



The Role of Psychological Safety in Implementing Agile Methods across Cultures

Sara Thorgren & Elin Caiman

To cite this article: Sara Thorgren & Elin Caiman (2019) The Role of Psychological Safety in Implementing Agile Methods across Cultures, Research-Technology Management, 62:2, 31-39, DOI: [10.1080/08956308.2019.1563436](https://doi.org/10.1080/08956308.2019.1563436)

To link to this article: <https://doi.org/10.1080/08956308.2019.1563436>



© The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 12 Mar 2019.



Submit your article to this journal [↗](#)



Article views: 1899



View related articles [↗](#)



View Crossmark data [↗](#)

The Role of Psychological Safety in Implementing Agile Methods across Cultures

A psychological safety framework can help illuminate cultural challenges that occur when implementing Agile methods across different cultures.

Sara Thorgren and Elin Caiman

OVERVIEW: This paper emphasizes the cultural challenges of implementing Agile methods. We applied a psychological safety framework in an empirical case where Agile methods were implemented across workplace cultures, which helped define challenges related to psychological safety in three areas: (1) cultural differences related to attitudes toward inclusiveness, (2) cultural differences related to perceptions of and trust in collective responsibility, and (3) cultural differences related to openness in communication. These findings suggest that working across cultural boundaries adds to the challenges with Agile implementation found in other studies.

KEYWORDS: Agile, Project management, Culture

Agile practices, originally created for use in software development, have surged in popularity (Dingsøyr et al. 2012). Agile approaches are founded on continuous adaptation, practiced by self-organized teams that adhere to values that prioritize:

1. Individuals and interactions over processes and tools,
2. Working software over comprehensive documentation,
3. Customer collaboration over contract negotiation, and
4. Responding to change over following a plan (Beck et al. 2001).

The principle behind the Agile approach is the belief that quick reaction to change will deliver improved value for both stakeholders and the company. Software that works is seen as a useful performance measure; functions that add little value can be detected and rejected early (Boehm and Turner 2005). The Agile approach is characterized by an iterative process; in each iteration, the team plans, analyzes, designs, codes, and tests to achieve defined goals without being driven by a sequential plan. Close and frequent communication among team members substitutes for a predetermined,

sequential plan. Team members report frequently on their progress, their plan for the next step, the challenges they have faced, and the challenges they anticipate (Kumar and Bhatia 2012).

Agile methods deliver a number of benefits, including efficient response to defects, improved formal and informal communication, and increased effectiveness of coordination (Li, Moe, and Dybå 2010; Pikkarainen et al. 2008; Strode et al. 2012). However, it also comes with a number of management challenges. A number of these challenges arise from failures or misfires in the constant, close communication required for Agile methods to succeed. Working across company and organizational unit boundaries—and thus across workplace cultures—may exacerbate these challenges. Communication is critical to the success of any Agile project; it is imperative that all team members feel safe to (1) offer constructive criticism when they detect errors or see something that can be improved in the product or in the process, (2) be honest about their own progress (or lack thereof), and (3) share information. This security and ease

Sara Thorgren is a professor of entrepreneurship and innovation at Luleå University of Technology (LTU) in Luleå, Sweden. Her research interests are in organization management and entrepreneurship, primarily analyzed with a psychological perspective and with the goal to advance understanding of how individuals feel, think, and interact in organizations. She holds a PhD from LTU. sara.thorgren@ltu.se

Elin Caiman is a development manager based in Stockholm, Sweden. She has an interest in social anthropology and experience working in Europe and South America. She studied industrial and management engineering at Luleå University of Technology, Sweden. elincaiman@gmail.com

DOI: [10.1080/08956308.2019.1563436](https://doi.org/10.1080/08956308.2019.1563436)

© 2019 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

The challenges associated with psychological safety are likely to be exacerbated in implementations across workplace cultures.

of communication is necessary to keep individual team members in sync both with the iterative cycle and with other team members. When assumptions about what constitutes safe behavior in the workplace differ, implementing Agile approaches becomes much more difficult.

In particular, three sets of cultural attitudes may affect workers' perception of psychological safety in the workplace and thus present challenges in the implementation of an Agile process: (1) attitudes toward inclusiveness, (2) perceptions of and trust in collective responsibility, and (3) openness in communication. These elements of *psychological safety*—defined as a shared assumption that everyone in a group can take personal risks and “speak up without being rejected or punished” (Baer and Frese 2003, p. 50; see also Edmondson 1999)—must be considered in implementing Agile methods, as they can either support or impair implementation.

