



Evidence-based recommendations for employee performance monitoring



David L. Tomczak^a, Lauren A. Lanzo^a, Herman Aguinis^{b,*}

^a *Columbian College of Arts and Sciences, George Washington University, 600 21st St. NW, Washington, DC 20052, U.S.A.*

^b *School of Business, George Washington University, Fonger Hall 311, 2201 G St. NW, Washington, DC 20052, U.S.A.*

KEYWORDS

Electronic performance monitoring;
Employee attitudes;
Privacy;
Organizational ethics

Abstract From security cameras to GPS tracking systems, nearly 80% of organizations use some type of electronic performance monitoring (EPM). EPM uses technology to gather, store, analyze, and report employee behavior (e.g., productivity, use of company time, incivility). The objective, real-time data that EPM systems collect can be used for performance appraisal, training and development, logistical tracking, wellness programs, employee safety, and more. Despite the organizational benefits of EPM, these systems can have adverse effects on employee satisfaction, organizational commitment, fairness perceptions, and employee behavior. Research provides evidence, however, that these downfalls can be mitigated by implementing these systems with employee attitudes and privacy perceptions in mind. Using theory and empirical research evidence, we offer five recommendations for maximizing the positive effects and minimizing the negative effects of EPM: (1) Be transparent with employees about EPM use, (2) be aware of all potential employee reactions to being monitored, (3) use EPM for learning and development rather than deterrence, (4) restrict EPM to only work-related behaviors, and (5) consider organizational makeup when implementing an EPM system.

© 2017 Kelley School of Business, Indiana University. Published by Elsevier Inc. All rights reserved.

1. What is electronic performance monitoring?

Electronic performance monitoring (EPM) refers to organizational systems that use technology to

gather, store, analyze, and report employee behavior data to assess performance and observe actions on the job (Alge, 2001). A 2007 survey indicated that 78% of organizations utilize some type of EPM (Ribitzky, 2007), and this number is likely even higher today as the evolution of technology provides more opportunities for data-gathering capabilities. At its most primitive, EPM can include surveillance camera systems and computer and phone monitoring/blocking systems,

* Corresponding author

E-mail addresses: davetomczak@gwmail.gwu.edu (D.L. Tomczak), llanzo@gwmail.gwu.edu (L.A. Lanzo), haguinis@gwu.edu (H. Aguinis)

but the world of EPM has evolved recently to accommodate the popularity of wearable technologies and smartphones, including Fitbits and mobile GPS tracking applications. Indeed, in the modern workplace, “every e-mail, instant message, phone call, line of written code and mouse-click leaves a digital signal,” allowing organizations to generate patterns of employee behaviors inexpensively and make big data-driven decisions to improve efficiency and innovation (Lohr, 2013).

Reasons for implementing EPM are directed at both the individual employee and group level, and for measuring both positive (e.g., task performance, productivity) and negative employee behaviors, such as counterproductive work behaviors (CWBs). CWBs are intentional employee behaviors that oppose the interests and functioning of an organization, such as employee theft, absenteeism, and cyberloafing (e.g., spending time on the internet engaging in non-work behaviors such as online shopping or gaming) (Dalal, 2005; Kidwell, 2010). Consequently, EPM systems may be implemented to surveil for theft, monitor use of company time and resources for personal use, and deter cyberloafing behaviors by monitoring internet usage and blocking non-work-related websites.

EPM systems can monitor positive employee behaviors as well, such as productivity, performance, safety, and even personal health behaviors for training/development and work-life management. Tracking software such as WorkIQ and Desk Time allows companies to condense real-time employee behavior data into weekly or quarterly reports that are emailed directly to employees, outlining how they used their computer time throughout the week (Agu, 2016). The reports aim to help employees become cognizant of their work behaviors, but they may also be used to make employment, promotion, or disciplinary decisions. Additionally, mobile tracking systems can provide useful logistic and time-oriented metrics to assist organizations in predicting delivery times and help employees engage in safer behaviors. For example, semi-truck company Ryder recently implemented driver-facing camera docks and satellite-based monitoring systems to record both positive and negative personal driver behaviors such as unproductivity, speeding, safe turning, abrupt braking, and unauthorized stops (Bowman, 2014). The primary goal of the system is to provide the company with minute-to-minute data regarding vehicle efficiency, fuel usage, and hours of service, but the data also provide drivers with useful information on the safety of their driving practices, allowing them to improve their proficiency at job-related behaviors (Bowman, 2014). Lastly, certain employees

may even welcome location-tracking systems in the workplace because the constant surveillance levels the playing field and holds coworkers accountable for their actions, such as arriving or leaving early on any given workday (Zetlin, 2009).

