, careful, patient, time demanding and complicated leading and management that needs a strong will [53]. It must be carried out in an agile way and concentrate on all aspects of change. During it, adequate coaching, training, transformation progress observations, team-specific caring, perception management, shared

understanding, and respecting for the nature of transformation especially in terms of the duration are required. Team dynamics, current situation and way of working should be considered [34]. Structural approaches in Agile mindset transformations also indicate using the classical controlling, redirection, and monitoring activities specific to individuals and teams.

Even while physical acts may be seen, we still need to figure out **how to develop** Agile Mindset or how to observe the minds of people by **measuring** it [19] to make sure that people are fully immersed in Agile Mindset [17], especially when considered that there are not enough studies to measure Agile Mindset in the literature [19]. Organizations should take down the obstacles standing in their paths to having a proper Agile Mindset by the individuals [19]. Further research is required to determine the various stages at which achieving an Agile Mindset can occur, ranging from the individual to the organizational levels [19, 45].

Having an Agile Mindset is not enough; people should reflect their mindset in actions. This is also a unique learning process for individuals and teams. Companies should set up expensive, drawn-out, **ongoing endeavors** (the contingencies) for individuals to have Agile Mindset. For instance, individuals should establish habits of continuous learning, constant feedback, and continuous progress, among other ongoing initiatives. Thus, every distinct person, team, and organization should evaluate the benefits, costs and drawbacks of adopting an Agile Mindset to identify their ideal levels. Specifically speaking for the drawbacks side, for instance, investigations about whether an overly Agile Mindset detracts from performance [3], quality or other factors may be worthwhile to study. Even in the initial stages of the Agile Mindset transformations, organizations might allow for a drop in performance.

While some items of Agile Mindset that are discussed in this study are unquestionably beneficial in the absolute sense (such as continuous improvement), some others have **trade-offs** that must be considered (even though it has not been encountered much in our review). For instance, while cross-functionality lowers communication costs by bringing the required skills together within the team and facilitating quick decisions, self-sufficient (!) teams erode their capabilities overall due to potential alienation of surroundings, which poses a risk to teams operating in a multi-team environment [51]. A focus on agility without a focus on resilience might lead employees to experience increased stress and perform less well as a result [53]. It also serves as a kind of reminder that firms should possess a variety of capabilities (such as resilience, quality, sustainability, etc.) in addition to agility and find a balance between them [29]. Agile Mindset ought to be combined with other constructs in a holistic network [19] while achieving a desired and planned level of it, at a relatively excessive cost. This difficult aspect of Agile Mindset adds to its power; it gives organizations independence and a “safe place” away from the “Agile marketplace”.

We conclude that possessing the right Agile Mindset has certain causes and advantageous consequences. Reaching such consequences, though, comes at a **cost**. Agile Mindset is one of the aspects of Agile that is difficult to internalize in organizations [23, 38]. It takes a new way of thinking to adopt it, which makes it difficult to unlearn long-standing habits and adopt new ones [58]. Changing the mindset of employees and management appears to be more difficult than simply implementing Agile practices,

which is simpler [34]. Agile mindset initiatives may thus need a significant investment of time, money, and services [53]. Putting an Agile culture in place with an Agile Mindset will take considerable time, patience, and effort, requiring a wide range of discussions, iterations, and a strong will [53].

The findings indicate that for employees to build an Agile Mindset to cope with changing environments, appropriate leadership and management mindset approaches are necessary. The outcomes demonstrate once more how much **leaders** have an impact on Agile Mindset initiatives by being role models and establishing a supportive environment including physical facilitations for meeting rooms and offices, as well as socio-psychological aspects to support Agile Mindset developments, explorative activities, risk-taking, and independent thinking. Throughout a bi-directional (from the top-down, from bottom-to-top) transformation [57], leaders should be role models [34, 57], ambassadors [53, 57], problem solvers [53], core values installers [53], and invest in coaching, training, learning, building, and measuring Agile Mindset. They should empower employees to make their decisions and cocreate change [57]. As a result, we must identify the roles that leaders, talent acquisition and development, and people management play in implementing target-oriented programs and provide means for actors to cultivate an Agile Mindset [13, 19]. Important insights into the attitude of Agile leaders and their impact on organizations are also required [19].

