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Investigating cyberinfrastructure strategy, higher education policy and digital transformation in public South African universities

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Abstract

In 1996 the principle of the National System of Innovation (NSI) was introduced as a vehicle to eradicate South Africa's socio-economic challenges. In support, the government introduced a research and development strategy and a ten-year innovation plan, collectively addressing funding and priority research projects. The policy framework acknowledged the importance of elevating higher education through improved, development of human resources, knowledge creation, and collaboration on research and innovation.

The research investigated the impact of investment and policies in cyberinfrastructure on digital transformation at public universities, concerning teaching and learning, and research practices. The study adopted a qualitative single case-study methodology to understand the underlying concepts of the subject. Data was collected through in-depth interviews with senior managers specialising in higher education, science and technology, telecommunications, and through documentary analysis.

The findings of the research indicate that the historic investment and policies consideration in cyberinfrastructure has a positive impact on teaching and learning, and research at public universities. The effect varies according to the following, amongst other things: 1) financial standing of the public university; 2) geographic location of the public university; 3) historical background of the public university, and; 4) density of commercial ICT infrastructure.

The investment enabled public universities to access cyberinfrastructure and effectively collaborated with other research institutions. Investment in competency programmes empowered increased usage of cyberinfrastructure thereby growing research outputs, improved research quality, introduced technology transfer, human development, expanded the scope of research at public universities, enabled public universities to collaborate and host sections of international projects.