Many organizations now wish to extend the big data capabilities of technology to assist employees outside of the workplace as well. For example, Castlight Health, used by major employers such as Walmart and Time Warner, analyzes self-reported employee behavior, health searches, and self-assessments to assist employees with making better health choices or even recommending medical treatment. Fitbits, wearable devices that record body movements and heart rate, have infiltrated company buildings as well and employees are often rewarded with paid time off for racking up steps and exercise time (McGregor, 2014). Although these examples do not necessarily assess employee performance, the data gathered nevertheless provide information regarding employee behavior and consequently blurs the boundaries between work and personal life.

2. A lesson in the unintended consequences of monitoring

When Myrna Arias accepted her job position with Intermex, a money transferring company based in the U.S., management required her to download a mobile resource management application called Xora that provides useful on-the-go web services for employees that often engage in client-related communication and travel. Although the location and communication capabilities of the app provided useful data regarding employee whereabouts and transportation metrics during work hours, Xora collected location information via GPS 24 hours per day, 7 days a week in order to function efficiently. Cognizant of this feature, Arias objected to the constant surveillance and requested that the application only be activated during work hours. Her manager insisted that Xora be active at all times for client call purposes, but also bragged to Arias about the exceptional accuracy of the application, claiming that he could even see how fast she was driving at any given time. Perturbed by the manager's indiscreet use of the application and her now perceived loss of privacy, Arias decided to deactivate the application for her own privacy concerns. Arias, despite being an excellent employee, was scolded for her actions and was soon fired for noncompliance, leading to a lengthy lawsuit between Arias and Intermex with damages

of more than \$500,000 for lost wages (Newman, 2015).

It is apparent that Intermex had good intentions with Xora, but the execution failed to consider employee reactions to unfair monitoring practices, causing them to lose a good employee and suffer a legal financial burden. Cases such as this one are not limited to just Intermex and Xora. The aforementioned Castlight Health application can guide employees to adopt healthier behaviors, avoiding serious imminent health complications simply by analyzing user inputs. This wealth of data, however, can also lead to accurate predictions about extremely personal health issues, such as whether or not an employee is pregnant (Zarya, 2016). Under improper management, an employee could be denied a promotion for their personal health concerns, leading to yet another legal issue.

When implemented correctly, monitoring practices can supply organizations with accurate, helpful, real-time data with minimal invasion upon employee privacy. But, when implemented incorrectly, monitoring can lead to both legal issues and other negative employee reactions, including decreases in employee satisfaction and commitment, and increases in perceived unfairness and CWBs. Considering the big data capabilities of modern electronic monitoring systems, organizations are likely to continue to adopt EPM and in more innovative ways—if they have not done so already. Thus, it is important for organizations to understand the risks, limitations, and perceived invasiveness of these methods, as well as the evidence-based guidelines to ensure employee compliance, minimize legal issues, and ultimately reap the benefits of a workforce that is satisfied, committed, and engaged in learning and development in a monitored environment.

3. Negative employee reactions to EPM

The way in which EPM is implemented and communicated to employees is crucial because it is well known in organizational research that employee attitudes are related to their behaviors (Ajzen, 2001). If implemented inappropriately, employees may experience negative attitudes toward the organization that can ultimately lead to decreased performance and/or CWBs, a cost that may far outweigh the intended benefits of the EPM system. Some examples of negative reactions to EPM include the following:

- *Feelings of privacy invasion* (McNall & Roch, 2007; McNall & Stanton, 2011; Stanton, 2000a):

A recent simulated scenario experiment of 208 college students concluded that location monitoring in the workplace evokes feelings of privacy invasion, and these feelings are highest for individuals that do not have the option of turning the monitoring off outside of working hours (McNall & Stanton, 2011).

