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# DECISION-MAKING IN AGILE INFORMATION SYSTEMS DEVELOPMENT: THE ROLE OF EMPOWERMENT AND AUTHORITY

*Research in Progress*

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## Abstract

*Agile information systems development (ISD) teams are claimed to work via self-organized and autonomous methods. Yet little research exists on how these teams make decisions. Therefore, this research-in-progress paper conceptualizes a multilevel model that examines decision-making–team empowerment and project managers’ decision-making authority–in agile ISD teams and its effect on team members’ work engagement and performance. Preliminary results show satisfactory psychometric criteria for the measurement instrument. Within the main study, multilevel analyses using hierarchical linear modeling and hierarchical linear regression will be used to examine cross-level effects. We expect our research to contribute to deeper understanding of agile ISD teams’ decision-making and to the limited evidence on project managers’ role in agile ISD.*

*Keywords: Agile Information Systems Development, Project Managers, Team Empowerment, Decision-Making Authority, Teamwork Performance, Work Engagement.*

## 1 Introduction

In recent times, both business and technology environments have changed rapidly, making it difficult for software development teams to detect user requirements and keep up with frequent changes (Lee & Xia, 2010; Schmidt et al., 2001). As a result, agile information systems development (ISD) approaches have addressed these complexities by making it easier for software development teams to respond to changing user requirements (Beck, 2008). The core difference between agile ISD approaches and traditional software development is that the former strongly emphasizes lean processes and dynamic adaptation (Nerur & Balijepally, 2007), while the latter suffers from poor customer communication, rigid time frame structures, and next to no flexibility (Singh et al., 2019). Besides agility in software development principles and concepts, one of agile ISD’s main success factors is its focus on human beings (Cockburn & Highsmith, 2001). Agile ISD emphasizes human value and interactions over processes (Beck et al., 2001) and places people at the heart of agile project management (APM) (Cockburn & Highsmith, 2001). Agile practices strive for flexibility, self-organization, team autonomy, high team interaction, and satisfied, engaged team members (Cockburn & Highsmith, 2001; Highsmith, 2002). The literature has also clearly indicated that to a great extent, individuals building development teams determine project success or failure (Serrador & Pinto, 2015).

In traditional, plan-driven software development, teams were manager-driven: leaders had much authority over work methods and made decisions for the team (Hoda et al., 2012). Hierarchical team structures lacked team empowerment, and leaders executed a “command-and-control” style (Hoda et al., 2012). APM, however, is determined by a “light-touch” management style (Augustine, 2005), often defined as granting autonomy to and empowering the team (Remus et al., 2020).

One of the greatest challenges for agile ISD teams and their leaders is decision-making (Hoda et al., 2012). On the one hand, teams have potential for effective decision-making because they can bundle knowledge and information. On the other hand, these positive effects can become obstacles in collaborative decision-making (Drury et al., 2012). So far, we lack empirical evidence on decision-making in agile ISD teams.

Therefore, this research conceptualizes a theoretical model of decision-making and empirically investigates its validity by addressing the research question: *What are the effects of team empowerment and project leader decision-making authority on work performance and work engagement?* In response, our research uses the literature of team empowerment (Maruping & Magni, 2015) as a theoretical base for developing a research model and hypotheses and for proposing a survey design to evaluate the theory empirically.

Within this research, we aim to contribute to theory and practice in several ways: first, to the currently limited understanding of project managers' role in agile ISD literature (Mueller & Toutaoui, 2020; Shastri et al., 2016; Shastri et al., 2017); second, to existing research on team empowerment (Maruping & Magni, 2015; Tessem, 2014); and last, to the presently limited understanding of agile ISD teams (Windeler et al., 2017). Our results might provide a foundation for IT project managers to implement successful decision-making mechanisms with agile ISD teams.

In this paper, we first provide theoretical insights on agile ISD teams and decision-making in agile ISD. Second, we outline the research model including our hypotheses. Third, we describe the agenda for conducting the survey, including results of our pre-study and a preview of the main study. Finally, we conclude with suggestions for future studies.

