

Quantifying and Fostering Organizational Effectiveness

Measuring knowledge worker productivity and how it contributes to an organization's overall effectiveness is difficult but not impossible. In traditional productivity measures, the unit of analysis is the individual. With knowledge work, the team, or functional group, becomes the unit of analysis. Relevant measurement includes activities that contribute to overall business goals and strategies. That measurement allows for management, which can help an organization guide and direct its valuable human capital toward the goals it has identified. Organizations can foster effectiveness by establishing trust and giving people autonomy, by increasing people's control over their work environments, and by providing healthful, ergonomic support. Doing so can increase their loyalty and creativity.

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A lab scientist mixes a strange new brew. A manager takes a nap in the office lounge. An architect doodles on a napkin over lunch. A programmer downloads the latest fantasy game from the Internet. Are they working? Are they being productive? Are they contributing to the health and success of their organizations?

As more knowledge workers engage in information work, answering these kinds of questions becomes more urgent. If you believe Peter F. Drucker when he says that “knowledge worker productivity is...(the) only real competitive advantage in a global economy,” (1) then the time to better understand their contributions is now.

While measuring knowledge worker productivity and how it contributes to an organization's overall effectiveness is difficult, it is not impossible. The rewards of doing so are twofold. Measurement allows for management, which can help an organization guide and direct its valuable human capital toward the goals it has identified. In turn, the ability to better manage knowledge workers opens the door to new ways of fostering their loyalty, their creativity, and their productivity.

What is organizational effectiveness?

While it isn't limited to productivity, organizational effectiveness certainly encompasses it. Defined narrowly as the amount of physical output for each unit of productive input, productivity has been a human concern for centuries. The Chinese philosopher Mencius (372–279BC) wrote about conceptual models and systems that would qualify today as production-management techniques. Plato (427–347BC) spoke of the division of labor in *The Republic*: “A man whose work is confined to such limited task must necessarily excel at it.”

Early thinking about productivity remains relevant to production today. Measuring it, however, has become more complex. The U.S. Bureau of Labor Statistics (BLS) measures what it calls “multifactor productivity,” in which “output is related to combined inputs of labor, capital and intermediate purchases. Labor is measured by the number of hours of labor expended in the production of output. Capital includes equipment, structures, land, and inventories. Intermediate purchases are composed of materials, fuels, electricity, and purchased services.” (2)

The problem with measurement comes in defining output for non-manufacturing, service activities commonly thought of as “white collar” or “knowledge work” that the BLS labels “hard-to-measure.” These include “transportation, communications, utilities, retail and wholesale trade, finance and insurance, and various additional services rendered to persons and businesses.” (3)

Measurement is an issue because a significant portion of the service sectors in the economies of developed nations relies on knowledge and human capital. Managers in these economies recognize that technology ultimately derives from human

ingenuity. The challenge becomes to quantify, and more effectively manage, intangible components of the productivity mix.

In their book *The Balanced Scorecard*, Dr. Robert S. Kaplan and Dr. David P. Norton addressed the complexity of measuring and managing organizational performance: “The balanced scorecard retains traditional financial measures. But financial measures tell the story of past events, an adequate story for industrial age companies for which investments in long-term capabilities and customer relationships were not critical for success. These financial measures are inadequate, however, for guiding and evaluating the journey that information age companies must make to create future value through investment in customers, suppliers, employees, processes, technology, and innovation.” (4)

The authors argue that organizations must examine their business both internally and externally, expressing a vision and strategy and identifying objectives, measures, targets, and initiatives that address four questions.

1. To succeed financially, how should we appear to our shareholders?
2. To achieve our vision, how should we appear to our customers?
3. To satisfy our shareholders and customers, what business processes must we excel at?
4. To achieve our vision, how will we sustain our ability to change and grow?

Michael O’Neill, who leads a program of research into organizational effectiveness for Herman Miller, notes that the value of an approach such as the balanced scorecard is that it attempts to quantify the capacity an organization has to conduct work and ultimately create value. “In traditional productivity measures,” O’Neill notes, “the unit of analysis is the individual. In terms of knowledge work, that may be irrelevant because increases in individual productivity, no matter how they’re measured, do not automatically transfer to the productivity of the organization. Instead, the team, or functional group, becomes the unit of analysis. This requires managers to make a conceptual shift in their thinking, to understand that it’s more relevant to measure activities that contribute to overall business goals and strategies, such as the speed of organizing around new opportunities and the quality of business processes.” (5)

O’Neill says that in addition to the external factors that may affect a business, this perspective should take into account

- the design of the organization (for instance, centralized versus decentralized decision making)
- its technology (information technology strategy and implementation)
- its people (human resource issues, work styles, performance)
- the physical work environment (spatial dispersion of facilities, work environment design, facilities and real estate issues) (6)

Who contributes to organizational effectiveness?

