Harnessing data flow potentials for sustainable applications of Science, Technology and Innovation for African Development

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In their various forms and intricacy, Science, Technology and Innovation (STI) have always been the main building blocks of socio-economic development and prosperity throughout the history of mankind. Their successful applications have depended on, *inter-alia,* the rate of data and/or information flow, knowledge propagation and utilisation among the various social entities. In modern societies, enhancements in data generation, storage, retrieval, dissemination and the related integration of global economies and societies are fast transforming the way we live and interact. The outcome has been the formation of a dynamic, globalised and information society which, unfortunately, remains largely digitally divided. This paper focuses on addressing some of the continent's interlinked key issues relating to health, poverty and the environment by exploiting data/information flow potentials. In particular, it highlights the fundamental requirements for a sustainable transformation of data into knowledge that could readily be applied in improving the peoples' quality of life. Using a generic data sharing model, it illustrates data-driven decision making processes using large-dimensional stock trading, breast cancer and environmental data while emphasizing a multidisciplinary research approach in combating related issues.

The paper's main objectives include highlighting the influence of information flow on the development and prosperity of the African continent and identifying the framework for sustainable implementation of sharable data repositories and sources. In particular, it proposes rolling out the generic model through Knowledge Transfer Partnerships (KTP) based on synergies between the private sector, academic and research institutions within and between countries. The paper's main outcomes include a proposed implementation framework and setting the scene for the creation of decision support systems capable of addressing the key issues relating to human health and well-being, poverty and the environment. Potential future outcomes include integrating data resources into high performance cloud computing, grooming a community of young African data scientists to grow and integrate into the mainstream global research networks as well as improving the peoples' overall quality of life.