



# Rewarding Knowledge Worker Productivity Beyond the Corner Office

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Much has been said and written about knowledge worker productivity since Peter Drucker coined the term at least three decades ago. While almost everyone has accepted the importance of knowledge workers, very few agree on how to measure what they do. However, well-accepted characteristics for good measures do exist and have been in use for centuries among scientists. Knowledge work also pre-dates the term's application to business environments, and universities have been measuring the productivity of their professors for a very long time. Although the direction for learning can flow in either direction, in this case, corporations could learn a great deal from how universities capture and reward their knowledge workers. Such measures must be derived locally, be informed by what a particular corporation needs in terms of work outputs, and be customized to provide incentives that individual workers value.

Peter Drucker and several other management gurus have argued that organizations must learn to leverage their "knowledge worker" potential to remain competitive in the new millennium. Apparently organizations harbor vast, untapped resources of human productivity just waiting for the right organizational culture to blossom into extraordinary innovation and leadership. Several problems along this corporate highway to success have been addressed by others, but I wish to outline the basics of some of them here along with a possible solution.

## INITIAL PROBLEMS

First, very few people agree on what the term "knowledge worker" means. If you ask individual employees of Fortune 500 companies, they all would claim to be knowledge workers. And if you ask their executives, they want all their employees to be knowledge workers. What is a useful definition? Essentially, knowledge workers are those employees who have the responsibility (or the luxury) of exploring and generating ideas and concepts rather than concentrating solely on implementing or managing existing processes or operations within the company. Project management typically begins and ends with them rather than from their superiors, although knowledge workers may reside in various organizational structures. The original "prototype" used by Drucker when he created the concept of "knowledge worker" was a MD/PhD developing new drugs for a pharmaceutical firm.

If we compare the corporation to a network, knowledge workers might represent individual nodes within this network. Much of the network involves hierarchical relations: Nodes at one level analyze information (e.g., process inputs, contents, or outputs) and delegate tasks related to that information to nodes at lower levels. In contrast, knowledge workers represent nodes that implement procedures and create knowledge for the company independently of their formal inputs. They do their own thinking and act on the resulting information, for the most part. They can be part of any group or department, but they tend to be part of R&D, management strategy, IS/IT, or design groups, and they typically have an advanced degree in their chosen field. They're usually technology-literate and perhaps even technology-driven.

So first, there's the obstacle of definition in trying to measure knowledge worker productivity. But another much more difficult problem for assessment involves the distinction between quantification (or measurement) itself and the goals and content of the work that knowledge workers produce.

Historically, measurement within corporate environments has followed the tradition of Frederick Taylor and his *Principles of Scientific Management*. Presumably, every worker's job can be broken down into discreet behaviors or task elements, and these

behaviors must be segmented and integrated optimally to minimize the time required to perform the overall activity or task. Henry Ford implemented these principles on a grand scale in his assembly line manufacturing systems.

Virtually the same productivity model influenced early office environments as well, and combined with econometrics (e. g., ROI, ROA, several measurement models for office worker productivity have been developed. Unfortunately, most of these have assumed that what office workers produce bears a conceptual resemblance to what factory workers produce: Information, knowledge and/or services, but outputs nonetheless that should be amenable to measurement — just like the factory workers’ “widgets” per unit time. Problems arise because unlike manufacturing, knowledge work does not break down easily into constituent behavioral components that can be timed to ensure the best segmentation and integration of task components. Ideas do not map neatly onto a chronological time-line.

How do you measure the task of inventing a novel product solution and procuring a patent for it? How do you break down the task of winning a design award into its constituent elements (much less measure the marketing or “branding” impact of such an event)? What are the behavioral components of innovation or creating ideas? Should such things as job satisfaction or environmental satisfaction be included in the evaluation of knowledge workers? (Certainly absenteeism, sick leave, and turnover can be quantified and their impact on the “bottom line” estimated.) Additionally, does working collaboratively improve on the outcomes of individual knowledge work? If so, how do you decipher and reward the contributions of individual group members?

