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REVIEW OF UNDERSTANDING TECHNOLOGY IN THE CONTEXT OF NATIONAL DEVELOPMENT: CRITICAL REFLECTIONS (2025)

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ABSTRACT

Understanding Technology in the Context of National Development: Critical Reflections by Tiwari, Kostenko, and Yekhanurov (2025) has quickly gained academic and pedagogical significance. The work offers a comprehensive examination of how digital transformation and technological innovation intersect with national development strategies, governance models, and economic growth. It situates technology as both a driver of progress and a subject of critical reflection within development economics and ICT4D (Information and Communication Technologies for Development). Drawing on key policy frameworks including OECD's digital transformation guidelines, United Nations (UN) development agendas, and the Network Readiness Index the authors analyze themes such as technological advancements, human capital, governance, and innovation ecosystems. The review finds that the book makes a valuable contribution to debates on digital transformation and development by identifying thematic pillars, capturing stakeholder insights, elaborating on twin foundations of tech enabled growth, and proposing concrete solutions to governance and inclusion challenges. This is shown by its adoption as post graduate course material for Industrial & Organizational programs at Universiti Malaysia Sabah (UMS), Malaysia and Esa Unggul University, Indonesia, where the author is associated with and currently using the book for post graduate studies courses listed in the curriculum. The curricular integration underscores the book's broader pedagogical relevance in Southeast Asia. In doing so, it bridges theoretical discourse with practical policy considerations, providing scholars, policymakers, and practitioners a timely resource aligned with global development frameworks.

KEYWORDS

Technology and National Development, Digital Transformation, Governance, ICT4D, Development Economics, Innovation, Network Readiness Index, Industrial & Organizational Psychology, Pedagogy

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Introduction

The integration of modern technology into national development processes has become a defining feature in the current era. Institutions and universities worldwide recognize that technological change is reshaping economies, labor markets, and governance structures in profound ways.

Understanding Technology in the Context of National Development: Critical Reflections (2025) by Siddhartha Paul Tiwari, Oleksii Kostenko, and Yuriy Yekhanurov provides valuable context to this evolving landscape by examining digital innovations. From internet connectivity to artificial intelligence can catalyze economic growth, improve governance, and promote inclusive development. The importance of this book is highlighted by its adoption as course material in university curricula across Malaysia and Indonesia, notably in the Industrial & Organizational Psychology program at Universiti Malaysia Sabah (UMS) and at Esa Unggul University. The university official usage not only attests to the book's relevance for bridging technological and organizational perspectives, but also underscores its broader pedagogical value in preparing students to navigate digital transformation in real-world organizational and national contexts.

Explaining technology within national development, the book and the authors bring together lot of insights. Siddhartha Paul Tiwari works in tech policy (at Google Asia Pacific), Kostenko's has lot of expertise in law and digital jurisdiction, and Yekhanurov's experience in governance and economics (as a former Prime Minister of Ukraine) make the book's holistic perspective. The outcome is a good book which is both theoretical and practice-oriented. The book looks not only at how technological advances are transforming how nations develop, but also how policy and society must adapt to harness these advances. The book starts by noting that technology has dramatically changed how citizens communicate, organize, and interact across continents. Technology and the magnitude of its impact on national development is still underappreciated. The book emphasizes that "people... are the true foundations of any nation as well as the primary beneficiaries of technology's development, setting a people-centric tone. This reflects the book's core foundation that technological progress must be aligned with human development and societal needs. A view resonant with long-standing development theories and contemporary frameworks like the UN Sustainable Development Goals.

This review provides an overview of the book's content, methodology, and contributions to the literature and academics in general too. It follows the structure of a formal academic analysis. First outlining the authors' methodology and approach, then summarizing key results across several thematic dimensions. A discussion section engages with broader academic and policy frameworks such as OECD's policy framework. The United Nations digital development agendas, and the Network Readiness Index to evaluate how the book's insights align with or add to current debates in digital transformation, governance, development economics, and ICT4D. The conclusion reflects on the significance of these findings and the book's pedagogical and practical implications.

