

Artificial Intelligence Adoption and Labour Relations Transformation in Organisations

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Abstract

This paper explores the links between the use of Artificial Intelligence (AI) and how labour relations are changing in the modern workplace. The aim is to analyze the impact of AI technologies such as; machine learning, automation and others) on job design, supervision of workers, autonomy of workers, organizational relationships and employer–employee relationships. The study uses the conceptual research design which is based on reviewing and synthesizing the theoretical perspectives, especially Socio-Technical Systems Theory and Technological Determinism. The results showed that AI implementation could have enabling or restricting effects on labour relations, depending on the design, implementation and governance of AI technology. While AI has potential to enhance organisational efficiency, decision-making, productivity, and work processes, it can also create job redesign, skill transformation, dependency on automation, decreased autonomy, surveillance, algorithmic opacity, concerns of fairness, and lessened employee voice. The paper concludes that AI is not just a new technology, but a structural change that is changing labour relations. Therefore, ethical governance, transparency and inclusive management are crucial for sustainable and balanced digital workplaces.

Keywords: *Artificial Intelligence Adoption, Socio-Technical Systems, Job Redesign and Skill Transformation, Worker Autonomy and Control*

Date of Submission: 26-09-2026

Date of Acceptance: 05-10-2026

I. Introduction

The surge in technology called Artificial Intelligence (AI) has revolutionized the way companies function, compete and hire staff. AI technologies, including machine learning, robotics, NLP, predictive analytics and others, are being used more and more in various industries to aid in making decisions, improving operational efficiency and automating repetitive tasks. AI has been hailed as a revolutionary force in today's workplaces, impacting the way things are done as well as the organizational design and management of human resources (Brynjolfsson & McAfee, 2014). There are several sectors that have embraced the use of AI systems for process optimization, cost reduction, and productivity gains. AI systems have been adopted by several industries to enhance processes, lower costs and boost productivity. For instance, many workplaces now employ automated systems for making decisions, AI systems to handle recruitment, or algorithmic management platforms. The technological developments are great opportunities for organizational growth, but they also pose questions that need to be addressed regarding changes in employment relationships, job security, employee roles and power dynamics in organizations as a result of the introduction of AI.

Human-to-human relations, collective bargaining, management power and workplace policies have always been important factors in determining labour relations. But, when AI systems come into play, decision-making in an organization is being done more and more with algorithms than with humans. This change will impact the nature of work and traditional working relationships such as job design, performance assessment, monitoring, autonomy, and union representation. Consequently, the implications of AI have an impact on worker identity, the control of the workplace, and the psychological contract between employers and employees. AI technologies have been shown to have a potential impact on labour relations, both positive and negative. On the other hand, AI can help with productivity, eliminate repetitive and dangerous tasks for workers, and empower them to engage in more creative and strategic tasks. Conversely, the implementation of AI can also lead to job displacement, a lack of job skills, monitoring, and heightened anxiety among employees about job security. Many jobs, for example, can be automated, as many workers may lose their jobs to automation and inequality (Frey & Osborne, 2017).

Furthermore, there are ethical and managerial issues surrounding fairness, transparency and accountability in algorithmic decision making, which should be taken into consideration when considering AI adoption. Recruitment, performance evaluation or workforce planning algorithms designed to make use of AI can inadvertently perpetuate biases or lack transparency with regards to managerial decisions. This can affect employee trust, fairness and justice in the workplace. Although AI technologies have garnered growing interest from scholars, there are some key areas in which further research and understanding are needed on the intersection between AI uptake and labour relations. The literature available is mainly about the technical capabilities or the efficiency of an organization and has limited attention to the impact of AI on the nature of labor relations, including employee voice, negotiation of workplace issues, job security, and psychological contracts. Furthermore, the majority of research is focused on the developed economies and sectors, which means there remains a gap in knowledge about the impact of AI on labour relations in developing countries and emerging economies.

In addition, although some research considers the possibility of replacing human labor with AI, few investigations have explored how AI is impacting the relational components of work, including the trust between employers and employees, employee representation through collective action, and human-AI working in tandem. Weak regulation, low digital skills and changing labour market structures create a context of uncertainty regarding the multi-dimensional impacts of AI in labour relations, which is largely under-researched. The aim of this study, therefore, is to fill this void by exploring the impact of AI usage on the labour relations in organizations. This research seeks to develop a more comprehensive understanding of the implications of AI for modern labour relations by exploring how the application of AI technologies impact the structures, power dynamics, employment conditions and experiences of workers.