- *Perceptions of unfairness* (McNall & Roch, 2009; Moorman & Wells, 2003; Stanton, 2000a, 2000b): A study of 257 call center representatives concluded that being monitored on the job can lead to perceptions of unfairness toward managers, and feelings of informational unfairness (negative perceptions of the quality of information exchange between managers and subordinates) were highest for those that were not given an explanation for being monitored (McNall & Roch, 2009).
- *Decreased job satisfaction* (Wells, Moorman, & Werner, 2007): A survey study of 330 sales and customer service representatives in a Midwestern telecommunications company demonstrated that EPM used to deter undesirable behaviors was met with lower employee satisfaction than EPM used for learning and developmental purposes (Wells et al., 2007).
- *Decreased organizational commitment* (Wells et al., 2007): The same survey study of 330 telecommunications employees also demonstrated that EPM for deterrence purposes negatively impacts an individual's commitment to the organization, whereas EPM for developmental purposes (improving job performance) results in greater organizational commitment (Wells et al., 2007).
- *Increased CWBs* (Willford, Tomczak, Jimenez, Ravid, & Behrend, 2017): A recent survey study was conducted with users from Amazon Mechanical Turk (MTurk), an online crowdsourcing platform hosted by Amazon Web Services that allows individuals and businesses to request tasks from users (e.g., survey responses, freelance work) and compensate them for their contributions. Researchers found that individuals who experience real-time computer and location monitoring also engaged in CWBs directed at both individuals (e.g., incivility towards coworkers) and the organization (e.g., showing up late, absenteeism) (Willford et al., 2017).
- *Lower task performance and productivity for less-skilled workers* (Aiello & Kolb, 1995): A study

of 202 undergraduates completing a monitored data entry task demonstrated that monitoring evokes a sense of evaluation apprehension, the conscious awareness of being watched and evaluated based on performance on a single task. Results indicated that monitoring causes low-skilled individuals to be even less productive but causes high-skilled individuals to be even more productive (Aiello & Kolb, 1995).

- *Greater perceptions of stress on work-related tasks* (Aiello & Kolb, 1995): The same study of undergraduates completing the data entry task also concluded that monitoring evokes greater self-reported stress levels compared to non-monitored individuals. The findings in tandem suggest that monitoring new employees that are unfamiliar with work tasks may result in lower performance and higher stress (Aiello & Kolb, 1995).

The use of EPM is emerging and so is research on how it affects employees' attitudes and subsequent behaviors. In 2015, researchers conducted a mixed-methods study of MTurk user responses to qualitative and quantitative surveys regarding experiences of work-related monitoring (Willford, Cox, Howard, & Behrend, 2015b). Amidst gaining knowledge of the various ways that employees are monitored (e.g., multisource big data collection), researchers found that active synchronous monitoring (e.g., monitoring real-time internet usage and computer keystrokes) consistently elicited more perceptions of privacy invasion than passive asynchronous monitoring (e.g., email scanning) (Willford et al., 2015b). Perhaps even more important, strong feelings of privacy invasion can result in seriously harmful repercussions for organizations. Willford et al. (2017) demonstrated these consequences in a subsequent study of MTurk ($n = 537$) users from various professions. Researchers found that participants who did not know if they were being monitored engaged in more organizationally directed deviant work behaviors, such as arriving late, stealing from work, disclosing confidential information, and withdrawing effort (e.g., working slowly, taking longer breaks) on behalf of feelings of privacy invasion and procedural injustice (Bhave, 2014; Leventhal, 1980; Robinson & Bennett, 1995; Willford et al., 2017). On the other hand, less invasive forms of EPM (e.g., blocking internet sites) were not associated with an increase in these behaviors, likely due to the fact that such monitoring has become generally accepted. The authors explained that EPM may be related to these negative behaviors because of employee perceptions of privacy invasion.

Feelings that one's privacy has been invaded or perceptions of unfairness fall under the umbrella of perceptions of organizational justice, which can have implications for employee attitudes, reactions, and behaviors. A meta-analysis using 190 primary studies (total of 64,757 participants) demonstrates that perceptions of justice lead to positive attitudes and in turn positive organizational behaviors (e.g., commitment, citizenship behavior, and performance), while perceptions of injustice lead to negative attitudes and in turn negative behaviors (e.g., CWBs) (Cohen-Charash & Spector, 2001). These findings were replicated in two studies by Ambrose and Schminke (2009). The authors surveyed 425 employees from 54 organizations varying in industry (e.g., technology, insurance, financial, food service) and found that overall perceptions of justice significantly predicted job satisfaction, commitment, and turnover intention. In a second study, the authors collected data on 137 employee-supervisor dyads to determine whether supervisor ratings of employee behaviors were related to employee perceptions of justice. Results indicated that overall employee perceptions of injustice were related to decreased performance and increased CWBs as judged by supervisors.

When EPM is implemented inappropriately, these negative feelings increase. By following the guidelines presented in Section 4, organizations can ensure that monitoring systems are less of an ominous burden and more of a tool for improvement for employees.

4. Evidence-based recommendations for using EPM

We examined the evidence from the scholarly literature and distilled the findings into five evidence-based recommendations to assist practitioners with creating EPM policies and implementing monitoring systems. As a preview and summary, Table 1 includes our recommendations.

