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# An IT Tool for Increasing Productivity of Knowledge Workers and Their Organizations

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## Introduction

Productivity in making and moving things has increased at an annual rate of 3 to 4 percent compounded for the last 125 years - or a 45-fold expansion in overall productivity in the developed countries. However, there has not been such a big improvement in knowledge worker's productivity. A knowledge worker is a professional who applies ideas, concepts, and information to work rather than manual skills or brawn [4]. In some developed countries, knowledge workers represent approximately 80% of all employees and perform key roles in economic activities in an enterprise. Therefore, the productivity of the newly dominant groups in the work force, i.e., knowledge workers, will be the biggest and toughest challenge facing managers in the developed countries for decades to come. Also, some analysts forecast that the stagnation of productivity of knowledge workers will emerge as one of the obstacles to maintain an appropriate level of growth for the twenty first century.

## Literature Survey

Researches have been conducted to improve knowledge workers and their organizations' productivity and have suggested a variety of solutions including personal time management, time-based competition strategies, and business process re-engineering. Previous studies are considered to approach this issue from either of two viewpoints, a matter of individual workers or that of organizations. One approach viewing it as individual's issue primarily, focuses on the effective personal time management, the improved individual's ability and qualification or the comfortable working environment and atmosphere [2,3,6,7]. The other viewpoint studying it as an organizational issue highlights the cutback of cycle time to improve the flow of processes [1,5,8,9,10,11,12].

### Criticism of the Traditional Approaches

been conducted most actively by the people who advocate the improvement of knowledge workers' productivity is the effective use of time by knowledge workers. However, criticism has been raised on this approach. The idea is that effective use of time by individuals through personal time management does not necessarily affect the overall productivity of their organization.

Personal time management is neglecting organizational productivity, while business process reengineering lacking consideration of individuals' value system as a critical element of organization. In other words, business process reengineering designed

without considerations of individuals' value system has looked over the much knowledge worker's contribution to the organization's productivity by the effective use of their time during the business processes performed.

The summary of the criticisms raised for the two traditional approaches is that they seemed to ignore the fact that knowledge workers and their organizations' productivity are closely related and dependent each other. These solutions tend to focus on either individual or organizational productivity so that individuals' effective use of time through, so called, personal time management has not been properly linked to the organizational productivity.

## **Research Efforts**

One of the major thrust of this research is to develop a concept to integrate those two approaches and to establish interactive relationship between individuals and organizations. Secondly, information technology tool based on the developed conceptual model was implemented and the benefit of its use by a business unit was measured.

Underlying the operations of every company - working like its spine or cerebral cortex - is a system. Each business operation is different, but all share one powerful common trait : all are system for providing value to customers - value delivery systems.

A value delivery system organizes work and guides actions : knowledge worker's time and business process connects all the parts of the system. It is a system that develops product, delivers product, and makes decisions. A value delivery system performs several value adding processes which, in turn, includes sub-processes and activities. For example, sales process includes seven sub-process cycles as shown in Figure 1. These primary processes utilize business resources, i.e., man, money, material, machines and information to develop and deliver the products and services to the customers.

One of the important task of the manager is to improve overall productivity by utilizing the resources in the most efficient way. The manager relies more and more on information system that has mirroring image of all the physical conditions of business firm's processes and resources. However, knowledge worker's time, one of the most important resources, has not been reflected properly in the business information system. So, information regarding time usage of knowledge worker has not been given to the manager and neither do knowledge workers have feedback about the effective use of their time. That may be the possible cause of low productivity of knowledge workers.

To improve productivity of knowledge workers and their organizations at the same time, knowledge workers' time should be invested to the 'real work' of the value adding processes in a value delivery system. Productivity of both knowledge workers and organizations is to be improved concurrently by utilizing transaction processing systems which is integrated with time-record keeping function. That is, the system provide knowledge workers with the detailed information of their time spending on the business processes and activities. The system has built-in mechanism which enables knowledge

workers to allocate their time to predefined business processes and activities and evaluate the use of time in terms of the organization's value adding processes. This matching mechanism has been considered to synchronize individual's productivity to organization's one.

A software has been developed based on the above framework for a group use by knowledge workers. This software, called CrossPoint, considers individuals' time as a limited resource and time spent for activities during business process as a use of resource, respectively. It also credits each job with certain values.

After planning and carrying out business activities for a designed period, both individuals and their organizations can evaluate how effectively they used their limited resources, i.e., time in terms of organization's value-added processes. Based on the result of evaluation, individuals and organizations will then be able to allocate their time with more consciousness of value.

## **Results**

CrossPoint was adopted and tried by a business unit which employed 60 individuals in an effort to measure benefits of its use. For 18 months of a trial period, pilot survey was conducted to measure the benefits by using the system, users satisfaction, and use rates on a module basis. The firm estimated that it saved more than 1,000 man hours a year and increased sales volume by 35 percents within the group without stress increased by using the new equipment. In conclusion, CrossPoint has helped the improvement of productivity of a group without stress increased by using a new device, and it has been proven through field tests.

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