Using a controlled setting to study the effects of monitoring.

DOES ELECTRONIC MONITORING OF EMPLOYEE INTERNET USAGE WORK?

With the introduction of any new technology, there is also the potential for its misuse. When PCs were introduced into organizations, computer games soon followed. Similarly, evidence exists of a productivity vacuum occurring immediately following the installation of Internet access on worker desktops [3, 8]. Anecdotes abound of workers wasting weeks perusing recreational Web pages, emailing friends, shopping, stock trading, chatting, or playing games [6].

Managers have good reason to minimize sources of unproductiveness and hence look for solutions to aid in this quest. IS in particular has been dogged by the productivity paradox [1] and forced to justify ever-increasing budgets. In response, some companies require employees to follow Internet acceptable use policies (AUPs) [9]. These policies range in enforcement from virtually none to continuous monitoring and termination of offenders. Companies with AUPs need an effective enforcement method [10], and many companies have developed software (such as Net-Nanny and CyberSitter) that assists in monitoring and/or blocking access to certain Web sites, news-groups, and other locations. Most monitoring tools accomplish the denial of access by keeping a list of inappropriate sites and either blocking access or recording access to these sites. Moreover, email can be, and often is, electronically monitored.

Managers can face a dilemma in controlling unproductive Internet surfing. Research shows testing individuals for illicit drugs causes a decrease in their abuse. Similarly, polygraphs can deter individuals from lying, and time clocks keep workers more honest about hours worked. Managers would like to limit cyberslouching but simultaneously not offend employees by introducing another constraint on creativity and freedom. Many employees use the Internet occasionally and harmlessly for short personal tasks, such as checking a

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sports score or a stock price. For others, the Internet provides an opportunity to idle away time while still appearing busy. Managers thus must decide whether to create draconian AUPs or to simply let unproductivity happen.

For researchers and managers alike, several important questions exist about AUPs and monitoring of Internet usage that can provide insights into worker productivity and the ultimate benefits of the technology. Could the benefits of electronic monitoring be outweighed by ill feelings it may generate? Can monitoring be conducted to allow productive (although possibly unplanned) uses of the Internet, yet stop cyberslouching? The fundamental, unanswered question of concern is: What are the effects of monitoring Internet usage on behavior and on satisfaction with monitoring?

Computer-Aided Monitoring Research

Electronic monitoring (EM) has two basic uses: providing feedback and implementing control. Monitoring for feedback is when employees are monitored in order to provide them with performance-related feedback and suggestions for improvement, such as with recording a receptionist's typing speed or the accuracy of data entry clerks. Monitoring for control is when employees are monitored in order to gain compliance with rules and regulations, such as using video cameras and badge readers to track employee movement. While many studies have examined EM with service employees [4], few have examined monitoring of electronic work.

Chalykoff and Kochan [2] conducted a study of the effects of EM on job satisfaction and turnover intent. They observed employees where PCs recorded information during interactions to provide feedback on accuracy and speed with a job-related custom software package. Surveys were administered to employees to discover if the employees' satisfaction with monitoring (SWM) was related to job satisfaction and turnover intent. While the study did not find a direct relationship between SWM and turnover intent, there was an indirect relationship. Other identified significant predictors of SWM include immediacy, clarity of rating criteria, supervisory consideration, supervisory expertise, and the valence of feedback received.

While Chalykoff and Kochan provide a framework for conducting EM research, their resulting study is incomplete by their own admission. Their study only covered a situation where monitoring was used to give employees feedback on productivity, ignoring the control scenario. Furthermore, over a decade later, the environment and technology they studied now seem relatively constrained compared to possibilities for today's Internet-enabled employees. In an effort to continue research on the questions posed by Chalykoff and Kochan, we conducted two exploratory studies.

Studying EM in a Controlled Setting

The full detail of our theoretical model and research methods are available elsewhere [11], and are only summarized here. Essentially, we studied the effects of EM type (feedback or control) on SWM. We did not examine factors leading to the monitoring decision, rather, we concentrated on the monitoring type and its effects.

There are contrasting opinions on the appropriateness of EM. One stream of thought (the "Theory X" approach to monitoring) holds that employees need to be monitored; it is an employer's right to monitor, and people will begrudgingly (if at all) accept EM as a further, routine invasion of privacy in today's automated and litigious workplace. An opposing stream ("Theory Y") holds that monitoring can be useful, employees will welcome EM because those who are diligent will be unaffected, and it will provide evidence to eliminate organizational "deadweight." Consistent with Chalykoff and Kochan [2], Guthrie and Gray [5], and Zuboff [12], we reasoned that as monitoring increases, employees are more likely to believe the sacred bond of trust between the employer and him- or herself has been violated, thus affecting SWM negatively.

Context #1—EM in the classroom. The investigation of EM of Internet usage began with a relatively controlled context to observe monitoring and its effects. To begin an extension of Chalykoff and Kochan, a natural classroom setting was chosen. This was done in order to gather basic observations from a relatively homogenous population in which people had similar levels of computer skills (an undergraduate programming course) and routine tasks were largely computer-related.

Throughout a semester, students from two consecutive sections of a Visual Programming course had their computing habits studied during class time. Students were told and reminded throughout the semester that the instructor would watch them carefully to ascertain student-computer interactions were for pedagogical purposes. If students were noticed cyberslouching (idle Web surfing, reading email), the instructor would dock their class participation grade (15% of the overall grade). Only one course section was informed of the EM. In fact, both classes were electronically monitored using WinWhatWhere software.

