



Mapping project managers competences to project complexity

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The motivation for this research

- Projects are becoming more and more complex
- Large technical projects do not always meet the intended schedule and budget
- One of the causes mentioned: project complexity
- What is the typical complexity and what is needed to manage it?
- Could one type of project manager fit all projects / project phases?

The assumptions

- Managing project complexity better leads to better project results (from project management perspective)
- The project manager plays a significant role in managing project complexity
- Competencies and tacit knowledge play a significant role in the capability of a project manager to manage project complexity

The research questions

- What is the relation (the 'map') between project complexity and the competences and tacit knowledge of the project manager?
 - How to classify project complexity?
 - Which competences does a project manager require to manage a project with a certain complexity?

Descriptive character of the research

Methods used

- Qualitative research using mixed methodologies
 - Literature survey
 - To develop a project complexity framework
 - To develop a competence framework
 - Field study
 - Interviews with 4 experienced project managers
 - Interviews with 2 experienced resource planners

Results (1/7)

Complexity framework

- Complexity can not be captured in one single number
- Framework chosen:

Technical	Organizational	Environmental
Goals	Size	Stakeholders
Scope	Resources	Location
Task	Project team	Market conditions
Experience	Trust	Risk
Risk	Risk	

Results (2/7)

Competence framework

- Competences: demonstrated ability to apply knowledge and/or skills and demonstrated personal attributes
- In-company framework chosen

Competence groups
Project engineering (technical PM elements)
Contracting and procurement
Health, safety, security and environment management
Personal and business competences
Global leadership competences

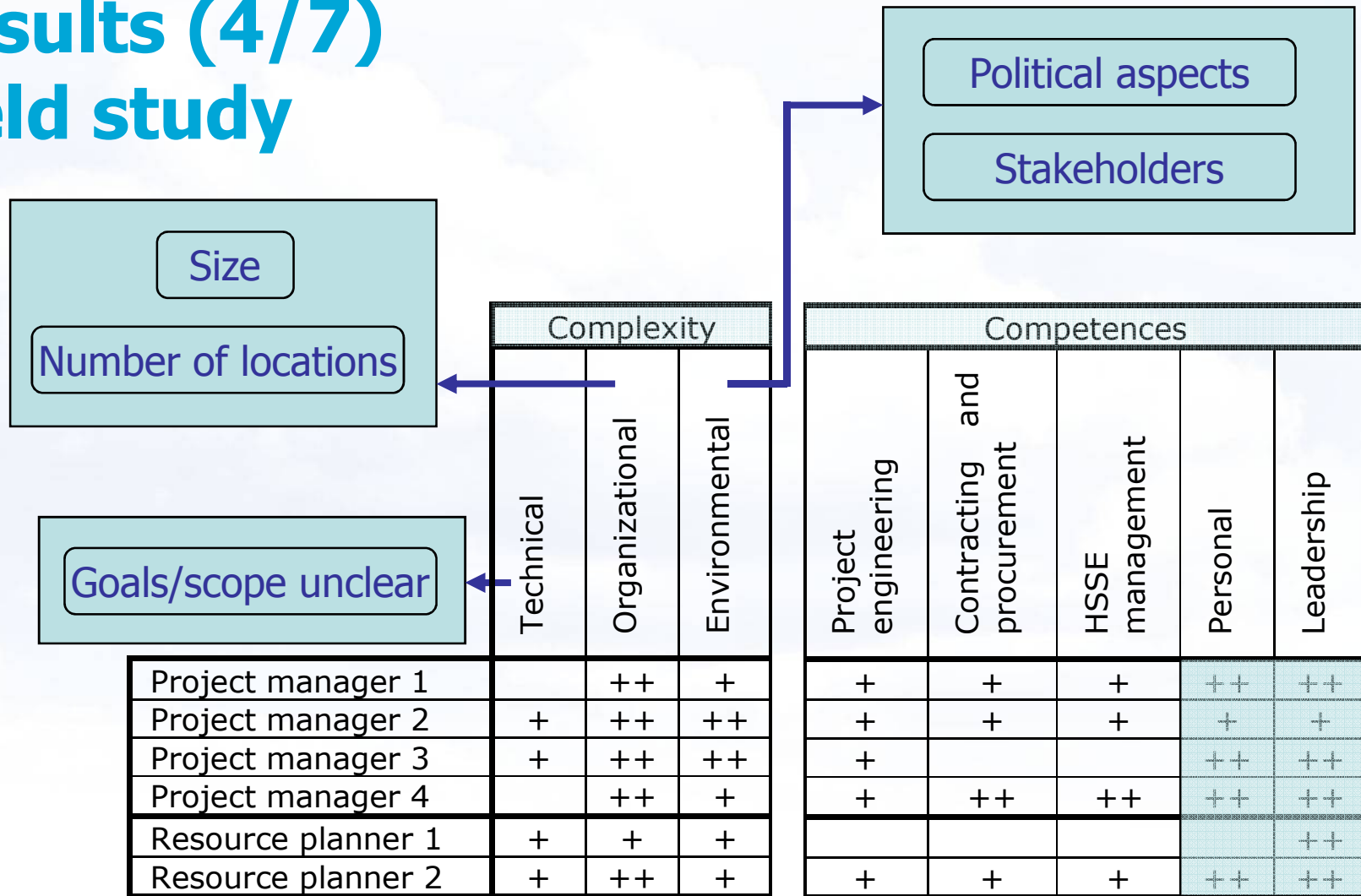
Four levels
Project director
Project manager
Senior project engineer
Project engineer

Results (3/7)

Field study

- Within oil and gas company
- Experienced project managers and resource planners
- Projects between 500 million to several billions US\$
- Mix of projects in definition phase and execution phase
- Mix of greenfield and brownfield projects

Results (4/7) Field study



Results (5/7)

Field study

- Complexity observed typically in organizational and environmental aspects, less in technical aspects
 - But..... technical interest & experience is seen as essential for project managers of technical projects
- Key competences in the “softer” area
 - Leadership & personal competences
 - Courageous
 - Interpersonal skills
 - Clear vision

Results (6/7)

Map of complexity and competences

		Competences				
		Project engineering	Contracting and procurement	HSSE management	Personal	Leadership
Project Complexity	Technically complex	+++	+	+	++	+++
	Organizationally complex	+	+++	++	+++	+++
	Environmentally complex	+	+	++	+++	+++

Results (7/7)

Explaining the map

- Importance of personal and leadership competences to manage complexity
 - Link between all types of complex projects and personal & leadership competences
 - Link between technically complex projects and more technical competences
 - Link between organizationally complex projects and C&P competences
- To be used to choose appropriate project managers for a typical project

But...

(observations based on field study)

- Different project **phases** require different (type of) managers
- The **team** can complement the project manager's competences
- Using competence standards might be **overvalued** (measure of what people have done, not where they can grow...)

Conclusions

- Project complexity consists of several aspects
- Different project managers for different projects / phases
- Look broader than the competence (development) of the project manager
- Map between complexity and competences to be used to select the appropriate project manager (and team)

- Further development of the map between complexity and competences is foreseen
 - Detailing complexity and competences
 - From descriptive to predictive

Thank you!

Questions?

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