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Testing a Structural Model on Access-Utilization of High Performance Computing Systems in Black Owned Small Businesses in South Africa: The Role of Dynamic Capabilities

Researchers over the past four decades have argued that on the one hand, small businesses are significant drivers of economic growth and employment globally while on the other hand, they have a high rate of failure. In South Africa for instance, 91% of businesses, 57% of the GDP and 61% of the employment reportedly come from small businesses. Conversely, South Africa has recorded a high rate of failure of small businesses especially Black owned. Black owned businesses are considered as enterprises controlled by minimum of 51% Black South Africans often referred to as one of the groups mostly affected by poverty, gross shortage of government support, finance, and skills. Thus, the poor performance of Black owned small businesses in South Africa can inter alia be traced to the prevailing lack of knowledge and competencies required to survive in the increasingly unstable business environment. This instability in the business environment can inter alia be traced to disruptive technologies like Internet of Things (IoT) which produces large data. This large data necessitates the architecture provided by High Performance Computing (HPC) systems to be effectively managed. However, Black owned small businesses are lacking in HPC R&D frameworks, skills, and competencies relevant for the dynamic environment. Thus, they lag in access and utilisation of HPC systems to boost their performance. The foregoing suggests that the role of dynamic capabilities in performance cannot be ignored for Black owned small businesses to drive economic growth and employment in South Africa. This is because dynamic capabilities involve developing, blending, and realigning organisational competencies for survival in dynamic business environment. Hence, using a quantitative research approach and cross-sectional survey research design, this study will test a structural model on the access and utilisation of HPC systems in Black owned small businesses in South Africa. In addition, this study will ascertain the role of dynamic capabilities such as big data management capabilities, entrepreneurial orientation, and innovative performance in the afore-mentioned. Web-based questionnaires will be used to collect data while Structural Equation Modelling (SEM) will be adopted for analysis and modelling of data to be collected from selected respondents who will be conveniently sampled from the target population. The target population for this study will be the Black owned small businesses under the recent collaborative initiative between the Council for Scientific and Industrial Research (CSIR) and Black Umbrellas (BU). The BU-CSIR collaboration exists to enhance Black owned small businesses in South Africa by assisting them with their technical and technological needs by granting them access to CSIR-developed technologies including HPC. In addition, the partnership seeks to facilitate the access of Black owned small businesses in South Africa to the CSIR research and development frameworks relevant to their businesses.

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