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Making Artificial Intelligence Work for South Africa: Productivity, Jobs and Inclusive Growth

Introduction

Artificial intelligence (AI) is increasingly transforming how economies produce goods, deliver services, allocate resources and organise work. Its potential to improve productivity through automation, predictive analytics, process optimisation and innovation presents significant opportunities for developing economies. However, the economic benefits of AI are not automatic. They depend on the institutional, educational, industrial and fiscal environments within which the technology is introduced. For South Africa, this distinction is particularly important because the country faces persistent structural unemployment, skills inequalities, industrial constraints and substantial disparities in access to digital infrastructure. The challenge is therefore not simply to accelerate AI adoption, but to determine how its economic benefits can be distributed more inclusively. If adoption is driven primarily by cost reduction, businesses may replace workers without creating sufficient alternative employment opportunities. Conversely, if AI is integrated into a broader development strategy, it could strengthen industrial competitiveness, support new enterprises, improve public services and generate demand for higher-value skills.

This essay argues that South Africa should pursue an employment-conscious AI industrialisation strategy built on three interconnected pillars: education reform that develops adaptable human capabilities, industrial policy that strengthens domestic productive capacity, and targeted fiscal incentives that reward innovation alongside employment development. These interventions must be supported by labour protections, infrastructure investment and accountable governance. The objective should not be to prevent technological change, but to ensure that technological progress contributes to structural economic transformation rather than reinforcing existing inequalities.

1. South Africa's economic context and the AI challenge

South Africa's starting conditions make the relationship between AI and employment particularly complex. Statistics South Africa reported an official unemployment rate of 33.6% in the second quarter of 2026, while youth unemployment among those aged 15-34 reached 47.4% (Statistics South Africa, 2026). These figures demonstrate that the country already struggles to absorb a substantial proportion of its available workforce. Introducing labour-saving technologies without complementary job-creation strategies could intensify this challenge.

Nevertheless, avoiding AI adoption would also carry economic risks. Businesses that fail to improve productivity and technological capabilities may become less competitive in domestic and international markets. AI can improve manufacturing efficiency, strengthen agricultural forecasting, support disease detection, optimise logistics and improve financial services. The relevant policy question is therefore how to capture these productivity gains while ensuring that workers participate in the resulting economic opportunities. The

International Labour Organization (ILO, 2025) estimates that approximately one in four workers globally is employed in an occupation with some exposure to generative AI. Importantly, the organisation observes that job transformation is more likely than the complete elimination of most occupations. This distinction suggests that policy should focus not only on protecting existing jobs, but also on preparing workers for changing tasks and occupations.

South Africa must also confront unequal access to the foundations of AI adoption. Statistics South Africa's General Household Survey 2024 reported that 82.1% of households had internet access through at least one means, but only 17.4% had fixed internet access at home (Statistics South Africa, 2025). Access through mobile devices does not necessarily provide the reliable connectivity, computing capacity or affordability required for advanced digital learning and productive AI use. Consequently, an AI strategy that assumes equal digital readiness risks benefiting already advantaged schools, institutions and businesses disproportionately.

2. Redesigning education for an AI-driven economy

Education reform should be the foundation of South Africa's AI transition. However, preparing learners for an AI-driven economy should not mean teaching everyone to become a programmer or data scientist. Such an approach would be unrealistic and could reproduce existing educational inequalities. Instead, education policy should develop a combination of foundational digital literacy, technical competence, critical thinking, problem-solving and occupational expertise. At school level, AI literacy should be integrated progressively into the curriculum. Learners should understand how AI systems operate, how to use them responsibly, how to assess the reliability of generated information and how algorithmic decisions can reproduce bias. Mathematics, science, communication and analytical reasoning must remain central because they provide the foundations for understanding and working alongside intelligent technologies. Importantly, these capabilities should be developed across different subjects rather than treated as the responsibility of computer science alone.

This reform must be accompanied by investment in the conditions necessary for meaningful digital learning. Schools in rural and historically disadvantaged communities require reliable electricity, affordable connectivity, appropriate devices and adequately trained teachers. Without these investments, digital education could become another mechanism through which socioeconomic advantage is reproduced. At tertiary level, universities and Technical and Vocational Education and Training (TVET) colleges should establish more flexible, interdisciplinary programmes. AI education should extend beyond specialist technology degrees into agriculture, healthcare, engineering, finance, public administration and business management. For example, agricultural graduates should be able to interpret AI-supported weather and crop forecasts, while healthcare professionals should understand how clinical decision-support systems can complement professional judgement.