One of the things people need during their learning process to face the complexity is the courage to change, including changing oneself. They also need to feel comfortable and have a reasonably high tolerance provided by their leaders for making mistakes for their **personal safety**. This necessitates mutual **respect** and **trust** across the organization. Respect promotes collaboration, opens avenues of communication, and permits **taking risks**. Respect ensures that every individual has a suitable and secure space for learning and experimentation. **Courage** is necessary to motivate to take risks and veer off course to adjust along the way.

Individuals with an Agile Mindset are expected to **align their mindset with Agile practices** since these practices themselves embody an Agile mindset too. For instance, as a practice, a large amount of development is broken down into smaller functional increments with iterative development in conjunction with frequent delivery. This helps to better understand functionalities that customers demand, control risk, and obtain early feedback from clients and end users. Iterative development also promotes learning and experimentation. Because the system to be developed can produce small steps forward, it can expand organically as needed to adjust to changes. People with an Agile Mindset frequently employ inquiry, observation, improvement, learning, learning from mistakes and feedback loops to learn more about reality. People with an Agile Mindset must embrace these agile techniques to reap their benefits. Seeing such distinct behaviors and methods in practice can serve as a reliable gauge of an individual's Agile Mindset.

Agile processes and people are additionally equipped with quick and accurate **information**. Information in Agile should circulate swiftly both within and between the teams to move quickly and accurately. To be quick, self-organizing and cross-functional teams are ideal for Agile teams. Cross-functionality along with self-organization brings

required capabilities closer and together, lowering the cost of communication and transfers to enable quick actions for a variety of complex scenarios. To be accurate, communication is facilitated by transparency. Learning is supported by communication including communication with the developed solution itself. Furthermore, communication with shared goals fosters collaboration and teamwork. As a result of this, quick and accurate information that is updated, rectified, accelerated, and shared to gain experience and generate innovative ideas brings more agility.

The act of putting Agile practices into practice is quite easy compared to changing the mindset of management and individuals which is much more challenging [34]. Assuming that they are put in practice successfully, Kuhrmann et al. [36] investigated how different agile practices and approaches were used and how much agility was influenced by them in software engineering fields. They discovered a minimal correlation between the application of specific agile techniques and a project's level of agility. Consequently, they conclude that other factors must influence the level of agility. Thus, examining the impact of Agile Mindset and studying the covariance correlations for each item in the model we propose would be beneficial.

Researchers and practitioners alike recognize the importance of adopting an Agile Mindset. Despite its well-known significance, Agile Mindset is susceptible to being overlooked in favor of more visible, commercially viable Agile practices. Even if it is undertaken with solid intention, with proper guidance and specific suggestions to make it happen, the process of **changing the mindset** appears to be far more challenging.

One of the most fundamental reasons why Agile transformation is **difficult**(!) to achieve may be the desperate attempt to transform institutions and people without transforming their mindsets. It is a matter of curiosity whether a better result would have been achieved regarding Agile if some of the investments in the practices and the economy surrounding it had been made on people, values, principles, and mindset instead of these (certification, method trading, etc.). But at least we are sure of this; Investments made in the same way will not take organizations that have reached a saturation in the field of practices much further. It becomes evident that the primary success factor and prerequisite for developing Agile is the people-related matters, team members' personal prerequisites and attitudes [34]. Thus, it would be beneficial to give the human related elements (e.g., personality traits) more attention since projects may be improved by concentrating on the individuals engaged in the process [34].

In addition to the mind, the heart of people with **intentions** (in other words ethical and moral values) posing potential paradoxical values, unique interests, a dialectical nature of culture, and conflicting orientations [20] is significant. Despite this, it was surprising not to encounter this phenomenon in such a subject that focuses on people. Similarly, we have seen extremely limited attention to dimension of experience, even though experience is especially important for managing the demands of a complex world.

When it comes to the investigated studies including the term Agile Mindset, like the results from the study of [45] and [49], in our work we have also realized that most of the excluded studies use and mention the term Agile Mindset as a "**fixed term**" without actual definitions, descriptions, elaborations, investigations, details, or explanations. Most of these articles look upon Agile Mindset as a prerequisite [34], one category among many [16], or as a necessary condition for putting Agile into practice.

