

To Study the Impact of Digital Surveillance Tools on Employee Efficiency and Performance

Dr. Balasaheb Shivale¹, Mrs. Pooja M Gaikwad²

¹Directors, Institute of Business Management and Research, Savitribai Phule Pune University, Pune, Maharashtra, India.

²Research Scholar, Institute of Business Management and Research, Savitribai Phule Pune University, Pune, Maharashtra, India

Abstract

In this digital era companies or organisation's are increasingly, so rely on surveillance tools like monitor is use to evaluate, and manage employee activities. Such system ranging from CCTV cameras and biometric attendance to software that tracks keystroke and online behaviour are designed to enhance the productivity and organisational efficiency. However, their uses like working employee also raises questions about privacy, autonomy, and psychological well-being. So the motive of this research paper presents a theoretical analysis of how digital surveillance affects employee efficiency and performance using secondary data, drawn from academic literature, industry reports, and previous research paper studies. The finding reveals that while surveillance can improve short term productivity and accountability, if the excessive or high tech monitoring get effects on employee productivity, can harm trust, creativity and long term motivation.

1. Introduction

The primary goal of digital surveillance is to enhance employee productivity and organizational performance by collecting and analyzing real time data on work behaviour, task completion and communication patterns. In this integration of digital technology into the workplace has revolutionized how organisation's manage their operations, workforce and productivity. Among this digital technological advancement have a powerful instrument that enable employer to monitor employee activities, and also monitoring their performance and ensure compliance with the organisational standards, this high tech monitoring technology include tracker,

biometric attendance devices, email and network monitoring software, GPS enabled field tracking and artificial intelligence (AI) based performance analytics. In this modern digital economy, particularly within the information technology sector, the use of such tools has become almost indispensable for maintaining operational efficiency and accountability.

The primary goal of digital surveillance is to enhance employee productivity and organizational performance by collecting and analyzing real time data on work behaviors task completion and communication patterns. Employers argue monitoring system is use to help reduce idle time, prevent data breaches, ensure ethical use or resource, and foster greater discipline among employees. Time doctor or Hubstaff are commonly used in IT companies for monitoring and track progress manage remote teams and evaluate individual contributions. These systems generate valuable insights that can help identify workflow bottlenecks, optimize project timelines, and allocate resources effectively.

However while digital surveillance can lead to measurable improvement in short term productivity in short term productivity ,it also raise ethical psychological and social concerns.Continuous monitoring may creates a sence of mistrust ,anxiety or pressure among employee potentially undermines job satisfaction and intrinsic motivation

From a theoretical standpoint, the relationship between surveillance and productivity can be explained through frameworks such as the Hawthorne effects and self-determination theory. The challenge for organizations, lies in implementing surveillance tools that promotes accountability and efficiency without compromising trust and employee wellbeing. In the broader perspective, digital surveillance is not a technical issue but also a strategic management and ethical concern.Its impact on employee efficiency depends largely on how it is designed communicated and integrated within the organisational culture .Transparent policies, employee consent, and the use of data for development rather than punitive on can transform surveillance from a mechaznism of control into a tool for performance enhancement.

Thus this study explores the impact of digital monitoring tools on employee efficiency and performance through theoretical lens, supported by secondary data from existing literature review. It aims to analyze both positive and negative implication of monitoring systems in the workplace and propose strategies for ethical and balanced implementation that sustain productivity while preserving employee trust and morale.

Meaning of Digital Surveillance :

Digital surveillance” at work covers Electronic Performance Monitoring such as keystrokes, screen capture and time tracking, algorithmic management system that allocate task and evaluate performance and biometric location based monitoring. EPM is often describe as automated collection of digital traces to measure work activity, algorithm management adds automated decision making about work allocation evaluation and reward.

Objectives of the Study :

1. To study the positive impacts of surveillance on employee efficiency.
2. To examine the negative consequence of digital monitoring on employee performance and morale.
3. To study the purpose and types of digital surveillance tools used in organizations.
4. To study strategies for ethical and balanced implementation.

Research Gaps:

The secondary literature highlights important gaps .

Quality Vs Quantity tradeoffs: Limited focus on how monitoring affects work quality error rates and downstream customer outcomes.

Limited Longitudinal and Causal Evidence

Most existing studies on digital workplace surveillance are cross-sectional and rely on self-reported perceptions. There is a lack of long-term or experimental studies that establish *causal* links between surveillance intensity and employee performance or efficiency over time

Neglect of quality-oriented performance metric

Many studies emphasize quantitative indicators such as time on task or productivity counts but overlook qualitative aspect creativity ,innovation and collaboration. This creates a gap in understanding how surveillance affects quality of work *and* creative performance.