As a group, EM-blind subjects had 8.8% of their computer interactions classified as off-topic, but this accounted for 51.34% of their time engaged with the computer. In the EM-aware group, these values were 5.73% and 43.25%, respectively. It became obvious user behavior differed between baseline (EM-blind) and experimental conditions (EM-aware). EM-aware

Study results.	
Study 1	
Findings	**Implications For**
EM-aware subjects were more focused on task than were EM-blind subjects.	Productivity
EM-aware subjects were more generally less satisfied with the experience than the EM-blind subjects.	Satisfaction
Study 2	
Findings	**Implications For**
EM-feedback subjects had higher SWM than EM-control subjects.	Satisfaction
Task motivation was positively linked with SWM.	Productivity, Satisfaction
Higher past performance was positively linked with SWM.	Productivity, Satisfaction

subjects were more task-focused than the EM-blind group. Moreover, the EM-aware group's job satisfaction (course evaluation) scores were significantly lower than those in the experimental section. Overall, monitoring helped to ensure productivity, but only at the expense of overall satisfaction.

Context #2—A controlled lab study. To maximize control and improve understanding of EM effects, the next step was an experimental research design in which monitoring type (feedback or control) was manipulated. Computer Information Systems students participated in a project that benchmarked the CIS program at their U.S. university with competitor IS programs. First, 174 subjects used the Internet to identify courses and requirements for IS programs at other universities within their conference ("Ivy League" or "Big 10," to name two), and they recorded findings on a previously provided MS-Word template. The second part was similar except the scope was expanded to IS programs nationwide. Class credit and cash prizes were awarded for participation.

At the beginning of each session, demographic data (such as GPA and class standing) was collected. While subjects received instruction in the experiment (and at other points during the study), the EM used was described as being either for feedback or control purposes (depending on the manipulation), and post-hoc checks confirmed the manipulations were successful.

When the first part of the experiment ended, subjects took a break and then received actual monitoring data presented as either high-level feedback showing how well they performed on the project (feedback) or a detailed list showing how much they cyberslouched during the work period (control). Subjects then completed the second task. For the first part of the experiment, participants completed a SWM and manipulation (type of EM) check survey. SWM was found to be significantly greater in the feedback rather than the control conditions, and positively significantly correlated with subject GPA.

As in any laboratory experiment, subject motivation to complete the task may be questionable. Simulating the real-world environment of defaulting on mortgage payments and public shame due to termination is challenging. Similar experiments have shown task motivation affects performance levels. To eliminate potential problems related to subject seriousness, it was also important to determine individual task motivation levels. A generic, preexisting scale to measure motivation toward an experimental task was used [7], showing adequate subject-task engagement and high inter-item reliability. It was also shown to be significantly positively correlated with SWM.

Conclusion

The results for these two studies are summarized in the table. To reiterate, the primary research question was: What are the effects of EM of Internet usage on behavior and SWM?

This research shows EM influenced behavior and satisfaction. People who were EM-aware were more task-focused than the EM-blind subjects, supporting "Theory X." However, EM-aware subjects were generally less satisfied overall than the EM-blind group, supporting "Theory Y." This presented an interesting tradeoff between productivity and satisfaction, suggesting that for some contexts, EM presents a mixed blessing.

A solution could be to identify an EM scheme that simultaneously enables managers to influence employees *and* is acceptable to employees. Evidence for this is our finding that people monitored electronically for feedback purposes have higher SWM than those monitored for control. Under feedback conditions, EM data was used positively, helping individual performance; under control conditions the data was used to identify and stop cyberslouching. In these contexts it appears the carrot is better than the stick in pacifying employees, but the stick succeeds in keeping employees on-task.

The study's results provide additional evidence that supports EM. Task-motivated individuals have higher SWM than those with lesser motivation. Similarly, high past performance was positively correlated with high SWM. In these contexts it appears the high-performing, highly motivated people are more accepting of the monitoring, while lower-performing, lower-motivated individuals are less accepting of EM. In generalizing this finding, the bitterness that monitoring may generate among some employees may be desirable by management.

These results have both research and practice implications. For researchers, they extend Chalykoff's and Kochan's work to a contemporary, Internet-based context with complex tasks. Furthermore, their work was extended by studying control and feedback-based EM, and showed that including both types of EM produced previously unidentified results. Finally, results suggest our subsequent EM studies should measure individual differences and their role in long-term SWM, overall job satisfaction, and long-term job performance.

Among the many implications for practitioners is that EM may be a double-edged sword, potentially forcing a decision between productivity and employee satisfaction. Fortunately, it appears positive forms of monitoring can be more instructive and acceptable to employees than negative forms of monitoring. Finally, given that "star" performers had higher SWM, managers may institute EM despite lower SWM with other employees. Alternatively, managers might employ different EM techniques for different employees (using EM for feedback for high-performers and EM for controling for problematic employees, to name two).

There are limits to this investigation and the resulting conclusions. First, neither factors leading to the monitoring decision nor comprehensive effects of EM on outcomes like overall performance or turnover were studied. Second, as behaviors were studied in a classroom setting and then in the laboratory with a meaningful yet relatively contrived task, the potential that generalizability could be a limitation. Several efforts were made to create appropriate contexts for the subject pool and yet similar to tasks in corporate settings (programming and benchmarking) and incentives (grades and cash prizes) were high.

One useful extension would be a field study seeking to replicate these findings. Then, subsequent field research could further investigate the relationship among EM and job satisfaction, long-term performance, and turnover. Similarly, field studies could aid in identifying optimal jobs and organizational contexts for EM.

It is possible that, ultimately, the answer to the question as to how best to conduct EM is a hybrid of feedback and control monitoring. For example, at GE Appliances, all Internet usage is monitored and logged. However, logs are examined only upon a request from human resources to investigate a previously identified employee productivity problem. The data can then be used for supporting a case for employee discipline or termination, but never for instigating one. Additional EM research will help determine how to optimally perform what, for better or worse, is becoming a pervasive practice. **C**

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