

More Productive Knowledge Work

A Report on a Systems Theory Based Approach to Identify Options for Higher Knowledge Work Productivity and its Applications in Business and Public Management

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Abstract: The established methods used for measuring labour productivity — originally designed for the manufacturing sector — do not fit the specific characteristics of knowledge work. We therefore propose a more appropriate understanding of the driving forces behind knowledge work productivity, focussing on process quality instead of result quantity. In a three step potential analysis, we assess (1) the knowledge intensity and then (2) current levels of knowledge work productivity with regard to typical intellectual activities such as information processing, communication, decision making, and learning, as well as organizational adaptability. The quality of knowledge work can be increased if the handling of information, communication and knowledge during these activities occurs in a systematically organised way instead of arbitrarily. Results of the analysis are then used to (3) propose both short and medium term action plans for more productive knowledge work.

Keywords: knowledge work, knowledge work productivity, labour productivity

Categories: M.9

1 Introduction

In this paper we present a new method to identify potential for higher knowledge work productivity and its application. The analysis technique, which we have called “Potential Analysis” since its aim is to identify potentials for improved knowledge work productivity, consists of three major steps:

Step 1 — Knowledge intensity: Assessing the knowledge intensity of an organization’s processes and products we conclude how relevant knowledge and therefore knowledge work productivity is for a specific organization.

Step 2 — Current levels of knowledge work productivity: While most approaches towards work productivity deal with work efficiency only [see State of the Art] ours concentrates on effective standards for typical knowledge work activities.

Step 3 — Fields for improvement: The results from Step 1 and 2 allow identifying “quick wins” and a development path for knowledge management.

2 State of the Art

We follow Drucker's [Drucker 69] definition of knowledge work, who first introduced the term more than 35 years ago for people who deal with formal knowledge as a major part of their job also raising awareness to the relationship between productivity and knowledge: "The most valuable assets of a 20th-century company were its production equipment. The most valuable asset of a 21st-century institution, whether business or nonbusiness, will be its knowledge workers and their productivity" [Drucker 99].

In their taxonomy of methods to measure knowledge worker productivity, Ramirez and Nembhard [Ramirez and Nembhard 04] report that to date there are no effective, universally accepted, practical methods to measure knowledge worker productivity, see also [Drucker 99]. Approaches to measuring the productivity of knowledge work include input/output oriented models, as well as models that evaluate how efficiently knowledge work tasks are accomplished. The majority of these models aims at determining time standards but do not provide any information on the quality of the work done. Other methods try to enhance the efficiency of an organization by identifying and consequently reducing overhead costs. Although the approaches listed above cover aspects such as quantity and quality, costs and profitability, timeliness, customer satisfaction etc., none puts the defining task of knowledge work, the handling of rather formal knowledge [Drucker 69] at the center of attention. Among the concepts to enhance the productivity of knowledge workers most focus on the employment of IT, followed by approaches that emphasize the effects of management, culture and teams on knowledge work productivity. Others stress the importance of the workplace environment to make knowledge workers more productive [Sumanth et al. 90]. Heisig provides a survey of business process oriented approaches towards knowledge management and concludes that there still is a lack of theoretically as well as empirically founded methods that support the process oriented handling of knowledge in a systematic and methodologically sound way [Heisig 05].

3 The Analysis Technique

The importance of knowledge workers and their productivity when handling formal knowledge is undisputed [Drucker 99]. The Potential Analysis presented in this paper focuses precisely on the systematic handling of information, communication and knowledge. So far it has been applied to eight organisations in Austria:

- one of Austria's major financial service institutions,
- the Austrian subsidiary of a major international software company,
- a large social service organization,
- a branch of the regional government dealing with youth welfare,
- two institutes for teacher training,
- a medium sized research center, and
- an international, Austrian based machine construction business

Thus the Potential Analysis is not limited to a specific kind of business. It is carried out in three consecutive steps over a few months. However the input required by the cooperation partners is basically limited to the time needed for the interviews.

The matrix is an adaptation of the Information Intensity Matrix developed by [Porter and Millar 85], which, despite its name, actually shows the importance of knowledge for an organization's major activities, final products, and services [Willke 01], see [Fig. 1]. In accordance with the often used definitions of information and knowledge by [Davenport and Prusak 00], we have consequently renamed the matrix "Knowledge Intensity Matrix". By entering the five indicators into the matrix the driving forces of knowledge intensity can be identified. [Fig. 1], for example, shows that in this case the major activities as well as the products and services are characterized by high information intensity, while variability does not have so much effect on the knowledge intensity. Therefore the first step of the analysis results in defining the focus of the knowledge management emphasis.