Agile and Psychological Safety

Along with its well-documented benefits (see, for instance, Li, Moe, and Dybå 2010; Pikkarainen et al. 2008; Strode et al. 2012), Agile brings some complex challenges. Boehm and Turner (2005) categorize the challenges as development process conflicts (for instance, managing variability, life cycles, legacy systems, and requirements), business process conflicts (human resources, progress measurement, process standard ratings), and people conflicts (management attitudes, logistical issues, change management). People conflicts may be the most challenging; Moe, Aurum, and Dybå (2012) highlight challenges that hamper shared decision making, including a lack of shared understanding, lack of an arena for resolving conflicts, decision hijacking, and lack of a clear definition of what “done” entails.

These kinds of challenges, which may be inherent in the company culture, are incompatible with the requirements of Agile. The Agile approach depends on collaborative relationships and interdependence among team members; it is imperative that employees' concerns about the potential consequences of speaking up—to note a gap in others' work or difficulties in their own—are not allowed to hamper performance.

In other words, team members must feel safe to “offer ideas, admit mistakes, ask for help, or provide feedback in hierarchies”—they must have a sense of psychological safety (Edmondson and Lei 2014, p. 36). While psychological safety has not been studied in the context of Agile, research in other contexts indicates that the concept may be particularly relevant to Agile project management. For example, a psychologically safe climate has been found to support the success of process innovations (Baer and Frese 2003). A sense of safety

also supports innovation by stimulating productive exchanges, which can produce new combinations of knowledge, which in turn have a positive effect on the revenues generated from new products and services (Collins and Smith 2006). Research has also indicated that psychological safety promotes learning from failure (Carmeli and Gittell 2009) and increases the likelihood that employees will share their thoughts about how to improve organizational functioning (Detert and Burris 2007).

Leader inclusiveness—what leaders say and do to indicate that comments and feedback are invited, appreciated, and valued—is a key element in fostering a climate of psychological safety (Nembhard and Edmondson 2006). However, feedback must always be solicited with an eye toward managing the conflict it may create. Not all conflict is negative. Task conflicts, which arise around different points of view concerning a task, may not generate as many ill effects as relationship conflicts, which spring from interpersonal tensions, such as negative feelings about a specific person (Jehn and Mannix 2001). While the organizational and management literature suggests that task conflict is generally positive (for instance, helping groups to identify problems, consider solutions, and assess alternatives), task conflicts can easily boil over into relationship conflicts, which are typically destructive, often resulting in decreased group-level communication and cooperation (Jehn and Bendersky 2003). To prevent such developments, leaders must create a climate where expressing opinions is perceived to be safe and divergent opinions are viewed as constructive debate rather than personal disagreement.

Another important element of psychological safety is making team performance a collective responsibility, meaning that the team shares responsibility for the product or outcome (Valentine and Edmondson 2015). Collective responsibility underscores the importance of teamwork and communication over individual effort. It also lessens the possibility that the openness to exploration fostered by a psychologically safe environment will lead individuals to escalate their commitment to particular courses of action even when those courses show no sign of meeting with success. Such escalation of commitment is more likely to occur when individuals are personally—rather than collectively—responsible for the decision (O'Neill 2009). Importantly, making team performance a collective responsibility does not undermine individual accountability (Valentine and Edmondson 2015). Rather, each team member remains accountable to the team for the particular tasks her or she is assigned while responsibility for the project as a whole is shared by all the members of the team.

Based on this literature background, we hypothesized that the concept of psychological safety likely plays an important role in implementations of Agile methods. Furthermore, the challenges associated with psychological safety are likely to be exacerbated in implementations across varying workplace cultures, whether across different units in a single company or across corporate boundaries in projects with collaborative partners. Cultural norms shape both attitudes and behaviors, dictating what one can do, should do, and should avoid doing in a given community (Groysberg et al. 2018). The elements of

psychological safety constitute one such shared norm; in cultures where the climate is perceived as psychologically safe, Agile methods, which rely on continual close communication, are likely to fit better with cultural norms than it will in cultures with lower levels of perceived psychological safety.

When Agile teams are drawn from different units or organizations, there will be different assumptions within teams about what is safe to say and do and what is not. Some team members may feel safe to align their behavior with Agile values, while others may not. This mismatch creates a tension that hits the Agile philosophy at its core, one that may hamper the team's quality of work, productivity, and effectiveness.

Although psychological safety has been explored in the context of workplace norms, its role in Agile implementations has not been examined. To address this gap, we conducted a case study; the study is designed to (1) identify psychological safety-related challenges in implementing Agile methods and (2) explore the particular relevance of psychological safety to implementations of Agile methods across workplace cultures.

The Study

To explore the role of psychological safety in the success of Agile methods in projects that cross workplace cultures, we engaged in an exploratory and qualitative case study. The subject of the study was a project undertaken by a global manufacturer of commercial vehicles headquartered in Europe to deploy its online sales portal in South America. The subject company was global in reach, with 49,300 employees located in about 100 countries. R&D activities, including software development, are concentrated at the European headquarters; branches in South America and Asia also contribute to the R&D effort. For this kind of global organization, the impact of differing workplace cultures may be particularly significant.

