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Electronic Performance Monitoring: A Literature Review and Research Prospect

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Abstract: Amid the accelerating process of digital transformation, electronic performance monitoring has become an essential tool in organizational management. As a process that utilizes information technology to observe, record, and analyze employees' work behaviors and performance, electronic performance monitoring not only enhances organizational efficiency and optimizes decision-making support but also exerts a profound influence on employees' psychological states and behavioral responses. This paper systematically reviews the conceptual evolution, measurement methods, and related research progress of electronic performance monitoring. The findings reveal that the definition of electronic performance monitoring has evolved dynamically from a "technological tool" to an "organizational practice," and its measurement approaches have developed from a single-dimensional to a multi-dimensional perspective, encompassing aspects such as monitoring purpose, monitoring intensity, and monitoring feedback. Existing empirical studies indicate that different types of electronic performance monitoring, such as developmental and preventive monitoring, have distinct impacts on employees' job performance, innovative behavior, and psychological responses. Overall, developmental monitoring tends to foster positive behaviors and creativity, whereas preventive monitoring may trigger psychological resistance and counterproductive work behaviors. This review provides a theoretical foundation for understanding the dual-edged effects of electronic performance monitoring and lays the groundwork for developing localized measurement instruments and exploring its underlying mechanisms in future research.

Keywords: Electronic performance monitoring; Performance feedback; Employee response

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1. Introduction

With the rapid advancement of information technology, enterprise management practices are undergoing profound transformation. The widespread adoption of digital office systems, big data analytics, and artificial intelligence has enabled organizations to monitor employees' work behaviors and performance with unprecedented precision and breadth. Against this backdrop, electronic performance monitoring has emerged as a technology-driven managerial tool and has gradually become a core mechanism in organizational performance management and employee

supervision. By utilizing technologies such as computer systems, video surveillance, and communication record analysis, enterprises can collect, record, and analyze employees' work data in real time, thereby achieving greater objectivity and visibility in performance evaluation. However, as the use of electronic performance monitoring becomes increasingly prevalent, the managerial and psychological issues it raises have also become a focal point of attention for both academic researchers and practitioners.

2. The concept of electronic performance monitoring

In today's work environment, electronic performance monitoring has become a common management practice. With electronic performance monitoring, managers can focus more precisely on subordinates' work processes and conduct in-depth evaluation and analysis of employee work behaviors. In 1987, the United States Congress Office of Technology Assessment introduced the term "electronic performance monitoring," referring to the process of using computer means to monitor, record, and track employee performance, behavior, and personal characteristics. Nebeker and Tatum defined electronic performance monitoring as the process of using technological means such as audio, video, or computer systems to collect, store, analyze, and generate corresponding reports on the behavior and performance of individuals or groups. Subsequently, Stanton defined it as the use of technological means to observe, record, and analyze information directly or indirectly related to employee work performance. Furthermore, Abraham *et al.* pointed out that electronic performance monitoring refers to the use of technology to collect employee data to examine their activities [1].

With the further development of monitoring technology, increasingly new functions have emerged. Among these, Ball noted that although technological progress has profoundly transformed the methods of employee monitoring, its fundamental objectives-namely, monitoring employee performance and behavior to maintain organizational performance, prevent theft and legal risks, ensure employee safety, and promote their development-remain consistent. Moreover, Ravid *et al.* argued that with the evolution of digital technology, electronic performance monitoring has become increasingly prevalent and applied more widely, and has now become a routine technical means for enterprises to observe, record, and analyze information related to employee work performance [2].

In summary, the dynamic evolution of the definition of electronic performance monitoring reflects the continuous refinement of its theory and practice. Domestic research in this field is still in its early stages, with related definitions primarily drawing on foreign research. Constructing a concept of electronic performance monitoring within the local context is a key task for future research. Despite varying expressions, scholars have reached a consensus on the core of this concept. Accordingly, this study defines electronic performance monitoring as the use of technological means to observe, record, and analyze information directly or indirectly related to employee work performance.

3. The measurement of electronic performance monitoring

As scholars have not yet reached a consensus on the definition of electronic performance monitoring, its dimensional and scale development also present diversified approaches. Previous studies often examined electronic performance monitoring from a single perspective and treated it as an important factor predicting employee behaviors and attitudes. However, with subsequent more in-depth research, scholars have gained a more comprehensive understanding, leading to studying electronic performance monitoring from two dimensions.