3.2 Step 2: Current Levels of Knowledge Work Productivity

Labor productivity measures the output of work. Knowledge work productivity refers to the specific characteristics of knowledge work. While in economics general labor productivity is frequently equated with efficiency [OECD 08], "[t]here is a consensus in the literature that in knowledge work, *quality* is one of the more important factors" [Ramirez and Nembhard 04].

Traditional products and services have become intelligent and knowledge-based. The knowledge inherent to these products and services is decisive for their quality and keeps organisations competitive [Willke 01]. Thus, trying to assess the results of knowledge work we believe that it is mandatory to focus on the quality of these results instead of the quantity. The more knowledge intense work gets, the more important the quality of the output becomes compared to the quantity. However in many cases it seems to be very difficult if not virtually impossible to directly assess the quality of the results of knowledge work as the definition of quality strongly depends on the individual contexts of their application [Merchel 03]. Thus, instead of assessing the quality of knowledge workers' results directly, we evaluate the quality of the activities producing these results, which is a common approach for many quality management settings, notably for the assessment of scientific research.

The fundamental basis of our analysis is Willke's systemic approach which says that the quality of knowledge work increases if the handling of knowledge occurs systematically instead of arbitrarily [Willke 01]. Thus to achieve a high process quality for knowledge work, an organisation needs to establish a system of standards or rules — to use the appropriate systems theory term — to govern key knowledge work activities. The production factor knowledge should be managed as systematically as we have learned to manage traditional production factors such as land, labour and capital; especially as knowledge is about to overtake the traditional production factors in their importance. We equate the quality of knowledge work processes with effectiveness. Whereas the quantity of the results – output per work hour – is equated with efficiency. If there are more results per working hour or knowledge work is more rule based an organisation operates in a more productive way.

$$\begin{aligned} &\text{Productivity of knowledge work} \\ &= \text{work efficiency} \times \text{effective handling of knowledge} \dots \end{aligned}$$

This is in contrast to mainstream economics where productivity is usually equated with the ratio of output and input [Samuelson and Nordhaus 04] and thus corresponds

to efficiency only. We have experienced that for many types of knowledge work, fixing standards for output and minimising input to increase productivity is just no longer possible.

Following Willke's systemic concept knowledge management [Willke 01], to find out if an organization does effectively make use of its knowledge we investigate whether a system of rules and adequate ICT for the incorporation, storage and re-using of information and knowledge exists, as well as whether the employees are familiar with these rules and observe them. We run a series of interviews applying the Critical Incident Technique [Flanagan 54] which requires that the interview strictly refers to the behaviour within specific situations — to critical incidents. Basing the interviews thus on actual incidents helps the interviewer to get accurate descriptions while personal biases and false generalizations are avoided. During the interviews, the transactions under examination are reconstructed in minute detail. The interviews focus on one or two characteristic knowledge intensive processes. However, the aim of the analysis is not to improve these specific processes but to identify deficiencies in the systematic handling of knowledge which are typical for the organisation.

At the international software company, we analyzed the preparation of a complex offer within the business unit application sales; the attendance of a debtor during the preparation of personal bankruptcy at the social service organization. The execution of care concepts for children and teenagers was analyzed at the branch of the regional government for youth welfare, similarly the preparation of teacher seminars for the forthcoming semester at the institute for teacher training.

During the interviews with the key account managers of the financial service provider, a common answer was that there were no written rules for a certain activity but that the interviewees acted as they had always done. We considered the existence of such "tacit rules" as informal rules about the handling of information, communication and knowledge. Such informal rules might work quite well. However, they cause problems whenever new employees have to be trained, and when an organization tries to systematically adapt its long established ways of handling certain activities to a changing environment. From the absence of rules, we do not conclude that every single activity has to be documented in writing. We would just like to point out that the handling of information, communication and knowledge is left to chance. The exchange of information and knowledge could, for example, also be improved by organizing regularly held, well-conducted meetings for the key account managers.

We also learned from the first application of the Potential Analysis to cluster typical activities associated with knowledge work into four major categories: information processing, communication, decision making and the adaptation of an organisation to changing circumstances — double-loop learning — each combined with the adequate ICT support. This categorization allows us to distinguish between (a) a lack of effectiveness in connection with a specific sub-activity — "a local weakness" so to say (e.g. an employee in a certain subsidiary is not yet familiar with a new guideline) and (b) a more general deficit of effectiveness, which might be typical for an organization's general approach towards knowledge work (e.g. generally rather vague rules about responsibilities, which results in ineffective, widespread up-delegations). [Fig. 2] shows the results of Step 2 of our analysis. 100% refers to the total number of questions for each category.