For many people and companies, Agile Mindset represents a completely **new** way of thinking [38] or a box that has not been opened yet; how the state of having an Agile Mindset can be achieved is described by limited studies [34]. When considering the underestimated position of Agile Mindset in literature and its new developing progress, it is recommended and worth researching the construct in terms of practice and theory. It appears that much remains to be discovered about this subject. In our study, our goal was to create a comprehensive representation of Agile Mindset through a model. Utilizing the data from most of the well-known studies on the topic to date, we hoped to make the analysis comprehensive and complimentary. Additionally, we hope that the results can guide in transformation processes of Agile Mindset.

There are too many social, psychological, emotional, and individual aspects at play about this topic rather than a clear path to success [34, 37]. For further studies, in the initial stages of the research on this topic, it is recommended to consider studies that examine mindset in a broad sense and benefit from findings of related fields of study. Further research in the fields of learning (as opposed to teaching), cognitive science, behavioral science, and multidisciplinary studies will likely be needed to advance this still-emerging construct. In this way, for instance, lessons from historical accounts of notable mindset transformations can also be applied to studies of Agile Mindset development, providing motivation and direction.

Working with an Agile mindset presents certain challenges because almost everything that is related to Agile is impacted by people, and nearly everything related to people is influenced by the mindset. As a result, it is challenging to identify boundaries for Agile Mindset. Such boundaries need to be clarified using scientific and systematic approaches. For instance, such a clarification might make a distinction between the external variables (environment, leaders, processes, etc.) and the internal components of the Agile Mindset of individuals (goal, personality, motivation, etc.). Furthermore, a differentiation between individuals who may possess an Agile Mindset in the future and those who already possess it can also be considered.

As a result, it is a matter of question to see what trajectory the construct of Agile Mindset, which is new but necessary, necessary but difficult to obtain, difficult to observe but should be observed, easy to ignore but at an excessive cost, will follow.

6 Conclusions and Limitations

Beyond the prescribed set of practices that guarantee no assurance for successfully implementing Agile methods, firstly individuals require an Agile Mindset. Even implemented in a successful manner, there are certain basic constraints to the practices provided by the Agile methods. This requires correct understanding and locating the Agile mindset before the practices. Interestingly, the construct of Agile Mindset is underestimated in the literature, even though numerous research and individuals have acknowledged its significance. Most of the research involving Agile Mindset uses it as a fixed term, thus, it would appear necessary to further dissect the construct which is worth researching in terms of practice and theory. We need more knowledge and wisdom beyond stating that Agile Mindset is important and required for various aspects.

In our study, we aimed to deal with the Agile Mindset construct comprehensively, by using sources from many disciplines. We aimed to unbox this construct by providing

comprehensive data from the literature modeled within the Six C's model by Glaser [24]. Our research incorporates the data currently accessible in the literature on Agile Mindset and offers a model that encompasses all this data, making it simple to acquire pertinent facts at one time and providing guidance on how to develop an Agile Mindset based on the model's recommendations. In the future, we will study further development and measurement of Agile Mindset for individuals in organizations.

The procedures used in our study and the nature of our study have limitations in several ways. Many items stated as contingencies in the study could also be a consequence of Agile Mindset. For instance, although trustworthy relationships are necessary and supportive of Agile Mindset, their existence is also a result of Agile Mindset. The obtained Consequences can also provide inputs to the model as Contingencies. We included these items in our analysis under only one category where we think they are prevalent to keep the model simple. Our study also does not purport to be exhaustive or finished to offer a list, model, or framework for cultivating an Agile Mindset, either in its entirety or in part.