4.1. Be transparent with employees about EPM use

Transparency in organizational policies and procedures results in perceptions of fairness and justice in organizational research and practice (Aguinis, Joo, & Gottfredson, 2013; Leventhal, 1980). From compensation systems to promotions, employees are more likely to accept and see decisions as fair when organizations are transparent about the process involved in setting policies and procedures (Leventhal, 1980).

Table 1. Research-based recommendations and guidelines for implementing employee performance monitoring (EPM) systems

Recommendations	Implementation Guidelines
1. Be transparent with employees about EPM use	<ul style="list-style-type: none"> • Start by simply informing employees whether or not they are being monitored; the most negative reactions result from employees who are not aware they are being monitored • Give employees the opportunity to voice their concerns, suggestions, and responses to being monitored; be willing to adapt the system accordingly if feasible
2. Be aware of all potential employee reactions to being monitored	<ul style="list-style-type: none"> • Implement only if monitoring is crucial to organizational functioning because monitoring typically elicits negative responses regardless of implementation • Ensure that the EPM system being implemented is the least invasive option available for the functionality • Understand that active monitoring (e.g., real-time computer use) is considered more invasive than passive monitoring (e.g., monitoring emails) and invasiveness leads to counterproductive work behaviors (e.g., employee theft, absenteeism, cyberloafing)
3. Use EPM for learning and development rather than deterrence	<ul style="list-style-type: none"> • Avoid excessive blocking and limiting of website usage to prevent dissatisfaction and lack of commitment reactions • Condense EPM data into learning and development recommendations for employees rather than punishment • Ensure that the instrumentality of the EPM system entails both quantity and quality assessments of performance
4. Restrict EPM to only work-related behaviors	<ul style="list-style-type: none"> • Create a clear distinction between data used for wellness programs (e.g., Fitbits) and data used for performance management • Avoid using EPM capabilities (e.g., location) when employees are offsite engaging in non-work behaviors
5. Consider organizational makeup (i.e., size, job characteristics) when implementing an EPM system	<ul style="list-style-type: none"> • Ensure that the EPM system is clearly described and communicated throughout all levels of the organization; this is especially important for larger organizations to facilitate justice perceptions • Consider the characteristics of the job—complex jobs that require more freedom and autonomy for core tasks will need EPM systems that do not block crucial activities

This general empirical finding holds true for EPM systems. In a proposition for a theoretical framework regarding employee reactions to EPM based on justice perceptions and EPM characteristics (e.g., participation, disclosure, opportunity for feedback, tasks monitored), [Ambrose and Alder \(2000\)](#) suggested that the most negative reactions to EPM come from employees who do not know whether they are being monitored, why they are being monitored, or how they are being monitored. The survey study of 537 MTurk users by [Willford, Cox, Howard, Badger, and Behrend \(2015a\)](#) mentioned earlier provides evidence for this proposition as results indicate that individuals who did not know if they were being monitored elicited the most negative responses to measures of invasion of privacy, fairness, and instrumentality of the monitoring systems. The findings from [Willford et al. \(2015a\)](#) add to the existing literature on what causes employees to react negatively, including perceptions of privacy invasion, threat to personal and social

identity ([Alge, Greenberg, & Brinsfield, 2006](#); [McNall & Stanton, 2011](#)), and evaluation apprehension—the feeling of being watched by individuals who are making important social evaluations based on situational performance. This feeling of being constantly watched by individuals with power (i.e., management) often leads to task anxiety, which can be harmful to learning and development on behalf of the employee ([Watson et al., 2013](#)).

Transparency can be a double-edged sword, however. A study of 108 students completing a monitored data entry task (cross-referencing data from written spreadsheets with computerized spreadsheets for accuracy) concluded that constant reminders of monitoring actions can lead to lower feelings of personal control and subsequently lower task satisfaction ([Stanton & Barnes-Farrell, 1996](#)). Thus, it is best to alert employees that EPM is happening in general and to not increase stress perceptions by continually reminding them of monitoring events.

4.2. Be aware of all potential employee reactions to being monitored

In general, employees may perceive some degree of electronic monitoring as procedurally fair, but invasive nonetheless (McNall & Roch, 2007). Some EPM systems are more invasive than others and are differentiated by whether they are active or passive (Willford et al., 2017). An example of passive monitoring includes monitoring archived emails, whereas an example of active monitoring is evaluating real-time location (e.g., GPS, surveillance cameras) and computer (e.g., time spent on computer) or internet use (e.g., website tracking) (Willford et al., 2017). Employees respond differently to these two types of EPM because they target different aspects of the employee; passive monitoring typically concerns artifacts of employee behavior (e.g., emails, number of phone calls) whereas active monitoring observes the employee's actual behaviors, leading to feelings of intrusiveness and unfairness (Ambrose & Alder, 2000). It is important to note this distinction between EPM types because active monitoring can lead employees to engage in CWBs against individuals (e.g., incivility toward coworkers) and the organization (e.g., tardiness, withholding effort on job-related tasks) (Willford et al., 2017).