Every employee contributes to organizational effectiveness. Taking into account skills, experience, motivation, and rank, some play a bigger role than others. Peter Drucker coined a term for one category of these high-level performers in his 1959 book *Landmarks of Tomorrow*. He wrote of “knowledge workers,” defining them as anyone who works for a living at the tasks of developing or using knowledge.

Richard Florida in his 2002 book *Rise of the Creative Class* says anyone whose work creates “meaningful new forms” is vital to the success of an organization. According to Florida, creative professionals “work in a wide range of knowledge-intensive industries such as high-tech sectors, financial services, the legal and healthcare professions, and business management. These people engage in creative problem-solving, drawing on complex bodies of knowledge to solve specific problems.” (7)

At a deeper level, Florida identifies a “super-creative core” that includes scientists, engineers, university professors, designers, and architects. This core, along with the “thought leadership” of cultural figures, think-tank researchers, analysts, and other opinion-makers, “produce new forms or designs that are readily transferable and broadly useful—such as designing a product that can be widely made, sold and used; or coming up with a theorem or strategy that can be applied in many cases.” (8)

In other words, knowledge work falls somewhere on a continuum of complexity and difficulty. As Thomas H. Davenport, director of the Accenture Institute for Strategic Change, puts it, “Workers at the lower end of the continuum would possess less knowledge, would use knowledge more than create it, and would have less discretion in how to employ knowledge in the course of their work. Knowledge workers at the higher end of the continuum are more expert and experienced, and are in most cases knowledge creators as well as users.” (9)

Susan Conway of the Information Work Productivity Council, an independent group of companies and academics studying information work productivity and profitability, notes that knowledge work is actually part of “information work,” a broader occupational category. “In sophisticated economies,” says Conway, “the great majority of workers constantly use data, information and knowledge—each to varying degrees—in their jobs. They create, manage, share, receive and/or manipulate information. To accurately classify a particular type of worker as working with a particular type of information content is almost impossible.” (10)

Whatever the terminology, everyone from consultants to CEOs acknowledges the importance of this type of work to achieving organizational effectiveness. However, gauging the contribution of knowledge workers to overall organizational effectiveness poses several challenges because no single measure is likely to capture the outcomes.

How can organizations measure effectiveness?

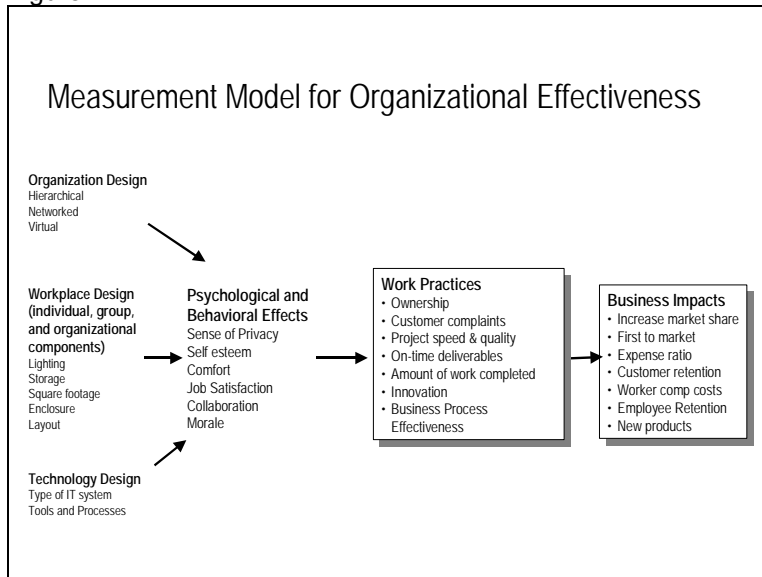
An old business adage says that whatever cannot be measured cannot be managed. Yet, as Susan Cantrell, research fellow at the Accenture Institute for Strategic Change, points out, knowledge workers resist being measured, “both because they have no history of being measured and because they believe it might take the ‘magic’ out of their work. Most high-end knowledge workers...tend to work on unique, one-off, highly specialized problems, making it impossible to have one measure for all such knowledge workers. Moreover, many knowledge workers...work interdependently, making it difficult to isolate one knowledge worker’s contribution from another’s. And, because the work performed is generally unobservable, a knowledge worker could be working for months, or sometimes even years, before an output is tangibly realized.” (11)

Based on her analysis of several firms, Cantrell cites five best practices for measuring high-end knowledge work.

