



TECHNOLOGY BRIEFING ON AI IN THE WORKFORCE & ECONOMY

Artificial Intelligence (AI) is reshaping the workforce, economies, and individual livelihoods. As businesses harness AI to enhance productivity and drive innovation, we face a multifaceted impact—ranging from profound economic opportunities to ethical dilemmas and challenges to workforce dynamics. To ensure AI realizes its economic potential and drives more meaningful and effective work environments, we need to examine its promises and the pressing issues associated with them.

Economic Implications of AI in Business and GDP

- **Macro-Economic Growth Potential**
 - **McKinsey Global Institute:** AI could contribute up to \$13 trillion to the global economy by 2030. This means an average of 1.2% additional GDP growth per year.
 - **PwC's Projection:** AI's contribution might reach \$15.7 trillion by 2030, with productivity contributing \$6.6 trillion and consumption effects making up \$9.1 trillion.
 - These projections differ due to varying methodologies, assumptions about AI's adoption rate, and estimated impacts on labor productivity. Essentially, forecasting AI's economic impact involves assessing current economic inputs (like labor and capital) and estimating how AI might amplify or transform them.
 - **AI may also be used to assist in economic modeling,** allow companies and governments to predict, more effectively respond to, and potentially prevent recessions, inflation, depression, and other forms of downturn.
- **Monetization Strategies by Big Data and AI Companies**
 - **Subscription Models**
 - *Context:* AI services are often complex and require continual updates. To provide businesses with the latest advancements without hefty initial investments, companies offer subscription models.
 - Example: IBM Watson offers AI services that businesses can access via a monthly or yearly subscription fee.
 - *Ethical Implications:* Subscriptions ensure that businesses always have the latest tools, but there's a dependency created. Companies can become overly reliant on a particular service, and any changes to the service or its pricing can significantly impact business operations.
 - **Pay-as-you-go & API Services**
 - *Context:* Instead of committing to long-term contracts, businesses can utilize AI services and only pay for what they use. Moreover, Application Development Interfaces (APIs) allow businesses to tailor AI technologies to their specific needs.
 - Example: Amazon Web Services (AWS) offers machine learning services, and Google Cloud provides APIs for its Vision and Natural Language tools.
 - *Ethical Implications:* Such models democratize access to AI tools. However, without clear billing transparency, businesses might face unexpected costs. Moreover, over-reliance on a particular provider's API could lead to vendor lock-in.
 - **Data Brokerage**

- **Automation Tools**
 - *Context:* Repetitive and routine tasks, while essential, often consume a significant portion of workers' time, detracting from activities that require human ingenuity.
 - *Examples:* [UiPath](#) and [Blue Prism](#) offer Robotic Process Automation (RPA) tools. These tools can handle tasks like data entry, basic customer service inquiries, and even more complex procedures like financial reconciliations.
 - *Implications:* Automation not only increases efficiency but also reduces human error. However, there's a trade-off: while workers are freed up to tackle higher-value tasks, there's potential job displacement in sectors heavily reliant on routine tasks.
- **Decision Support Systems**
 - *Context:* As businesses become more data-driven, there's a need for tools that can analyze vast datasets quickly and provide actionable insights.
 - *Examples:* [Tableau](#), when integrated with Einstein Analytics, offers powerful data visualization and analytics capabilities.
 - *Implications:* By leveraging AI for analytics, businesses can make more informed decisions. This leads to better resource allocation, understanding customer needs, and predicting market trends.
- **Virtual Assistants**
 - *Context:* Administrative tasks, while essential, can consume a significant portion of the workday. Virtual assistants powered by AI can streamline these chores.
 - *Examples:* The acquisition of the [x.ai tool](#) (not to be confused with Elon Musk's latest research company, X.ai) by [Bizzabo](#) underscores the growing demand for AI-driven personal assistants. These tools can schedule meetings, manage calendars, and even draft emails.
 - *Implications:* Reducing administrative overhead allows professionals to focus more on their primary roles, leading to increased job satisfaction and efficiency.
- **Real-time Translation**
 - *Context:* In a globalized business world, language barriers can impede smooth transactions and collaborations.
 - *Examples:* Google's Neural Machine Translation and their latest [Translation Hub](#) provide on-the-fly translation, making it easier for businesses to communicate across borders.
 - *Implications:* Breaking down language barriers fosters a more inclusive global business environment. It facilitates smoother collaborations, negotiations, and understanding between multinational entities.
- **Generative AI in the Workforce**
 - *Context:* Generative AI can create content, be it textual, visual, or even auditory, based on inputs it receives.
 - *Examples:* OpenAI's [Codex](#) can assist developers by suggesting lines of code and streamlining the development process. Their other tools, like [ChatGPT](#) and [DALL-E](#), can assist in writing, copy-editing, or other text-based tasks and produce images based on textual prompts, respectively, providing insights in design brainstorming sessions or better blueprints/assistance in time-sensitive tasks.
 - *Implications:* While generative AI can accelerate creative and development processes, it also necessitates a reevaluation of roles. Designers and developers

will need to adapt, focusing more on refining AI outputs and integrating them meaningfully.