The existing evidence tells us that some forms of EPM are more accepted than others (Willford et al., 2017), but organizations may be in situations where the benefits of monitoring and gathering information about employee behaviors (e.g., additional logistics metrics, location services, mobile communication) outweighs the potential negative aspects of EPM. Thus, there are a few things to keep in mind when considering the implementation of an invasive EPM system: (1) make sure it is necessary to use these invasive techniques rather than less invasive options that may provide adequate information, (2) make sure employees understand the reasoning behind the decision and have an opportunity to voice their opinions and concerns, and (3) make sure employees understand the details of the monitoring system (e.g., what information is collected and stored and how it is used). These suggestions may not eliminate the negative reactions to invasive monitoring, but they may mitigate them.

4.3. Use EPM for learning and development rather than deterrence

Deterrence systems refer to EPM policies that are intended to limit unwanted behaviors or prevent employees from accessing non-work information (Wells et al., 2007). An example of a deterrence

system is limiting internet access by blocking certain websites (e.g., social media sites). Results from the Wells et al. (2007) study of telecommunications representatives demonstrates that deterrence systems lead to feelings of unfair treatment, lower satisfaction, and less commitment to the organization (Wells et al., 2007). On the other hand, when employees understand that the system is used for learning and development and does not invade their personal boundaries, they are more likely to accept the system and view it as fair (Alge, 2001; Alge et al., 2006; Boswell & Boudreau, 2000; McNall & Stanton, 2011; Zweig & Webster, 2002). Moreover, when the organization uses EPM to generate productivity and task-related metrics for employees to improve their personal performance, employees experience significantly higher levels of EPM acceptance, satisfaction, and organizational commitment than deterrence systems because the organization has demonstrated a genuine interest in helping the employee grow and progress in their position (Stanton, 2000b; Wells et al., 2007). For example, consider the case of TechWiss, Inc., an e-health startup with an international workforce of 55 employees. The company noticed that a coder in India was consistently missing deadlines for a mobile application development project, and instead of immediately firing him, they analyzed EPM data to find that he was not collaborating with coworkers through their online chat system; as a result, his coding performance was suffering. TechWiss, Inc. provided the coder with a week of training, and his performance dramatically improved, demonstrating that developmental EPM enables companies to retain good workers and target specific behavioral improvements for better performance (Johnston, 2016).

The instrumentality of the EPM system can also elicit different responses from employees. When EPM systems focus on both quality and quantity of employee output and employees are aware of the functionality of the EPM system, employees report higher levels of task satisfaction (Stanton & Julian, 2002). This increase in satisfaction occurs because the employee understands what aspects of task performance are important to the organization and the emphasis on employee quality reflects the organization's genuine concern for the quality of their work (Stanton & Julian, 2002). Giving employees a sense of control over their work conditions in the presence of an EPM system (e.g., allowing them to manipulate the time and amount of feedback) can also mitigate the evaluation apprehension effect (the feeling of constantly being watched and evaluated throughout performance on a task). This is especially important for lower-skilled or newer

workers because their performance and productivity will further suffer if they are continually reminded of being monitored (Aiello & Kolb, 1995; Aiello & Svec, 1993). On the other hand, higher-skilled workers may actually see EPM as a way of demonstrating their worth to the organization and, consequently, their performance and productivity may increase when they know they are being monitored (Aiello & Kolb, 1995; Alge et al., 2006).

4.4. Restrict EPM to only work-related behaviors

As mentioned earlier, many organizations are using employee monitoring technologies (e.g., Fitbits, health behavior tracking dashboards) to promote employee health and well-being by rewarding employees when they eat healthy food, accumulate steps, and successfully stop smoking (Paypro, 2015). Although these programs demonstrate genuine concern for employees, it is important to make such programs optional, minimally invasive, and not linked to job performance monitoring and evaluation. According to Plump and Ketchen's (2013) guidelines for properly implementing a wellness program, it is essential to keep employee medical information private, make programs entirely voluntary, and clearly separate work hours from wellness activities. These recommendations are critical in the context of EPM, given that the vast data-capturing capabilities of EPM can easily blur the boundaries between work and personal life when not considered carefully. Without this separation, employees may be concerned about work-related outcomes (e.g., promotions) being linked to measures of health, which may result in the types of legal issues described earlier. Organizations can mitigate perceptions of privacy invasion and solidify the delineation between work and wellness by giving employees the option to control the monitoring system (e.g., turn it off at any time that they choose) (McNall & Stanton, 2011) and ensuring that information from the wellness program will not be used for other purposes.