Currently, in empirical research on electronic performance monitoring, questionnaire surveys and experimental manipulation are commonly used for measurement. In experimental methods, the focus is mainly on measuring monitoring purpose, monitoring evaluation frequency, and monitoring nature. In scale methods, the focus is mainly on measuring the perceived purpose of monitoring, the extent of monitoring, and monitoring feedback. Details are as follows:

Stanton measured the extent and type of electronic performance monitoring in 2000 and developed a 7-item scale, for example, "To what extent are your email communications and internet activities monitored?"; Alder and Ambrose developed 2 items in 2005 to measure monitoring fairness, for example, "I believe the monitoring procedure used in this experiment is fair and reasonable"; Wells *et al.* developed a 6-item scale in 2007 to measure the purpose of electronic performance monitoring, including developmental and preventive dimensions, with 3 items each, for example, "The company implements the call monitoring system to assist employees in completing work tasks more efficiently" and "The company implements the call monitoring system to supervise and reduce employee misconduct"; Martin *et al.* developed 4 items in 2016 to measure the extent of electronic performance monitoring, for example, "To what extent are you monitored by video in your work"; Thiel *et al.* developed 4 items in 2022 based on the definition of electronic performance monitoring by Ravid *et al.* to measure the frequency with which employees are subjected to electronic performance monitoring [2,3]. Furthermore, McNall and Stanton used an experimental method in 2011 to measure customer service purpose and punishment purpose; Watson *et al.* used an experimental method in 2013 to measure synchronous electronic performance monitoring, asynchronous electronic performance monitoring, and no electronic performance monitoring; Siegel *et al.* used an experimental method in 2021 to measure supportive monitoring, controlling monitoring, and neutral monitoring [4]. This study uses the 4-item scale developed by Thiel *et al.* in 2022, with example items such as: "The information I send and receive on my work computer is automatically monitored [3]."

4. Research progress on electronic performance monitoring

Regarding research on electronic performance monitoring, there are relatively few studies on its antecedents. Most scholars focus on investigating its outcomes, primarily concentrating on employee work performance, work behaviors, and physical and mental health, among others. For example, Stanton and Barnes-Farrell found that employees who had the ability to delay or block electronic performance monitoring exhibited a greater sense of control and demonstrated superior task performance. Alge categorized electronic performance monitoring into privacy procedures and non-privacy procedures, confirming that monitoring work-related activities and involving those being monitored in the work process would reduce the perception of privacy invasion and enhance procedural justice. Jeske and Santuzzi found that close performance monitoring had a significant negative impact on employee work attitudes, such as job satisfaction and affective commitment [5].

Martin *et al.* drawing on psychological reactance theory, found that higher levels of perceived electronic performance monitoring at work led to worse attitudes towards workplace monitoring, which in turn made employees more inclined to engage in counterproductive work behaviors. Peng *et al.* shifted the research perspective to the gig platform and studied electronic performance monitoring by dividing it into developmental electronic performance monitoring and preventive electronic performance monitoring. The results showed that developmental electronic performance monitoring positively influenced sustained value co-creation behavior, while preventive electronic performance monitoring negatively influenced sustained value co-creation behavior.

Thiel *et al.* based on social exchange theory, argued that electronic performance monitoring promotes employee production deviance and, by undermining the exchange of social benefits, erodes leader-member social exchange, thereby inhibiting employee task performance [6].

From the perspectives of communication privacy management theory and self-determination theory, Wolff *et al.* found that high leader-member exchange based on trust reduced the privacy invasion caused by intrusive electronic performance monitoring [7]. Through the lens of stress cognitive appraisal theory, Cao and Luo found that electronic performance monitoring influences employees' responsible innovation behavior through dual pathways of challenge stress and hindrance stress. Based on organizational justice theory, Soomro *et al.* confirmed a positive link between electronic performance monitoring and individual performance [8]. Wang et al. empirically tested through psychological reactance theory, found that developmental electronic performance monitoring promoted proactive behavior, while preventive electronic performance monitoring inhibited these behaviors [9]. Yao *et al.* based on conservation of resources theory, demonstrated that developmental electronic performance monitoring positively influences employee innovative behavior, whereas preventive electronic performance monitoring negatively influences their innovative behavior.

5. Conclusion

This review highlights that electronic performance monitoring has evolved from a purely technological tool into a multifaceted organizational practice that simultaneously enhances managerial efficiency and shapes employee experiences. Existing research demonstrates that the effects of electronic performance monitoring are inherently dual-edged, where developmental monitoring can strengthen performance, creativity, and constructive behaviors, whereas preventive monitoring tends to evoke psychological resistance, reduce job attitudes, and increase the likelihood of counterproductive behavior. The current literature also reveals substantial diversity in measurement approaches, reflecting ongoing theoretical refinement. Overall, this study consolidates fragmented research findings, clarifies the conceptual and methodological progression of electronic performance monitoring, and underscores the need for localized measurement tools and deeper exploration of its underlying mechanisms.

Disclosure statement

The author declares no conflict of interest.

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