- **AI in Hiring**

- **AI-Driven Resume Screeners**

- *Context:* The vast number of job applications for popular positions can be overwhelming for HR teams. Automated screeners analyze resumes to filter out those that match job requirements.
 - *Examples:* Platforms like **HireVue** and **Pymetrics** employ algorithms to assess resumes and even play games with applicants to gauge their suitability for a role.
- *Implications:* These tools can significantly speed up the shortlisting process and ensure that no potential match is overlooked. However, if the algorithms are trained on biased historical data or flawed criteria, they could inadvertently favor certain demographics over others, leading to discriminatory hiring.

- **Virtual Interviewers**

- *Context:* The next step after screening, interviews, can be time-consuming. Virtual interviewers, powered by AI, can conduct preliminary rounds, assessing candidates based on their responses.
 - *Examples:* Platforms like **Vervoe** use AI to grade applicants' skills tests and simulate job tasks, giving employers a clearer picture of a candidate's abilities.
- *Implications:* While AI-driven interviews can provide a consistent and objective initial assessment, there's a risk of missing out on human nuances. Candidates' comfort levels with AI interviews can vary, potentially disadvantaging those less familiar with the technology. Moreover, biases in the AI's training data can result in unfair evaluations.

- **Ethical and Bias Concerns**

- *Context:* The historical data used to train AI hiring tools may contain biases. If unchecked, these biases get perpetuated in the hiring process.
 - *Examples:* A notable case was **Amazon's scrapped AI recruiting tool**, which showed bias against female candidates. The model was trained on resumes submitted over a decade, inadvertently learning gender biases present in the tech industry.
- *Implications:* While AI has the potential to make hiring more efficient and objective, the algorithms must be transparent and regularly audited for fairness. Ensuring diversity in training data and actively countering inherent biases can help make AI hiring tools more equitable. Furthermore, bias in other tools whose outcomes affect hiring, such as AI-based recidivism risk prediction technologies like **COMPAS** (which was proven to statistically discriminate against Black defendants), may also perpetuate disparate hiring outcomes.

- **AI in Employee Negotiations:** AI's increasing role in employee negotiations seeks to streamline the process, offering efficiency and potential fairness. The COVID-era has reshaped workforce priorities, and while AI offers adaptable solutions, balancing its efficiency with the nuances of human interaction remains essential for satisfactory employment decisions.

- **Current Offerings**

- *Pactum AI:* Since 2021, the world's leading automated procurement negotiation provider has used AI chatbots for employee package negotiations.

- *Ironclad*: Backed by prominent firms like Sequoia and Accel, Ironclad is set to launch an AI agent focused on employment contract analysis.
 - *Public Tools*: Individuals can access public chatbots to simulate negotiations, helping them prepare and conceptualize compensation packages.
- **Potential Benefits**
 - *Efficiency*: AI can streamline the negotiation process, making it faster and potentially more objective.
 - *Expanding Negotiation Scope*: As highlighted by the changes during the COVID era, employees' priorities shifted. AI could potentially tailor negotiations based on individual needs and stages of life, such as work-life balance, family responsibilities, or specific benefits.
 - *Objective Mediation*: AI doesn't have the human biases or emotions that sometimes hinder negotiations. This might particularly benefit those uncomfortable with face-to-face negotiations or those who traditionally don't negotiate their terms.
 - *Gender Balance*: With Pactum's chatbot, both men and women negotiated equally aggressively. This contrasts with traditional negotiations where, as indicated by Martin Rand (Pactum's CEO), male employees often negotiated harder than their female counterparts.
- **Concerns and Potential Downsides**
 - *Information Disparity*: Employees might not have the full context or might provide insufficient information to the chatbot, potentially leading to unfavorable terms.
 - *Risk of Alienation*: While automating standard contracts might be efficient, using chatbots for unique talent or critical roles could make candidates feel undervalued.
 - *Privacy Concerns*: Handling sensitive payroll data requires robust security measures. An inadequately trained or secured chatbot poses risks to individual privacy and might expose critical commercial information.

