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**Creating a successful
technical and engineering
consulting firm**

**—Swift transition and knowledge
cycling**



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By Jonas Söderlund
& Sijetlana Pantic-
Dragisic

Changing innovation and engineering labor

The organization and development of innovation labor (engineers in particular working with design and development) is undergoing major changes in technology-based and engineering-intensive industries in most industrialized countries. These changes are tightly linked to volatile market demands and increasing project uncertainties – and call for greater numerical flexibility (adding manpower when needed) and functional flexibility (adding specialized expertise when needed) within the innovation labor workforce.

Rise of technical and engineering consulting

These trends have led to the technical and engineering consulting industry becoming an increasingly important player for the organization and development of innovation labor and engineering knowledge to industries, such as telecom, aerospace, and automotive. Moreover, it also plays a central role for the development and transfer of knowledge across firms and industries. Having a thriving technical consulting industry is essential for a nation's competitiveness – and for client firms to get the right human resources. In that respect, the capabilities of technical and engineering consulting firms are critical for the success and competitiveness of their clients.

However, we know relatively little of the specific capabilities that are the most central for the organization of innovation labor among technical consulting firms. This was what our study, reported in full elsewhere, targeted (Pantic-Dragisic and Söderlund, 2020). We went out to explore the most critical capabilities for a successful technical and engineering consulting (TEC) firm.

Capabilities and competitiveness

By capabilities we mean the learned and patterned behaviors of collective activity that reside in a firm's organizational processes and activities. Capabilities draw on firm-specific knowledge that an organization has built over time and that determines its long-term success. Capabilities

are required to integrate, reconfigure, acquire and divest resources. The main resources marshalled by TEC firms are the human resources – so capabilities in that context pertain mainly to leveraging and enhancing the firms' human capital.

Knowing how an organization develops its knowledge and capabilities is fundamental to understanding its basic premises and competitiveness. For TEC firms, capabilities are particularly interesting and important as they are molded across the organizational and individual levels – individuals are provided with opportunities to develop and use their skills and knowledge, while organizations rely on individual expertise to build collective knowledge and capabilities that are essential to their performance. What are the most critical capabilities for a TEC firm with regards to managing this interaction across individual and organizational levels?

Investigating key capabilities

A central idea behind the present study was to determine the underlying factors for the growth of the technical consulting industry and in particular factors explaining the success of the TEC firm. In line with recent literature in strategic management, this calls for a much better understanding of the nature and nurturance of critical capabilities. To explore this issue in-depth, we therefore conducted a detailed case study of one of the leading TEC firms in Scandinavia.

In our study, we examined in-depth the different patterns across our interviews and observations. We relied on an advanced coding scheme to identify the activities that were singled out as particularly important. From this rather complex web of data, we distilled a higher-order pattern from which we identified the key capabilities within the studied TEC firm.

Our study spanned several organizational levels and encompassed more than 50 interviews with top managers, technical consultants with different levels of experience as well as support staff. We also interviewed the firm's most important clients. In addition, we made use of a large amount of other data including field observations and diary studies. This broad set of data enabled us to identify two key capabilities that play a central role in the successful

development of TEC firms: swift transition and knowledge cycling.

The interplay between these capabilities, each of which arises from the interactions between the firm level and the individual level, seems crucial for the successful development, organization and supply of innovation labor and engineering knowledge. In different ways, these capabilities were related to the very basic supply of these firms in that they solve a problem related to numerical flexibility and functional flexibility. Numerical flexibility means that the TEC firm adds manpower to the client's projects, whereas the functional flexibility in principle means that they add specific expertise that is not available within client organization. However, the capabilities also clearly indicated a pattern that went beyond these flexibility requirements. It was, thus, not merely a matter of adding manpower and adding manpower with certain technical expertise. There was something else at play here, our study indicated.

Swift transition and knowledge cycling

Combined the capabilities of swift transition and knowledge cycling created a foundation for the successful organization and transfer of engineering knowledge among different and diverse problem-solving settings. These capabilities also highlighted that the TEC firm can serve purposes far beyond merely adding numerical flexibility (number of manhours) and functional flexibility (specific technical knowledge) but actually set in motion a very different kind of knowledge dynamic that seems central for explaining the growth of the TEC industry – which is fundamental for the services of the TEC firm.