- **Involve knowledge workers and top management in identifying measures.** Sometimes the most obvious element is the one missed. If knowledge work is critical to the business, top management better be involved in setting measurements and making sure they align with corporate strategy. And if knowledge workers are really valuable to the organization, then they better have a say in setting their work practice and effectiveness measures so they have ownership.
- **Identify only a few, simple measures that are “good enough.”** Complex measures confuse and frustrate both managers and knowledge workers. It is better to sacrifice accuracy for clarity when using measurements to guide the efforts of knowledge workers.
- **Build a causal chain of evidence.** Cantrell identifies four areas of measurement for high-end knowledge workers and says the goal is to implement measures in each of them: 1) the impact of an intervention (such as a new workplace design) or multiple interventions (such as a change in organizational structure and an information technology implementation); 2) the individual’s work practices; 3) the individual’s effectiveness; and 4) the overall impact on organizational effectiveness.
- **Don’t rely on measures alone.** If the organization’s goal is to guide, motivate, or even control knowledge workers’ behavior, it must supplement measurement with strong cultures and value systems. Measurements may be attractive for their apparent preciseness, but they must be tempered with the observations, experience, and common sense of managers.
- **Compare apples to apples.** Knowledge work is idiosyncratic, so avoid generalizing among groups, either in terms of what measurements apply or what impact an intervention may have.

As an example of Cantrell’s “causal chain of evidence,” Michael O’Neill of Herman Miller conducted research to identify a “casual model” that shows the logical relationships between organizational, workplace, and technology design features, and subsequent effects on employee behavior and business outcomes (see Figure 1). This model was empirically tested as part of a long-term research project with a major customer in the shipping industry. (12) The company wanted to examine the impact on collaboration and efficiency of business processes of a major consolidation of employees from four locations into one. The redesign project included some new furniture and improved adjacencies between key individuals and groups.

Figure 1



Herman Miller researchers conducted detailed analyses of the steps and time involved, as well as the cost of business processes within the organization. The research showed that as a result of the design interventions, the time required for “business project approvals” (involving interaction between four departments) decreased by about 20 percent, from 112 to 90 days. Cross-departmental ratings on quality of “responsiveness” to needs for information between departments increased by 32 percent. When these time savings were computed using employee compensation data, the cost savings equaled \$710,000 for one process alone.

These results, notes O’Neill, demonstrate the importance of understanding an organization’s high-level business strategies and then creating measures that determine whether the contributions of knowledge workers are achieving the desired goals. “We do measure business-process efficiency,” O’Neill says. “The cost side of the equation is still important; however, that is the only part of the issue. Effectiveness involves more than this. We want to increase the quality of output as well as the amount.” (13)

Whether workplace design interventions or changes in work practices or processes are involved, consultant Cliff Grimes notes that no single measure, or single instance of measurement, is sufficient to give a clear picture of effectiveness. “A family of measures...related to the real objectives of the department, allows the level of performance to be measured and monitored over time to establish whether it is stagnating, declining, or improving. It allows the effect of productivity initiatives to be established and focuses managers’ attention on the need to improve productivity, the only true way to improve a company’s competitive position.” (14)

How can organizations foster effectiveness?