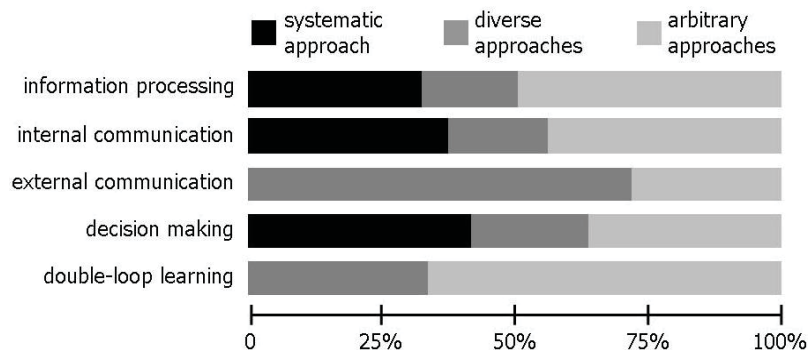


Figure 2: Results of step 2 of the Potential Analysis applied at an international financial service provider

A “systematic approach” towards the handling of knowledge refers to the case when all of the interviewees state that they know written standards on how to handle information, communication and knowledge during a certain activity and observe them. The category “diverse approaches” covers the case when some interviewees know about rules and observe them sometimes and others do not know about these rules. By “arbitrary approaches”, we mean that none of the interviewees know written standards or rules on how to proceed during a certain activity.

3.3 Step 3: Fields for Improvement

In the case of the international financial service provider, the results of our analysis point to two main potentials for more systematic and, according to our definition at the beginning of this paper, therefore more productive knowledge work.

3.3.1 Potential 1: Knowledge Exchange about/with Customers

Despite the particularly high knowledge intensity of the customer interface [Eschenbach et al. 06], analysis of the interviews indicated a remarkable weakness precisely in this area (i.e. ineffective or unsystematic handling of knowledge). It seems that many of the account managers who work with customers on a daily basis are simply not aware of some of the guidelines (e.g. for customer communication) — a fact that came as quite a surprise to some of the headquarter managers in charge of these processes. So both the handling of knowledge about customers and the exchange of knowledge with customers leave plenty of room to further improve knowledge work productivity. This seems to be of special importance if a financial service provider tries to shift its focus from information transaction to far more knowledge intensive customer consulting activities.

3.3.2 Potential 2: Double Loop Learning/Organizational Learning

The issue here is how systematically a company learns (i.e. creates and implements new knowledge). According to Willke [Willke 01], organisational learning can only take place if there are guidelines for the creation of new standards and rules, as well

as for the adaptation of the standards and rules currently valid. When we asked the product and process managers how they find out whether their guidelines and rules are not applicable in daily business, they answered that probably one of the account managers would tell them. So there seems to be no systematic procedure concerning the adaptation of rules. In reaction to these findings, some employees of the client company questioned whether in times of rapid change, management should rely on rules and other types of regulations any longer. To answer this question, one needs to see what choices organizations in a fast changing knowledge economy actually have: Certainly not the choice between a predictable and static or a changing environment, but between systematic adaptation of the organization's knowledge to new circumstances, and arbitrary reaction. The more knowledge intensive an organization is and the faster the environment changes, the louder is the call for clearly managed organizational learning on the basis of explicit knowledge.

4 Conclusions and Further Research

One of the questions that arise again and again is whether really everything should be standardized in detail. We have not yet found a satisfactory answer to this question. On the one hand, knowledge is today the most important production factor for many organizations. From this perspective, it definitely does make sense to organize the handling of knowledge more systematically. The deployment of other important production factors such as capital, manual labor or land is not left to chance either. On the other hand, the handling of knowledge differs from traditional production factors. While Taylor [Taylor 11], the figure head of systematic management for manual work, was convinced that for every task there is exactly one best way to solve it, this does not apply to knowledge work [Drucker 99]. Knowledge workers have to know their individual strengths, weaknesses and procedures in order to be productive. Any kind of standardization that restricts their individuality in this respect will consequently decrease their productivity. The integration of these two views will thus have to be improved in the future, as knowledge work — from an individual as well as from an organizational perspective — requires much more systematic management.

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