## **2 Theoretical Background**

### **2.1 Agile ISD teams**

The literature has so far investigated agile ISD teams' numerous characteristics. The most significant and versatile characteristic is that such teams are self-organizing and, to a great extent, have authority over much of their daily work (Moe & Aurum, 2008). In the literature, the term "self-organizing team" is synonymous with: "autonomous team," "empowered team," or "self-managing team." Nevertheless, certain differences demonstrate that agile ISD teams are social units of great complexity. Self-organizing teams are responsible for planning and scheduling upcoming work and for assigning tasks within the team (Moe & Aurum, 2008). They "manage their own workload" (Highsmith, 2004), have a shared vision of their project and/or product, trust and respect each other, and can continuously adapt to change (Hoda et al., 2012). Collaborative decision-making is also key for self-organizing teams (Hoda et al., 2012). Autonomous teams concentrate on team-decision-making (Lee & Xia, 2010) and share decision-making authority (Moe et al., 2009). Autonomous agile ISD teams have the authority to decide the tools, procedures, and methods that they want to apply to solve problems in development work (Lee & Xia, 2010). Acharya and Colomo-Palacios (2019) note that inter alia performance effectiveness is an advantage of autonomous teams: due to the no-top-down command style, teams can immediately respond to problems and changes. In empowered agile ISD teams, decision-making is delegated to the team members (Tessem, 2014), and teams are empowered to make decisions (Drury-Grogan & O'Dwyer, 2013). As in self-organizing and autonomous teams, decision-making authority plays a major role in empowered teams and is often named as their most meaningful characteristic. Moreover, Tessem (2014) reports that team empowerment relates to various decision-making processes. According to Lee and Xia (2010), empowered teams combine the characteristics (mentioned above) of autonomous and self-organizing agile ISD teams. Teams are empowered to evaluate the best way to pursue and solve issues and to complete tasks on their own (Larman, 2004). Furthermore, knowledge-management—gaining new and deepening existing knowledge—is another important factor that defines empowered teams (Tessem, 2014). Besides that, empowered teams are characterized in psychological and social terms; empowered team members like their jobs and therefore stay in their companies, are highly motivated, feel responsible and connected to their projects, and perform better (Remus et al., 2020;

Tessem, 2014). Tessem (2014) likewise depicts empowered teams as having a positive effect on company outcomes.

In most cases, “self-managing” is also used as a synonym for “self-organizing.” However, in self-organizing agile ISD teams, key characteristics shift a bit to personnel and social aspects, with focus on a team’s individuals and their collaboration, while self-managing teams focus on internal feedback, monitoring, coordination, and communication (Dickinson & McIntyre, 1997). Additionally, self-managing teams differ from self-organizing teams in that the latter collaboratively assume more responsibilities of their former supervisors who were guided by higher management (Hoda et al., 2012). This reflects evolution from traditional to agile software development because in the latter, management trusts teams to deliver high-quality products and therefore cedes authority; in the former, management practices a command-and-control style (Hoda et al., 2012).

## **2.2 Decision-making in agile ISD teams**

In agile development processes, decision-making occurs during many activities (Drury et al., 2011) and assumes a specific role in the Agile Manifesto. In their investigation of agile software projects’ Daily Scrum Meetings, Stray et al. (2012) found that 35% of daily meeting time was spent discussing problems and solutions and making decisions based on the discussions. Agile ISD is a problem-solving activity and, based on teamwork, implies the high potential of discussing everything, because agile ISD teams are meant to deliver high-quality software and products. Decisions needed in software development are not only miscellaneous but also of varying complexity. Previous studies list the following examples: agile ISD teams must plan iterations (e.g., assign tasks to team members, provide information), decide on tactical implementation and development, decide whether a product satisfies customer requirements, and vote on iteration-process changes (Drury et al., 2011). Moe and Aurum (2008) analyzed decisions on the classification model: strategic decisions are organization-related, management-control decisions are project- and customer-related, but operational-control decisions most impact team members because they are implementation-related. The current literature’s findings clearly show that agile ISD teams work in a complex, challenging area. Regardless of subject, decisions should be made collaboratively by considering every team member’s voice—in reference to the self-organizing characteristic of agile ISD teams (Drury-Grogan & O’Dwyer, 2013).

## **3 Research Model and Hypotheses**

This research is based on theories of team empowerment (Maruping & Magni, 2015) and work engagement (Bakker & Demerouti, 2014) (Figure 1).

Team empowerment, one of our model’s two decision-making constructs, is defined as a mutual motivational state experienced by team members, resulting from fundamentally positive attitudes toward the work environment (Kirkman & Rosen, 1999). Empowerment itself is connected to motivation and engagement because empowered people are more likely to engage proactively in value-creation (Maruping & Magni, 2015), for instance, in decision-making. Although empowerment can be measured on both team and individual levels with similar meaning, the team level focuses on team members’ shared perceptions (Chen et al., 2007).

