

Factors that Boost and Hinder the Transition from Traditional to Self-managed Teams

A Mapping Study Review

Background: Considering the required speed of organizational transformations to keep software development competitive, transitions based on a trial-and-error approach are less and less acceptable. Even so, due to the lack of a systematic process and knowledge capable of guiding the transition of traditional teams to self-managed teams (SMT) many companies have faced difficulties in completing this mission, becoming dependent on individual efforts with unpredictable results. **Objective:** This work aims to analyze available scientific publications in order to characterize the critical factors related to the transition from traditional teams to SMT in a software development context. **Method:** We used the Scopus scientific database to conducted a Mapping Study Review over its available publications in the last 5.25 years. **Results:** A total of 28 publications were accepted in this review, which helped identify the main factors that boost and hinder the transition from traditional to self-managed teams. **Conclusion:** Although the number of research about SMT has increased in last years, none of them has tried to understand how the transition from traditional team to SMT happens. Our findings show that this transition cannot be seen as an isolated process with immediate results. The critical factors and categories presented in this study will help those who want to carry out the transition of their teams to SMT in the software development industry.

Additional Key Words and Phrases: self-managed teams, self-organized teams, software development teams, software engineering

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1 TECHNICAL REPORT

1.1 List of selected papers

Code	Title	Year	Authors
P01	Overcoming cultural barriers to being agile in distributed teams	2021	Šmite, Darja and Moe, Nils Brede and Gonzalez-Huerta, Javier
P02	Initiated and received task interdependence and distributed team performance: the mediating roles of different forms of role clarity	2022	Wong, Sut I and Van Gils, Suzanne
P03	Scrum anti-patterns, team performance and responsibility	2021	Talpová, Sylva Žáková and Čtvrtníková, Tereza
P04	Factors Affecting Task Allocation and Coordination in Distributed Agile Software Development	2021	Nundlall, Chitra and Nagowah, Soulakshmee D
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Manuscript submitted to ACM

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First column	Second column	Third column	
P05	An architecture governance approach for Agile development by tailoring the Spotify model	2021	Salameh, Abdallah and Bass, Lian M
P06	Organizational implications of agile adoption: a case study from the public sector	2021	Mohagheghi, Parastoo and Lassenius, Casper
P07	Building high performance teams	2020	Pfutzenreuter, Thais Carreira and Lima, Edson Pinheiro and Frega, José Roberto
P08	The Relationship between Agile Practices and A Team's Maturity	2021	Moyo, Albert and Khoza, Luc
P09	A Quantitative Exploration of the 9-Factor Theory: Distribution of Leadership Roles Between Scrum Master and Agile Team	2020	Spiegler, Simone V and Grötin, Daniel and Heinecke, Christoph and Wagner, Stefan
P10	Enabling team autonomy in a large public organization	2020	Bakken, Ingrid Omang
P11	Evaluating the Transition for Self-Managed Teams through Analysis of Roles in Agile Product Development Process in a Technology-Based Startup	2020	de Souza, Gustavo and Costa Melo, Isotilia and Capaldo Arrabal, Daniel
P12	In for a Penny, in for a Pound? A Lifecycle Model for Agile Teams	2020	Diegmann, Phil and Drees, Tim and Rosenkranz, Christof
P13	It's Not Easy Being Agile: Unpacking Paradoxes in Agile Environments	2020	Horlach, Bettina and Drechsler, Andreas
P14	Approaches to Business Analysis in Scrum at StepStone—Case Study	2020	Forowicz, Piotr
P15	Scrum without a scrum master	2019	Ereiz, Zoran and Mušić, Den
P16	Coexisting Plan-driven and Agile Methods: How Tensions Emerge and Are Resolved	2019	Laux, Isabel and Kranz, Joha
P17	Agile Autonomous Teams in Complex Organizations	2019	Mikalsen, Marius and Næseth, Magne and Reime, Erik Andre and Solem, Anniken
P18	Boosting agile by using user-centered design and lean startup: a case study of the adoption of the combined approach in software development	2019	Signoretti, Ingrid and Marczyk, Sabrina and Salerno, Larissa and de Lara, Augusto and Bortolotto, Ricardo
P19	Principles of reforming an agile-compliant performance appraisal	2019	Rejab, Mawarny Md and Omar Mazni and Ahmad, Mazida and Hassan, Syahida
P20	The influence of culture and structure on autonomous teams in established companies	2019	Spiegler, Simone V and Heinecke, Christoph and Wagner, Stefan
P21	Becoming agile: a grounded theory of agile transitions in practice	2017	Hoda, Rashina and Noble, Jam