4.5. Consider organizational makeup when implementing an EPM system

Not all EPM systems are created equal. There is a wide range of type and depth of EPM systems that are most appropriate for different organizations and jobs. Two issues for organizations to keep in mind when choosing an appropriate system are organization or unit size and type of job.

Organization or unit size is important to keep in mind for many reasons. EPM systems can be popular among large organizations because it allows easy monitoring of large numbers of employees in multiple offices both nationally and globally (Willford et al., 2015a). However, larger organizations may struggle more with perceptions of injustice. A study that included data from 11 organizations in various industries such as architecture and engineering, banking, and health care found that as organization size increased, perceived levels of justice decreased (Schminke, Ambrose, & Cropanzano, 2000). This may be because larger organizations are viewed as less personal because supervisors with larger departments and more employees may not be able to have close interactions with all employees (Daft, 1998; Schminke et al., 2000; Weber, 1964). In addition, decisions about organization-wide policies in large organizations are likely to be made at higher levels without inclusion or participation from lower level employees. As mentioned, perceptions of justice and acceptance of decisions decrease when individual employee values and opinions are not considered (Leventhal, 1980, as cited in Willford et al., 2015a). When implementing an EPM system in a large organization, communication and transparency at all levels are very important.

In addition to organization size, different types of monitoring may be better suited to different types of jobs. Job and task complexity—the extent to which an individual's job position involves difficulty, ambiguity, and novel problem solving to complete complex tasks—is an important factor to keep in mind (Campbell, 1988). As job complexity increases, so does the need for autonomy, control, and freedom for high performance (Chung-Yan, 2010; Willford et al., 2015a). EPM systems that are stricter and more controlling may decrease the potential for necessary individual judgment, decision making, and creativity (Chung-Yan, 2010; Willford et al., 2015a). Thus, it is important that the EPM system in place does not prohibit the individual from engaging in behaviors that are essential to task completion. Giving the employee an opportunity to decide how and when the monitoring will take place will enhance this sense of control over working conditions, which is associated with greater perceived autonomy and, ultimately, greater intrinsic motivation (McNall & Stanton, 2011). For example, managers at Zappos found that when it comes to monitoring customer service representatives, less stringent performance monitoring practices allow the company to empower them to engage in more creative problem-solving behaviors. Zappos measures average call time, but instead of allocating

rewards to employees with the shortest averages, Zappos rewards employees for the length of time that they are engaging customer-oriented interactions. Zappos has found that by monitoring the quality of the customer interaction rather than the speed of the interaction, representatives have more autonomy in deciding how to assist customers and ultimately engage in more creative problem-solving behaviors, such as visiting other websites or brick-and-mortar stores to help customers find products that are out of stock (Barkus, 2015; Verrill, 2016). This level of customer dedication and engagement has led to greater customer satisfaction and demonstrates that EPM must be implemented in a way that does not inhibit creativity when it is essential to organizational performance.

5. Summary

EPM offers a multitude of helpful services for organizations, including performance management and productivity reports, mobile locational and communicative services, and trackable wellness programs. As noted, however, there are several factors to take into consideration when implementing an EPM system. Concerning benefits, EPM has the potential to provide big-data representations of productivity and performance measurement as well as key information for learning and development. In order to reap the full benefits of an EPM system, however, several factors should be taken into consideration to avoid negative consequences. Depending on their use and construction, some EPM systems are related to feelings of injustice, privacy invasion, and decreased job satisfaction and organizational commitment. In turn, these attitudes can lead to CWBs, including withdrawal of effort, theft, lower productivity, and ultimately lower performance. Organizations can avoid these harmful consequences by keeping these five evidence-based guidelines in mind:

1. Be transparent with employees about EPM use;
2. Be aware of all potential employee reactions to being monitored;
3. Use EPM for learning and development rather than deterrence;
4. Restrict EPM to only work-related behaviors; and
5. Consider organizational makeup (i.e., size, job characteristics) when implementing an EPM system.