A particularly important intervention would be the establishment of an industry-linked national AI reskilling programme. Government, universities, TVET colleges, Sector Education

and Training Authorities (SETAs) and employers should jointly identify occupations experiencing technological change and develop short, accredited training programmes for affected workers. These programmes should prioritise practical workplace applications, including data interpretation, digital administration, AI-assisted production and technical maintenance. Furthermore, employers should be encouraged to provide paid workplace learning opportunities. Training without access to employment can leave graduates with qualifications but no practical experience. Publicly supported apprenticeships, internships and workplace-based learning should therefore connect education directly to emerging economic opportunities.

3. Industrial policy: Using AI to strengthen domestic productive capacity

Education reform alone cannot resolve South Africa's employment challenges if the economy does not generate sufficient productive opportunities. Industrial policy must therefore guide AI investment towards sectors capable of increasing domestic production, improving competitiveness and creating new economic activities. South Africa should adopt a sector-based approach that builds on existing industrial capabilities. Priority areas should include manufacturing, agriculture and agro-processing, mining, healthcare, energy and logistics. These sectors are strategically important because improvements in their productivity can influence broader economic performance through stronger supply chains, exports and supporting services.

In manufacturing, AI-supported predictive maintenance, quality control and production planning could reduce equipment downtime, material wastage and operational costs. In mining, predictive systems could improve equipment monitoring and workplace safety. In agriculture, AI applications could support irrigation management, crop monitoring and more accurate assessments of production risks. In healthcare, AI-assisted diagnostic tools and supply-chain forecasting could improve the allocation of scarce resources. However, industrial policy should go beyond encouraging companies to purchase imported AI technologies. South Africa must develop the capacity to design, adapt, maintain and commercialise technologies locally. Otherwise, businesses may become dependent on foreign platforms, expertise and intellectual property while a significant share of the economic value generated leaves the domestic economy.

Government should therefore strengthen partnerships between universities, research institutions, local technology firms and established industries. Publicly supported research and development programmes should encourage locally relevant AI applications, particularly those addressing challenges in African markets. This includes developing technologies that accommodate South Africa's linguistic diversity, infrastructure constraints and sector-specific requirements. Small and medium-sized enterprises (SMEs) deserve particular attention. Large corporations generally have greater access to finance, technical expertise and data infrastructure, allowing them to adopt AI more easily. Smaller businesses may struggle with the cost of implementation and the absence of specialised skills. The Organisation for Economic Co-operation and Development (OECD, 2025) identifies connectivity, skills, finance, data and computing resources as important enablers of SME AI adoption.

South Africa should consequently establish regional AI adoption and innovation centres that provide SMEs with affordable technical advice, shared computing resources, demonstration facilities and access to research expertise. These centres could help businesses identify practical applications before committing to expensive technological investments. Such an approach would broaden participation in the AI economy while strengthening local enterprise development.

4. Fiscal incentives: Rewarding productive and inclusive AI adoption

Fiscal policy is essential because businesses respond to the financial incentives created by government. However, conventional technology tax incentives may encourage investment in automation without sufficiently considering the consequences for employment. South Africa should therefore redesign its fiscal incentives to reward both productivity improvements and inclusive economic outcomes.

First, government should introduce a conditional AI investment incentive for businesses adopting technologies that demonstrably improve productivity. Eligible expenditure could include AI software, computing infrastructure, employee training, cybersecurity and locally developed technological solutions. However, incentives should be conditional on measurable commitments to workforce development, skills transfer and responsible implementation. Second, tax incentives and grants should be differentiated according to business size and economic capacity. SMEs and emerging technology enterprises should receive more accessible support because they face greater financial constraints. Existing instruments administered by the Department of Trade, Industry and Competition, including the Manufacturing Support Programme, provide a foundation on which more targeted AI-related support could be developed. The programme already recognises competitiveness, localisation, transformation and employment creation as important objectives (the dtic, n.d.).

