Operationalizing Software Engineering Theories for Practical Validation
Appendix-B. Constructs, variables, and Indicators

The name of the constructor is indicated followed, in parenthesis, by the variables that characterize it and, for each variable, the value of the indicators. If the indicator is expressed in brackets {}, the variable can take only one of the values. If the indicator is expressed in square brackets [ ], the variable can take several values of those expressed in square brackets.

Constructors	Variables	Indicators
Team. It is an artificial (abstract) concept that represents a team structure of an IT department.	autonomy	{dependent,self-organization}
	blame	{true, false}
	alignment of devops goals	{local optimization, product thinking}
	responsibility/ownership sharing	{full sharing, medium sharing, minimal or null sharing}
	skills/knowledge sharing	{fullsharing, medium sharing, minimal or null sharing}
	stacktools sharing	{full sharing, medium sharing, minimal or nullsharing}
	cross-functionality/skills	{true, false}
	role definition/attributions	{true, false}
	Inherited members	{productteams, horizontal teams, bridge teams, enabler teams, development teams, operation teams}
Management. It is an artificial (abstract) concept that represents the management activities (project and product management,change management, team self-organization, coordination and transfer of work between teams, as well as measuring, monitoring and feedback) to ensure that software development and maintenance are systematic, organized, and quantified.	change type	{small&frequent, large&rare}
	product name	{String}
	Inherited members	{project management, product management}
Culture. It represents the set of common principles, values, and best practices that impact on the way that people in anorganization relate to each other and make decisions and actions around application life-cycle management.	principles	[customer centric action, end to end responsibility, automate every thing]
	cultural values	[communication, collaboration, transparency, blame]
	best practices	[continuous integration, continuous testing, continuous delivery, continuous deployment, continuous monitoring, continuous improvement, infrastructure as code]
Automation. It represents the set of activities to automate the processes of the application lifecycle management andinfrastructure management where applications are deployed.	type	{Automated Infrastructure Management, Automated Application Life Cycle Management}

Platform. It represents the technology to support automation. It provides interfaces for Automated infrastructure managementand automated application life-cycle management.	provided interface	{IaC, ALM Interface, Automated Infrastructure Management, Automated Application Life Cycle Management}
Silo. It represents the concept of silos between teams. The organizational silo represents the teams that are organized in differentlocations. Cultural silos are remnants of organizational silos, where teams work together. However, there is still a work transfer culture, poor interaction, and communication between teams, promoting work transfer.	type	{organizational, cultural}
Collaboration between teams. From the lack or eventual collaboration, to daily collaboration.	frequency	{daily, eventual}
	quality	{high, low}
Communication between teams. From poor/rare communication to frequent communication.	type	{poor/rare, frequent}