Methodology

Tiwari et al. (2025) adopt a multi-faceted methodological approach that combines literature review, stakeholder consultation, and comparative analysis. The foundation of the book is a comprehensive survey of existing research on technology and development, drawing from economics, public policy, and information science. The reference list spans contemporary publications too. By situating the inquiry in this broad scholarly context, the book ensures that their reflections engage with the ICT4D discourse.

Beyond literature analysis, the authors conducted extensive stakeholder discussions. To find their reflections in real-world perspectives. Over "300 hours" of discussion with more than 200 participants from diverse sectors (including government agencies, industry experts, and community leaders) were synthesized to extract common insights about technology's role in national development Tiwari et al. (2025). This qualitative data provided rich stakeholder reflections that highlight practical challenges and aspirations on the ground. Some of the participants emphasized problems such as excessive paperwork in government hampering data-driven decisions and called for greater automation and integrated digital systems in the public sector. The use of direct stakeholder voices gives the analysis an empirical grounding and ensures the book's recommendations address concrete issues faced by practitioners.

The book also employs case illustrations and conceptual frameworks. The authors present original diagrams and figures to identify critical factors and principles. One key conceptual model introduced shows the pillars of digital transformation into two core domains: (1) digital infrastructure management and (2) advanced data infrastructure. These were derived from the authors' synthesis of stakeholder input and policy analysis. Various other figures illustrate the interplay between technology and development. The methodology is very iterative literature and policy review informs a guiding framework, stakeholder input validates and enriches that framework, and the authors then iterate between theory and evidence to formulate recommendations.

The interdisciplinary and mixed-method approach gives the book a well-rounded perspective. It mirrors a form of policy analysis research. Blending qualitative insight gathering with analytical modeling to produce reflections that are both theoretically informed and pragmatically relevant. This methodology aligns with calls in development research for whole-of-society approaches, engaging multiple stakeholders to craft inclusive digital strategies.

Results

Thematic Overview

In its broad thematic sweep, *Understanding Technology in the Context of National Development* maps out how technology acts as a transformative force across various dimensions of nation-building. The book notes that digital technologies permeate virtually all sectors, reshaping everything from economic production and service delivery to governance and social interaction. A unifying theme is as more and more people become connected to technology, new possibilities emerge for economic and social development. The rise of the digital economy is highlighted as a trend. This reflects the book's alignment with observations by international indices like the Network Readiness Index, which treats widespread connectivity and technology adoption as fundamental to a country.

The authors emphasize that technology's impact on national development is not automatic or uniformly positive. It must be critically understood and managed. They identify both opportunities and new challenges arising from digital transformation. Opportunities include expanded market access for entrepreneurs, efficiency gains in public service delivery, and innovation in sectors like finance, education, and healthcare (telemedicine). Technology entrepreneurship and job creation are noted. The optimistic view shows development economics theories that link technological innovation to productivity growth and employment, provided the workforce adapts.

On the other hand, the authors catalog several challenges. Cross-border issues, the emergence of scams and fraud unique to the digital era, and the risk of widening inequalities. Without deliberate policy action, benefits of technology might bypass certain groups, exacerbating the digital divide. This sharp view acknowledges a plethora of new challenges alongside benefits. This situates the book firmly in current policy debates. It shows the OECD's stance that digital transformation offers immense opportunities for growth and well-being. Issues like privacy, security, and social cohesion in the face of rapid tech change are implicitly recognized in the book's early chapters, laying the groundwork for the more detailed discussions that follow.

The thematic overview in the book also underscores a normative point. People and society must remain at the center of technological development. By stating that citizens are the primary beneficiaries of tech progress and true foundations of nations. The authors align with human-centric development paradigms. This perspective is increasingly mirrored in global frameworks. The book's foundational chapters set a tone of cautious optimism. Technology can significantly enhance national development. But only if steered by sound policies and inclusive strategies that prioritize human development and social equity.

Stakeholder Reflections

A standout feature of the book is its incorporation of stakeholder voices, which brings practical realism to the discussion. Through the authors' engagement with over 200 participants in dialogues about technology and development. The book distills a set of on-the-ground reflections that complement the theoretical narrative. These stakeholder reflections shed light on the everyday obstacles and aspirations seen by public officials, industry experts, and community stakeholders when integrating technology into governance and economic life.