In the project, Agile team members from the company's headquarters software development division worked with an Agile team being assembled at a South American division.

During the more than five months of the study, the South American developers trained with developers at the European headquarters to learn the Scrum methodology of Agile.¹ One of the authors spent more than 800 hours with the team, collecting primary data through interviews and participatory observation in meetings and Scrum training sessions. The author also conducted 31 interviews with software developers involved in the training and managers at both sites. Interviews specifically sought to capture the workplace culture of each site and collect reflections regarding the implementation of Agile practice at those sites.

¹Scrum is an Agile practice characterized by sprints (short, timeboxed work periods with clearly defined outputs), both expectation and acceptance of continual changes as the product develops, and unlimited creativity and team flexibility. This approach starkly contrasts with traditional product development approaches (for both software and physical products), which are characterized by predefined phases and an expectation that teams will move linearly from one phase to the next with few if any changes to work done in previous phases. These approaches tend to limit creativity and team flexibility. For a review of the Scrum method, see Mahalakshmi and Sundararajan (2013).

The study was developed with the preconception that psychological safety may be relevant to Agile practice but without any *a priori* hypothesis about its role in or influence on Agile practice. Data related to psychological safety was captured by asking informants to reflect upon and discuss specific phases of the Agile management training with regard to (1) how safe they felt to voice concerns, (2) whether they had made a mistake on the job and how the mistake was received by others, (3) to what extent they perceived that other team members shared information freely, and (4) their thoughts around individual accountability.

By going back and forth between data and theory, on organizational behavior in general and psychological safety specifically, we arrived at a theoretical framework that grouped the psychological safety-related challenges that arose as the corporate division worked with the South American developers to implement Agile practices into three categories:

1. Cultural differences related to attitudes toward inclusiveness,
2. Cultural differences related to perceptions of and trust in collective responsibility, and
3. Cultural differences related to openness in communication.

We found that the two workplace cultures examined in the study differed in their attitudes and perceptions about openness, trust, and collective responsibility. We also identified the problems the tension between the two culture norms created, including difficulties in fully accessing the benefits of self-organizing teams, a lack of clarity around who bears responsibility for what, and meetings characterized by silent and reluctant contribution rather than effective communication.

Challenges in Implementing Agile Methods across Workplace Cultures

The two workplaces included in the case study were quite different, presenting many opportunities to explore how cultural differences around elements of psychological safety complicated Agile implementation.

The European workplace (company headquarters, hereafter referred to as WCA) included seven Scrum teams, each including a product owner, a development team, and a Scrum Master. The product owner is responsible for optimizing product value; the development team, which has 3–9 members, works to turn product backlog—the list of features to be developed—into releasable functionality during timeboxed sprints; and the Scrum Master supports the development team by providing understanding of Scrum theory, practices, rules, and values (Schwaber and Sutherland 2017). The developers in this group had been working with Agile methods for two years at the inception of the study. The culture at the European workplace was congruent with the values and principles underlying Agile; everyone's comments and feedback were appreciated, collective responsibility was highly valued, and communication was open.

Software developers at the South American workplace (WCB) had never before worked with Agile methods; in fact, they were forming the first Scrum team in that division. The

This shift in authority and responsibility from managers to team members became evident when the teams engaged in exercises that required members to generate ideas.

culture at the South American workplace was quite distant from the values and principles underlying Agile; authority was securely invested in managers, managerial control stood above collective responsibility, and communication flowed in one direction—downward from managers to developers.

At the time of the study, the company planned to develop one Scrum team in South America. Through the study period, researchers had full access to everyone involved in the training and set-up of the South American team, including developers, Scrum Masters, product owners, and managers. One of the authors spent another 18 months at a selection of different workplaces within the company (including the two workplaces included in this study). This level of access over an extended period allowed us the unique opportunity to follow an Agile implementation in real time.

As a result of this close observation, we developed insights into the role of psychological safety in Agile implementations, and particularly cross-cultural implementations, in the three categories of challenges our analysis developed:

- Attitudes toward inclusiveness,
- Perceptions of and trust in collective responsibility, and
- Openness in communication.

Challenge #1: Cultural differences related to attitudes toward inclusiveness

In Agile practice, the organizational structure is flat rather than hierarchical, and decision making falls to the team, not to managers. These self-organizing teams have a high degree of freedom to make decisions about their own work, as well as a high degree of responsibility for the outcomes of that work. There is an expectation that employees are included in decision making and that comments and feedback from everyone—no matter position or experience—are invited and appreciated in the product development process.