As measurement allows management, management implies control, or at least the ability to guide and direct. Failing to foster the effectiveness of individuals in achieving overall organizational goals carries a high price. According to the Gartner Group, 50 percent of workplace investments through 2005 will focus on the productivity of knowledge workers. By the end of 2007, organizations will target 20 percent of all investment in information and communication technologies at improving knowledge worker productivity. (15)

Yet, researchers at the Accenture Institute for Strategic Change found that among 40 firms they studied, “all of which had knowledge work at the core of their businesses, very few had made specific attempts to improve or enhance these workers’ efforts. In fact, many organizations took affront to the idea of focusing on high-end [knowledge] workers (HEKW) at all. They argued that HEKWs were not treated differently because their firm had an inclusive, democratic culture, and it would be damaging to the culture to treat any group of workers in a privileged fashion. Yet several of these firms had distinct approaches for dealing with senior executives. [W]e believe the primary reason is that executives don’t know how to attack the problem of improving HEKW performance.” (16)

Beyond identifying measures that relate to achieving overall business goals, efforts to increase organizational effectiveness by helping knowledge workers be more productive seems to involve three key areas: 1) establishing a culture of trust that gives people autonomy; 2) creating vital workplaces; and 3) providing healthful physical support for individuals.

Establish trust and give people autonomy

Corporate turnaround specialist John Whitney says that without trust people cannot or will not work together except under conditions of stringent control. (17) According to Professor Rosabeth Moss Kanter, work environments that provide access to information, resources, support, and the opportunity to learn and develop empower employees to accomplish their work. As a result, employees are more satisfied with their work, and they sense that management trusts them to do whatever is necessary to achieve high-quality outcomes for the organization. (18)

In one example, researchers studying the effect of a trusting environment in healthcare found a direct link between empowerment and organizational effectiveness. They chose a random sample of nurses and used a variety of self-reporting scales to test two hypotheses: whether empowerment would have a direct effect on satisfaction and affective commitment (an individual's emotional attachment to, identification with, and involvement in an organization); and whether empowerment would lead to feelings of trust that, in turn, would enhance job satisfaction and organizational commitment. (19)

Using structural equation modeling, the researchers first tested job satisfaction as the outcome variable, with formal power, informal power, and perceived access to work empowerment structures modeled as indicators of the latent variable "overall empowerment." The analysis found higher levels of empowerment associated with increased satisfaction. When testing affective commitment as the outcome variable, the data showed a direct link to empowerment and an indirect yet significant link to trust in management.

Establishing a climate of trust is important for allowing knowledge workers to contribute their best efforts to achieving organizational effectiveness. Balancing an open, autonomous work climate with structures and measurements that tie information work to organizational goals is critical. Yet, researchers at the Accenture Institute for Strategic Change "found relatively few grand experiments for high-end knowledge workers (HEKW) in the companies we studied. Because firms don't want to risk alienating HEKWs, they've been somewhat conservative in adopting new organizational arrangements. They also realize that knowledge workers value autonomy and don't like heavy-handed programs imposed from above. Therefore, in the companies we studied we found little evidence of process reengineering, formal empowerment programs, or even quality improvement initiatives specifically targeted at high-end knowledge workers." (20)

Create a vital work environment

Reluctance to take on cultural changes need not prevent an organization from undertaking physical changes that can improve organizational effectiveness. Office space is expensive, however, so there is a temptation to focus only on reducing its cost because that is much easier to quantify than the effect of giving knowledge workers a workplace redesign or more computing and communications tools. Weighing the benefit of reducing costs for space and work tools against the gains in effectiveness an organization can achieve with more productive knowledge workers shows just how important a vital work environment is.

Michael O'Neill contends that vital work environments result from the amount of control provided to employees at the organization-wide, business unit, team, and even the individual levels. "If the corporate mission demands continual reorganization around customer or market needs (as is increasingly common), ease of facility adaptability and reuse will permit changes in space usage to occur incrementally on an as-needed basis. Thus, the integration of environmental control into facility design may enhance effectiveness at the organizational level."

At the work group or team level, O'Neill says, the potential for environmental control "is determined by the flexibility of the physical (and organizational) boundaries surrounding the team. Boundaries serve to control the flow of information to and from the group. Control may be exercised by the ability to determine and self manage the reconfiguration of workspace layout and boundaries as the current state of formation of the team, and overall mission, dictate. Organizational boundaries can be reinforced or made more permeable through the design of the physical workspace."

Individuals exercise autonomy through the adjustability of the physical elements within their workstations, such as task lighting, shelves, storage, work surface height, level of enclosure, computer screen and keyboard, and HVAC system.