Limitations of search terms and search engines coverage can lead to an incomplete set of primary sources obtaining only those written in English and the peer reviewed. A single researcher extracted the data from the included studies. The data obtained from the sources is prone to bias. Also, the values of the quality assessment criteria are subjective but based on field experience. Moreover, the primary studies' results are context-dependent and have thereby limited generalizability. Agile mindset is a strong and abstract construct that touches on a wide range of topics. Because of this, even though it subtly influences many aspects, such data is ignored if this effect is not clearly linked to Agile Mindset in the studies. However, when these processes were unclear, a consensus session was applied with the first and second authors. To ensure the reliability of our study, the entire pool of the sources was analyzed carefully, and the data were reviewed, extracted, and synthesized in iterations according to the research protocol and guidelines applied. However, since most of the research in the literature ignores the outcomes of Agile and many beneficial consequences of agility are hypothesized [53], the validity of data used in our study from the identified sources needs to be evaluated.

References

1. Ahuvia, A.: Traditional, interpretive, and reception based content analyses: Improving the ability of content analysis to address issues of pragmatic and theoretical concern. *Soc. Indic. Res.* **54**, 139–172 (2001). <https://doi.org/10.1023/A:1011087813505>
2. Alexander, C.: Beyond the Agile manifesto: epoch of the team. *Crosstalk: J. Defense Softw. Eng.* **29**(4) (2016)
3. Asseraf, Y., Gnizy, I.: Translating strategy into action: the importance of an Agile mindset and Agile slack in international business. *Int. Bus. Rev.* **31**(6), 102036 (2022). <https://doi.org/10.1016/j.ibusrev.2022.102036>
4. Beck, K., et al.: The Agile manifesto (2001). <https://agilemanifesto.org/>
5. Benaben, F., Vernadat, F.B.: Information System agility to support collaborative organisations. *Enterp Inf. Syst.* **11**(4), 470–473 (2017). <https://doi.org/10.1080/17517575.2016.1269367>
6. Bider, I., Söderberg, O.: Moving towards agility in an ordered fashion. In: Hammoudi, S., Maciaszek, L.A., Missikoff, M.M., Camp, O., Cordeiro, J. (eds.) *ICEIS 2016. LNBIP*, vol. 291, pp. 175–199. Springer, Cham (2017). https://doi.org/10.1007/978-3-319-62386-3_9