The two cultures in this study differ significantly in norms around power distribution and inclusiveness. WCB's culture is characterized by a high level of respect for managers and formalized communication flows. Managers monitor developers closely; each employee is required to check in when arriving at the office and check out when leaving. Employees are also required to keep a record of their time throughout the day. As one WCB developer told the interviewer, "If the manager says, 'Go to the right,' employees go to the right." The great importance accorded to management is reflected

in the design of the workplace, with managers having larger offices and separate dining areas. At least some WCB managers were aware of the contrast between the hierarchical values of WCB's and Agile principles; one manager told researchers, "I don't know if this is how we're going to work but ... one difference could be, for example with our cards, we have to check in and check out. Why? To make sure you have worked our set hours for the week. For example, we must complete 40 hours per week. [In WCB,] the control is more important than delivery."

WCA's culture is much less hierarchical. Staff and managers work together in an open floor plan, and workers are to a large extent self-managed; they are expected to monitor their own performance and manage their own time to accomplish assigned tasks.

WCA team members noted this difference; one WCA developer reflected upon the distance between managers and developers at WCB in an interview: "What I was most surprised by [when visiting the WCB location] was how extremely hierarchical things were. It was very strict and very little flexibility, given how informal they [the developers] were when we interacted with them when the managers were not around." Another WCA developer concluded, "I think that in [WCB] they are more used to that communication flows only downward, than what it is like here [in WCA], where I can turn to my boss and give critical feedback. Maybe I would not do so in public, but if there is something on my mind I can easily find a way to communicate that."

WCB personnel noted the difference as well. As a WCA manager told researchers, "It was a completely different hierarchy [at WCB]. It took a while before they realized that we [in WCA] treat colleagues and managers the same way." A WCB developer explained, "[In WCA] the manager and the company does not pressure you to deliver so much. You have to self-manage and measure yourself. For me it is like 'oh nice,' but it sounds far from what we are used to." A WCB manager also pointed out the obvious difference: "We have a more hierarchical organization in [WCB], I can say. [In WCA] you have managers, but it is flatter. It's different. You can see a manager sitting with the guys together and team leaders testing in SP [Sales Portal] together with the guys. It's quite different [from WCB]." One of the WCB developers tried to explain how this difference may have arisen: "It is very hard to find someone [in WCB] that is committed to the delivery, so [WCB] managers keep things under control. I think it's different [in WCA]: you receive a mission, you have to deliver something you are committed to. In [WCB] we have a different culture, you have to follow the rules."

This shift in authority and responsibility from managers to team members became evident when the teams engaged in creativity exercises that required members to generate ideas in response to initiatives. In such exercises, WCA developers produced many ideas quickly, while WCB developers were hesitant and struggled to generate ideas. The workplace culture they came from meant that they had never been exposed to an unlimited creativity task or asked to evaluate others' processes and performance. They were used to being

instructed what to do. Thus, these exercises highlighted the cultural differences between WCB and WCA and the effects of those differences on the execution of Agile processes. It also created awkwardness in meetings, where WCB developers were often silent, a result of their being unused to being asked to contribute in this way.

Challenge #2: Cultural differences related to perceptions of and trust in collective responsibility

One of the principles underlying Agile development is the prioritization of individuals and interactions over processes and tools. The basis of this principle is the belief that teamwork will make the greatest difference in software quality. Agile team members are encouraged to trust other team members' hunches and suggestions as well as their own, even if accepting a teammate's point of view means rethinking solutions or abandoning approaches. Team members share a common belief in the competence of all team members and a commitment to the overall goals of the project. In other words, the team assumes collective responsibility for its performance.

Here, too, there were dramatic differences between the cultures of WCA and WCB. At WCA, collective responsibility was highly valued and embraced. In interviews and observations, WCA developers highlighted the importance of working as a team; they trusted each team member to take pride in developing high-quality code and to strive for the continual development of competence. A WCA developer expressed that sense of collective responsibility in describing the importance of honesty not only to intra-team communications but also to product quality: "When team members are not completely honest the team is not fully functional. To me, it feels like you are a team when you know that everyone argues for what they think is best for the team." Another WCA developer also stressed the importance of team cohesion: "A good team is made up of people whom you can argue with about a task, but it never gets personal. It is good when you can work, think, and argue more or less like a family."

This attitude is manifested, for example, in the acceptance of feedback, which one WCA developer described: "In our team we have more or less an atmosphere where you can say whatever you want to. If you are asked about how a Sprint can be improved, the reply to your comment is more like 'Ok, that's how you see things' rather than 'That is not how it is.'" That collective responsibility implies a high level of individual accountability; WCA developers generally felt that team members should not let their own work negatively influence the work of the team; in other words, each member had a responsibility to raise any issues that might influence the team's performance—even if those issues might reflect negatively on the individual's performance. As one WCA developer explained, "If you don't ask for help, others expect you to complete your task on time. So it is important to not put the team in uncertain situations because you have not told the rest of us 'This went better than expected so I can help out' or 'This went worse than expected, could we reprioritize?'"