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P22	Large-scale agile transformation at Ericsson: a case study	2018	Paasivaara, Maria and Behm, Benjamin and Lassenius, Casper and Hallikainen, Minna
P23	Transition to Agile method without Agile-compliant performance appraisal?	2018	Rejab, Mawarny Md and Omar, Mazni and Ahmad, Mazida and Hassan, Syahida
P24	Analysis of the changes in communication and social interactions during the transformation of a traditional team into an agile team	2018	Espinosa-Curiel, Ismael Edrein and Rodríguez-Jacobo, Josefina and Vázquez-Alfaro, Erika and Fernández-Zepeda, José Alberto and Fajardo-Delgado, Daniel
P25	From Scrum to Agile: a journey to tackle the challenges of distributed development in an Agile team	2018	Lous, Pernille and Tell, Paolo and Michelsen, Christian Bo and Dittrich, Yvonne and Ebdrup, Allan
P26	How autonomy emerges as agile cross-functional teams mature	2018	Lundene, Kjell and Mohagheghi, Parastoo
P27	Enabling autonomous teams in large-scale agile through architectural principles	2018	Gundelsby, Jan Henrik
P28	Group development and group maturity when building agile teams: A qualitative and quantitative investigation at eight large companies	2017	Gren, Lucas and Torkar, Richard and Feldt, Robert

Table 1. List of selected publications

Continent	Distinct countries	Qty	%
Africa	2 countries	2	7%
Asia	1 country	2	7%
Oceania	2 countries	2	7%
North America	none	0	0%
Central America	1 country	1	3.5%
South America	2 countries	4	14.3%
Europe	9 countries	20	71.4%

Table 2. Frequency of publications around the world

Code	Category	Type	Factor that affect the team transition to SMT
F1	Team environment	BIVALENT	Size of the project and the nature of its dependencies
F2	Team environment	HINDER	Facing external teams that working in non-agile way
F3	Team environment	HINDER	Facing external team that work in agile or SMT way
F4	Team environment	BIVALENT	Internal mentality of the team for autonomous management
F5	Team environment	HINDER	Diverging prioritization, coordination, and communication practices from the team to the rest of the company
F6	Team environment	BIVALENT	Team's transition project is created from a top-down decision
F7	Team environment	HINDER	Teams or team members change resistance
F8	Team environment	BOOST	development and dissemination of a common language, commitment to the cause and support from senior management
F9	Team environment	HINDER	political fights in the team
F10	Team environment	BIVALENT	The paradox of 'being Agile' and 'doing Agile'
F11	Team environment	BOOST	Self-taught bottom-up experimentation with Agile techniques and tools
F12	Team environment	BOOST	creates a production structure with as few dependencies as possible
F13	Team environment	BOOST	Provide staff to agile programs with full-time resources
F14	Team environment	BOOST	provides resources used to apply agile ways of working
F15	Team environment	BOOST	give a sufficient level of resources experience and training in agile.
F16	Team environment	BOOST	Adaptation and trust
F17	Team environment	BOOST	provide and support an environment based on try-make mistake-and-improve
F18	Team environment	HINDER	treating tensions and paradoxes as issues
F19	Team Autonomy	BIVALENT	Teams autonomy constrained by e doctrine of Mission Command
F20	Team Autonomy	HINDER	Teams autonomy constrained by legislation, security, universal design, soft ware architecture and legacy systems
F21	Team Autonomy	HINDER	Teams autonomy constrained by need to interact with other teams and projects
F22	Team Autonomy	HINDER	Teams autonomy constrained by high power distance
F23	Team Autonomy	HINDER	Teams autonomy constrained by specialist culture
F24	Team Autonomy	HINDER	Teams autonomy constrained by functional departmentalise
F25	Team Autonomy	BOOST	internal autonomy
F26	Team Autonomy	BOOST	external autonomy
F27	Team Autonomy	BOOST	team autonomy and diversity
F28	Team Autonomy	BOOST	balance between freedom and responsibility
F29	Team structure	BIVALENT	Team size
F30	Team structure	HINDER	part-time resources
F31	Team structure	HINDER	members from different backgrounds and prior experiences
F32	Team structure	BOOST	diversity and different skills aggregation
F33	Team structure	HINDER	role redundancy