As mentioned above, work engagement is part of the larger concept of employee well-being; it refers to the motivational state of being absorbed in and committed to something (Bakker & Demerouti, 2014). Engaged employees are intrinsically motivated to complete their tasks and fulfill their work objectives, eventually activating or creating job resources, for example, including collaboration or pairing that, in turn, accelerates task completion (Bakker & Demerouti, 2014).

Hypothesis H1 was derived from the literature review to demonstrate a core function of team empowerment. Iqbal et al. (2019) found that team empowerment positively impacted team performance, and Remus et al. (2020) were consistent with that: they found that an enabling control style positively affected task performance. Moreover, McAvoy and Butler (2009) illustrated that group cohesion—as a result of empowerment—positively influenced team performance. Hence, we hypothesize:

*H1: Team empowerment positively influences work performance.*

In this research, work performance is measured on the team level; thus, we are consistent with what is measured by “team performance” in the literature (Iqbal et al., 2019; Lindsjørn et al., 2016; McAvoy & Butler, 2009; Moe & Aurum, 2008; Remus et al., 2020). In our research model, we emphasize teams’ achievement during iterations and their results’ value; thus, we defined the corresponding construct “work performance.” Despite the semantic difference, we adhere to the summary of the team performance construct in the relevant literature.

Because decision-making processes relate to empowerment (Tessem, 2014), a project manager taking over decision-making authority hinders the team’s effective decision-making. . Project manager decision-making authority (PMDMA) is defined as the extent to which a project manager is taking over the decision making power within the team, or in other words the amount of decision-making authority that is taken away from the team through independent decisions by the project manager (Moe & Aurum, 2008). Still, different decision-making processes occur in agile ISD teams (Drury-Grogan & O’Dwyer, 2013; Drury et al., 2011; Stray et al., 2012), depending on team members’ expertise and on experts making good decisions in a team. Therefore, if the project manager makes the decisions, work performance is likely to be negatively affected because the team must execute externally-made decisions. Furthermore, team effectiveness, as part of team performance (Lindsjørn et al., 2016), decreases if decision-making authority is taken from the team (Moe & Aurum, 2008). Agile ISD teams naturally share decision-making authority, but if a project manager refuses to relinquish authority or decides upon the team, the risk of forcing the team to use, for instance, inefficient or unknown tools or methods is higher (Lee & Xia, 2010). Hence, an agile ISD team’s performance in the context of iteration success can be diminished. Thus, we argue:

*H2: Project manager decision-making authority negatively influences work performance.*

Looking at the team’s effect on the individual level, hypotheses H3a–b describe the impact of team empowerment and PMDMA on individual items. Since team empowerment leads to employees’ greater engagement (Maruping & Magni, 2015), empowerment is meant to influence work engagement positively (Tessem, 2014; Remus et al., 2020), and it has been found to help improve work results (Tessem, 2014). PMDMA is then presumed to affect team members’ work engagement negatively. We suggest:

*H3a: Team empowerment positively influences work engagement.*

*H3b: PMDMA negatively influences work engagement.*

Iqbal et al. (2019) describe team members as critical individual factors in software productivity, that is, each team member has “individual importance.” Work engagement is a key predictor of organizational outcomes, for example, of individual and team performance (Christian et al., 2011; Tims et al., 2013) and of creativity and innovation (Gawke et al., 2017; Orth & Volmer, 2017). Engaged, motivated team members can push the entire team forward, spreading positivity among colleagues. This goes hand in hand with the work of Asproni (2004) who declared that teams of individuals able and willing to work together and pull in the same direction improve work performance. Hence, we propose:

*H4: Work engagement positively influences work performance.*

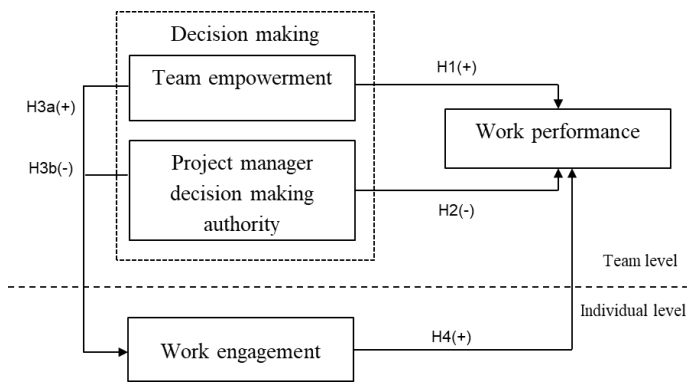


Figure 1. Research model

## 4 Agenda for Data Collection and Analysis

Using a multilevel approach, this research investigates the effect of team empowerment and PMDMA on agile ISD teams’ performance by asking agile ISD team members to complete an online questionnaire. Overall, the research consists of four main phases: (1) pre-study, (2) study design, (3) main study, and (4) data analysis (Figure 2).

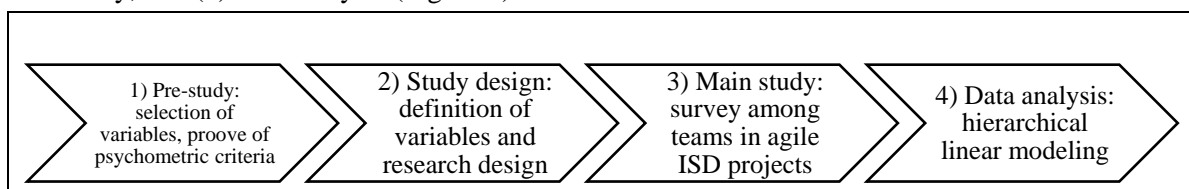


Figure 2. Overview of main research phases

### 4.1 Completed work: Pre-study

The first phase of the main study has already been completed. To ensure scale validity and our constructs’ reliability, we developed an online questionnaire involving all scales with corresponding items. The defined target of our main sample is members of agile ISD teams, selected for the pre-study as well. Survey participants belonged to agile ISD teams in a mature company known for producing commercial vehicles. Each team practiced iterations with two-week sprints and held planning, daily, review, retrospective, and team exchange meetings. The survey was sent to 54 developers distributed over five teams. Four teams (30 participants) completed the questionnaire. The teams all used Scrum as agile methodology. Participants’ work experience was an average of 7.68 years (SD=5.59), and their current employment averaged 2.00 (SD=1.20). The extent of use of agile ISD practices averaged 5.07 (SD=0.44) on a 7-point Likert scale.

The questionnaire contained 29 items, covering demographic data, constructs of team empowerment, PMDMA, work engagement, and work performance. Team empowerment was adapted from Lee and Xia (2010) and Kirkman et al. (2004). PMDMA was adapted from Iqbal et al. (2016). The nine-item “Utrecht Work Engagement Scale” (UWES), which refers to the three aspects of work engagement—vigor, dedication, and absorption—was used (W.B. Schaufeli & A.B. Bakker, 2004). First, vigor means a high level of energy and a willingness to invest effort. Second, dedication indicates deriving a sense of significance from one’s work and having an enthusiastic, inspired feeling toward it. Third, absorption refers to being completely into one’s work (Schaufeli & Bakker, 2004). Team work performance was assessed with a four-item scale, with two items adapted from Lindsjörn et al. (2016), one from Kirkman et al. (2004), and one self-developed. The majority of items were designed with a 7-point Likert scale asking for level of agreement.

Reliability of the survey's scales was assessed by executing reliability analyses in SPSS (version 27). Two items were excluded (team empowerment: item 1; work performance: item 5). The scales' alpha values ranged from 0.54 to 0.79 (Table 3), and the scales for work performance and work engagement exceeded commonly recommended reliability estimates ( $\alpha = 0.70$ ) (Eisinga et al., 2013). Alpha values of team empowerment and PMDMA ( $\alpha = 0.60$  and  $\alpha = 0.64$ , respectively) reached a fairly satisfactory level.

Construct	Cronbach's Alpha
Team Empowerment	0.60
Project Manager Decision-Making Authority	0.64
Teamwork Performance	0.77
Work Engagement	0.79

Table 1. Cronbach's alpha of scales

After item-exclusion by the principal component method and Varimax rotation, we used factor analysis to ensure convergent and discriminant validity. Convergent validity was fairly developed because inter-item correlations were moderately high across all constructs. In most cases, inter-item correlations were approximately 0.50 or higher, with certain outliers below that value. Since cross-item correlations were low between constructs, discriminant validity was confirmed.