WCB's team has not developed such a trust in collective responsibility. WCB developers recognized that "they [in WCA] are required to work together and help each other and share information" (WCB developer). They also recognized that this was, in the words of one WCB developer, "far from what [they] were used to." One WCB manager concluded, "I think, on a general level, trust [in others] is something really, really different [between WCA and WCB]." WCB managers agreed that trust in the collective was a factor in the success of the Agile implementation. As one manager told researchers, "I think it's all about people. Attitudes. They [developers] should really try to work as a team and be really open. Then I think other things are also connected, like they should be able to communicate, ask for help when they need it, and as a team should be able to help whoever needs it, but they should also be responsible for what they have committed to deliver."

At the same time as they recognized the need for change, WCB managers and developers were fully aware that navigating such a cultural transition would not be smooth. As one WCB developer explained, "Control for us [in WCB] is more important than the task and the deliverables ... it's the way we work." While this change may be difficult for both managers and developers, we observed stronger resistance on the part of managers. For example, when WCB managers attended a meeting about the Agile implementation, rather than use the opportunity to learn what Agile methods implied for them and their roles, they attacked the method. One manager expressed the overriding fear: "Okay, but what are we [managers] supposed to do now?" As one of the WCB developers explained, "The typical manager is controlling and wants the developers to work for him and then check what they have done. For them, this is a huge change."

The mismatch between Agile practices and WCB's governing norms became evident during the Scrum team's first sprint planning. According to Agile's guiding principles, the team members were supposed to take collective responsibility for driving the meeting; instead, WCB team members waited for direction from the Scrum Master. The Master, unsure of how to proceed in the face of team members' silence, ran the meeting even as he urged the team members to take part.

The mismatch proved to be an ongoing problem for WCB's implementation of Agile. The WCB developers, on the one hand, felt unsure and inexperienced and worried that the Agile training would be difficult. WCB managers, on the

At the same time as they recognized the need for change, WCB managers and developers were fully aware that navigating such a cultural transition would not be smooth.

WCB managers worried about their own roles under the system—would they become redundant when responsibility shifted to the collective?

other hand, worried about their own roles under the system—would they become redundant when responsibility shifted to the collective?—and, as a result, were reluctant to support the new practice. Some took every chance to attack the method in the hope of postponing its implementation. In one notable example, the new Agile team was placed far from other development teams so that it would not “disturb others.” In doing so, managers signaled that they did not trust Agile methods in general and collective responsibility specifically. The move was perceived by the new team as an expression of management’s belief that it would be best if Agile’s values were not allowed to contaminate the entire workplace culture. It signaled to other WCB employees that the existing workplace culture would override the values governing the (temporary) Scrum methods. This signaling exemplifies how this challenge may emerge where Agile is implemented across cultures and where managers at the different workplaces are not aligned with regard to the underlying principles.

Challenge #3: Cultural differences related to openness in communication

In Agile practice, responding to change is more important than following a plan. To create a context in which change is seen as an asset rather than as a liability, Agile management stresses the value of communication (minimizing the risk of team members not being kept up to date), simplicity (taking one step at a time), feedback (providing input on why a plan is to be changed), and courage (stressing the value of exploration in reaching a project’s goals). Transparency is essential; information must be widely available so that team members can make informed decisions and members ought to be able to debate any aspect of the project.

Here, too, WCA and WCB had very different cultural norms. At WCA, workers were fully aware that they should speak up if they saw problems with a project’s development or timelines or if they had extra time that could be spent on another task. As one WCA developer told researchers, “Openness, I mean open communication and openness about mistakes, is very important.” Open, continual communication was viewed as critical for success, as was honesty about individual progress. WCA developers agreed that WCA “sticks out by having a very open climate, where there are ‘no stupid questions.’ It is ok to not understand, to ask, etc.”

However, the principle was not always lived to its full extent. WCA developers told researchers that team members

still wanted to be seen as performing well individually. As a result, they were not always completely honest about their progress or their need for help. Often, programmers told researchers, this behavior was an indication of the overall maturity of the team. In new development teams, there was more reluctance to say or do anything that might upset other team members. Openness did not emerge automatically; teams had to develop to the point where team members considered themselves a family with a responsibility to each other and relationships strong enough to allow arguments about tasks and content to remain separate from personal relationships. As a WCA developer said, “The team should be so safe that you could express what you think does and does not work. If you have difficulties in expressing criticism in a non-personal or [non]aggressive way, you should practice that.”

