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Impacts of Artificial Intelligence on the Global Workforce: Social and Economic Challenges

Impactos de la Inteligencia Artificial en la Fuerza Laboral Global: desafíos sociales y económicos

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This article examines the impacts of artificial intelligence (AI) on the global workforce, highlighting the dual nature of AI as both a catalyst for innovation and a source of disruption. By automating routine tasks, AI technologies foster the creation of new job categories and alter existing wage structures, thereby reshaping the employment landscape. Through an exploration of AI's role in various sectors, including a detailed case study on its application in educational assessment within the Hawaii State Department of Education, the paper investigates the broader implications of AI integration across industries. It addresses the resulting legal and regulatory challenges, particularly in terms of labor protection, and taxation. Furthermore, the discussion extends to the societal responses to automation-induced job displacement, such as the proposals for Universal Basic Income (UBI) and robot taxes, offering insights into their potential effectiveness and limitations. The article concludes by emphasizing the necessity of a balanced approach to AI integration, advocating for continuous dialogue, research, and policy development to leverage AI's benefits while ensuring equitable opportunities and protections for workers in an increasingly automated future.

Este artículo examina los profundos impactos de la inteligencia artificial (IA) en la fuerza laboral global, destacando la naturaleza dual de la IA tanto como catalizador para la innovación como fuente de disrupción. Al automatizar tareas rutinarias, las tecnologías de IA promueven la creación de nuevas categorías de empleo y alteran las estructuras salariales existentes, remodelando así el panorama laboral. A través de una exploración del papel de la IA en varios sectores, incluyendo un estudio de caso detallado sobre su aplicación en la evaluación educativa dentro del Departamento de Educación del Estado de Hawái, el artículo investiga las implicaciones más amplias de la integración de la IA en las industrias. Aborda los desafíos legales y regulatorios resultantes, particularmente en términos de protección laboral y tributación. Además, la discusión se extiende a las respuestas sociales al desplazamiento laboral inducido por la automatización, como las propuestas de Ingreso Básico Universal (IBU) e impuestos a los robots,

ofreciendo perspectivas sobre su potencial efectividad y limitaciones. El artículo concluye enfatizando la necesidad de un enfoque equilibrado hacia la integración de la IA, abogando por un diálogo continuo, investigación y desarrollo de políticas para aprovechar los beneficios de la IA garantizando oportunidades y protecciones equitativas para los trabajadores en un futuro cada vez más automatizado.

In 2019, the OECD stated that generative artificial intelligence (AI) is a general-purpose technology with the potential to improve people's welfare and well-being, contribute to positive sustainable global economic activity, increase innovation and productivity, and help respond to key global challenges (OECD, 2019). The OECD's 2023 definition describes an AI system as a machine-based system that, to achieve explicit or implicit objectives, infers how to generate outputs—such as predictions, content, recommendations, or decisions—that can influence the physical or virtual environment from the input it receives. AI systems vary in their levels of autonomy and adaptiveness after deployment (OECD, Artificial Intelligence in Society, 2023).

Evaluation and Impact of AI

Machine learning systems, sub-discipline if AI, have been used since the 1960s, employing algorithms that learn from data to make predictions or decisions (Brown, 2021). Companies like Google, Facebook, Amazon, and Netflix, which dominate the modern business landscape, widely employ machine learning. Both machine learning and AI require large databases, made available by the digital revolution. The advent of deep learning technologies and big data accessibility has significantly catalyzed the transition to AI. Although machine learning has already revolutionized business operations and significantly changed our lives, it was the introduction of AI that intensified discussions and concerns surrounding machine learning.

Workforce Transformation

AI technologies reshape the workforce by automating tasks, creating new job categories, and influencing wage structures. They have the capability to exhibit intelligent behavior similar to humans. The key difference is that while machine-learning excels at identifying patterns to solve specific problems, AI can complete human tasks more efficiently and consistently.

Legal and Regulatory Considerations

The transformative impact of AI on industries and societies has highlighted a need for a numerous of legal and regulatory considerations that transcend traditional boundaries, raising significant questions for intellectual property rights protection, labor protection, and taxation, affecting income tax revenues, tax compliance, and the enforcement landscape.

AI imitating human behavior can be more effective and, crucially for some industries, more consistent. For example, scoring tech companies contracted by the state governments to score students' tests in different fields of study have traditionally used humans and, to some extent, machine-learning algorithms. The biggest challenge was the consistent quality of scoring.

Machine-learning algorithms still rely on human input for training, while AI potentially allows the use of virtual stakeholders (for example virtual teachers and committee members) for scoring tests, achieving consistent quality and reducing the need for human test scorers, thus saving time and money (SEALED PROPOSALS TO PROVIDE ARTIFICIAL INTELLIGENCE STAKEHOLDER DEVELOPMENT FOR CLASSROOM-BASED ASSESSMENTS, 2023).

The extensive impact of AI across various industries has imposed a re-examination of legal and regulatory frameworks, challenging traditional boundaries and raising critical questions about intellectual property rights, labor protection, and taxation (Smith, J., & Dvorak, R. , 2021). This is evident in the education sector, where AI's application in grading can potentially ensure consistent quality, reduce reliance on human input, and offer substantial time and cost savings. These AI systems are trained on vast datasets, enabling them to grade with consistency and objectivity, potentially surpassing human capabilities. This development also prompts a reevaluation of the role of human evaluators in education (Johnson, 2022). Despite some hesitancy from local governments due to concerns over AI's "black box" nature, we believe the benefits of AI in industries where consistency and efficiency are paramount will be increasingly recognized.