O'Neill notes that "control over these elements may contribute to comfort, environmental satisfaction, privacy, communication, and other perceptions that are related to effectiveness and quality of work life." (21)

Researchers at Herman Miller recently studied the impact of the work environment on employee behavior and work process, work effectiveness, and business productivity. Using a project that consolidated employees into one building, they analyzed the impact of workplace design issues, including departmental adjacencies, collaborative space, and assigned and unassigned space use, for an experimental group (employees who moved) and a control group (employees who did not move) both before and after the change occurred. (22)

As part of this effort, researchers mapped three ongoing business processes within several departments and collected metrics on those processes, such as process cycle time before and after the move. Using data from almost 1,200 employee surveys, they created a statistical model that identified key workplace variables that predicted cycle time for those processes. Increases in quality of lighting, quality of internal group processes, design of interior space to support quickly shifting from individual to collaborative work, and amount of time spent in unassigned workstations were the main predictors of reduced cycle times.

To illustrate the impact of the move on process quality and efficiency, researchers plotted process cycle times for a repeatable business process against an independent assessment of the quality of output for the group responsible for that process. They found that the process cycle time decreased after the move, and the assessment of work product quality rose (see Figure 2). Employees involved in the business process achieved efficiency gains that resulted in time savings of 7.5 percent.

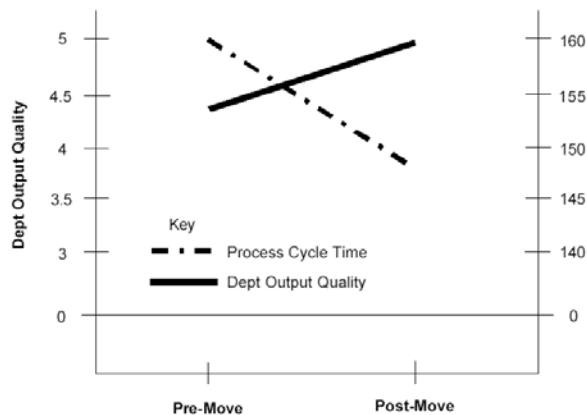


Figure 2
Productivity: Plot of Process Quality and Efficiency

Provide healthful support

A comfortable worker is a happier worker and a more productive contributor to organizational effectiveness. A wealth of statistics exist to bolster the argument that ergonomic chairs and adjustable work and input surfaces, especially for people who spend long periods of time at a keyboard, reduce costs related to medical claims and absenteeism. The real news is that healthful support can increase productivity.

Working with a global management consulting and technology services company, Michael O'Neill and a team of researchers examined the effects of

- moving employees from four buildings into one that had fewer workstations than people
- giving them new furniture and interior design concepts intended to make interior space highly flexible for either individual work or group collaboration
- providing them with training geared to improve ergonomic awareness and communicate new "rules of behavior" for using the space (23)

The project involved a total of 1,135 employees representing three groups. The control group did not receive any changes in its workplace nor did it get any training. The first experimental group moved into the new workplace and received training. The second experimental group moved to the new space but did not receive training. Researchers studied each group before and after the move and the training.

Because job control is a reliable predictor of employee health and the reductions in the risk of coronary heart disease, the researchers wanted to test the hypothesis that the greatest reduction in pain and musculoskeletal discomfort would result from the combination of workspace flexibility and ergonomic training. The results of the study supported this premise. Employees who moved into the new work environment reported a statistically significant 2 percent increase in job control.

Employees in the new environment who also received training reported a 13 percent increase in job control. “Work-related discomfort” decreased 27 percent for the group that moved, and 46 percent for the group that moved and received ergonomic training.

The study also showed significant results related to the relationship between workplace design, training, and business-process efficiency. Using a method called Business Process Analysis, the research team gathered information from the control and experimental groups to determine the time, resources, and steps involved in four repeatable business processes.

The average across all four process the researchers studied was a 5.62 percent reduction in process cycle times for the move-only experimental group and a 10.55 percent reduction for the group that received the move and the training. Further analysis showed that workplace design features, such as meeting rooms and flexible workstations, were significant predictors of the reduction in process-cycle time. The researchers concluded that there is credible evidence that broad workplace strategies to support behaviors (such as collaboration), which managers intuitively believe lead to effective work, actually do increase performance and business success.

Information work and knowledge workers will be key contributors to organizational effectiveness for the foreseeable future. Recognizing that fact is merely one step toward enabling their best contributions. For that to occur, organizations must tackle the challenge of measuring their contributions and then supply them with an environment and tools that allow them to create value for their employers.

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End Notes

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