WCB had a different set of challenges around open communication. At WCB, the established norm is that communication flows downward. Staff members do not, as a rule, talk back to managers or to team members. One WCB developer described the typical employee behavior at WCB: “When I know about the business rules and codes, when I feel comfortable with that, I give my opinion. But in general, I don’t give much of an opinion.” Understanding of what to do with critical feedback when it is offered is also scarce. Because the WCB norm is that workers follow rules and are controlled by upper management, the new Agile team members had to learn how to provide and accept feedback from each other. That process did not go smoothly; as a WCB developer pointed out, “people know how to listen, but they don’t know how to communicate criticisms.”

This lack of open task-related communication quickly became a challenge in the Agile implementation. WCB developers joked and bantered as long as managers were not around, but in meetings, they were silent and shy. They told researchers that they did not share the requested information outside of meetings either. These behaviors could have serious implications for the Agile project; the lack of information sharing reduces the chances that team members could make the informed decisions that Agile relies upon, resulting in defects taking too long to correct and creating high development costs.

Discussion

In the case project, major challenges emerged as a result of developers coming to Agile from a workplace culture built on very different values and principles from those underlying Agile. As a result of the lack of key elements of psychological safety (including inclusiveness, collective responsibility, and openness), WCB’s new Scrum team was misaligned with the Agile approach on many dimensions. Compared to the developers from WCA, WCB developers had a much greater transformation to undergo; further, their work did not align with management practices at WCB or with the approaches of other development teams at WCB. The tension produced by this misalignment was evident throughout the study period.

However, not all of these challenges proved to be persistent. In the 18 months after the study, some challenges

resolved. One of the major changes that took place after the formal study concluded is that WCB's Scrum team has gained legitimacy within the division. The team is no longer physically isolated from the rest of the office, and team members have learned how to speak up and how to generate ideas. At the same time, the general workplace culture remains focused on control rather than self-organization. WCB's group manager told researchers that almost two years after the launching of the Scrum team, he still must protect the team from middle management, which cannot fully let go of the idea that software developers should be controlled and monitored. As a result, the group manager acts as a barrier between the Scrum team and internal pressures for control.

This study offers important insight for organizations implementing Agile methods across cultural boundaries, whether those boundaries are internal to the company (between divisions or business units) or external (between the company and partners). Although caution must be exercised in generalizing too far from a case study of one project, the study can offer some generic lessons.

First, this study highlights how elements of workplace cultures can create unexpected challenges for Agile implementation. It is already well known that culture *is* important for Agile success; this study specifies what aspects of culture may play a role in facilitating—or hampering—an Agile implementation, and how. Companies interested in implementing an Agile method would be well advised to take these dimensions into account. If there are differences between the existing workplace cultures and Agile values and principles, or between workplace cultures, managers can expect that an Agile implementation may require additional effort and time.

Second, this study demonstrates the importance of committed management to an Agile implementation. In this case, WCB's middle managers were the greatest Agile skeptics. They were openly against its implementation and to some extent still are. Nevertheless, WCB's Scrum team has gained increasing legitimacy. One reason for this is the management commitment on other levels, both top managers and ground-level group managers and software developers. The top manager at the South American site has made public statements on the importance of allowing employees to be creative, engaged, and committed. He has also acknowledged that the WCB workplace has a longer way to go to reach that state than other workplaces in the company. Signals of leadership commitment like these can be very important for mitigating the issues resulting from workplace culture clashes with Agile. Likewise, the shield between the software developer team and middle management provided by the group leader may also be necessary when middle managers are not fully committed to the implementation.

A final lesson from this study is that a careful exploration of the different cultures involved could be a valuable precursor to any implementation of Agile but certainly to a cross-cultural implementation. That exploration should focus on psychological safety and its elements of inclusiveness, collective responsibility, and open communication. Such an evaluation would not only identify cultural differences but also reveal how the

If there are differences between the workplace cultures and Agile values and principles, managers can expect that an Agile implementation may require additional effort and time.

workplace culture fits with the values and principles underlying Agile. By identifying potential cultural clashes and adjusting in advance, managers could ease the implementation of Agile methods and anticipate challenges.


Conclusion

The transformation to Agile has been one of the major management shifts in software development in the last 15 years; physical product development organizations are now beginning to integrate Agile into their processes as well. While Agile brings many benefits, many organizations have experienced challenges with its implementation. This research adds to the understanding of the sources of such challenges by bringing a psychological safety perspective to the study of Agile implementations. Identifying and illustrating psychological safety-related challenges associated with Agile provides managers another lens through which to understand and anticipate the cultural issues likely to complicate an Agile implementation.