Example: AI in Educational Assessment

On August 23, 2023, the Department's Procurement and Contracts Branch issued Request for Proposals (RFP) D24-023 (SEALED PROPOSALS TO PROVIDE ARTIFICIAL INTELLIGENCE STAKEHOLDER DEVELOPMENT FOR CLASSROOM-BASED ASSESSMENTS, 2023). This RFP represents a proactive step toward embracing AI technologies within the educational sector, specifically targeting the automation of test grading processes. The RFP outlines the Department's intention to procure AI-driven systems capable of evaluating standardized tests with a high degree of accuracy, consistency, and efficiency to save time and money.

This move by the Hawaii State Department of Education exemplifies the broader trend of educational institutions looking towards AI to enhance operational efficiencies and improve the objectivity of student assessments. By adopting AI for grading, the Department aims to leverage technology to ensure fair and unbiased grading at a scale previously unattainable through human effort alone.

The Hawaii State Department of Education's RFP D24-023 serves as a concrete example within the broader discussion of AI's role in reshaping workforce dynamics, particularly in education. It emphasizes the pragmatic steps being taken to harness AI's capabilities while also considering the implications for educators, administrative staff, and the quality of education delivery. This example further enriches the case study of AI in educational assessment, illustrating the tangible ways in which institutions are moving towards automation and the complex considerations that accompany this shift.

The integration of AI in the workforce raises important labor law implications. Automation, AI-driven decision-making, and the potential for job displacement have sparked debates on the

future of work and the need for regulatory safeguards to protect workers' rights. Concerns such as wage polarization, job redistribution, tax income reduction and the risks of automation are especially pronounced in industries like manufacturing, transportation, retail, and, quite unexpectedly, education.

Universal Basic Income and Robot Tax: Diverse Strategies for an Automated Future

Both Universal Basic Income (UBI) and the robot tax address the challenges presented by AI and automation from distinct perspectives. UBI aims to buffer the effects of job displacement and ensure a basic standard of living for all, acting as a societal safety net (Camper, 2017). In contrast, a robot tax focuses on moderating the pace of automation to safeguard jobs and fund social programs. UBI envisions a new social contract that embraces the realities of an automated future, while the robot tax intends to carefully manage and mitigate the transition. The implementation of these strategies could significantly influence society's adaptation to the technological revolution, with each approach carrying its own set of benefits and limitations.

UBI is a financial framework designed to provide all individuals with a regular, unconditional sum of money, irrespective of employment status, wealth, or social standing. Its goal is to offer a safety net that protects a minimum financial security level for everyone. The concept dates back to the 16th century when Thomas More first proposed a similar idea in his book "Utopia". Interest in UBI has been revived in almost every century since then, discussed by influential thinkers from Thomas Paine to Milton Friedman. While the McKinsey Global Institute predicts that automation could displace between 400 million and 800 million people globally by 2030 (A future that works: Automation, employment, and productivity., 2017), UBI advocates view UBI as a remedy for job loss due to AI, providing a safeguard against economic instability and allowing individuals to reshape their skills. Notable programs, like The Stockton Economic Empowerment Demonstration (SEED), which provided $500 monthly to selected families in Stockton, California, have demonstrated UBI's positive impacts on humans' lives (Tubbs, 2020). Advocates believe UBI can lessen poverty and foster economic stability threatened by automation and AI. Additionally, UBI could enable individuals to pursue education, start businesses, or explore creative pursuits without financial pressure. However, opponents raise concerns about UBI potentially discouraging work, impacting inflation, and the challenges of funding the program at scale (IAS, 2023).

The robot tax, a fiscal policy targeting the use of automation that displaces human workers, aims to address income tax revenue decrease and generate revenue for social welfare programs. This tax proposes taxing companies that opt for machines over human labor, thereby cushioning automation's workforce impact. Despite its intention to balance automation's pace, it is possible that a robot tax could discourage technological innovation and productivity investment, hindering economic growth and global competitiveness, and can be viewed as punitive tax.

Proposed in the European Parliament in 2017 but rejected over slowing innovation concerns (European Parliament , 2017) , the robot tax concept has seen variations, such as South Korea's reduced tax incentives for automation investments (R. Abbott, B. Bogenschneider, 2018). In 2023,

New York State considered a robot tax, reflecting its cautious stance among policymakers. Seen by some as modern Luddism, the robot tax debate underscores the tension between preserving jobs and embracing technological progress (New York State Legislature, 2023).

In summary, UBI and the robot tax present divergent but complementary strategies for navigating the automation era. While UBI focuses on supporting individuals directly, the robot tax aims to fund social initiatives. Together, they highlight the multifaceted approach needed to harness technological advancements while ensuring societal resilience and well-being.

Conclusion

The advancement of artificial intelligence technologies is disruptive technology and a critical shift in workforce dynamics, presenting both opportunities and challenges across various sectors. AI's capacity to automate tasks, create new job categories, and influence wage structures imposes a need for a reevaluation of current legal and regulatory frameworks to accommodate these changes effectively. The case study of AI in educational assessment, specifically through the Hawaii State Department of Education's initiative, underscores the practical benefits and considerations of AI application in real-world settings. However, as industries increasingly adopt AI, concerns regarding job displacement, wage polarization, and the ethical use of AI technologies have sparked significant debate. Responses such as Universal Basic Income and robot taxes are explored as potential mitigation strategies for the adverse effects of automation. Ultimately, the integration of AI into the workforce demands a balanced approach, fostering innovation and efficiency while ensuring protection and equitable opportunities for all workers. As AI continues to evolve, continuous dialogue, research, and policy development are essential to harness its potential responsibly and inclusively.

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