## MEASUREMENT DIFFICULTIES

Add to this complexity of process for knowledge work the fact that good quantitative measures must exhibit two characteristics: Reliability and Validity. Essentially, this means that a particular measure must be repeatable and actually represent what it measures. A ruler is reliable, since two people using the same ruler to measure the same desk in meters will invariably arrive at similar numbers. Eyeballing the desk would not be a reliable measure since different people may come up with very different numbers. To be valid, measures must faithfully represent what they claim to measure. A measure can be reliable but not valid (measuring shoe size in inches as an indicator of intellectual ability); presumably a measure cannot be both valid and unreliable. (The latter assumes a degree of objective stability in what one is measuring, but statisticians rarely explore this issue, since it relates to the scientific assumption of determinism.)

Does asking employees how productive they are adequately measure their productivity? Are supervisors’ opinions an adequate guide when determining employee productivity? What about measures of organizational performance or group performance — do these reflect individual employee productivity? Or should customer evaluations ultimately be relied on? Such questions and others like them represent concerns about the validity of measurement. Researchers typically correlate the measures based on some new assessment method with measures on a generally accepted method, and if this correlation is high and positive, they argue for the validity of the new measure. This only establishes validity if the “generally accepted” measure is also valid — a particularly difficult version of “the-chicken-or-the-egg” problem.

Finally, in addition to the problems of deciphering the knowledge work process and measuring it in a reliable, valid manner, knowledge work ideally cannot be tied to a particular time

or place (or be demanded within a given time period) as can factory or other essentially routine, repetitive work. Useful combinations of ideas occur anywhere, anytime, and efficient organizations must find ways to encourage & leverage such serendipity. Furthermore, measurement and quantification rely on accurate, timely recording of the salient raw data, and this either requires an additional employee layer (e. g., clerical, data-entry) or the involvement of the knowledge workers themselves, and time spent documenting activities certainly does not contribute to knowledge worker productivity.

## ONE PROPOSED SOLUTION

So, is there a solution? One tried and true approach within facilities management involves benchmarking, which means capturing what works (best practices) at another facility regarding the problem addressed. Do examples of adequate measurement and reward exist for knowledge work? I believe so — at Universities. University professors have long been measured and rewarded — essentially for thinking. How have these contributions been quantified? Interestingly, almost every institution of higher education — although there is some uniformity across the campuses of State universities (e. g., the UC system in California) — has independently developed and implemented an evaluation procedure for assessing their faculties’ contributions. These systems accomplish at least three things: 1) they enjoy contextual validity; 2) they enjoy perceived fairness; and 3) they provide a quantitative basis for evaluation and reward of knowledge work.

Although, there are almost as many evaluation and reward systems as there are Universities, most of them required a consensus at one time among the existing faculty members on the type of system developed and implemented. Pertinent considerations involve the degree of difficulty of

particular projects, the time involved, and the prestige associated with the successful completion of certain tasks. A value metric that determines the most important tasks for professors at University X is first developed. Next, the time to undertake and complete these various tasks is estimated. Finally, some sort of evaluation metric for individual professors is constructed.

The maxim "Publish or perish" reflects the high value that Universities typically place on their professors' publications in the "peer-reviewed literature." Such publications denote original scholarly contributions to particular disciplines. The time to complete such a publication project can be considerable, but consensus can usually be reached at a particular University based on their faculties' typical experiences. A point system based on such estimates of activity times can quantify the performance of individual faculty members, and this can be compared to an evaluation metric.

So, for instance, a particular faculty member working at a University that values original research may publish three articles in one year in peer-reviewed journals within his or her discipline. At that institution, such publications acquire 20 points each, a point representing the equivalent of 10 hours of work. For the year, our faculty member has thus acquired 60 points. The evaluation metric states that a score between 56-60 points represents "above average" accomplishment, resulting in a predetermined adjustment in salary, a particular promotion schedule, etc. Such "point-systems" for faculty evaluation usually include many other things in addition to publishing in peer-reviewed journals, such as number of classes taught, student evaluations of classes, peer evaluations of classes, service to the University (e. g., committee work), and community involvement.