References

- Baer, M., and Frese, M. 2003. Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior* 24(1): 45–68.
- Beck, K., Beedle, M., van Bennekum, A., Cockburn, A., Cunningham, W., Fowler, M., Grenning, J., et al. 2001. *Manifesto for Agile software development*. <http://agilemanifesto.org/>
- Boehm, B., and Turner, R. 2005. Management challenges to implementing Agile processes in traditional development organizations. *IEEE Software* 22(5): 30–39.
- Carmeli, A., and Gittell, J. H. 2009. High-quality relationships, psychological safety, and learning from failures in work organizations. *Journal of Organizational Behavior* 30(6): 709–729.
- Collins, C. J., and Smith, K. G. 2006. Knowledge exchange and combination: The role of human resource practices in the performance of high-technology firms. *Academy of Management Journal* 49(3): 544–560.
- Detert, J. R., and Burris, E. R. 2007. Leadership behavior and employee voice: Is the door really open? *Academy of Management Journal* 50(4): 869–884.
- Dingsøyr, T., Nerur, S., Balijepally, V., and Moe, N. B. 2012. A decade of Agile methodologies: Towards explaining Agile software development. *Journal of Systems and Software* 85(6): 1213–1221.

- Edmondson, A. 1999. Psychological safety and learning behavior in work teams. *Administrative Science Quarterly* 44(2): 350–383.
- Edmondson, A. C., and Lei, Z. 2014. Psychological safety: The history, renaissance, and future of an interpersonal construct. *Annual Review of Organizational Psychology and Organizational Behavior* 1(1): 23–43.
- Groysberg, B., Lee, J., Price, J., and Cheng, J. Y.-J. 2018. The leader's guide to corporate culture. *Harvard Business Review* 96(1): 44–52.
- Jehn, K. A., and Bendersky, C. 2003. Intragroup conflicts in organizations: A contingency perspective on the conflict-outcome relationship. *Research in Organizational Behavior* 25: 187–242.
- Jehn, K. A., and Mannix, E. A. 2001. The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance. *Academy of Management Journal* 44(2): 238–251.
- Kumar, G., and Bhatia, P. K. 2012. Impact of Agile methodology on software development process. *International Journal of Computer Technology and Electronics Engineering* 2(4): 46–50.
- Li, J., Moe, N. B., and Dybå, T. 2010. Transition from a plan-driven process to Scrum: A longitudinal case study on software quality. Paper presented at the Proceedings of the 2010 ACM-IEEE International Symposium on Empirical Software Engineering and Measurement, Bolzano-Bozen, Italy, September 16–17.
- Mahalakshmi, M., and Sundararajan, D. 2013. Traditional SDLC vs Scrum methodology: A comparative study. *International Journal of Emerging Technology and Advanced Engineering* 3(6): 192–196.
- Moe, N. B., Aurum, A., and Dybå, T. 2012. Challenges of shared decision-making: A multiple case study of Agile software development. *Information and Software Technology* 54(8): 853–865.
- Nembhard, I. M., and Edmondson, A. C. 2006. Making it safe: The effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *Journal of Organizational Behavior* 27(7): 941–966.
- O'Neill, O. A. 2009. Workplace expression of emotions and escalation of commitment. *Journal of Applied Social Psychology* 39(10): 2396–2424.
- Pikkariainen, M., Haikara, J., Salo, O., Abrahamsson, P., and Still, J. 2008. The impact of Agile practices on communication in software development. *Empirical Software Engineering* 13(3): 303–337.
- Schwaber, K., and Sutherland, J. 2017. *The Definitive Guide to Scrum: The Rules of the Game*. <https://www.scrumguides.org/docs/scrumguide/v2017/2017-Scrum-Guide-US.pdf>
- Strode, D. E., Huff, S. L., Hope, B., and Link, S. 2012. Coordination in co-located Agile software development projects. *Journal of Systems and Software* 85(6): 1222–1238.
- Valentine, M. A., and Edmondson, A. C. 2015. Team scaffolds: How mesolevel structures enable role-based coordination in temporary groups. *Organization Science* 26(2): 405–422.



HERE'S WHERE THE TALENT IS FOUND.

THE IRI CAREER CENTER IS YOUR ONLINE RESOURCE FOR QUALIFIED R&D AND INNOVATION PROFESSIONALS.


EXPERIENCED | QUALIFIED | TALENTED

IRI Career Center is the exclusive resource for candidates who specialize in R&D and Innovation. The system offers you an extensive resume database and powerful, user-friendly searching capabilities that allow you to find the candidates that you need to meet your organizations recruitment goals. To find out why over hundreds rely on the IRI Career Center to fill their positions, visit us today!