II. Literature Review

2.1 Artificial Intelligence Adoption

The systematic use and incorporation of AI-based technologies in organizational processes to improve, assist or even replace decision making by humans, is called Artificial Intelligence (AI) Adoption. These technologies are also powered by machine learning algorithms, robotic process automation (RPA), natural language processing (NLP), and expert systems, which allow companies to handle vast amounts of data, detect patterns and generate intelligent responses with minimal human effort. Today, AI is not just used in "experiments" but is an integral part of digital transformation programs to increase efficiency, accuracy, competitiveness in modern companies. Based on three factors, Davenport and Ronanki (2018) classified the adoption of AI in organizations as follows: cognitive insight generation, cognitive engagement, and process automation. Process automation refers to the automation of repetitive tasks that are performed based on rules and performed by humans. This involves tasks like data entry, payroll processing, inventory management, and routine administrative tasks. The automation of these processes can help organizations to save on operational costs, reduce human error, and make processes more efficient.

The second type of cognitive insight generation is when AI systems process vast amounts of information to identify patterns, make forecasts and recommendations to help managers make decisions. In HR, AI can help forecast employee attrition, help determine if a candidate is likely to be a high performer in the recruiting process, and analyze the productivity of employees. Predictive Analytics can help predict changes in demand and optimize logistics planning in supply chain operations. It's a way of using AI that adds value to the quality of the decisions made by the user, by giving them evidence-based insights, which can be difficult to see by using traditional analytical methods. Cognitive engagement involves AI systems that directly engage with people in conversational interactions like chatbots, virtual assistants, and customer service representatives. The purpose of these systems is to imitate the human interaction, which enhances the customer experience, agility and effectiveness of services. In an organizational environment, cognitive engagement tools are becoming more popular with client relationship management, employee support and intra-communications. In addition to these practical uses, there are many organizational implications when it comes to the use of AI. It's not just about the technology; it's about changing

the way work is done, the organizational structure, and management processes. AI is also frequently used in conjunction with changes in organizational structure as there is a shift towards data-driven decision making and away from subjective judgment. This change could lead to a decline in the influence of middle-management, and an employee's role as a Data Scientist, Systems Designer or Technical Specialist gaining greater influence within the organization.

Moreover, AI integration results in job redesigns and alterations in job tasks. Routine and repetitive tasks have been automated, and jobs are now increasingly taking on more supervisory and interpretative functions and solving complex problems. This shift necessitates employees to acquire new digital and analytical abilities and therefore continual demand of reskilling and upskilling. This has led to a heightened demand for organizations to invest in their personnel's training and development to make their workforce adaptable to AI-driven work environments. Besides, there are also changes in managerial authority and control systems with the adoption of AI. The traditional management was much dependent on the judgments of humans and hierarchical decision making process. As AI systems have become more integral in decision-making processes surrounding recruitment, performance assessment and task allocation, however, so have the powers of managers. But, with AIs playing a larger role in recruitment and performance assessment decisions, as well as task allocation, managerial power is now somewhat delegated to AI systems. Also dubbed as algorithmic management, this phenomenon shifts the power balance between managers and workers, when decisions are more standardized, data-driven and opaque to workers. The introduction of AI isn't just a matter of technology; it's a multi-faceted shift in the way businesses operate. It changes work practices, roles and power and authority relationships in the workplace. Thus, a technical view of AI adoption is not enough; a socio-organizational view is necessary that takes into account a wider perspective of the implications of AI for work, employment and labour relations.

2.2 Labour Relations

Labour relations are the institutional, legal and social framework that regulates the relationship between the employer, employee, the trade unions and regulatory bodies in the workplace. It covers various aspects such as job contract negotiations, collective bargaining, collective grievance procedures, employee involvement, labour law compliance, dispute resolution, and more. Labour relations are essentially a process of allocation and utilization of labour's power, rights and responsibilities in the process of work relations. Kaufman (2010) emphasizes that labour relations systems are dynamic as a result of changing economic factors, institutional structures and bargaining power between labour and management. These enable them to be heard, to have influence in decisions made by the organization and to protect their interests in the workplace.