Third, public funding should support research and development, particularly collaborations between universities, research institutions and local businesses. Government could expand competitive innovation grants, technology-transfer funding and early-stage commercialisation support for locally developed AI applications. This would help strengthen domestic technological capabilities rather than relying exclusively on imported solutions. Fourth, fiscal incentives should reward firms that retrain and redeploy workers instead of immediately replacing them. For example, businesses receiving substantial public support for automation could be required to submit workforce transition plans demonstrating how affected employees will be retrained, redeployed or supported. Where appropriate, incentives could be linked to the number of employees who successfully complete accredited training and move into new or higher-value roles.

Nevertheless, fiscal incentives must be carefully designed to avoid subsidising investments businesses would have undertaken without government support. Incentives should be time-bound, subject to transparent eligibility criteria and evaluated against measurable outcomes. Productivity improvements, employment retention, new job creation, training completion, local procurement and the participation of historically disadvantaged

enterprises should all form part of the assessment. The objective should be to make public expenditure generate additional economic and social value rather than simply reduce the cost of private investment.

5. Managing labour market disruptions and protecting workers

Even with effective education and industrial policies, some occupations will experience significant changes as AI becomes more widely adopted. South Africa must therefore develop a labour transition framework that recognises workers as participants in technological change rather than passive recipients of its consequences. Employers introducing substantial AI-driven restructuring should be required to assess the likely effects on jobs, working conditions and required skills. These assessments should involve employees and organised labour before major implementation decisions are made. Such consultation would allow workers to identify opportunities for redeployment and training while helping employers anticipate operational challenges.

Existing labour institutions and social partners should also develop sector-specific transition agreements. These could establish minimum standards for retraining, redeployment, consultation and reasonable notice where technological changes result in job displacement. Workers who cannot be redeployed should have access to employment services, career guidance and temporary income support where appropriate. Another important consideration is the quality of employment created through AI adoption. Productivity gains should not be achieved through excessive workplace surveillance, discriminatory algorithmic management or the erosion of workers' bargaining power. AI systems used in recruitment, performance evaluation and employment decisions should be subject to appropriate human oversight, transparency and accountability.

Furthermore, government should monitor how AI affects different groups, particularly young people, women and workers in lower-paid occupations. Without deliberate intervention, these groups may face disproportionate exposure to displacement while having fewer opportunities to access emerging technical occupations. The broader objective should be to ensure that productivity gains translate into improved wages, better working conditions, enterprise growth and new employment opportunities. Technological progress should improve the productive capacity of workers, not simply reduce the number of workers required.

6. Implementation, governance and accountability

The success of an inclusive AI strategy will depend on coordination across government, industry, education institutions and organised labour. South Africa should establish a national AI productivity and employment council involving the Department of Communications and Digital Technologies, the Department of Higher Education and Training, the Department of Trade, Industry and Competition, National Treasury, labour representatives, businesses and research institutions. The council should coordinate implementation, identify sectoral priorities and monitor the distribution of AI-related economic benefits. It should also support the development of clear standards for data protection, cybersecurity, algorithmic transparency and accountability.

Implementation should occur in phases. The initial phase should prioritise infrastructure, workforce assessments and the identification of high-impact sectors. The second phase should expand education programmes, SME support and conditional investment incentives. The third phase should evaluate productivity, employment and distributional outcomes, allowing policies to be adjusted according to evidence. Crucially, success should not be measured by the number of businesses purchasing AI technologies or the amount of capital invested in automation alone. Government should also measure improvements in labour productivity, the creation of skilled employment, worker transitions, local innovation, SME participation and regional inclusion. Such an approach would help ensure that AI adoption contributes to measurable economic development rather than becoming an isolated technological objective.

Conclusion

Artificial intelligence presents South Africa with an opportunity to strengthen productivity, improve industrial competitiveness and develop new sources of economic growth. However, the extent to which these benefits are realised will depend on the policy choices made today. In a country characterised by persistent unemployment, educational inequalities and uneven productive capacity, technological adoption without deliberate intervention could reinforce existing economic divisions. South Africa should therefore redesign education to develop adaptable and digitally capable workers, use industrial policy to strengthen domestic innovation and productive capacity, and direct fiscal incentives towards investments that generate both economic and social returns. These measures must be complemented by effective labour protections, accessible digital infrastructure and accountable governance. Ultimately, the objective should not be to choose between technological progress and employment protection. It should be to create an economic environment in which the two reinforce one another. South Africa's success in the AI era will not be determined simply by how quickly it adopts artificial intelligence, but by how effectively it converts technological advancement into broader productive capacity, decent work and inclusive economic transformation.

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