



## Leap 4.0: African perspectives on the fourth industrial revolution

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## BOOK REVIEW

**Leap 4.0: African perspectives on the fourth industrial revolution**, edited by Zanzima Mazibuko-Makena and Erika Kraemer-Mbula, Johannesburg, MISTRA, 2021, 443 pp., R319 (paperback), ISBN: 978-1-928509-16-5

This edited volume provides a timely African focus on conversations on the Fourth Industrial Revolution, largely in the pursuit of policy influence. These kinds of volumes are an important part of informing an African narrative on the digital future. A preliminary caveat to discussions relates to the very idea of punting the 'Fourth Industrial Revolution' (4IR) as an avenue for Africa to 'leapfrog' the so-called industrial stages of development. The book seeks early in its introductory chapter to explain why this is necessary, noting the 'absence' of Africa from the first and second industrial revolutions,

the continent missed the First and Second Industrial Revolutions while it endured the invasion, occupation, division and colonisation of the African territory by European powers (p. 11).

Yet, perhaps, given the importance of historical investigations for considering potential future realities, the book could have gone further to highlight early on that the African continent has not been absent from the earlier industrial revolutions, but has rather been absent from its *benefits*. The region was in fact central to the First and Second Industrial Revolutions of other countries – and this history of extractivism could have been an important framing for conceptualising a 4IR future with its attendant risks of data and digital extractivism. The introductory chapter does, however, indicate that both online and offline inequalities serve as important context for the African 4IR – a theme that emerges consistently throughout the following chapters as well.

The book is organised into three sections: the first is on 'Emerging Technologies and Inclusive Innovation'; the second focuses on 'Human Capability Formation'; and the third looks at the 'Application of Advanced Technologies in Sectoral Development'.

Chapter Two, authored by Gilwald, provides a sound foundation in establishing the realities of the regional footprint as marred by digital inequalities, arguing in response for a 'digital new deal' – rather than adoption of the 4IR rhetoric – which would frame much of digital development as constituting a public good. Oguamanam, also looking at South Africa (with some comparisons to policy in Nigeria and Kenya), then highlights the absence of sufficient protections for indigenous knowledge systems within digital transformation policy as a key indication of policy inadequacy. In chapter three, Mokoele, Moyo and Mahlangu look to the hidden impact of algorithms on African lives (through case studies involving the likes of high frequency trading and the Congea company's bot development) as necessitating systems-thinking, the advancement of diverse engagement, the advancement of capacities, and accountability and transparency – all key priorities for timely digital policy. Marivate then considers the opportunity for African language natural language processing, not just as mechanisms for ensuring equality and diversity, but also as a direct facilitator for improving and expanding markets for domestically developed content.

Moving to section two, Gastrow centres education and skills development as key mechanisms for harnessing the benefits of 4IR in chapter five – but notes that it remains a key site for potential impact from broader structural inequalities. Lorenz and Kraemer-Mbula then look to the automotive and mining equipment manufacturing industries to demonstrate the

important role individual firms will need to play in order to use skills development to combat technologies' labour-displacing forces. In chapter seven, Molopyane looks at the mining and banking sectors to highlight how differences in both sector and country contexts will shape the influence of technology on the labour market – and additionally suggests that these trends will require research to consider not just productivity and efficiency gains, but also broader social and economic impacts for planning. Mabasa and Qobo then turn to considering the case of Uber in labour relations and market structures, highlighting how in the South African context it continues its international patterns of weak regulation to the detriment of labour, while also demonstrating the poor adaptability of labour regulations to the digital economy.

Section three then moves to application. Chapter nine sees Mazibuko-Makena looking at healthcare to show that the benefits of 4IR in the sector are impeded by structural inequalities. Gibixego and Odume nevertheless subsequently note how digital technologies can in fact be leveraged to improve environmental compliance and environmental outcomes, if harnessed under the correct policy conditions. Ting notes that a digitally enabled energy transition from electricity will need a cautious approach in South Africa, which will require reform across governance structures. Finally, Ncube and Rutenberg are tasked with concluding the book. In doing so, they note the vital role of intellectual property rights as a mechanism to support Africa's 'leapfrogging' digital ambitions.

In sum, the book perhaps over-emphasises the South African context for regional reflections, though the case studies are all notable and exceptionally interesting. But the book's prioritisation of African scholarship in this subject area is an important step for reframing 4IR narratives. It is hoped, though, that with the production of more of these types of works, African narratives can begin to rid themselves of some of the traditional constraints in economic theory and language that inadequately account for regional realities, and might better centre social and economic justice imperatives alongside each other. It is perhaps because of some of these traditional constraints that emerging technologies dominate the case studies, yet as the introductory chapter so well notes:

The disproportionate emphasis on research and development (R&D) that overlooks low-cost or low-tech innovations, which are usually aimed at alleviating socioeconomic challenges, should be reviewed (p. 15).

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