Labour relations have traditionally been based on the direct interaction between people and the negotiation processes between the management and labour representatives. Collective bargaining, especially, has been a very important tool in the process of balancing power differentials between the employer and employees, providing fair compensation, workplace safety and mediation procedures. But, traditional concepts are being challenged due to changes in technologies in the workplace. In recent years, new types of workplace governance have emerged that are not just based on human interaction but also on digital platforms, remote work systems and data-driven management. Consequently, the nature of employer - employee relationship is changing, moving away from personal interaction and towards mediated, through technologies, interaction.

Modern businesses are increasingly transforming labour relations with the use of cutting-edge digital tools, especially Artificial Intelligence (AI). The use of workforce analytics, automated recruitment platforms, and algorithmic performance evaluation systems, among others, that utilize AI to track, evaluate, and manage employees is growing. The systems are able to move decision-making from human managers to algorithms based on data, which in turn changes traditional supervision systems. According to scholars, this change is an example of a new "algorithmic governance", in which decisions in the workplace are made based on algorithms instead of through human interaction or managerial discretion (Kellogg et al., 2020). This change is timely because it brings significant issues of transparency, accountability and fairness to the forefront on employment.

Furthermore, AI-powered labour relations systems have widespread ramifications for employee voice, autonomy in the workplace, and collective representation. Digital monitoring tools can lead to greater managerial oversight of workers' activities, which may decrease workers' autonomy and affect their ability to engage in informal bargaining and/or grievance resolution. Algorithmic decision-making could also reduce the power of workers' representatives, as it makes decision-making more centralized within a technological system that is not easily accessible or understandable to workers' representatives. Such developments are part of a broader trend toward "surveillance capitalism" in which data about individuals' behaviour is constantly captured and leveraged to improve organizational systems of control, Zuboff (2019) argues. This means that work relations are becoming more and more asymmetrical, more opaque and changing in terms of the power distribution between employers and employees, leading to new challenges that AI can't solve. Labour relations in the age of AI is therefore becoming more and more characterised by asymmetrical information flows, less transparency, and shifting power dynamics between employers and employees, which are now posing new challenges that AI can't solve.

2.3 Theoretical Foundations

2.3.1 Socio-Technical Systems Theory

Socio-Technical Systems (STS) Theory offers a basic framework to view how technology and social systems interact in organisations. This theory focuses on the optimum or “synergistic” operation and effectiveness of two interdependent subsystems, the social system and the technical system. Social system are people, roles, communication, leadership and work relationships, and technical system are machines, tools, processes, and technologies required to perform organizational tasks. In his pioneering research on workplace organization, Trist and Bamforth (1951) showed that efficiency and workplace dissatisfaction can occur when workplace organisations are overly technical and ignore social aspects. The STS perspective is that the social implications of technological implementation should not be divorced from technological implementation. Technologies are not just tools, but they need to be well integrated within human roles, organizational culture and relationships in the workplace to be effective. The STS theory is applicable to the adoption of AI because it asserts that AI systems need to be created and deployed in a manner that aligns with, enhances and does not supplant or detract from the abilities of humans. For instance, the integration of AI in HRM changes communication patterns, decision-making processes, and teamwork between HR professionals and managers.

In the context of labour relations, STS theory can be applied to a specific focus on the impact of the use of AI on relations at work. AI-based systems change traditional jobs, by redistributing work between humans and machines. This reconfiguration results in changes in authority structures, more and more decision making is data-driven and system-dependent. The face-to-face communication between employers and employees could diminish as the reliance on AI-driven communication tools grows, which may impact trust and informal negotiation processes. Face-to-face communication between employers and employees may be diminished with increasing reliance on AI-driven communication tools, potentially reducing trust and informal negotiation channels. Thus, STS theory emphasizes the need to consider technological efficiency and the well-being, participation, and stability of employees when implementing AI in the workplace.