## 4.2 Future work: Study design, main study, and data analysis

In this study's second phase, we will conceptualize our study design. Based on insights from the pre-study, we will develop our questionnaire by involving constructs of team empowerment (Kirkman et al., 2004; Lee & Xia, 2010), PMDMA (Iqbal et al., 2019), work engagement (W. Schaufeli & A. Bakker, 2004), and team work performance (Kirkman et al., 2004; Lindsj rn et al., 2016). As control variables, we will include function in the company, overall work experience, experience in "working agile," and general team characteristics, for instance, team size and familiarity. Furthermore, we will assess general project characteristics, for example, the number of parallel projects and project size, duration, and success (El Emam & Koru, 2008). To enhance the parsimoniousness of measurement items and the theoretical model, we will verify whether all control variables are needed.

Many times, questionnaire surveys risk common method bias (CMB) (Rindfleisch et al., 2008) because they allow measuring both dependent and independent variables used for analysis (Jakobsen & Jensen, 2015). CMB can be a "serious methodological challenge" (Jakobsen & Jensen, 2015) because it creates bias in measurement results through participants' responses to both dependent and independent variables (Podsakoff & Organ, 1986). Furthermore, survey items' characteristics need to be considered as possibly producing CMB (Jakobsen & Jensen, 2015). According to Podsakoff et al. (2012), a survey item risks producing method bias if answering it is difficult due to the item being complex, ambiguous, or abstract. To avoid, or at least reduce, CMB, several ex-post and ex-ante approaches have been developed. Ex-ante, some aspects will be considered while defining the survey's structure and implementation. Questions in corresponding groups will be ordered to obtain a high level of randomness. Besides that, participants will be informed that neither correct nor incorrect answers are possible (due to use of Likert scales) and that honest answers will be highly appreciated. Following the guidelines of Chin et al. (2013), one marker item will be added in each question group to prevent participants' selection of the same option for several items. Ex-post, Harman's Single-Factor Test will be applied to detect CMB.

Our main study will occur in the third phase. The target group will consist of team members working in agile ISD, including all needed roles, for example, software developers, architects, and designers. Data will be collected using an online survey, and participant recruitment will use circular email to companies familiar with agile practices.

This research's fourth phase will include data cleaning and analysis. The multilevel study's data analysis will be conducted using random coefficient modeling, often referred to as hierarchical linear modeling (HLM) (Gavin & Hofmann, 2002). To support aggregation of team-level ratings, interclass correlation coefficients (ICC) 1 and 2 will be calculated using the reliability functions ICC1() and ICC2() of the multilevel package in R. The amount of variance explained by team membership is indicated by ICC1, whereas ICC2 indicates the reliability of team means or team mean differences (Bliese, 2000). Moreover, to justify aggregation of team level variables, the interrater agreement index (rwg(j)) for multiple item measures postulated by James et al. (1993) will be calculated using the corresponding function in R. Multilevel analyses conducted to verify our theoretical model will involve two levels also in the theoretical model: individual (level 1) and team (level 2). Again, the multilevel package in R will be used. Analyzing tests on the team level (single-level tests) will be done using ordinary least squares (OLS) regression. Since team-level hypotheses in the research model define team empowerment and PMDMA as independent variables, hierarchical linear regression (HLR), as a special form of multiple OLS regression, will be used. HLR is an analytical regression procedure in which predictor variables are added to the regression model in separate steps. By adding more variables in each step, one can control whether each model's ability to predict the dependent variable improves. For the HLR on the team level, model 1 will include only team empowerment, and model 2 will include team empowerment and PMDMA as predictor variables.

## **5 Suggestions for Future Research and Conclusion**

In this research, we theorize about agile ISD teams' decision-making, which remains largely unexamined in the literature. We conceptualized a theoretical model that proposes team empowerment's positive effect on team work performance, while PMDMA is argued to influence team work performance negatively. Furthermore, we argue that team members' work engagement relates positively to the team's work performance.