Worker Dynamics and Activity

● **Job Displacement**

- **Nature of Job Displacement**
 - *Routine and Repetitive Tasks*: Jobs centered around repetitive tasks, like data entry or basic assembly line work, are particularly vulnerable to automation.
 - *Low-Skill Manual Roles*: Basic manual roles, such as in warehousing or simple manufacturing, might see a decline with the rise of AI-driven robotics and automation.
- **Job Creation**
 - *Emerging AI-driven Fields*: As AI evolves, new roles emerge. These can range from AI ethics officers to AI system trainers. The tech sector, in particular, might see a surge in demand for roles related to AI system development, maintenance, and oversight.
 - *Complementary Jobs*: AI will also catalyze roles that aren't directly tech-focused but work alongside AI systems. For instance, while AI might enhance diagnostic imaging in healthcare, there will be an increased need for technicians to operate and interpret these systems.

- **Challenges in the Age of Automation**
 - *Reskilling and Upskilling*: As certain jobs become obsolete, there's a pressing need to equip the workforce with new skills. This might involve introducing them to digital tools or training them in AI-complementary roles.
 - *Digital Access Disparities*: A significant challenge lies in reaching underserved stakeholders. Those in regions with limited digital infrastructure or from socioeconomically disadvantaged backgrounds might not have the resources or access to digital platforms for upskilling. This disparity risks widening the digital divide and exacerbating income inequalities.
 - *Shift in Job Nature*: While AI might create jobs, the nature of these jobs could be vastly different. A worker displaced from a manual role might find it challenging to transition into a tech-centric position without adequate training and support.
- **Needs for Underserved Stakeholders**
 - *Focused Training Programs*: Governments and organizations can invest in targeted training programs, especially for those in vulnerable sectors. These programs can be tailored to bridge the gap between obsolete roles and emerging opportunities.
 - *Digital Infrastructure Development*: To ensure equitable access to reskilling opportunities, there's a need to bolster digital infrastructure in underserved regions. This includes not just internet access but also digital literacy initiatives.
 - *Collaborative Efforts*: Public-private partnerships can be instrumental. Tech companies, with their expertise, can collaborate with governments to design effective reskilling programs—especially for the bottom billion—, ensuring they're aligned with market needs.
 - *Antitrust*: Opportunities to democratize AI development to micro-, small-, or medium enterprises as well as big tech companies will broaden the job market.
- **Digital Sweatshops**: With the dawn of the artificial intelligence era, there is a growing concern about the exploitation of human labor, often in countries with low wage standards, to train and refine AI models. Although *the promise of AI is automation, in many cases, it requires humans to act like machines to maintain them* (which is also the premise of Imitation AI, as previously mentioned). These workers, often referred to as being in "digital sweatshops," play a critical role in the development of sophisticated AI systems but are subjected to less-than-ideal working conditions and pay. Such practices are common among general-purpose AI tools and big data companies.
 - **Human-in-the-Loop**: Contrary to popular belief that AI operates autonomously, many AI systems, including prominent ones like ChatGPT, depend heavily on human-in-the-loop mechanisms. These humans, often from countries like the Philippines or Kenya, are tasked with labeling vast amounts of data, differentiating objects in images, or ensuring the quality of text generated by language models.
 - **Exploitative Conditions**:
 - *OpenAI*, for instance, engaged in a partnership with a San Francisco-based firm called Sama that employs workers in Kenya, Uganda, and India. These Kenyan workers were paid a mere \$1.32 to \$2 per hour to label potentially disturbing content, which was instrumental in making ChatGPT safer and less toxic.
 - *Scale AI*, another major player, owns a platform called Remotasks. More than 2 million people in the Philippines perform data annotation for AI on such platforms. Reports suggest that these workers, known as "taskers", often earn below the minimum wage, face frequent delays or reductions in payments, and have little to no channels to voice their grievances.

