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CSS 566: Software Management

Paper Draft 1

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**Research Questions** for Literature Review:

1. What are the challenges of adopting agile Software Management?
2. Does agile leadership matter in successful agile adoption and projects? What can leaders do in agile adoption to increase likelihood of success, especially in the relationship between agile leaders (Product Owner and Scrum Master’s relationship with development team, encourage team norms)? How do we foster agile leadership and culture?

**Keywords**: agile challenges, agile teams, psychological safety, agile team norms, agile leadership

**Abstract:** During Software Management class, we have explored LeSS agile software management framework but have not had an in-depth discussion about the challenges the teams and other roles such as Product Owner and Scrum Master can face when adopting agile methodologies. This literature review will explore challenges that agile practitioners and adopters face and possible solutions. In addition, it will also discuss how leadership roles can positively impact and increase the likelihood of success and maintenance of agile adoption by focusing on team dynamics.

**High-level Flow:**

Introduction:

* Discuss the shift of the technology industry from Waterfall to agile approach in software development and management (and other industries start to apply agile as well)
* Discuss despite proven success in many companies and how it is the approach used by many startups, there are still challenges with scaling when applied for more established companies and organizations
* Summarize main themes that will be discussed in “Main Body” section: challenges, success factors, what leaders can do for successful agile adoption

Main Body

I. Main challenges during agile adoption:

Challenges come from many different roles and aspects (internal: team, management and external: partners, customers)

* company culture
* lack of coaching
* lack of management/organizational support (or no support, still use traditional approach
* resistance to change
* lack of trust
* too many dependencies to others

(There might be more)

II. Factors for successful agile adoption and long-term maintenance:

* based on the list in challenges
* provide more support
* tailor coaching approach based on group developmental stage (initially more hands-on direction, later on prompting, less help; when team is mature, they can function and make decision by themselves): by Scrum Master and Product Owner
* encourage development of good team norms, build strong team with trust and transparency
* provide a safe environment (to be creative, take risk, fail safe) to adopt agile

III. What can leaders do to increase likelihood of successful agile adoption?

* Based on factors for successful agile adoption above
* Don’t overemphasize framework. When adopting Agile, tailor the process to company or team-specific needs while maintaining core Agile principles
* Treat challenges in context instead of in isolation as they are usually interlinked
* Focus on not just adopting agile but sustaining agile

1. Scrum Master

2. Product Owner

3. Team members (they are leaders too!):

* Use “Turn The Ship Around book” reference
* Develop culture of collective responsibility, team ownership of work/product
* Encourage team members to discuss, collaborate and make decision without too much oversight and guidance from the main leader

Conclusion

Agile adoption often meets skepticism, resistance and challenges. However, with the help and support of agile practitioners, management and collaborative effort from the team, the transition can be successful and long lasting.

References

\* References are categorized based on keywords and main topics. I include a summary for every reference for easy retrieval and citation later on during writing paper.

**Challenges and Success Factors**

Alahyari H., Horkoff J., Matsson O., Egenvall K. (2018). What Do Agile Teams Find Important for Their Success?. 474-483. <https://doi.org/10.1109/APSEC.2018.00062>.

*Important factors for success are team-related such as team environment, team spirit and team capability as opposed to project management process and customer involvement.*

Kalenda, M., Hyna, P., Rossi, B. Scaling agile in large organizations: Practices, challenges, and success factors. J Softw Evol Proc. 2018; 30:e1954. <https://doi.org/10.1002/smr.1954>.

*Success factors: company culture, prior agile and lean experience, management support, value unification*

*Challenges: resistance to change, overly aggressive roll-out time frame, quality assurance concerns, integration into preexisting nonagile business processes*

*Don’t overemphasize framework. When adopting Agile, tailor the process to company or team-specific needs while maintaining core Agile principles*

Hekkala, Riitta & Stein, Mari-Klara & Rossi, Matti & Smolander, Kari. (2017). Challenges in Transitioning to an Agile Way of Working. 10.24251/HICSS.2017.707.

*Adopting iterative and incremental development approach was the least challenging while team-work, leadership and culture were much harder to address*

Stray V., Moe N., Hoda R. (2018). Autonomous agile teams: challenges and future directions for research. In Proceedings of the 19th International Conference on Agile Software Development: Companion (XP ’18). Association for Computing Machinery, New York, NY, USA, Article 16, 1–5. <https://doi.org/10.1145/3234152.3234182>.