7. Calafat, A.L.M., Mas, A., Pacheco, M.: Fake Agile: what is it and how to avoid it? *IT Prof.* **24**(2), 69–73 (2022). <https://doi.org/10.1109/mitp.2021.3139826>
8. Cambridge Dictionary: Meaning of mindset in English (2023). <https://dictionary.cambridge.org/dictionary/english/mindset>. Accessed 16 May 2023
9. Cockburn, A., Highsmith, J.: Agile software development, the people factor. *Computer* **34**(11), 131–133 (2001). <https://doi.org/10.1109/2.963450>
10. Conboy, K., Coyle, S., Wang, X., Pikkarainen, M.: People over process: key challenges in Agile development. *IEEE Softw.* **28**(4), 48–57 (2011). <https://doi.org/10.1109/ms.2010.132>
11. Cooke-Davies, T.: The real success factors on projects. *Int. J. Proj. Manage.* **20**(3), 185–190 (2002). [https://doi.org/10.1016/S0263-7863\(01\)00067-9](https://doi.org/10.1016/S0263-7863(01)00067-9)
12. Corbin, J.M., Strauss, A.: Grounded theory research: procedures, canons, and evaluative criteria. *Qual. Sociol.* **13**(1), 3–21 (1990). <https://doi.org/10.1515/zfsoz-1990-0602>
13. Crnogaj, K., Tominc, P., Rožman, M.A.: Conceptual model of developing an Agile work environment. *Sustainability* **14**(22), 14807 (2022). <https://doi.org/10.3390/su142214807>
14. Çelik, H., Başer, N.B., Kılıç Memur, H.N.: Nitel veri analizi ve temel ilkeleri. *J. Qual. Res. Educ.* **8**(1), 379–406 (2020). <https://doi.org/10.14689/issn.2148-2624.1.8c.1s.16m>. (in Turkish)
15. Denning, S.: What’s missing in the Agile manifesto: mindset. *Forbes* (2016). <https://www.forbes.com/sites/stevedenning/2016/06/07/the-key-missingingredient-in-the-agile-manifesto-mindset>
16. Dikert, K., Paasivaara, M., Lassenius, C.: Challenges and success factors for large-scale Agile transformations: a systematic literature review. *J. Syst. Softw.* **119**, 87–108 (2016). <https://doi.org/10.1016/j.jss.2016.06.013>
17. Durbin, M., Niederman, F.: Bringing templates to life: overcoming obstacles to the organizational implementation of Agile methods. *Int. J. Inf. Syst. Proj. Manage.* **9**(3), 5–18 (2021). <https://doi.org/10.12821/ijispm090301>
18. Dweck, C.S.: *Mindset: The New Psychology of Success*. Random House Publishing Group, New York (2006). ISBN 978-0345472328
19. Eilers, K., Peters, C., Leimeister, J.M.: Why the Agile mindset matters. *Technol. Forecast. Soc. Change* **179**, 121650 (2022). <https://doi.org/10.1016/j.techfore.2022.121650>
20. Fang, T.: Yin Yang: a new perspective on culture. *Manag. Organ. Rev.* **8**(1), 25–50 (2012). <https://doi.org/10.1111/j.1740-8784.2011.00221.x>
21. Fronza, I., Wang, X.: Revealing Agile mindset using LEGO® SERIOUS PLAY®: experience from an online Agile training project. In: 34th International Conference on Software Engineering and Knowledge Engineering, pp. 428–433 (2022). <https://doi.org/10.18293/sek2022-117>
22. Geffers, K., Bretschneider, U., Eilers, K., Oeste-Reiß, S.: Leading teams in today’s dynamic organizations: the core characteristics of Agile leadership. In: Hawaii International Conference on System Sciences (HICSS) (2024). ISBN 978-0-9981331-7-1
23. Gelmis, A., Ozkan, N., Ahmad, A.J., Guler, M.G.: Perspectives on the sustainability and future trajectory of Agile. Systems, software and services process improvement. In: 29th European Conference, EuroSPI 2022, pp. 443–458 (2022). https://doi.org/10.1007/978-3-031-15559-8_32
24. Glaser, B.G.: *Theoretical sensitivity*. The Sociology Press, Mill Valley (1978). ISBN 978-1884156014
25. Gouda, G.K., Tiwari, B.: Ambidextrous leadership: a distinct pathway to build talent agility and engagement. *Hum. Resour. Dev. Int.* 1–9 (2022). <https://doi.org/10.1080/13678868.2022.2163101>
26. Gregory, P., et al.: Onboarding: how newcomers integrate into an Agile project team. In: *Agile Processes in Software Engineering and Extreme Programming: 21st International Conference*

