Chapter 5
Creation of Indicators
Determining the Work of High-Tech Business Practitioners:
Validity, Reliability, and Negotiation Revisited

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ABSTRACT
The authors address how performance indicators are configured and engineered in ERP-systems to follow up the activities of the knowledge workers in an oil and gas company. ERP-systems enable the development of new performance indicator systems, and give management simple dashboard tools to follow up and compare the performance of the organizational members across time and space. Decisions in organizations are increasingly taken on the basis of these abstract indicators that work as signs and inscriptions. This makes the development of such accounting indicators an interesting area of research because the representation of such indicators will to a large extent govern the decision making and practices of the organization. Who inscribes and controls the indicators controls the business. The authors discuss the development of such indicators as an inscription and translation process and how the indicators develop as a consequence of negotiations between influential actors. Finally, they address the consequences of these indicators and argue that they are dependent upon three key issues: the validity of the indicators, their reliability, and how indicators are negotiated. The authors’ research question is how do disparate organizational groups interplay with physical and technical elements to create indicators determining the work of high-tech business practitioners?

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INTRODUCTION

Knowledge intensive work is increasingly sought controlled directly or discretely by Information and Communication Technology (ICT), putting the knowledge worker increasingly under corporate control. From a strategic and coordination perspective, it makes sense that management should be able to follow up the activities sufficiently to develop appropriate work design and work processes, and as a consequence be able to put forward strategies for prioritized areas and cooperative relations. Such a management mindset has worked in the past and is providing a strong motivation to continue a command and control approach of the business. This chapter is intended for those interested in the dynamics between accounting practices and organizational control with ICT whether from an engineering, accounting or organization science perspective. We address ERP-systems, short for enterprise resource planning, a special type of ICT that integrate data from all facets of the business, including planning, manufacturing, sales, and marketing modules. SAP, one of these ERP-systems, is not standard off-the-shelf software; it is a meta-software within a workflow architecture that connects a database to the above modules. Without data specifications (how and what data will be stored) and business processes (how business transactions are sequenced and draw upon or modify this data), the ERP-system will not fulfill its purpose (Quattrone & Hopper, 2006, p. 225).

ERP-systems also differ from other information systems in their complexity, scale and organizational impact (Kallinikos, 2004), and deserve greater attention with regard to their impact on organizational control (Ignatiadis & Nandhakumar, 2009). Some of the embedded features of the ERP-system and its system of control will have consequences for the work of knowledge workers (Kallinikos, 2004). Even though direct automation of knowledge workers expertise in ERP-systems is not likely, a more moderate consequence for knowledge work is the change of the social structures of the organization. New experts are created and previous expertise is made redundant. An ERP system also measures individual performance in new ways. A higher degree of standardization and codification of work is necessary. There are increasing demands to data management and discipline. Data must be entered “correctly” the first time, if not the integrated features of the ERP-system will have unforeseen consequences (Hanseth, et al., 2001). ERP improves accounting control by increasing visibility in two ways; both the amount of information and the speed at which it becomes available. Such systems change the focus of management accounting from financial to physical (Dechow & Mouritsen, 2005, p. 691). An ERP system shrinks distances, particularly in making centralized or shared services possible (Quattrone & Hopper, 2005, p. 737).

However, it is not our intention to address ERP-systems in general in this Chapter. We are more concerned with the indicators that are configured and engineered to follow up the activities of the knowledge workers based on the input from ERP-systems. An indicator is defined as a sign that tries to present vital features of given parts of an organizational reality aggregated and detached from its local contexts of time and space.

The multi-disciplinary activities of today’s knowledge intensive businesses are complex. Managers located far away from the operational activities must follow up work and take decisions in areas where they have little expertise. As a response to the increasingly complexity of knowledge intensive businesses software companies have developed tools to systematize and simplify this complexity through models and indicators. ERP-systems with real-time data enable the development of performance indicators based on this information, and give management simple dashboard tools to follow up the performance of the knowledge workers. As such, accounting systems like SAP are able to compress time and space (Robson, 1992). In essence, the integrated
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