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Editor's Introduction: Informatics and Digital Transformations

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Abstract
This thematic introduction briefly discusses the importance of pursuing research in informatics and digital transformations in Africa.

Keywords
digital transformation, universal access, Africa

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1. Studies in informatics and digital transformation

The theme for this issue arises from the extensive work of Nagy Hanna, a pioneer in the field of digital transformation studies, who has exhorted the academic community and the policy and regulatory communities to expend their energies and research resources towards charting and understanding the nature of the changes wrought in economy and society through the application and use of digital technologies. Hanna's latest book, *Mastering Digital Transformation*, is reviewed in this issue. His work draws our attention to the need to engage in studies across the range of focus areas necessary to achieving a holistic understanding of digital transformation, including understanding of: transformation in key economic sectors; transformation in enterprises; transformation in government; modalities for fostering digital inclusivity; and building smart cities. Hanna also emphasises the need to incorporate consideration of foundational digital transformation elements such as an enabling ICT industry, the human resources necessary for digital innovation and adoption, enabling policy and regulation, and enabling institutions and leadership. Studies in informatics, including information processing, information systems design, and engineering for digital transformation, are all relevant to enhancing the knowledge base of digital transformation studies.

In which journals are authors publishing on informatics and digital transformation in Africa? First, a large number of journals are published in a wide range of knowledge fields related to digital technologies and their effects. These journals serve the scholarly communities working in particular aspects of the broader disciplinary grouping of digital technology studies, whether from an arts perspective, an engineering perspective, or a policy perspective, among others. In some cases, knowledge fields are even more specialised, with particular journals publishing on e-government or government information. Second, vast numbers of articles on digital technologies and their effects are also published in field-specific journals in fields other than those directly related to digital technologies and digital media: fields spanning knowledge from agriculture to zoology. These journals enable scholars and students in these particular fields to publish and read about the particular types of digital transformation occurring in their fields and disciplines.

Many African scholars of digital transformation publish in both types of journals – those focused on digital technologies and those field- and discipline-specific journals that publish selected articles on digital technologies and their effects in the particular field of study. *The African Journal of Information and Communication (AJIC)* seeks with its "informatics and digital transformations" thematic issues, including this issue, to bring together articles from across a broad range of knowledge fields – both digital-technology-specific and field- or discipline-specific – in one thematic publication, in a common space where a wide range of focus areas can appear together. The aim is to create a publishing space for studies situated in any aspect of informatics and digital transformation. Thus, discussions of digital transformation in the economy, in the social sphere, in communities, in the practice of science, and in many other forms and aspects of digital transformation on the African continent,

can appear in one *AJIC* thematic issue, fostering contemplation of both the singular and cross-cutting issues relevant to the emergence of digital societies, irrespective of national or regional differences.

2. The range of digital transformations covered in this issue

In this *AJIC* Issue 18, three articles provide a sense of the range of digital transformations currently underway on the African continent. Scholtz et al.'s article on gamification as a means to improving career knowledge establishes the importance of thinking about educational outcomes, as well as health goals and other social goals, as opportunities for creating games to foster achievement. Kiptoo, Gerber and Van der Merwe present a view of the design of informatics for more effectively studying biodiversity, through utilising digital technologies to enable citizen participation, through crowdsourcing, and through taxonomic tagging for the purposes of species identification and knowledge enrichment. Maharaj and Naicker, in their study of LinkedIn use in South Africa, analyse the value created through making personal knowledge capacities visible in online social networks, and provide an indication that firms' use of such online social platforms offers greater potential value than is generally recognised. The thematic report by Mbanaso directs our attention to the growth in international cyber conflict and the need for heightened African research in this area.

Van Biljon's article on development informatics research provides a useful foundational exploration for the two articles that it precedes. Van Biljon persuasively argues, in her abstract, that "[i]ndigenous or local researchers from developing countries have not made a leading contribution to development informatics (DI) or information and communication technologies for development (ICT4D) research". The two articles that follow Van Biljon's show the richness that emerges from efforts to progressively shift the reality that Van Biljon identifies, i.e., both articles contribute meaningfully to the goal of building a corpus of African development informatics knowledge. The Van Zyl and Sabiescu item provides findings from research into digital technology deployment in poorly-resourced South African schools, while Ezema addresses reproductive health information needs among rural women in Nigeria.

The article by Dlamini, Lugayizi and Esiefarienrhe presents an important area for continued research, as increasing demand is placed on the capacity of networks to offer quality of service for video streaming on the Internet. Greater attention to research on network engineering and its supporting role in development informatics is required with respect to future uses of the Internet, such as video streaming, in Africa.

3. Universal access in an African digital transformation context

The six articles and thematic report in this AJIC issue each present an implicit perspective on universal access requirements in the contemporary African digital ecosystem as we approach the end of the second decade of the 2000s. The requirements for universal access have advanced far beyond access to voice or Internet. In Africa,

we now live in an era where high levels of data usage via mobile Internet access and continuous connectedness are characteristic of economic and social development of households and nations. Universal access challenges for voice and Internet that were not answered in the first decade of the 2000s, combined with the greater complexity associated with the digital innovation and regulation required for effective universal access in this decade, have created an ever more difficult set of challenges for policymakers, regulators, Internet service providers, operators and digital innovators. Far from solving the universal access question, Africa's ICT ecosystem continues to produce new access challenges for African countries that are resource-poor or digital-strategy-poor. If more than a few people are to benefit from the gamification, or online social networks and technology-enabled schools, which are discussed in this issue, then it is a necessity that available funds and resources be directed towards appropriate investment in universal digital infrastructure access, use and innovation.

In 2017 and beyond, access goals on the African continent must focus on, among others, online education in and out of school, online access to career knowledge 24/7/365, building online communities of practice for scientific study, online health, and online knowledge-sharing. It is these directions where empowerment now lies. Not that the traditional forms of empowerment (via income, assets, all forms of infrastructure, and services) are no longer essential; they certainly are. Nevertheless, personal and community empowerment, through the various forms of educational and health content and general access to knowledge that is available online, are integral to enabling these traditional forms of empowerment.

Universal access to what? Universal access where? The combination of personal or shared devices, mobile voice, (mobile) broadband infrastructure, Internet services and online services, in the home or in walking distance, at affordable prices, at low or no cost – this is the what. Digital transformation of economy and society can advance through universal access to mobile voice and mobile broadband for the 50% or more of the population of the African continent that resides in rural and remote places – this is the where.

4. Learning by editing

AJIC is reviewed, edited and published by academics interested in the process of knowledge-making and knowledge evolution on the African continent. In addition to the value gained by the authors, to whom we are grateful for their contributions, significant value is also gained by the editorial team, as we engage with the submissions, and as we explore the reference materials cited by the authors, the vast majority of which are freely available online. Accordingly, significant author and editor energy goes towards ensuring that the citations linking to online works, in the articles' reference sections, are accompanied by working URLs or accurate digital object identifiers (DOIs).

I urge scholars to continue to treat *AJIC* as a platform for presenting research findings situated at the cutting edge of investigating African informatics and digital transformations.