The point is that such metrics can be developed, agreed upon, and implemented throughout institutions of considerable size and complexity. Whether or not some version of

University tenure would also be developed for corporate environments remains an open question, although this tradition has increasingly come under attack as outdated and frequently abused by less-than-productive faculty members. However, point systems for knowledge workers could be developed without granting "tenure" status, and they could serve to quantify (render measurable) knowledge worker contributions. One challenge of this approach involves measuring a number of different kinds of activities using the same scale; is it really possible to equate time spent teaching to time spent in research? Pritchard's (Harris, 1994) ProMES system represents one possible solution to this complication.

#### CONSIDERATION OF CONTEXT

Such systems would need to be developed within particular corporate environments, since different companies would tend to value contributions differently depending on their unique product or service offerings. A computer chip (or other hardware) development company may value peer-reviewed publications very much like a University would, since their products might reflect basic research information in computer science. A marketing firm might value design awards for their marketing campaigns. A manufacturing company might place a high value on acquiring patents or cost-savings innovation within their production and/or distribution processes. Customer or other industry groups' evaluations of presentations, seminars, or workshops might be highly rated by consulting or training firms. Whether or not to evaluate and reward employees according to individual or group performance represents an additional consideration that can easily be tailored to your organization, team or department.

Ultimately, measurable metrics for rank-ordering valued tasks, together with estimates of the time required to complete such tasks (with "points"

or other merits awarded for partial or complete task performance) can be developed within any organization. For example, the mean of the distribution of time taken to develop and patent an idea at a particular company might be two years. More points could be rewarded for completing this process by one standard deviation below the mean. Further refinement of the measure (and points awarded) may involve the ultimate profitability of the patent. These measures combined with evaluation criteria for individual performance and a quantitative method for determining how these factors result in raises, bonuses, promotions, and other awards can form the basis for evaluating knowledge worker productivity in your organization.

Finally, companies should consider multiple ways to reward productive knowledge work. Facilities represents only one way, but traditionally the ultimate goal for ambitious professionals has been the "corner office." This reflects the historical preoccupation with space and territoriality as indicators of influence and power. The more the company values a particular employee, the more willing they are to devote costly real estate (and other scarce resources) to him or her. However, knowledge workers tend to be quite a heterogeneous group; they may not value traditional modes of reward. Organizations must think creatively about integrating bonuses, vacation time, sick leave, access to communication and other technologies at home, flexible working conditions & hours, promotions, raises, benefits, stock options, profit-sharing and other incentives into personalized compensation packages for each highly skilled knowledge worker.

Regardless of how you measure their performance, knowledge workers perform best when their compensation plan reflects their own personal values. Perhaps an engineer might be motivated by reimbursement for taking a night class. A designer might enjoy

tuition assistance for his child in college. A software designer might prefer an extra week's vacation for snow-boarding in Colorado. An R&D manager may relish the idea of company funds — based on her group's performance — being earmarked for projects in her community.

Obviously, such additional considerations would need to supplement more generally expected milestones such as raises & promotions. Any number of other personalized incentive systems could be created, but in the increasingly competitive game of employee recruitment and retention, these ideas will increasingly move from concept to reality. Facilities managers can facilitate this process by documenting the potential savings to the corporation of trading other incentives for valuable real estate, as well as the savings in the recruitment and retention of productive knowledge workers by tracking the costs associated with these activities. But ultimately, our society will be better off if we reward the human spirit in each of us and slow the trends toward needless quantification & record-keeping, mechanization, and the metaphor of workers-are-machines.

## SUMMARY

To summarize, knowledge workers have become much more prevalent within office environments, but the complexity of their role within the organization has prevented adequate evaluation of and reward for their contributions. An outcome-based evaluation system — modeled on existing University systems — together with reward metrics informed by individual knowledge workers' personal values was explained and offered as one possible solution to this dilemma.

## REFERENCE

Harris, D. H. (Ed.). (1994). *Organizational linkages: Understanding the productivity paradox*. Washington, D.C.: National Academy Press.

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