- on Agile Software Development, XP 2020, pp. 20–36 (2020). https://doi.org/10.1007/978-3-030-49392-9_2
27. Gregory, P., Barroca, L., Sharp, H., Deshpande, A., Taylor, K.: The challenges that challenge: engaging with Agile practitioners' concerns. *Inf. Softw. Technol.* **77**, 92–104 (2016). <https://doi.org/10.1016/j.infsof.2016.04.006>
 28. Hajjdiab, H., Taleb, A.: Adopting Agile software development: issues and challenges. *IJMVSC* **2**(3), 1–10 (2011). <https://doi.org/10.5121/ijmvsc.2011.2301>
 29. Hoda, R., Noble, J., Marshall, S.: Balancing acts: walking the Agile tightrope. In: ICSE Workshop on Cooperative and Human Aspects of Software Engineering, pp. 5–12 (2010). <https://doi.org/10.1145/1833310.1833312>
 30. Hoda, R., Noble, J., Marshall, S.: The impact of inadequate customer collaboration on self-organizing Agile teams. *Inf. Softw. Technol.* **53**(5), 521–534 (2011). <https://doi.org/10.1016/j.infsof.2010.10.009>
 31. Hohl, P., Klünder, J., van Bennekum, A.: Back to the future: origins and directions of the Agile Manifesto—views of the originators. *J. Softw. Eng. Res. Dev.* **6**(1) (2010). <https://doi.org/10.1186/s40411-018-0059-z>
 32. Joskowski, A., Przybyłek, A., Marcinkowski, B.: Scaling scrum with a customized Nexus framework: a report from a joint industry-academia research project. *Softw. Pract. Exp.* (2023). <https://doi.org/10.1002/spe.3201>
 33. Kitchenham, B., et al.: Systematic literature reviews in software engineering—a systematic literature review. *Inf. Softw. Technol.* **51**(1), 7–15 (2009). <https://doi.org/10.1016/j.infsof.2008.09.009>
 34. Klünder, J., Trommer, F., Prenner, N.: How Agile coaches create an Agile mindset in development teams: insights from an interview study. *J. Softw.: Evol. Process* **34**(12), e2491 (2022). <https://doi.org/10.1002/smr.2491>
 35. Kramer, R.: From skillset to mindset: a new paradigm for leader development. *Public Adm. Issues*, **5**, 26–45 (2016). <https://doi.org/10.17323/1999-5431-2016-0-5-26-45>
 36. Kuhrmann, M., et al.: What makes Agile software development Agile. *IEEE Trans. Softw. Eng.* (2021). <https://doi.org/10.1109/TSE.2021.3099532>
 37. Leeuw, R.T., Joseph, N.: Reciprocal influence between digital emotional intelligence and Agile mindset in an Agile environment. *Adm. Sci.* **13**(11), 228 (2023). <https://doi.org/10.3390/admsci13110228>
 38. Lindskog, C., Netz, J.: Balancing between stability and change in Agile teams. *Int. J. Manag. Proj. Bus.* **14**(7), 1529–1554 (2021). <https://doi.org/10.1108/ijmpb-12-2020-0366>
 39. Macmillan Dictionary: Definition of mindset in English (2023). <https://www.macmillandictionary.com/dictionary/british/mindset>. Accessed 16 May 2023
 40. Masood, Z., Hoda, R., Blincoe, K.: Real world scrum a grounded theory of variations in practice. *IEEE Trans. Softw. Eng.* **48**(5), 1579–1591 (2020). <https://doi.org/10.1109/tse.2020.3025317>
 41. Melo, C.O., Santana, C., Kon, F.: Developers motivation in Agile teams. In: 38th Euromicro Conference on Software Engineering and Advanced Applications (2012). <https://doi.org/10.1109/seaa.2012.45>
 42. Mikhieieva, O., Baumgartner, R., Stephan, K., Lipilina, E.: Agile mindset competencies for project leaders. In: IEEE European Technology and Engineering Management Summit (E-TEMS), pp. 208–213. IEEE (2022). <https://doi.org/10.1109/e-tems53558.2022.9944538>
 43. Miler, J., Gaida, P.: Identification of the Agile mindset and its comparison to the competencies of selected Agile roles. In: Przybyłek, A., Morales-Trujillo, M.E. (eds.) LASD/MIDI -2019. LNBIP, vol. 376, pp. 41–62. Springer, Cham (2020). https://doi.org/10.1007/978-3-030-37534-8_3