EMPLOYER RESOURCES

- Targeted Advertising
- Full Resume Access
- Job Activity Reports
- Advertising Enhancements
- Email Notifications
- Member Discounts

CAREERS.IRIWEB.ORG



Research-Technology Management seeks submissions

CALL FOR PAPERS

Research-Technology Management is seeking articles that connect theory to practice in the management of innovation.

RTM is actively seeking articles that map the cutting edge in R&D management, illustrate how management theory can be applied in real situations, and give R&D managers the tools to promote innovation throughout their organizations. We are interested in case studies, practical models, frameworks, and tools covering a wide range of issues in innovation and technology management, particularly open innovation, design-driven innovation, user-centered innovation, and other trends in innovation strategy and R&D management. We are also seeking articles exploring the future of innovation and how emerging trends may shape innovation in coming years.

RTM articles are concise and practice centered. The ideal submission will provide concrete examples and data to support theories about invention and innovation, the management of technology and capabilities to support innovation, or the process of portfolio selection and management. Successful submissions will offer readers practical information they can put to work immediately.

We prefer submissions at around 4,000–4,500 words, although we will occasionally publish truly groundbreaking pieces as long as 5,000 words. Articles should be submitted via our Editorial Manager system at <http://www.editorialmanager.com/rtm/>. For more information, including author's guidelines and submission requirements, visit us at www.tandfonline.com/urtm.

Special Issue: From Innovation Experiment to Organizational Transformation

As market velocity accelerates, flexibility and responsiveness are becoming imperative for continued competitiveness. As a result, corporate innovation functions are experimenting with product development approaches that decentralize decision making and imagine innovation as a rapidly iterating series of experiments, in order to enable rapid response to learning and to changing market signals. Often, these new systems are adapted from other contexts—Agile, for instance, which originated in software design, or Lean Startup, which (as its name indicates) was designed for the startup world. And increasingly, these innovation-function experiments are serving as templates for rethinking the entire organization. A few companies have even remade themselves as complete Agile organizations.

RTM is interested in how approaches designed to power flexibility and speed in product design and innovation—like Agile, Lean Startup, and open source movements—are reshaping organizations themselves. We seek submissions that explore issues related to this phenomenon, including but not limited to:

- What does the journey look like inside the innovation or development function? What are the challenges to adoption even within a single department?
- How does the adoption of Agile, Lean Startup, or a similar approach by the innovation function affect the organization as a whole? How do these concepts proliferate through the organization, and to what effect?
- What does the process of adapting a small-scale approach like Agile to an entire organization look like? What are the speed bumps and challenges of such a transformation, and what are the payoffs?
- What effect does the companywide adoption of such an approach have on the innovation function itself, especially when the transformation has its seeds in an innovation experiment? How does it change interactions with other

functions? How does it change how the company thinks about innovation and its role in the organization?

- Does this kind of transformation require a different kind of change management approach than other transformations (for instance, the move to servitization)?

There are, of course, myriad other questions, any of which could form the basis for a compelling article.

To be considered for the special issue, articles should be submitted by **March 15, 2019**. Please select Special Issue Article as the article type and note the special issue title in the appropriate space.

Special Issue: The Artificial Intelligence Renaissance

Artificial intelligence (AI) has emerged from its “AI winter” and entered a renaissance. Increases in computing power, advances in machine learning algorithms, and dramatic growth in data volumes and data structures to manage the volume have all contributed to increased success with AI applications and a broadening of application areas. AI has already led to improvements in operational efficiency, asset utilization, and hyper-personalization in marketing, and its impact is only beginning to be realized. AI and its related disciplines may well revolutionize innovation, both the products that can be created and the innovation process itself.

We are interested in articles about artificial intelligence, machine learning, predictive analytics, cognitive computing, automation, and related technologies, specifically focusing on how these technologies can be effectively managed as part of an innovation portfolio. We seek case studies, frameworks, and articles that provide insight into application spaces, managerial practices, and critical success factors. Topics of interest include, but are not limited to:

- How to identify applications for AI and related technologies that make sense for the business
- What is needed for business success with AI
- The implications of AI for business operations
- The common pitfalls in AI efforts
- Roadmaps to adoption of AI and automation
- Business model implications of AI and automation

Note that we are not interested in technical articles about the technology itself; our focus in this issue will be on how the technology can be integrated with a wider portfolio as part of a comprehensive innovation strategy.

To be considered for the special issue, articles should be submitted by **April 1, 2019**. At submission, select Special Issue Article as the article type and note the special issue title in the appropriate space.

Forthcoming Special Issue: Open Source Beyond Software

RTM is planning a special issue on the open source movement and its applications beyond the software world, including open source business models for manufacturers, biotechnology, and other industries and issues associated with open source, such as intellectual property. Watch this space for more information, or join our email list to receive a notification when the call is released. To join the list, send a request to gobble@iriweb.org.