Swift transition involves more than quickly moving consultants in response to client needs or adding manpower to late projects. It goes beyond numerical flexibility. It requires that managers are able to identify client needs and match them with the appropriate human resources and that the technical consultants are able to enter new projects on demand and quickly engage in productive interactions with other members of the clients' project teams. Thus, a key purpose of the TEC firm is to offer clients the services of consultants who are equipped to assume a position that creates value and

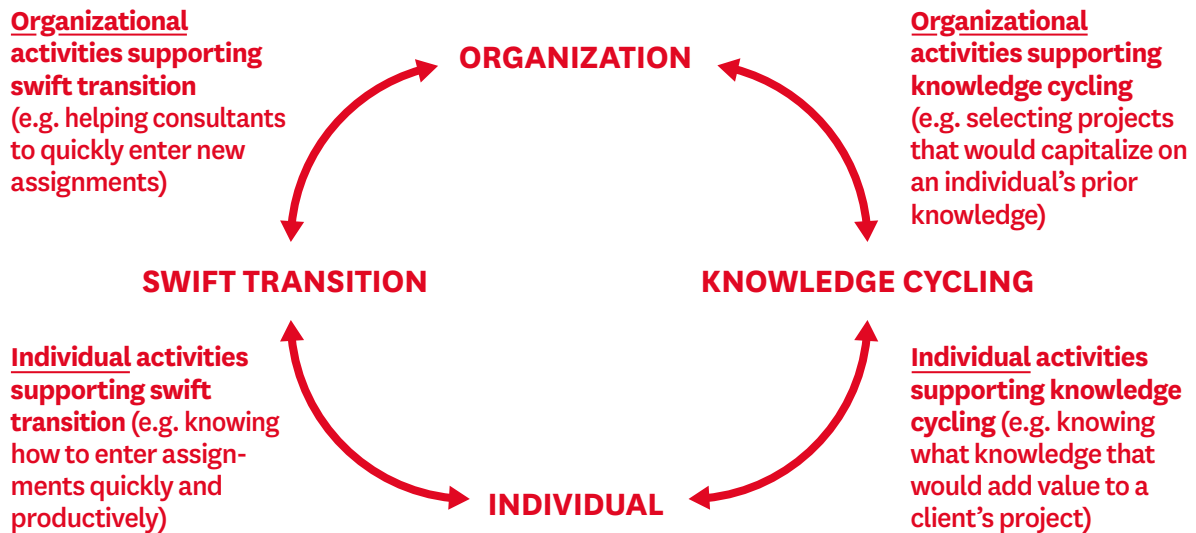


Figure 1.

contributes to the focal project. Being quick in handling fluctuating demand changes due to project uncertainties and technological change seems particularly important in light of swift transition. However, swift transition is not only a matter of quickly adding manpower – it is equally important to move manpower to new assignments and ensure that consultants develop their ability to move around among projects and clients.

Knowledge cycling concerns not only the TEC firm's ability to encourage knowledge transfer by rotating its consultants among problem-solving contexts but also the technical consultant's ability and activities to transfer knowledge and lessons learned from various client organizations – to make a difference by adding a different kind of knowledge that would contribute to creativity and solutions in the client's project. Thus, knowledge cycling transcends conventional solutions to the problem of functional flexibility. It centers on the ability of the individual consultant and the TEC firm to identify what knowledge from prior assignments and experience that is relevant for the present assignment, to engage in a dialogue centered on the integration of knowledge and expertise among hired consultants and client engineers.

In that regard, our study showcases the close connection between individual skills and the development of organizational capabilities – as well as the tight link between swift transition and knowledge cycling. As illustrated in Figure 1, the capabilities of swift transition and knowledge cycling are closely linked and mutually constitutive. We argue that each is formed through interactions between the organizational and the individual level – and calls for a tight relationship and long-term commitment

and understanding from clients – to make this knowledge dynamic work.

Managerial implications in brief

- TEC firms should select their clients carefully to be able to engage in the interplay between swift transition and knowledge cycling
- Clients need to know that they are part of a capability process centering on swift transition and knowledge cycling
- Clients need to understand that there is a premium paid for engaging in this capability process and a long-term benefit to be gained
- TEC firms should ensure that clients add

differences and show sufficient resemblances to make knowledge cycling effective

- TEC firms should develop the ability to quickly identify client needs (often in close dialogue with clients) and ensure the ability to quickly enter new assignments and add value to ongoing projects
- TEC firms should develop consultants' ability to swiftly enter new projects, add value and hand-over when assignments are completed and/or projects terminated



JONAS SÖDERLUND

jonas.soderlund@liu.se

Jonas Söderlund, Ph.D., Professor of Strategy and Organization at Linköping University. He has been a member of the Advisory Board of Project Management Institute, Director of executive education programs at BI, Norway, and professor at several universities and business schools. His research centers on the dynamics of strategy and innovation with a particular focus on knowledge integration, temporality, and project-based organizing. His research has been published in many of the leading journals in innovation and organization, such as Research Policy, Organization Studies, Human Relations. He is on the editorial board of several academic journals, including Organization Studies and Human Relations. He is an associate editor of the Project Management Journal.



SVJETLANA PANTIC-DRAGISIC

svjetlana.pantic.dragisic@liu.se

Svjetlana Pantic-Dragisic, PhD, is a senior lecturer in Business Administration at Linköping University. Her research interests include organizational behavior, organizational capabilities, knowledge management, human resource management and digitalization. She has published in journals such as Management Learning and Research Policy.