This research aims to contribute to existing literature in several ways—first, to the limited understanding of project managers' role in agile ISD (Mueller & Toutaoui, 2020; Shastri et al., 2016; Shastri et al., 2017). To ensure our research results' reliability and validity, similar quantitative approaches should be applied with a much larger sample size, that is, greater numbers of teams and participants. If implementing a comparable approach focused on Scrum teams, researchers should consider inclusion of product owners and Scrum masters in the participant sample so as to gather different viewpoints on project manager behavior and team empowerment. Researchers should also expand teams' scope and analyze data from teams that apply varied agile methodologies, such as XP, FDD, or Crystal Methods. Hence, greater variability and variety in results can be achieved, and potential differences in DMP, empowerment characteristics, and leadership styles can be analyzed. Moreover, observing the DMP of teams that apply various agile methodologies allows for collecting best practices that expand the proposed empowerment framework. Thus, this very theoretical framework can be consolidated and confirmed by scientific evidence and influences from practice. By extending the scale used and measuring additional agile principles or practices, the image of agile methods can be challenged in terms of impact on empowerment, performance, and collaboration (Lindsjörn et al., 2016; Maruping et al., 2009). Second, we intend to contribute to existing research on team empowerment (Maruping & Magni, 2015; Tessem, 2014). Empowering a team, especially in decision-making, is a key aspect of leadership in the agile development environment; agile ISD teams' project managers are supposed to follow the principles of agile management. The positive effect of such an enabling leadership style is confirmed through empowerment's impact on team performance (Remus et al., 2020). Third, we intend to contribute to the limited understanding of teams in agile ISD (Windeler et al., 2017).

From practitioners' viewpoint, this research contributes to deeper understanding of project managers' role in agile ISD. In particular, it can guide team design to help keep a team productive in the long term.

In this research, we aimed to examine the effect of decision-making—team empowerment and PMDMA—on agile ISD team members' work performance and work engagement, based on theories of team empowerment and work engagement. Pre-study (or first-stage) results show satisfactory



psychometric quality. In future stages, we propose a multilevel approach with an online survey for data collection and HLM for data analysis to advance understanding of how agile ISD teams make decisions.

## 6 Appendix: Survey Items

**Team empowerment** (1 = Strongly disagree, 7 = Strongly agree; “No answer” possible)

1. The team decided which tasks are assigned to team members.
2. The team decided which user requirements had to be implemented in the iteration.
3. The team chose its own way to solve tasks and implement user stories.
4. The team had control over what it was supposed to accomplish.
5. The team was granted authority to collaboratively make decisions.

**Project Manager Decision-Making Authority** (1 = Strongly disagree, 7 = Strongly agree; “No answer” possible)

1. The project leader determined the iteration goal.
2. The project leader made project-related decisions on its own.
3. The project leader acknowledged decisions made by the team.
4. The project leader empowered the team to contribute to decision making.
5. I find football interesting. (*CMB control item*)
6. The project leader chaired and actively guided the following meeting:
  - a. Daily Meeting.
  - b. Planning Meeting.
  - c. Review Meeting.
  - d. Retrospective Meeting.

**Work Engagement** (1 = Never, 7 = Very frequently; “No answer” possible)

1. At my work, I feel bursting with energy.
2. At my job, I feel strong and active.
3. I am enthusiastic about my job.
4. My job inspires me.
5. When it comes to art, I prefer painting over photography. (*CMB control item*)
6. When I get up in the morning, I feel like going to work.
7. I feel happy when I am working intensely.
8. I am proud on the work I can do.
9. I am immersed in my work.
10. I get carried away when I am working.

**Teamwork Performance** (1 = Strongly disagree, 7 = Strongly agree; “No answer” possible)

1. I believe that we reached our iteration goal.
2. I think that the team delivered high quality.
3. I believe that the work outcome of the iteration contributed to create value for our customers.
4. The delivered quality suffered due to decisions made by the project leader.