2.3.2 Technological Determinism

Theoretical approach explaining social/organizational change as a result of technological innovation is called technological determinism. In this perspective, technology is not a mere tool operated by people, but is a process that defines social structures, organizational behaviours and economic systems. Technological determinism in the context of Artificial Intelligence (AI) implies a process where the pervasive use of AI systems inevitably alters the nature of work, employment dynamics, and governance of workplaces. This viewpoint has been supported empirically by Frey and Osborne (2017) who show that a large number of current jobs could be automated by technological developments (machine learning and computation). Their study finds that occupations that are less routine, and those that require more cognitive and creative abilities are less likely to be displaced, whereas less cognitively and creatively oriented occupations are more likely to be displaced. The shift is part of a larger reconfiguration of occupational categories in which human labor is increasingly being focused upon those occupations that demand high levels of complex judgment, emotional intelligence and problem-solving skills. In the context of labour relations, technological determinism aids in understanding the changes in control mechanisms in organisations in the context of AI adoption. AI is increasingly being used in various aspects of the management process, including recruitment, employee performance monitoring, and task assignment, which is shifting decision-making from human managers to AI-driven systems. This change will limit the ability of managers to make discretionary decisions and heighten the need for reliance on automated systems that rely on data inputs and predictive models. Consequently, labour relations are subject to less interpersonal negotiation, are more structured and standardized.

Moreover, the technological determinism emphasises the larger societal impacts of AI adoption, such as altering employment security and job inequality. With the rise of AI in organizations for efficiency and cost savings, employees might feel more vulnerable to job loss and be asked to acquire new skills. This gives rise to a dynamic labour market characterised by the constant reshaping of employment conditions and employer/employee power relations as a result of technological changes. Considering technological determinism, then, AI is an instrument that changes the shape and dynamics of the labour relations in modern organizations in a fundamental way.

2.4: Job Redesign and Skill Transformation

The use of Artificial Intelligence (AI) by organizations is rewriting the concept of work, in a way that fundamentally changes the nature of the work by redesigning jobs and transforming skills. The nature of tasks performed by humans is changing as AI systems take over repetitive, rule-based and routine tasks. The nature of tasks performed by humans is changing as repetitive, rule-based and routine tasks are increasingly taken over by AI systems. It's not just about changing job roles, but also creating new skills that workers need to have in order to stay relevant in an AI-powered world. It's not just about the job description but also the skills that need to be

acquired to be relevant in an AI-powered workplace. Intelligent systems are increasingly taking over tasks previously done manually and cognitively by humans, including data entry, basic analysis, and administrative coordination, among others, which decreases the need for repetitive manual and cognitive tasks. This is called the polarisation of the labour market by labour economists and is attributed to the rise of technology, which reduces demand for middle-skill, routine-based jobs and raises the demand for high-skill, analytical jobs and low-skill service jobs (Autor, 2015). This is where AI/automation has a disproportionate impact on jobs that involve predictable and repetitive work, and adds value to the jobs that require non-routine cognitive jobs or jobs with complex systems. Consequently, organisations see the evolution of job structures, where there is a focus on specialist digital skills, data literacy and technological adaptability.

This continuous change brings about considerable tension in the organization regarding the labour market. Organizations are increasingly demanding of employees that they must continuously learn, reskill and upskill in order to be employable in the changing work environment. But, the opportunity to train is not the same for everyone and there are inequities in terms of being adaptable and moving up in the job. Such disparities can be factors in job insecurity, opposition to technological shifts and in labour relations. AI adoption therefore calls for job redesign, much more than just a technical change, it's a socio-economic issue that can affect employee morale, workplace stability and even organisational cohesion.

2.5 Employee Work Performance Management System

Algorithmic management involves leveraging AI systems and data platforms to assign tasks, track employee actions, assess performance, and aid in managerial decision-making. Unlike traditional management that heavily relies on human judgment and interpersonal supervision, algorithmic management brings real-time monitoring and control mechanisms which are embedded in digital platforms, and which are based on algorithms. The systems can capture huge amounts of information from employee productivity, attendance, task completion, and behavior, among other factors, and analyze it to make management decisions. Such a change has an important impact on human discretion in management issues, such as performance assessment, task allocation and disciplinary measures, increasingly based on algorithmic output. This may help streamline, improve, and objectify the decision-making process, but poses significant questions about transparency, accountability, and fairness in the workplace. There can be a lack of understanding for employees about how decisions are made using algorithms, leading to a sense of opacity and loss of trust in organizational processes.