44. Miler, J., Gaida, P.: On the Agile mindset of an effective team—an industrial opinion survey. In: Federated Conference on Computer Science and Information Systems (FEDCSIS) (2019). <https://doi.org/10.15439/2019f198>
45. Mordi, A., Schoop, M.: Making it tangible – creating a definition of Agile mindset. In: 28th Conference on Information Systems (ECIS2020) (2020)
46. Mordi, A., Schoop, M.: Scaling with an Agile mindset—a conceptual approach to large-scale Agile. In: AMCIS (2021)
47. Muduli, A., Pandya, G.: Psychological empowerment and workforce agility. *Psychol. Stud.* **63**(3), 276–285 (2018). <https://doi.org/10.1007/s12646-018-0456-8>
48. Ozkan, N., Gok, M.S.: Definition synthesis of agility in software development: comprehensive review of theory to practice. *Int. J. Mod. Educ. Comput. Sci.* **14**(3) (2022). <https://doi.org/10.5815/ijmecs.2022.03.02>
49. Ozkan, N., Gok, M.S.: Investigation of Agile mindset elements by using literature review for a better understanding of agility. In: Turkish National Software Engineering Symposium (UYMS), pp. 1–6. IEEE (2020). <https://doi.org/10.1109/uym50627.2020.9247073>
50. Ozkan, N., Erdogan, T.G., Gök, M.Ş.: A bibliometric analysis of Agile software development publications. In: 3rd International Informatics and Software Engineering Conference (IISEC), pp. 1–6. IEEE (2022). <https://doi.org/10.1109/iisec56263.2022.9998291>
51. Ozkan, N., Gök, M.Ş., Köse, B.Ö.: Towards a better understanding of Agile mindset by using principles of Agile methods. In: 15th Conference on Computer Science and Information Systems (FedCSIS), pp. 721–730. IEEE (2020). <https://doi.org/10.15439/2020f46>
52. Ozkan, N., Eilers, K., Gök, M.Ş.: Back to the essential: a literature-based review on Agile mindset. In: 2023 18th Conference on Computer Science and Intelligence Systems (FedCSIS), pp. 201–211. IEEE (2023). <https://doi.org/10.15439/2023f6360>
53. Petermann, M.K., Zacher, H.: Agility in the workplace: conceptual analysis, contributing factors, and practical examples. *Ind. Organ. Psychol.* **13**(4), 599–609 (2020). <https://doi.org/10.1017/iop.2020.106>
54. Ryskowski, J.: Revealing the unobvious social norms and traditional development fantasies that impede Agile adoption. In: 2018 International Conference on Computational Science and Computational Intelligence (CSCI), pp. 829–834. IEEE (2018). <https://doi.org/10.1109/aero.2019.8741796>
55. Sathe, C.A., Panse, C.: Analyzing the impact of Agile mindset adoption on software development teams productivity during COVID-19. *J. Adv. Manage. Res.* (2022). <https://doi.org/10.1108/jamr-05-2022-0088>
56. Senapathi, M., Srinivasan, A.: Sustained Agile usage: a systematic literature review. In: 17th International Conference on Evaluation and Assessment in Software Engineering, pp. 119–124 (2013). <https://doi.org/10.1145/2460999.2461016>
57. Sommer, A.F.: Agile transformation at LEGO group: implementing Agile methods in multiple departments changed not only processes but also employees’ behavior and mindset. *Res. Technol. Manag.* **62**(5), 20–29 (2019). <https://doi.org/10.1080/08956308.2019.1638486>
58. Thangasamy, S.: Lessons learned in transforming from traditional to Agile development. *J. Comput. Sci.* **8**(3), 389–392 (2012). <https://doi.org/10.3844/jcssp.2012.389.392>
59. Van Manen, H., van Vliet, H.: Organization-wide Agile expansion requires an organization-wide Agile mindset. In: Jedlitschka, A., Kuvaja, P., Kuhrmann, M., Männistö, T., Münch, J., Raatikainen, M. (eds.) PROFES 2014. LNCS, vol. 8892, pp. 48–62. Springer, Cham (2014). https://doi.org/10.1007/978-3-319-13835-0_4
60. Wang, Z., Pan, S.L., Ouyang, T.H., Chou, T.C.: Achieving IT-enabled enterprise agility in China: an IT organizational identity perspective. *IEEE Trans. Eng. Manage.* **61**(1), 182–195 (2013). <https://doi.org/10.1109/tem.2013.2259494>
61. Weinberg, M.G.: *Secrets of consulting*: Dorset House (1985). ISBN-13: 978-0932633019

62. Yang, H., Antunes, P., Tate, M.: Towards a unified conceptualisation of IS agility. In: IEEE 20th International Conference on Computer Supported Cooperative Work in Design (CSCWD), pp. 269–275 (2016). <https://doi.org/10.1109/cscwd.2016.7566000>
63. Zablah, A.R., Brown, B.P., Donthu, N.: The relative importance of brands in modified rebuy purchase situations. *Int. J. Res. Mark.* **27**(3), 248–260 (2010). <https://doi.org/10.1016/j.ijresmar.2010.02.005>
64. Ziegler, A., Peisl, T., Ates, A.: The future of Agile coaches: do large companies need a standardized Agile coach certification and what are the alternatives? In: Yilmaz, M., Clarke, P., Riel, A., Messnarz, R. (eds.) EuroSPI 2023. CCIS, vol. 1891, pp. 3–15. Springer, Cham (2023). https://doi.org/10.1007/978-3-031-42310-9_1