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F34	Team structure	BOOST	redundancy of skills or backup people
F35	Team structure	HINDER	imposing or offering a form of team structure
F36	Team structure	BIVALENT	production and control structures
F37	Team structure	BOOST	tailor the methods to their needs and not the contrary
F38	Team structure	HINDER	generation of new social structures
F39	Team structure	HINDER	unwillingness and inability to assume responsibility
F40	Team structure	HINDER	plan-driven culture inhibits agile structures
F41	Team structure	HINDER	traditional mindset over autonomous team mindset
F42	Team structure	BOOST	reorganization of plan-driven structures
F43	Team structure	BOOST	limiting interfaces between agile and non-agile teams
F44	Roles	HINDER	New roles
F45	Roles	BOOST	Role extinction
F46	Roles	BIVALENT	Role adaptation (eg. Project Manager)
F47	Roles	BOOST	Role clearance about duties, rights, boundaries
F48	Roles	BOOST	coaching role
F49	Roles	BOOST	leadership role
F50	Roles	BOOST	dedicated Scrum Master or coaching
F51	Roles	BOOST	shared Scrum Master or coaching
F52	Roles	HINDER	unnoticed task developed by Scrum Master
F53	Roles	HINDER	unnoticed task developed by Project Manager
F54	Roles	BOOST	Good coaching (conduct team toward the goals)
F55	Roles	HINDER	Bad coaching (apply their own interests)
F56	Roles	BIVALENT	external leaders
F57	Roles	HINDER	centralized architectural decision making
F58	Roles	BOOST	Architecture Owners and Enterprise Architect
"F59	Roles	BOOST	Transforming the architectural decision-making of product development from enterprise to operational level
" F60	Roles	BOOST	architecture organized by domains
F61	Process	BIVALENT	top-down approach
F62	Process	BIVALENT	bottom-up approach
F63	Process	BOOST	martial arts concept of Shuhari (obey, fall, break away)
F64	Process	BOOST	gradual transitions reduce the risks and challenges of the change process
F65	Process	BOOST	transition process for Project Manager
F66	Process	BIVALENT	adopting agile methods to na environment in which plan-driven methods have been used
F67	Process	HINDER	hybrid approaches
F68	Process	BIVALENT	coexistence TEMPORARY of traditional and SMT methods

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F69	Process	BOOST	reorganizing teams and flattening hierarchies
F70	Process	BOOST	Provide a environment that supports Inspect
Adapt concept			
F71	Process	HINDER	“unnecessary” rituals are hurting the transfor mation and acceptance
F72	Process	HINDER	agile creates unwanted transparency
F73	Process	HINDER	agile does not fit into “old” processes
F74	Process	HINDER	increases communication might be slowing down the overall process.
F75	Process	HINDER	coexistence PERMANENT of traditional and SMT methods
F76	Process	HINDER	coexistence of traditional and SMT methods inside the team
F77	Process	HINDER	coexistence of traditional and SMT methods outside the team
F78	Others	HINDER	cultural distinct behaviors
F79	Others	HINDER	Command-and-control mindset
F80	Others	HINDER	reinforced dference to superiors
F81	Others	HINDER	Leadership style discouraging team members from expos ing problems
F82	Others	HINDER	Leadership style discouraging team members from proposing alterna- tives to perceived directives from superiors
F83	Others	HINDER	Willingness to say yes to most requests in deference to superiors
F84	Others	HINDER	reluctance to warn about non-feasible deadlines
F85	Others	HINDER	Reluctance to expose problems
F86	Others	HINDER	Lack of commitment to self-learning
F87	Others	HINDER	reliance on top-down improvements
F88	Others	HINDER	Lack of initiative to go beyond the top-down task-related instructions
F89	Others	HINDER	Reluctance to engage in constructive disagreements and challenging discussions or voicing criticism
F90	Others	HINDER	Reluctance in taking responsibility for tasks and code
F91	Others	HINDER	Reluctance to propose alternatives to perceived directives from superi- ors
F92	Others	BIVALENT	team motivation
F93	Others	BIVALENT	team ages : change is easier for “young”, more difficult for “old”
F94	Others	HINDER	character attributes incompatible among team member
F95	Others	HINDER	team members not included in decision making processes
F96	Others	HINDER	fear or resistance to change
F97	Others	HINDER	a team member’s experience from tradicional teams
F98	Others	BOOST	a team member’s experience from agile teams
F99	Others	BOOST	shared identity
F100	Others	HINDER	protective of their way of man aging and producing their deliverables
F101	Others	HINDER	anti-patterns: overloading of members

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First column	Second column	Third column	
F102	Others	HINDER	anti-patterns: failure to complete assigned projects
F103	Others	HINDER	anti-patterns: ad hoc requests with incidents
F104	Others	HINDER	anti-patterns: lack of customer involvement
F105	Others	HINDER	anti-patterns: teams are not always self organised
F106	Others	BOOST	need of na Agile-compliant performance appraisal

Table 3. List of identified factors