References

- Agu, K. (2016, May 24). 6 software tools for monitoring employee productivity. *Huffington Post*. Available at http://www.huffingtonpost.com/kc-agu/post_11966_b_10099296.html#comments
- Aguinis, H., Joo, H., & Gottfredson, R. K. (2013). What monetary rewards can and cannot do: How to show employees the money. *Business Horizons*, 56(2), 241–249.
- Aiello, J. R., & Kolb, K. J. (1995). Electronic performance monitoring and social context: Impact on productivity and stress. *Journal of Applied Psychology*, 80(3), 339–353.
- Aiello, J. R., & Svec, C. M. (1993). Computer monitoring of work performance: Extending the social facilitation framework to electronic presence. *Journal of Applied Social Psychology*, 23(7), 537–548.
- Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology*, 52(1), 27–58.
- Alge, B. J. (2001). Effects of computer surveillance on perceptions of privacy and procedural justice. *Journal of Applied Psychology*, 86(4), 797–804.
- Alge, B. J., Greenberg, J., & Brinsfield, C. T. (2006). An identity-based model of organizational monitoring: Integrating information privacy and organizational justice. In M. R. Buckley, J. R. B. Halbesleben, & A. R. Wheeler (Eds.), *Research in personnel and human resources management* (pp. 71–135). Bingley, UK: Emerald Group Publishing Limited.
- Ambrose, M. L., & Alder, G. S. (2000). Designing, implementing: and utilizing computerized performance monitoring: Enhancing organizational justice. *Research in Personnel and Human Resources Management*, 18, 187–220.
- Ambrose, M. L., & Schminke, M. (2009). The role of overall justice judgments in organizational justice research: A test of mediation. *Journal of Applied Psychology*, 94(2), 491–500.
- Barkus, D. (2015, December 4). Let your frontline workers be creative. *Harvard Business Review*. Available at <https://hbr.org/2015/12/let-your-frontline-workers-be-creative>
- Bhave, D. P. (2014). The invisible eye? Electronic performance monitoring and employee job performance. *Personnel Psychology*, 67(3), 605–635.
- Boswell, W. R., & Boudreau, J. W. (2000). Employee satisfaction with performance appraisals and appraisers: The role of perceived appraisal use. *Human Resource Development Quarterly*, 11(3), 283–299.
- Bowman, R. (2014, February 11). Is new truck-monitoring technology for safety—or spying on drivers? *Forbes*. Available at <http://www.forbes.com/sites/robertbowman/2014/02/11/is-new-truck-monitoring-technology-for-safety-or-spying-on-drivers>
- Campbell, D. J. (1988). Task complexity: A review and analysis. *Academy of Management Review*, 13(1), 40–52.
- Chung-Yan, G. A. (2010). The nonlinear effects of job complexity and autonomy on job satisfaction, turnover, and psychological well-being. *Journal of Occupational Health Psychology*, 15(3), 237–251.
- Cohen-Charash, Y., & Spector, P. E. (2001). The role of justice in organizations: A meta-analysis. *Organizational Behavior and Human Decision Processes*, 86(2), 278–321.
- Daft, R. L. (1998). *Essentials of organization theory and design*. Cincinnati, OH: South-Western Cengage.
- Dalal, R. S. (2005). A meta-analysis of the relationship between organizational citizenship behavior and counterproductive work behavior. *Journal of Applied Psychology*, 90(6), 1241–1255.
- Johnston, K. (2016, February 19). Firms step up employee monitoring at work. *The Boston Globe*. Available at

