Chapter 3
Towards an Understanding of Team Dynamics in Very Small Enterprises:
An Exploratory Study in Software Development Firms

Rory V. O’Connor
Dublin City University, Ireland

ABSTRACT

Given that it is relatively noncontroversial to claim that human capital, both in terms of education and experience, is associated with superior firm performance, this can be extended to say that having the requisite human capital in terms of software development staff is highly important for software development project success. However, translating into actual corporate benefits implies an understanding of the range of human capital issues in organizations. The present study examines one such range of issues with a focus on the dynamics of teams, where team dynamics is taken as a general term to denote the nature, quality and quantity of interactions among a firm’s human capital at the team level. Specifically we refer to collaborative dynamics among human capital team resources to indicate the extent to which valuable information is shared, levels of engagement, the existence of a collective sense of awareness and the ability to learn from one another. The results of a study of a series of very small software development firms are presented to ground this study in industrial practice.

INTRODUCTION

The proposition that firm-level resources in general are associated with sustainable competitive advantage (Wernerfelt, 1984) quickly led to the proposition that human capital is a resource that organizations can leverage to achieve competitive advantage (Barney, 1991). Further Coff (1997) observed that since human assets have, among other powers, the ability to leave the firm, human capital constitutes a special class of firm-level resource. Building upon this concept of a collective-level resource that has individual-level

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origins Ployhart and Moliterno (2011) define the human capital resource as a “unit-level resource that is created from the emergence of individuals’ knowledge, skills, abilities, and other characteristics”. This definition brings to the foreground the collective nature of the human capital resource composed of individual human assets (Nyberg, Moliterno, Hale, & Lepak, 2014). It is therefore relatively non-controversial to claim that human capital, both in terms of education and experience, is associated with superior firm performance. Taking a context of software development using expert knowledge workers, we can extend this concept to say that having the requisite human capital in terms of expert software development staff is highly important for software development project success. However translating this into actual corporate benefits implies understanding a range of human capital issues in organizations.

Various observers describe the modern global economy as one in transition to a ‘knowledge economy’ as an extension of an ‘information society’. As the modern world economy has transitioned from an industrial to knowledge-based economy, the nature of software development has also changed. Software development is a knowledge-intensive process, where knowledge is created and shared, when different aspects of a software development process (concepts, products, tools, process, people etc.) interact with each other (Qumer & Henderson-Sellers, 2008). Software development is a knowledge-driven industry, which relies on employees’ expert knowledge to create a finished product, where this expert knowledge is mostly tacit (Ryan & O’Connor, 2009). Software development teams have a relatively unique structure, wherein the division of labour among members is highly interdependent. Therefore the organization, management and support of the human capital resource is a key process in developing software products and in the ultimate success of software development firms.

This chapter will focus on one such range of human capital issues, namely the dynamics of teams, where team dynamics is taken as a general term to denote the nature, quality and quantity of interactions among a firm’s human capital at the team level. Specifically we refer to collaborative dynamics among human capital team resources to indicate the extent to which valuable information is shared, levels of engagement, the existence of a collective sense of awareness and the ability to learn from one another. From a human capital resource management perspective this is especially important in project teams because positive dynamics, where there is a flow of information and constructive comments, encourage learning processes to take place and enable the creation of new knowledge. This type of dynamic also enables the team to cope with uncertainty and excessive work demands, and helps it make the right choices and implement them in a more efficient way than groups with low levels of interaction (Ryan & O’Connor, 2012).

There is a substantial amount of literature examining the software process and how to improve the actual software development process steps, however, there is a lack of published studies addressing the issues of teamwork in software development teams and specifically the impact of team dynamics on the software development process. This chapter will discuss the role of team dynamics, both positive and negative and internal and external, in the context of software development teams. Further, this chapter will present the results from a series of studies from very small software companies with regard to team dynamics and its impact on the software development process.

BACKGROUND

A team can be considered to be a collection of individuals who are inter-dependent upon each other in terms of their tasks, who share responsibility for common outcomes, who see themselves and who are
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