Kellogg, et al. (2020) termed this as “digital Taylorism” which is an extension of the scientific management principles in the classical era where worker behaviour is constantly monitored, analysed and optimized using digital technologies. Under this model, AI-powered platforms serve as digital shields of constant monitoring and optimization, allowing businesses to keep a close eye on employee activities in real time. Such systems could enhance productivity and the efficiency of the operation, but they could also create new, more subtle and all-pervading forms of workplace control that are invisible to the naked eye. The ramifications of the algorithmic management are important in relation to labour relations. With more technology being used to monitor, it can lead to reduced employee trust because they feel there is a non-transparent monitoring system. It may also lead to concerns about fairness and fairness perceptions, especially in cases of algorithmic fairness concerns and decisions. Moreover, the less the human judgement is involved in assessment, the less such dialogue, negotiation and resolution of grievances is available. Consequently, algorithmic management has brought about a radical shift in labour relations, moving the power balance towards algorithmic systems in favour of data and changing the nature of the control and accountability in the workplace.

2.6 Worker autonomy and control

Organizational use of Artificial Intelligence (AI) has also brought with it many conflicting implications for autonomy and control of workers. AI-powered automation can boost autonomy for employees by reducing repetitive and time-consuming tasks, thus freeing them up to do more strategic, creative, and value-added work. AI automation can improve employee autonomy by eliminating repetitive and time-consuming tasks, freeing up time to engage in more strategic, creative, and value-added work. For example, if administrative or data processing tasks are automated, staff may have more time and mental energy to devote to other tasks, such as engaging in innovative activities, which can enhance their job satisfaction and performance. AI can be used as an enabling technology, complementing human capabilities, in this sense. Conversely, AI systems also have the potential to greatly diminish workers' autonomy by employing increased surveillance, monitoring, and algorithmic control. There are numerous workplace systems in use that utilize the power of artificial intelligence to monitor employee performance as it happens, from productivity to task completion time, the way they communicate to even their behavior in general, such as responsiveness and engagement. This ongoing surveillance may restrict the flexibility employers have over employee performance by subjecting their daily activities to constant performance-audits and analysis by algorithmic standards. This can lead to workers' feeling under pressure to perform to the expectations of the system, not to those of their own. This can create a pressure to do things exactly as the system tells them to, without independent thought or creativity.

The two ways this works together, results in an internal conflict in labour relations as workers feel empowered and constrained at the same time in an AI environment. Some parts of work are more flexible and more stimulating and engaging intellectually; other parts of work are more algorithmic and more standardized. This paradox may cause psychological pressure and lower employee satisfaction with their jobs, as well as confusion regarding how much autonomy their jobs have. AI thus has implications for task design beyond the mere structural and legal changes, as it also changes the sense of control in the workplace, with autonomy becoming a matter of contention and evolution in the context of contemporary working relations.

2.7 Power Relations and Negotiation

Another major power shift in the use of AI is the introduction of technology-based decision-making processes that displace the direct decision-making power of individuals. Adoption of Artificial Intelligence also has a significant impact on organizational power dynamics as decision-making authority is shifted toward technological systems, system designers and data controllers. In the past, power was defined in the workplace between managers and workers in hierarchical structures and by negotiation, including collective bargaining. As technology continues to advance and AI tools are growing in use for decision-making, there is a new kind of authority that is intrinsic to algorithms, that is controlled by the technology's creators, managers and interpreters. This change diminishes the leverage of unions and workers in the workplace because many of the decisions that can be made at work are now shaped or dictated by not easily accessible or negotiable automated systems. For instance, algorithmic outputs can be used to a certain degree or in their entirety to inform hiring, promotion, task allocation, and/or performance evaluation processes. This makes room for fewer human negotiations, and decreases the amount of room that employees have to challenge and question decisions, particularly if the algorithmic processes are not fully disclosed or are opaque.

This is explained by Zuboff (2019) during the concept of “surveillance capitalism”, digital technologies create asymmetries of knowledge and control between organizations and individuals. Organizations gather huge amounts of behavior data in these systems and use these data to forecast and shape employee behaviors. It gives managers more information power to enhance their surveillance and at the same time reduces the power of the employees and their autonomy. The traditional power balance in labour relations is thus upset. This change has important ramifications for collective bargaining and democracy at work. As decisions become increasingly entrenched in technical algorithms which are not transparent and are made by technical specialists, trade unions will have to struggle to negotiate effectively. Furthermore, the workforce has the potential to lose out on the sense of effective engagement and contribution to governance in the workplace, with increased data and centralization in decision making. This has not only changed the way things work but also the power dynamic that impacts labour relations in modern businesses.