- <https://www.bostonglobe.com/business/2016/02/18/firms-step-monitoring-employee-activities-work/215hoCjsEZWA0bp10BzPrN/story.html>
- Kidwell, R. E. (2010). Loafing in the 21st century: Enhanced opportunities—and remedies—for withholding job effort in the new workplace. *Business Horizons*, 53(6), 543–552.
- Leventhal, G. S. (1980). Beyond fairness: A theory of allocation preferences. In G. Mikula (Ed.), *Justice and social interaction* (pp. 167–218). New York, NY: Springer-Verlag.
- Lohr, S. (2013, April 20). Big data, trying to build better workers. *The New York Times*. Available at <http://www.nytimes.com/2013/04/21/technology/big-data-trying-to-build-better-workers.html>
- McGregor, J. (2014, December 18). Fitness trackers chase after the corporate market. *The Washington Post*. Available at https://www.washingtonpost.com/news/on-leadership/wp/2014/12/18/fitness-trackers-chase-after-the-corporate-market/?utm_term=.0259a71429e2
- McNall, L. A., & Roch, S. G. (2007). Effects of electronic monitoring types on perceptions of procedural justice, interpersonal justice, and privacy. *Journal of Applied Social Psychology*, 37(3), 658–682.
- McNall, L. A., & Roch, S. G. (2009). A social exchange model of employee reactions to electronic performance monitoring. *Human Performance*, 22(3), 204–224.
- McNall, L. A., & Stanton, J. M. (2011). Private eyes are watching you: Reactions to location sensing technologies. *Journal of Business and Psychology*, 26(3), 299–309.
- Moorman, R. H., & Wells, D. L. (2003). Can electronic performance monitoring be fair? Exploring relationships among monitoring characteristics, perceived fairness, and job performance. *Journal of Leadership and Organizational Studies*, 10(2), 2–16.
- Newman, L. H. (2015, May 11). Sales exec says she was fired for uninstalling GPS app that tracked her constantly. *Slate*. Available at http://www.slate.com/blogs/future_tense/2015/05/11/intermex_employee_says_she_was_fired_for_deleting_xora_gps_apps.html
- Paypro. (2015, May 20). 3 companies that do wellness programs really well – and what you can learn. Available at <http://www.payprocorp.com/2015/05/20/3-companies-that-do-wellness-programs-really-well-and-what-you-can-learn/>
- Plump, C. M., & Ketchen, D. J. (2013). Paving a road to well? How the legal pitfalls of wellness programs can harm organizational performance. *Business Horizons*, 56(3), 261–269.
- Ribitzky, R. (2007, April 18). Active monitoring of employees rises to 78%. *ABC News*. Available at <http://abcnews.go.com/Business/story?id=88319&page=1>
- Robinson, S. L., & Bennett, R. J. (1995). A typology of deviant workplace behaviors: A multidimensional scaling study. *Academy of Management Journal*, 38(2), 555–572.
- Schminke, M., Ambrose, M. L., & Cropanzano, R. S. (2000). The effect of organizational structure on perceptions of procedural fairness. *Journal of Applied Psychology*, 85(2), 294–304.
- Stanton, J. M. (2000a). Reactions to employee performance monitoring: Framework, review, and research directions. *Human Performance*, 13(1), 85–113.
- Stanton, J. M. (2000b). Traditional and electronic monitoring from an organizational justice perspective. *Journal of Business and Psychology*, 15(1), 129–147.
- Stanton, J. M., & Barnes-Farrell, J. L. (1996). Effects of electronic performance monitoring on personal control, task satisfaction, and task performance. *Journal of Applied Psychology*, 81(6), 738–745.
- Stanton, J. M., & Julian, A. L. (2002). The impact of electronic monitoring on quality and quantity of performance. *Computers in Human Behavior*, 18(1), 85–101.
- Verrill, A. (2016, March 9). A Zappos lesson in customer service metrics. *Software Advice*. Available at <http://csi.softwareadvice.com/a-zappos-lesson-in-customer-service-metrics-1101029/>
- Watson, A. M., Foster Thompson, L., Rudolph, J. V., Whelan, T. J., Behrend, T. S., & Gissel, A. L. (2013). When big brother is watching: Goal orientation shapes reactions to electronic monitoring during online training. *Journal of Applied Psychology*, 98(4), 642–657.
- Weber, M. (1964). *The theory of social and economic organization*. New York, NY: Collier-Macmillan.
- Wells, D. L., Moorman, R. H., & Werner, J. M. (2007). The impact of the perceived purpose of electronic performance monitoring on an array of attitudinal variables. *Human Resource Development Quarterly*, 18(1), 121–138.
- Willford, J. C., Cox, M. J., Howard, R., Badger, J. M., & Behrend, T. S. (2015a, April). A latent class analysis of electronic monitoring practices. Paper presented at the 30th Annual Conference of the Society for Industrial and Organizational Psychology, Philadelphia, PA.
- Willford, J. C., Cox, M. J., Howard, R., & Behrend, T. S. (2015b, May). *Workplace monitoring and surveillance: A mixed-methods examination of invasiveness perceptions*. Paper presented at the 27th Annual Convention of the Association for Psychological Science, New York, NY.
- Willford, J. C., Tomczak, D. L., Jimenez, W., Ravid, D., & Behrend, T. S. (2017, April). *Electronic performance monitoring type predicts monitoring perceptions and contextual performance*. Paper presented at the 32nd Annual Conference of the Society for Industrial and Organizational Psychology, Orlando, FL.
- Zarya, V. (2016, February 17). Employers are quietly using big data to track employee pregnancies. *Fortune*. Available at <http://fortune.com/2016/02/17/castlight-pregnancy-data/>
- Zetlin, M. (2009, May 1). Keeping tabs on mobile workers. *Inc*. Available at <http://www.inc.com/telecom/articles/200905/tracking.html>
- Zweig, D., & Webster, J. (2002). Where is the line between benign and invasive? An examination of psychological barriers to the acceptance of awareness monitoring systems. *Journal of Organizational Behavior*, 23(5), 605–633.