

# Chapter 5.1

## Multicultural Software Development: The Productivity Perspective

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### ABSTRACT

*Productivity management is a challenge for software engineering companies and, in this regard, there is a current trend toward globalization. Via acquisitions and mergers, business has become international and employs different national cultures. Therefore, the focus of this article is on the understanding of cultural differences affecting productivity in globalized software production. The relation between productivity and non coding activities in software development projects has not been proven. Software development is expert work, typically made in closely collaborating local teams and global distribution of expert work increases the degree of difficulty. In this paper, the authors analyze multicultural ICT companies from their productivity perspective through the lens of cultural differences. The purpose of this study is to report findings based on general cultural studies and reported experiences that seem to affect productivity in the software industry. Some company cases are also described and analyzed.*

### INTRODUCTION

The ICT (Information and Communication Technology) industry is becoming more global both in ownership and in the scope of the markets. The

driving forces for globalization are also affecting the productivity of projects, directly or indirectly. Productivity driven motives include a lack of skilled personnel in the home country and cheaper workforce in the target country. Forces affecting productivity indirectly are for example: opening up a wider market via or in the target country,

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expertise of the target country from the point of view of the company's products, and services and localization of the products and related services to conquer the markets of the target country.

Our hypothesis is that most globalization decisions are based on economic factors (e.g., productivity). The classical definition of labor productivity is the ratio of (the real value of) output to the input of labor (OECD, 2002), where hours worked and numbers of employees is used as the measure of labor input. When applied to knowledge work however, it has to be asked whether it is possible to measure the productivity of a knowledge worker in a quantitative fashion? Therefore the qualitative effect of cultural aspects on IT project productivity is discussed here.

A pre-condition for establishing a new global site is that the target country has a well-developed education system that can provide skilled candidates for the expert work. In ICT, distribution of work is the normal procedure. A typical project is based on dividing the work into parts, which are made the responsibility of collaborating project teams. Software development is expert work made in closely collaborating teams. The most natural way to do this kind of work is to implement it in local teams. Global distribution of expert work increases the grade of difficulty. An additional grade of difficulty appears if the organizational parts represent different cultural backgrounds. Productivity by definition is a concept that is understood differently by different people. The social, cultural, and historical environments affect a person's perspective.

Physical work is done mainly by using (networked) computers and the artifacts are managed in joint repositories. This distribution of work will cause issues that can be divided into two categories: (1) product management and (2) work management. From the product management point of view, productivity is for example a question of version management – how to avoid simultaneous changes in a certain artifact, but also of how to guarantee that the separate components are finally

parts of the same product after integration. Product management problems are mainly solved by suitable tools and efficient work practices.

Productivity issues in work management are related for example to teamwork – communication inside teams and in between teams. ICT-related work is usually organized as projects. Project groups are expected to have an opportunity for unrestricted communication whenever needed in a way that limits the chances for any misunderstanding. This issue is solved partially by high quality documentation (produced by commonly used tools and technologies, produced in predefined high capability level processes). An additional difficulty in teamwork is caused by the inadequate understanding of cultural differences between the team members. This is often manifested in the ways of communicating, tools acceptable for communication, (project) management practices, and organizational issues for example. In this article, we will focus on software development and software engineering work as a meaningful part of the ICT sector. In software engineering, there is a trend away from the traditional plan-driven software development culture towards agile processes (Agile, 2010). One of these, based on Ken Schaffer's article of 2004 is SCRUM (c.f. Scrum, 2010). SCRUM has recently become the most popular of all the agile methods in the software industry. The idea was originally introduced back in the mid-1980s by two Japanese knowledge management gurus (Takeuchi & Nonaka 1986). The approach in this article is to introduce and analyze interview material collected in early 2010. In the conceptual part of this article, the concepts of productivity and cultural differences are discussed. The article introduces some company cases and the main findings; the findings are analyzed from the stance of productivity.

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