2.8 Discussion

The introduction of Artificial Intelligence (AI) in the organizational system marks a radical shift in the definition of labour relations, influencing the nature of work organization, management and experience. AI can improve efficiency, productivity and make better decisions, but it also poses new forms of controls, surveillance and inequality in the workplace (Brynjolfsson & McAfee, 2014; Davenport & Ronanki, 2018). The two-way implications of this are why the use of AI is one of the biggest factors in transformation of today's industrial relations systems. The first implication of adopting AI is the further escalation of monitoring and control in the workplace, via algorithmic systems. Unlike the typical supervisory systems that depend upon manual, human interaction, AI systems gather and evaluate employee data continually, such as productivity, behavior, and how tasks are carried out. This is a change in managerial control to digital spaces – what Kellogg, Valentine and Christin (2020) call “algorithmic management” or “digital Taylorism” – that involves the systematic measurement and optimisation of employee behaviour through automated systems. This has led to the growing influence of data – based surveillance systems on labour relations, as opposed to face-to-face negotiation.

On a theoretical level, AI implementation poses a threat to the prevailing human-oriented approach in labour relations, which includes collective bargaining, discussion, and management. Kaufman (2010) noted the negotiation of power relations between employers and employees, as well as between trade unions and employers is very critical in the establishment of labour relations systems. Yet, as algorithmic decision-making grows and becomes more prevalent in the workplace, transparency is becoming more problematic, with workers having a hard time interpreting and challenging management decisions. This lack of transparency reduces employee engagement, and denies employees the chance to be meaningfully involved in decision making processes. Moreover, Frey and Osborne (2017) claim that occupational structures are also changing due to the use of automation technologies, thus further threatening the traditional systems of relations and bargaining. But also, the use of AI-based systems impacts on the way employees speak and empowers democracy within the workplace. What is seen is increases in the extent to which employees are losing control over the outcomes in the workplace, as they become more part of the technological system. What is seen is that employees have less and less agency over the outcomes in the workplace as they become more a part of the technological system. This transformation

will impact trust, fairness and procedural justice in the organisations, with workers potentially feeling that algorithmic decisions are impersonal, or that they are biased (Zuboff, 2019). This can lead to the traditional grievance handling and negotiating processes being less effective in AI-driven settings, undermining the institutional framework of labour relations.

But the implications of AI in labour relations are not all bad or predeterminate. AI technologies can also support the working environment in a way that minimizes repetitive tasks, increases the efficiency of tasks performed and makes them safer to do. For example, automation of routine tasks means that employees can devote more time and resources to higher-value cognitive and creative tasks, which will enhance their job satisfaction and productivity (Autor, 2015). Further, AI-powered systems can facilitate flexible work options and optimize the use of resources, leading to enhanced work-life balance and organizational flexibility. Thus, the impact of using AI in labour relations will depend on the organization's design and implementation of this technology. The use of AI systems that are transparent, protected by ethical guidelines and implemented with employee engagement can be a complement to human work and improve workplace efficiency without violating the rights of employees. However, if AI is used mostly as a means of surveillance and control, its impact can be to further perpetuate power disparities and undermine staff-employer relationships (Kellogg et al., 2020; Zuboff, 2019). This underscores the need for governance mechanisms to govern AI in the work environment.

2.9 Conclusion

The paper has theoretically explored the linkages between the adoption of Artificial Intelligence (AI) and the shift in the nature of labour relations in modern organisations. It sees AI as more than just a tool, but a force that is transforming employment dynamics, governance models in the workplace and the entire power dynamics of organizations. The study highlights the complexity of the relationships between AI adoption and the labour relations through socio-technical systems, institutional and technological determinism lenses. The theoretical considerations emphasize that the use of AI is more than a mere efficiency booster; it is a transformative process that can influence the organization, management, and perception of work. In general, the paper adds to the ongoing scholarly debate around the future of work by highlighting the need to consider AI-induced transformation in a broader socio-organizational context. It highlights the need to implement balanced, ethical, and inclusive strategies for integrating AI into the workplace to ensure the well-being of employees, create equitable employment practices, and foster sustainable relations in the digital age.

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