These insights support a core argument in public sector reform. Digitalizing government operations is critical for efficient service delivery. It also echoes global trends noted by the OECD and others that emphasize whole-of-government digital transformation to break down silos and improve agility.

Another recurrent point in the stakeholder reflections is the challenge of fragmented data systems. This aligns with best practices in digital governance. Where interoperability and integrated data platforms are seen as foundations for a smart government. International indices like the NRI also highlight data governance as a pillar of digital readiness, with leading countries investing in seamless data infrastructures to inform policy.

Human capital development emerged as another key reflection. Stakeholders stressed that to lead in innovation and fully harness technology, nations must invest in basic digital literacy and advanced tech skills among both civil servants and the general population.

Participants also touched on values and vision for technology in society. Stakeholders want technology deployment to enhance social cohesion and accountability. Through better measurement of outcomes.

The stakeholder reflections captured in the book reinforce and add texture to its analytical themes. They confirm that issues such as bureaucratic red tape, siloed systems, lack of training, and the need for visionary digital leadership are felt acutely by those in the field. By embedding these voices, the authors validate their proposed solutions against lived experiences. The reflections also ensure the book's analysis stays grounded in feasibility. Any recommended policy or initiative must address these very real pain points and conditions on the ground.

Twin Foundations

The authors cite critical domains reliant on infrastructure such as financial systems (for digital banking and payments), immigration and border control. The message is clear. Connectivity and infrastructure are prerequisite to everything else. This aligns strongly with global policy frameworks. The Network Readiness Index likewise dedicates one of its primary pillars to Technology infrastructure, and notes that even top-ranked countries must continually invest in high-speed internet access and network coverage to maintain their edge.

The second foundation, advanced data infrastructure, refers to the ecosystems and tools that enable data to be turned into value and insight. This includes technologies such as artificial intelligence. The authors illustrate components like AI-driven chatbots for public services. Real time monitoring for financial or security threats, automated workflows in government, and predictive analytics for policy planning as part of this data infrastructure.

By conceptualizing these as twin pillars, Tiwari et al. emphasize that both are necessary and must evolve in tandem. A country might have good connectivity but poor data utilization, or cutting-edge AI projects but weak underlying infrastructure; either scenario limits the developmental impact. The twin foundations idea also complements the Digital Economy frameworks promoted by institutions such as the World Bank or ITU, which often stress both hard infrastructure and soft infrastructure (data, skills, policies) as the two halves of digital development.

The book's explanation of these foundations serves as a diagnostic tool. The authors contribute a clear thematic lens through which to assess national progress in ICT4D. It is noteworthy that this framework mirrors the approach of some national digital strategies.

Innovation Catalyst

The book strongly posits technology as a catalyst for innovation within economies and governance, and it delves into how fostering a culture of innovation is both a result of, and a driver for, successful digital transformation. This reflects a virtuous cycle: technology adoption leads to innovative practices.

One area highlighted is entrepreneurship and the digital economy. The authors discuss how digital platforms enable small businesses and startups to scale rapidly by reaching wider markets at lower cost. This dynamic is at the heart of many digital transformation success stories in developing countries. By enabling innovators to jump infrastructure gaps and directly access consumers. Technology serves as an equalizer and accelerator for business model innovation.

For national development, the book suggests that technology can catalyze administrative innovation and improve policy-making. Data analytics and AI can introduce new ways for governments to deliver services. These innovations not only improve efficiency but can transform the relationship between the state and citizens. Making it more participatory and transparent. The authors point out that when routine tasks are automated and data is leveraged.

Tiwari et al. recognize that harnessing technology as an innovation catalyst requires deliberate investment in human capital and research capacity. They reference the need for training professionals in emerging technologies and fostering a mindset of continuous learning and adaptation.

The authors' reflections in this section celebrate the transformative potential of digital tools. Aligning with optimism in the ICT4D community about leaps in development through innovation. Yet they are careful to note, implicitly, that realizing this potential depends on supportive ecosystems. A skilled workforce, good governance, and inclusive policies to ensure innovations address societal needs. This perspective contributes to academic debates by blending a technology optimism with an institutionalist view. Innovation will flourish where institutions adapt and invest appropriately.