## References

- Acharya, B., & Colomo-Palacios, R. (2019). "A systematic literature review on autonomous agile teams". *2019 19th International Conference on Computational Science and Its Applications (ICCSA)*,
- Asproni, G. (2004). "Motivation, teamwork, and agile development". *Agile Times* 4(1), 8-15.
- Augustine, S. (2005). *Managing agile projects*. Upper Saddle River: Prentice Hall
- Bakker, A. B., & Demerouti, E. (2014). Job Demands–Resources Theory. In C. L. Cooper & P. Y. Chen (Eds.), *Wellbeing: A Complete Reference Guide, Volume III, Work and Wellbeing*. Wiley-Blackwell.
- Beck, K. (2008). *Extreme Programming Explained: Embrace Change*. New York: Addison-Wesley.
- Beck, K., Beedle, M., Van Beenekum, A., Cockburn, A., Cunningham, W., Fowler, M., . . . Thomas, D. (2001). *Manifest for Agile Software Development*. Retrieved 02.08.2019 from <https://agilemanifesto.org>
- Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. Klein & S. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 349-381). San Francisco: Jossey-Bass.
- Chen, G., Kirkman, B. L., Kanfer, R., Allen, D., & Rosen, B. (2007). "A multilevel study of leadership, empowerment, and performance in teams". *Journal of Applied Psychology* 92(2), 331.
- Chin, W. W., Thatcher, J. B., Wright, R. T., & Steel, D. (2013). "Controlling for Common Method Variance in PLS Analysis: The Measured Latent Marker Variable Approach". In H. Abdi, W. W. Chin, V. Esposito Vinzi, G. Russolillo, & L. Trinchera, *New Perspectives in Partial Least Squares and Related Methods* New York, NY.
- Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). "Work engagement: A Quantitative Review and Test of its Relations with task and contextual performance ". *Personnel Psychology* 64(1), 89-136.
- Cockburn, A., & Highsmith, J. (2001). "Agile software development, the people factor". *Computer* 34(11), 131-133.
- Dickinson, T. L., & McIntyre, R. M. (1997). A conceptual framework for teamwork measurement. In *Team performance assessment and measurement* (pp. 31-56). Psychology Press.
- Drury-Grogan, M. L., & O'Dwyer, O. (2013). "An investigation of the decision-making process in agile teams". *International Journal of Information Technology & Decision Making* 12(06), 1097-1120.
- Drury, M., Conboy, K., & Power, K. (2011). "Decision making in agile development: A focus group study of decisions and obstacles". *2011 Agile Conference*,
- Drury, M., Conboy, K., & Power, K. (2012). "Obstacles to decision making in Agile software development teams". *Journal of Systems and Software* 85(6), 1239-1254.
- Eisinga, R., Te Grotenhuis, M., & Pelzer, B. (2013). "The reliability of a two-item scale: Pearson, Cronbach, or Spearman-Brown?". *International journal of public health* 58(4), 637-642.
- El Emam, K., & Koru, A. G. (2008). "A replicated survey of IT software project failures". *IEEE Software* 25(5).
- Gavin, M. B., & Hofmann, D. A. (2002). "Using hierarchical linear modeling to investigate the moderating influence of leadership climate". *The Leadership Quarterly* 13(1), 15-33.
- Gawke, J. C., Gorgievski, M. J., & Bakker, A. B. (2017). "Employee intrapreneurship and work engagement: A latent change score approach". *Journal of Vocational Behavior* 100, 88-100.
- Highsmith, J. (2002). *Agile Software Development Ecosystems*. Boston: Addison Wesley.
- Highsmith, J. R. (2004). *Agile project management*. Boston: Addison-Wesley.
- Hoda, R., Noble, J., & Marshall, S. (2012). "Self-organizing roles on agile software development teams". *IEEE Transactions on Software Engineering* 39(3), 422-444.
- Iqbal, J., Omar, M., & Yasin, A. (2019). "An empirical analysis of the effect of agile teams on software productivity". *2019 2nd International Conference on Computing, Mathematics and Engineering Technologies (iCoMET)*,