Underexplored Mediating and Moderating Mechanisms

Although studies mention variables like trust ,autonomy, few have tested these systematically as mediators or moderators between surveillance and performance outcomes. Understanding these mechanisms can clarify how and why surveillance lead to specific results .

Insufficient Focus on ethical and Psychological Implications

While ethical concerns are often discussed conceptually, there is little empirical evidence on how ethical awareness, transparency, and Privacy assurance mediate employee psychological safety and motivation under digital monitoring..

2. Concept of Digital Surveillance.

2.1 What is digital Surveillance?

Digital surveillance refers to the collection, analysis and storage of employee data using technological tools for performance evaluation and compliance purposes. It encompasses both physical monitoring like CCTV, biometrics and virtual tracking software activity logs, email monitoring, keystroke analysis.

2.2 Types of Digital Surveillance Tools

Digital surveillance tools influence efficiency of employee through multiple dimensions: motivation, trust, accountability, and autonomy.

1. Computer and Network Monitoring Tools: E.g of computer and monitoring tools are Track application, Usage, Website visit and email traffic.
2. Biometric and Access control system: Record attendance, working hours and access to restricted areas.
3. AI Powered Monitoring Systems which is use for algorithms/ to assess productivity pattern and detect irregularities.
4. CCTV and Video Surveillance –Ensure physical security and compliance.

Remote work tracking software is used for monitoring distributed or hybrid workforce performance.

2.3 Theoretical Basis

Hawthorne Effect is theory which say employee temporarily improve performance when they know they are being observed.

Control theory is used to monitoring helps align individual goal with organisational objectives.

Self-determination theory Deci and Ryan is excessive control reduces intrinsic motivation and creativity.

Digital surveillance had some positive and negative effects which as follow:

• Positive Effects

1. **Enhanced Accountability:** Employees tend to adhere to organizational policies more strictly when they know activities are monitored.
2. **Reduced Idle time :** Monitoring systems discourage wastage of time and personal use of company resources.
3. **Data-Driven Performance Evaluation:** Real-time analytics help managers to identify top performers and areas needing improvement.
4. **Operational Tranperancy :** Surveillance creates objective records that can resolve workplace disputes fairly.

• Negative Effects

1. **Reduced Trust and Morale :** Employees often perceive surveillance as a lack of faith in their integrity.
2. **Psychological Pressure:** Constant observation can induce anxiety, fatigue, and reduced engagement.
3. **Loss of Creativity:** Strict monitoring discourages experimentation and open communication.
4. **Privacy Concerns:** Invasive monitoring can blur the boundary between professional and personal life, especially in remote settings.

- **Moderating Factors**
- **Transparency:** Clearly communicating the purpose and limits of surveillance reduces resistance.
- **Organizational Culture:** A culture of openness and mutual respect can mitigate negative perceptions.
- **Leadership Style:** Supportive and participative leadership enhances acceptance of monitoring systems

3 literature Review

Numerous studies have explored the impact of workplace surveillance on performance, Some positive impact, some negative impact and some balanced perspective.

- **Positive Impact:**

According to Brown in 2019 says that surveillance system improves employee accountability and reduce time theft. Surveillance is also important improve the productivity of employee and awareness or reduce the time theft.

According to the report by deloitte in 2021 found that companies using AI –based productivity tracking observed a 12 to 18% rise in measurable efficiency metric.

According to kumar & Singh 2020 Surveillance helps to detect workflow bottleneck and enables better resource allocation.

- **Negative Impact :**

Talking about the negative impact lee 2020 found that continues monitoring leads to psychological stress and reduces job satisfaction. A study by Harvard business review in 2021 indicated that excessive monitoring lowers creativity and innovation in knowledge based jobs. And ethical concerns such as data privacy, consent and misuse of personal information have led to increased employee distrust.

Regarding Balanced perspective Garcia and tan in 2022 says emphasizes that transparent communication about surveillance policies minimizes negative perceptions. Hybrid monitoring focused on result rather than activity enhances both trust and performance.

3. Empirical finding of secondary literature review.

Effects on measurable performance: Meta-analysis and empirical studies report mixed, context-dependent effects .some form of EPM especially those that provide timely feedback or structure routine task are associated with small to moderate improvement in objective productivity metric. However these gains are heterogeneous often short lived and sometime come with tradeoffs in quality or employee wellbeing.

Effects on attitude, stress, and trust: A robust finding across meta analytic and survey literature is that intrusive monitoring tends to decrease job Satisfaction decrease psychological stress, and erode trust in management—particularly when monitoring is non transparent or perceived as punitive. These negative outcomes can undermine long term performance, increase counterproductive behaviors.

Effects on creativity and adaptive performance.