Challenges

Despite the many opportunities presented by digital transformation, the book provides a frank assessment of the challenges and barriers that nations face in leveraging technology for development. These challenges are multi-dimensional, cutting across technical, organizational, and socio-economic domains. Tiwari et al. enumerate several key obstacles, which can be grouped into various academic buckets. Governance and policy challenges, infrastructure and technical debt, social and inclusion challenges, and emergent risks.

Discussion

In evaluating the contributions of *Understanding Technology in the Context of National Development*, it is useful to situate its insights within the broader academic literature and international policy frameworks on technology and development. The book emerges at a time when digital transformation is at the forefront of both scholarly debate and development policy agendas (OECD, UN, World Bank, etc.), and it manages to speak to several key issues in these discussions.

The book's people-centric emphasis resonates strongly with the sustainable development discourse. By foregrounding that technology's ultimate purpose is to benefit citizens and improve quality of life, Tiwari et al. align with the ethos of the United Nations' Sustainable Development Goals (SDGs), which stress inclusivity and leaving no one behind. Many of the challenges and solutions outlined in the book (digital divide, education and skills, e-governance for better services) tie directly into specific SDGs. This alignment suggests that the book's reflections are not in isolation but contribute to operationalizing how digital technology can accelerate SDG achievement. In academic terms, it contributes to ICT4D literature by providing an up-to-date synthesis that bridges high-level goals with concrete national strategies. The mention of Malaysia's progress on SDGs through technological means underscores this relevance.

In terms of policy frameworks, the book's recommendations mirror many best practices advocated by international organizations.

One notable strength of the book is its interdisciplinary and practical orientation, which likely stems from the authors' varied backgrounds. The involvement of a technologist, a legal scholar, and a policy veteran means the analysis doesn't fall into the trap of technological determinism or, conversely, policy myopia. Yekhanurov's governance perspective ensures economic and administrative realities are kept in view. This combination yields a holistic set of reflections rarely found in single-authored works. As a result, the book is equally at home in an academic seminar and a government cabinet retreat. The adoption in academic courses in two different countries speaks to its accessible yet rigorous content.

Critique

If there is a critique to be made, it might be that the book is ambitious in scope, perhaps at times sacrificing depth for breadth. Covering everything from infrastructure to AI to education means some topics might not be exhaustively analyzed. Researchers could use the identified themes and gaps as prompts for more focused studies.

Another minor limitation is that while the book cites global examples, it might lean towards certain regional contexts. Perhaps reflecting the authors' experiences in Asia and Eastern Europe. For a truly global outlook, additional perspectives from Latin America or Africa could complement the discussion. The principles espoused are general enough to have relevance globally, which the authors reinforce by referencing international indices and research.

Conclusions

Understanding Technology in the Context of National Development: Critical Reflections offers a timely and comprehensive exploration of how nations can navigate the opportunities and pitfalls of the digital age. Through a blend of theoretical insight, empirical stakeholder input, and alignment with global policy frameworks, the book constructs a multi-dimensional view of ICT-driven development. Its core message is that technology's transformative potential can only be realized through conscious strategy, inclusive policy, and human-centric implementation. This resonates strongly in an era where digital transformation is often touted as a panacea. The book grounds this optimism in realism, acknowledging the work required in governance reform, capacity building, and safeguarding equity.

The adoption of this work as course material in universities across Malaysia and Indonesia underlines its impact and relevance. It is not just a scholarly treatise, but a pedagogical tool preparing the next generation of leaders, managers, and researchers to critically engage with technology's role in society.

In practical terms, policymakers and development practitioners can draw on the book's "critical reflections" as a checklist for crafting or refining national digital strategies. The book effectively functions as a roadmap toward what the authors envision as a technology-enabled future for nations. One where digital innovation drives sustainable development, but not at the expense of governance, culture, or human well-being.

In conclusion, Tiwari, Kostenko, and Yekhanurov have contributed a significant volume that enriches understanding at the nexus of technology and development. Their collaborative, cross-disciplinary perspective helps ensure that technology is contextualized within national development rather than seen as an external silver bullet. As countries continue to grapple with digital transformation. A process only accelerated by global challenges and the post-pandemic new normal. This book stands out as a pertinent guide. It encourages reflective, well-informed action, making it a valuable addition not only to academic literature but also to the toolkits of decision-makers striving to harness technology for national progress.

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