- Jakobsen, M., & Jensen, R. (2015). "Common method bias in public management studies". *International Public Management Journal* 18(1), 3-30.
- James, L. R., Demaree, R. G., & Wolf, G. (1993). "rwg: An assessment of within-group interrater agreement". *Journal of Applied Psychology* 78(2), 306.
- Kirkman, B. L., & Rosen, B. (1999). "Beyond self-management: Antecedents and consequences of team empowerment". *Academy of Management Journal* 42(1), 58-74.
- Kirkman, B. L., Rosen, B., Tesluk, P. E., & Gibson, C. B. (2004). "The impact of team empowerment on virtual team performance: The moderating role of face-to-face interaction". *Academy of Management Journal* 47(2), 175-192.
- Larman, C. (2004). *Agile and iterative development: a manager's guide*. Addison-Wesley Professional.
- Lee, G., & Xia, W. (2010). "Toward agile: an integrated analysis of quantitative and qualitative field data on software development agility". *MIS Quarterly: Management Information Systems* 34(1), 87-114.
- Lindsjørn, Y., Sjøberg, D. I. K., Dingsøyr, T., Bergersen, G. R., & Dybå, T. (2016). "Teamwork quality and project success in software development: A survey of agile development teams". *Journal of Systems & Software* 122, 274-286.
- Maruping, L. M., & Magni, M. (2015). "Motivating employees to explore collaboration technology in team contexts". *MIS Quarterly* 39(1).
- Maruping, L. M., Venkatesh, V., & Agarwal, R. (2009). "A control theory perspective on agile methodology use and changing user requirements". *Information Systems Research* 20(3), 377-399.
- McAvoy, J., & Butler, T. (2009). "The role of project management in ineffective decision making within Agile software development projects". *European Journal of Information Systems* 18(4), 372-383.
- Moe, N. B., & Aurum, A. (2008). "Understanding decision-making in agile software development: a case-study". *2008 34th Euromicro Conference Software Engineering and Advanced Applications*,
- Moe, N. B., Dingsøyr, T., & Dybå, T. (2009). "Overcoming barriers to self-management in software teams". *IEEE Software* 26(6).
- Mueller, L., & Toutaoui, J. (2020). "Who Am I and What Am I Doing Here?-IT Project Manager Identity in Agile ISD Team Settings".
- Nerur, S., & Balijepally, V. (2007). "Theoretical reflections on agile development methodologies". *Communications of the ACM* 50(3), 79-83.
- Orth, M., & Volmer, J. (2017). "Daily within-person effects of job autonomy and work engagement on innovative behaviour: The cross-level moderating role of creative self-efficacy". *European Journal of Work and Organizational Psychology* 26(4), 601-612.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). "Sources of method bias in social science research and recommendations on how to control it". *Annual review of psychology* 63, 539-569.
- Podsakoff, P. M., & Organ, D. W. (1986). "Self-Reports in Organizational Research: Problems and Prospects". *Journal of Management* 12(4), 531-544.
- Remus, U., Wiener, M., Saunders, C., & Mähring, M. (2020). "The impact of control styles and control modes on individual-level outcomes: a first test of the integrated IS project control theory". *European Journal of Information Systems*, 1-19.
- Rindfleisch, A., Malter, A. J., Ganesan, S., & Moorman, C. (2008). "Cross-sectional versus longitudinal survey research: Concepts, findings, and guidelines". *Journal of Marketing Research* 45(3), 261-279.
- Schaufeli, W., & Bakker, A. (2004). "Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study". *Journal of Organizational Behavior* 25(3), 293-315.
- Schaufeli, W. B., & Bakker, A. B. (2004). "Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study". *Journal of Organizational Behavior* 25(3), 293-315.

- Schmidt, R., Lyytinen, K., Keil, M., & Cule, P. (2001). "Identifying software project risks: An international Delphi study". *Journal of Management Information Systems* 17(4), 5-36.
- Serrador, P., & Pinto, J. (2015). "Does Agile Work?—A Quantitative Analysis of Agile Project Success". *International Journal of Project Management* 33(5), 1040-1051.
- Shastri, Y., Hoda, R., & Amor, R. (2016, 6-9 Dec. 2016). "Does the “Project Manager” Still Exist in Agile Software Development Projects?". *23rd Asia-Pacific Software Engineering Conference (APSEC)*, Hamilton, New Zealand.
- Shastri, Y., Hoda, R., & Amor, R. (2017). "Understanding the roles of the manager in agile project management". *10th Innovations in Software Engineering Conference*, Jaipur, India.
- Singh, M., Chauhan, N., & Popli, R. (2019). "A Framework For Transitioning Of Traditional Software Development Method To Distributed Agile Software Development". *2019 International Conference on Issues and Challenges in Intelligent Computing Techniques (ICICT)*,
- Stray, V. G., Moe, N. B., & Aurum, A. (2012). "Investigating daily team meetings in agile software projects". *2012 38th Euromicro Conference on Software Engineering and Advanced Applications*,
- Tessem, B. (2014). "Individual empowerment of agile and non-agile software developers in small teams". *Information and Software Technology* 56(8), 873-889.
- Tims, M., Bakker, A. B., Derks, D., & van Rhenen, W. (2013). "Job Crafting at the Team and Individual Level". *Group & Organization Management* 38(4), 427-454.
- Windeler, J. B., Maruping, L., & Venkatesh, V. (2017). "Technical systems development risk factors: The role of empowering leadership in lowering developers’ stress". *Information Systems Research* 28(4), 775-796.