Task requiring judgment, improvisation, creativity algorithmic controls and narrowly defined metrics often reduce adaptive problem solving and creative output. Algorithmically driven task allocation and metricized performance incentives can crowd out discretionary effort and complex problem solving that do not map neatly to tracked metrics.

Sector and role specific differences.

Platform worker and front line customer service roles experience high exposure to algorithmic management, for them ,monitoring can both enable performance and intensify precarity and stress producing a double edged sword pattern.

4. Methodological approaches in secondary literature:

The existing secondary source summarize primary studies describe the Meta analyses and systematic review aggregating effect sizes across context which help full for estimating effects on job satisfaction, stress and productivity. Quasi experiment pre and post implementation and field studies using log data combined with surveys to link objective performance and subjective perception. And Qualitative case studies and ethnographies revealing micro processes, worker strategies of resistance and design details that quantitative work can miss.

5. Synthesis and implication for as study focused on efficiency and performance.

From the secondary literature three actionable are

Expert heterogeneity not a universal effects: In this surveillance can raise short term measurable efficiency in routine, well defined task but often at the cost of wellbeing, trust and creative quality outcomes. Design and framing matter. Whether surveillance is development or punitive is primary moderator include measurement of perceived purpose and transparency in any model.

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Measure mediators and boundary conditions. Include autonomy, perceived fairness, stress, and algorithmic explain ability as mediators, include task type, role, and dependence on employer as moderators. Longitudinal or quasi-experimental designs that combine log-data with survey measures are preferred for causal inference.

Below table mentions different digital surveillance technique used public and private sector.

	Surveillance technique used (N=250)	
	Frequency	Percent
Digital Camera Surveillance	241	96.2%
Internet Monitoring	65	25.8%
Location Tracking	89	35.8%
Task Monitoring	92	37.0%
Facial Recognition Software	146	58.2%
Finger Print Software	217	86.8%

Surveillance Enabled Light Bulbs	64	25.4%
Thermal Imaging System	223	89.2%
Data Analytics Software	86	34.4%
Social Media Software	80	32.0%
Smart Phones	54	21.6%
Smart Watches	36	14.6%

Table 1: Extent Of Different Digital Surveillance Methods Used by The Organizations

Source: Dr. Santosh Bali, Dr. Gursimran Singh, Dr. Nidhi Aggarwal, Dr. Rajni, (2025) Digital Surveillance in the Workplace:

Above table no 1 shows extent of use different types of surveillance use by public and private sector companies. Out of 84 used by public sector employees, that is 95.3% and out of 166 is used by private sector employees, approximate 96.7% said that their organization used digital cameras for surveillance. The test proportion was not significant suggesting that the proportion of public and private sector companies had similar levels of usage of digital cameras. The public sector organisation's used internet monitoring, while the proportion was much higher at 34% for private sector.



Figure 1: Conceptual model showing the impact of workplace surveillance on employee efficiency and performance (adapted from Kayas, 2023; Siegel et al., 2022; OECD,

This above diagram showing the impact of workplace surveillance on employee efficiency and performance.

6 Implication for Organizations

1. Strategic Implementation: Surveillance should aim to improve processes not to punish individuals.

2. Employee Guidelines: Develop clear policies outlining what data is collected and how it is used.
3. Employee consent : Involves employee in discussions and monitoring practices.
4. Training and awareness: Educate both managers and employees about ethical and legal dimensions of digital surveillance.
5. Performance Metrics: Shift from activity tracking to outcome based evaluation to preserve autonomy.

Major Findings

1. Digital workplace surveillance tools can increase short-term employee efficiency by reducing idle time and improving task completion rates.
2. However, excessive or non-transparent monitoring often leads to reduced job satisfaction, higher stress, and lower trust, which can harm long-term performance.
3. The purpose and design of surveillance—whether developmental (feedback-based) or punitive—significantly influence employee reactions and overall productivity outcomes.
4. Studies in IT and knowledge-based sectors show mixed effects, suggesting that surveillance improves measurable output but may diminish creativity and innovation if perceived as overly controlling.

Suggestions

- Organizations should implement digital surveillance tools with transparency and clear communication to build trust among employees.
- Monitoring should be used for developmental purposes, such as feedback and performance improvement, rather than strict control.
- Regular employee involvement and ethical data policies can minimize negative perceptions and stress.
- Encourage employee feedback to improve monitoring systems .
- Uses of monitoring technology to support employee development, not merely to supervise behavior.

Conclusion

Digital surveillance can enhance employee efficiency when applied responsibly, but excessive or punitive monitoring may reduce morale and creativity. A balanced approach—combining ethical use, transparency, and supportive intent—is essential to ensure that surveillance strengthens both performance and employee well-being in the workplace.

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