- **Financial Inclusion through AI & Crypto to Facilitate UBI**

- *Worldcoin*

- Objective: Co-founded by OpenAI CEO Sam Altman and Tools for Humanity CEO Alex Blania, Worldcoin aims to provide every individual on Earth with a share of its cryptocurrency. This initiative seeks to democratize financial systems and reduce wealth concentration.
- Mechanism: Participants have their irises scanned using Worldcoin's proprietary "orb" devices. This ensures a unique digital ID for every user, which can later verify their humanity in digital spaces increasingly influenced by AI.
- Implications
 - Pros: Worldcoin promises a more inclusive financial system, potentially mitigating the adverse effects of wealth concentration.
 - Cons: Despite its noble intentions, Worldcoin has faced criticism, especially regarding data privacy. The project's large-scale biometric data collection has raised eyebrows in countries like Argentina, Britain, France, Germany, Kenya, and Portugal. Critics argue that the "free" nature of Worldcoin might come with hidden costs, such as privacy risks, speculative uncertainties, and potential exploitation of user data.
- Ethics
 - Exploiting Vulnerability for Data: Worldcoin's promise of free cryptocurrency in exchange for iris scans has predominantly attracted individuals from economically disadvantaged backgrounds. In regions grappling with economic challenges, such as parts of Africa, the allure of "free money" can be irresistible. However, this practice raises ethical concerns as it seems to capitalize on the desperation of the most vulnerable, effectively trading essential biometric data for financial incentives.
 - Questionable Consent: The act of offering monetary rewards in exchange for sensitive personal data may blur the lines of genuine informed consent. While Worldcoin claims that individuals willingly provide their iris scans, the underlying motivation — the promise of financial gain — can be seen as a form of undue influence or inducement. This raises questions about whether participants fully understand the potential long-term implications and risks of handing over their biometric data.
 - Data Privacy and Storage Concerns: Despite assurances from Worldcoin that the biometric data is either deleted post-verification or stored in encrypted form, there remain substantial concerns about data security and potential misuse. The vast accumulation of such sensitive data creates an attractive target for cyberattacks and breaches. Furthermore, the company's past practices, including allegations of deceptive marketing and possibly violating data protection regulations like

the EU's GDPR, further erode trust in their data handling capabilities.

- *Fidutam* (note: this is by no means a promotional statement.)
 - Objective: Founded by Stanford student, Okezue Bell, Fidutam is one of the largest organizations globally mobilizing for responsible technology, with over 1,400 members. In their development arm, the organization has created an application that provides digital identification and microloans to the unbanked intending to provide them with the means to register for a formal account.
 - The application supports many individuals whose jobs are likely to be displaced by automation and don't have the means for upskilling.
 - The technology and platform could serve as a disbursement proof-of-concept for a social safety net funded by AI companies.
 - Mechanism
 - The application uses SMS messaging or SIM cards to have users register and access it entirely internet-free and accessible via a 2G phone. Registration includes entering a selfie image and known personal information (which is stored only locally on the device to preserve data privacy), and having two nearby users validate the registering users' identity via Bluetooth. The information is then encrypted into a digital ID stored in a PIN or QR code.
 - Fidutam provides a community fund (which is returned after all/most loans are collected) to on-ground nonprofit partners, through which users can request zero-interest microloans, paid back within a year. Users are provided with short-form and digestible financial literacy and entrepreneurship content to help them start businesses in conservation, the sale of locally-produced goods, or public health.
 - When the loan is paid back, the user's digital ID updates to record the repayment, establishing a digital line of credit. The ID is stored on a decentralized server, making the information contained within it inaccessible and the data itself immutable.
 - Once users have earned enough profit, users are then able to open an account with a local financial institution, as they can meet the minimum deposit requirement, have a line of credit, and a verifiable ID.
 - Results and Implications
 - Fidutam has been piloted in Nigeria, Zambia, Nicaragua, Kenya, the US, and Uganda with over 1,100 users and 13,000 users on the waitlist.
 - This has collectively generated over \$400,000 in profits in unbanked communities.
 - More mechanisms for verifiability of the digital ID are required, as well as the development of a scalable system with multinational compliance with financial policy to ensure it can be implemented broadly.

- *Karya* is a nonprofit that offers an application that allows Indian workers to earn above the minimum wage by submitting voice recordings of them speaking Indian languages, which are relatively scarce data-wise (and needed to build more robust natural language processing and voice recognition systems).
 - Users earn a 50% bonus when their voice recordings are validated.
 - They label the data, sell it to AI companies, and use the funds to pay participants.

The integration of AI into the workforce presents a transformative shift in how businesses operate and how jobs are performed. While AI offers efficiency and the potential for economic growth, it also brings challenges, including job displacement and ethical concerns related to worker treatment. Businesses, governments, and society at large must address these challenges head-on via multistakeholder collaboration, ensuring that the transition to an AI-driven workforce benefits all, rather than creating deeper economic divides.