*Four topics of challenges: not having clear and common goals, lack of trust, too many dependencies to others, lack of coaching and organizational support*

*Future research directions: leadership, coordination, organizational context, team design and team processes have emerged to address these challenges,*

K. Conboy, Carroll N. (2019). "Implementing Large-Scale Agile Frameworks: Challenges and Recommendations," in IEEE Software, vol. 36, no. 2, pp. 44-50, March-April 2019. <https://doi.org/10.1109/MS.2018.2884865>.

*Challenges: Defining concepts and term (shallow/no understanding agile completely), comparing and contrasting frameworks, readiness and appetite for changes, balancing organizational structure and frameworks, top-down versus bottom-up implementation, overemphasis on 100% framework adherence over value (prefer flexibility while maintaining core agile principles), lack of evidence-based use, maintaining developer autonomy, misalignment between customer and frameworks*

Thorgren S, Caiman E. (2019). The Role of Psychological Safety in Implementing Agile Methods across Cultures, Research-Technology Management, 62:2, 31-39, <https://doi.org/10.1080/08956308.2019.1563436>.

*Main challenges stem from* ***workplace culture*** *and lack of* ***psychological safety*** *(inclusiveness, collective responsibility, openness) Culture differences related to attitudes toward inclusiveness (good to note for multi-site, global multi-teams), cultural differences related to perceptions of and trust in collective responsibility, cultural differences related to openness in communication*

*After 18 months, some changes happened such as improved communication and colocation but other challenges remained such as general culture’s emphasis on control rather than self-organization (manager must protect team from middle management)*

Stray V., Tor F., Moe N. (2016). Exploring Norms in Agile Software Teams. <https://doi.org/10.1007/978-3-319-49094-6_31>.

*Success related to team dynamics/team interactions: Some team norms encourage productive and collaborative behaviors while others hinder. Regular team reflection helps on developing and changing norms to increase team effectiveness.*

Lenberg P., Feldt R. (2018). Psychological safety and norm clarity in software engineering teams. In Proceedings of the 11th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE ’18). Association for Computing Machinery, New York, NY, USA, 79–86. <https://doi.org/10.1145/3195836.3195847>.

*The paper explores how strong psychological safety and team norms are as predictors of team performance and job satisfaction. Team norm clarity is showed to have stronger influence. This implies encouraging the development of team norms can aid in successful adoption of agile methodologies. This also has important leadership implication for management.*

Challenges that faced agile practitioners

Gregory P., Barroca L., Sharp H., Deshpande A., Taylor K. (2016). The Challenges That Challenge: Engaging with Agile Practitioners’ Concerns. Information and Software Technology. <https://doi.org/10.1016/j.infsof.2016.04.006>.

*Challenges faced by agile practitioners are complex and intertwined. Some are hard to address while other change focus over time. Practitioners need to address them in context instead of in isolation.*

**Success and Leadership**

Marquet D., Covey S. (2013). Turn the Ship Around!: A True Story of Turning Followers into Leaders. Portfolio.

*Shift mindset of command-control leadership style (leader-followers) to leader-leaders style.*

Lucas G., Torkar R., Feldt R. (2017). Group Development and Group Maturity When Building Agile Teams: A Qualitative and Quantitative Investigation at Eight Large Companies. Journal of Systems and Software 124 (2017): 104–119. <https://doi.org/10.1016/j.jss.2016.11.024>.

*The research measures group agility and relates it to Wheelan’s group developmental stages. Themes from successful agile adoption are increase in job satisfaction, situational leadership (changing leadership style depending on the team’s developmental stage), the discipline of agile project management, team already agile before implementing agile practices, explicit group developmental aspect and personality (certain team working skills and individual skills are desired).*

Spiegler S., Heinecke C., Wagner S. (2019). Leadership Gap in Agile Teams: How Teams and Scrum Masters Mature. <https://doi.org/10.1007/978-3-030-19034-7_3>.

*The paper explores the effect of Scrum Master role in agile transition process as well as how Scrum Master role evolves over time as the team matures.*

Przybilla L, Wiesche M., Krcmar, H. (2019). Emergent Leadership in Agile Teams--an Initial Exploration. 176-179. https://doi.org/10.1145/3322385.3322423.

*Leadership emerge over time informally within teams and attributed to team members (instead of a single leader)*

Bäcklander G. (2019). Doing complexity leadership theory: How agile coaches at Spotify practise enabling leadership. Creativity and Innovation Management. 28. 42-60. <https://doi.org/10.1111/caim.12303>.

*Leadership should focus on fostering constructive dialogue and value of human interactions. Depending on the team level of maturity, use different tactics (more or less help, prompting, giving hands-on directions). Managers don’t dominate or let individual team member dominate the dialogue but increase sense of* ***psychological safety*** *for honest communication to happen.*