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THE ROLE OF INFORMATION COMMUNICATION AND TECHNOLOGY (ICT) IN THE HAMMARSDALE TOWNSHIP ECONOMY

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ABSTRACT

The study examines the impact of Information Communication and Technology (ICT) on the township economy in the Hammarsdale area. Hammarsdale is a township in the province of KwaZulu-Natal, South Africa. Itis semi semi-rural area based in the western part of eThekwini municipality classified as an underdeveloped with poor community.Critical to the reason of the study is the continuous growth of both formal and informal enterprises in the township creating an opportunity for an enabler to formalise and link the township enterprise to the externalandformalisedindustries.The study aimsto investigate the role that information and technology can play in improving the township's economic turnover and the growth of LED. Key objectives examinedthe access to ICT infrastructure within the township of Hammarsdale. They investigated the understanding and use of the ICT services importingbusinesses and tradersinside the township and external businesses. Examine the need to develop ICT hubs within the township topromote businessenterprises trading with and within the township. The study analysed a selected sample of businesses, N=260 that respondedto a questionnaire regardingICT as atool to grow their business. The sample comprised amixof businesses, including transport, retail and small street vendors. Key findings of this study highlighted limitedaccess to ICT infrastructure within townships, the need for training and development to promote ICT by business practitionersand a need to fund and create ICT hubs that will promote the use of ICT in the economic growth of Hammarsdale.

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INTRODUCTION

South Africa is rapidly moving towards an integrated part of the global community after its long absence in the advanced economic and digital economy. Globalisation and advances in ICT like the internet, social networks, and cryptocurrency in the range of business are the major contributors that have altered the way businesses and organisations communicate and interact with customers; this includes government departments and society at large (Fosu, 2019). The New World and South Africa (SA) internationally present opportunities for wealth creation and growth, allowing for LED and township economies to align with the world (Rogerson, 2018). According to Bvuma*et al*. (2020),in African countries, where many economies are informal, Small Medium and Micro Enterprises are used as vehicles facilitating individual business participation in the economy. Small Medium and Micro Enterprises (SMMEs) create wealth and value for many of the African economies resulting in as many socio-economic establishments in Africa, in South African SMMEs and entrepreneurial development economic value is realised in different environments that are located in cities as well as townships (Bvuma *et al*., 2020). While township trading is not a new phenomenon there is limited scholastic evidence that responds to the lack of information on ICT adoption by township economies and the value creation in their adoption or non-adoption of ICT (Cant, 2017). South African cities are economically and socially fragmented their remoteness, and the slow pace of urban restructuring has resulted in a situation where communities in remote urban areas are not only marginalised but economically excluded (Odendaal, 2003). According to Odendaal, (2003), city officials hoped eThekwini becoming a "digital city" that could provide the means for the city to achieve exposure, growth, and development. Hammarsdale is adistrict within the city of eThekwini exposed to these exclusions and marginalisation, especially in local economic policy and economic development (Mosoetsa, 2004). South African government expects cities to compete with both national and international counterparts in attracting investment and promoting local strengths (Karambakuwa *et al*., 2020). Different city municipalities have adopted e-governance, while central government

agencies have implemented ICT programs like digital divide initiatives and telecentres. eThekwini's ICT policy, though relatively new, focuses on two goals: using ICT as an enabler and improving efficiency, with rapid progress in IT and a strong emphasis on economic growth (Odendaal, 2003, Bond, 2023). Accordingto Bvuma & Marnewick (2020), South Africa's SMMEs operate in both townships and cities, but concerns have been raised about their high failure rate and struggle to gain a competitive edge, particularly in the current era of rapid ICT adoption.

METHODOLOGY

This study employs an exploratory qualitative approach, primarily relying on secondary sources through an extensive review of existing literature relevant to the topic under investigation. Secondary research also referred to as desk research, involves the analysis of previously gathered data to inform the study on thetownship economy in Hammarsdale.

Exploratory qualitative approach: researchers seek to gain deeper insights into the subject understanding rather than testing specific hypotheses. Exploratory research is generally considered to be inductive and qualitative. Exploratory qualitative studies adopting an inductive approach do not lend themselves to a priori theorising and building upon prior bodies of knowledge (Casula *et al*., 2021). The existing data were synthesised and organised to enhance the overall efficacy of the research. The study relied on two types of secondary data: internal and external data sources. According to Houston (2004), by utilising secondary data proxies, researchers can access new data sources and illuminate or provide crucial supporting evidence for established areas of research that have traditionally depended on a narrow range of methodological approaches.

Internal data source: This type of data is typically specific to the area of investigation and can provide valuable insights for decision-making, analysis, and strategy development (Özemre & Kabadurmus, 2020).

External data sources: This type of data can provide additional context, insights, and perspectives that may not be available through internal sources. External data is often used to complement internal data, helping researchers make more informed decisions and gain a broader understanding of market conditions and industry trends (Grover *et al*., 2018).

Ultimately, this approach underscores the potential of secondary data in informing decision-making and strategy development within the township economy.

LITERATURE REVIEW

In the global world, emerging economies are countries and areas that are adapting from developing to developed status to a free market system, creating a knowledge-based economy; this economy is assisted by the inclusion of ICT (Kowal & Paliwoda-Pękosz, 2017). In the study conducted by Majeed *et al*. (2018), the results showed that all ICT indicators accelerate global and regional economic growth. However, some indicators such as online service, telecommunication infrastructure and e-government are comparatively more conducive to enhancing economic growth. Although the existing literature is limited, it suggests that the challenges faced by rural and township economies in adopting digital business models like in Asiaare closely linked to socio-economic factors. Scholars like Bvuma *et al*. (2020) have similarly confirmed the need for ICT support to address these challenges (connectivity, access, training and development and other funding-related networks) highlighting commonalities in their findings to those in SA. Mahlaule *et al*. (2024), suggest that the link between economic growth and development is continuously linked to the expansion and use of ICT.

The importance and economic contribution of township economies are further linked to development and research. A thorough analysis and understanding of how ICTs contribute to development can serve as a foundation for further research and offer practical insights into how development can be advanced through the use of ICTs.Its economic link is determined by theuse and acceptance of ICT in emerging economies (Johnston *et al*., 2015). Using the fixed-effect model (individual business practice), Udimal's (2021) studies suggest that the primary binding constraints on the township economy in South Africa are the cost and supply of electricity. Furthermore, studies by Charman (2021), and Mosia (2021) support that the purchasing strategy may be advantageous for small businesses, as it lowers average costs while boosting the owner's revenue. However, Sutrisno (2023) suggest that thepurchasing strategy may not be advantageous for small businesses, as it might fail to significantly reduce average costs or increase the owner's revenue if ICT is not considered to open other avenues to reduce costs. In the age of globalisation and rapid advancements in information technology, competition across various business sectors has become increasingly intense, particularly small businesses. The township economy continues to effectively keep pace with ICT developments, which hinders its ability to align with emerging business opportunities (Sutrisno, 2023). While there is developing literature to support the need for economic growth within the ICT space, the literature suggests that link limitations expand the projected growth (Awad & Albaity, 2022). This article reviews the factors limiting the impact of ICT on the township economy. The impact of Information and Communication Technology (ICT) on township economies can be significant in driving growth, innovation, and development. However, several factors can limit its full potential. Here are some key limiting factors:

Socio-economic Factors: According to Awad & Albaity (2022), the significant progress in the empirical analysis of the impact of ICT on economic growth indicates that previous studies have not empirically examined the mechanisms by which ICT hinders or expands economic growth, especially in township economies. While most of the townshipsarebattling unemployment and poverty, the inability to use and integrate technology because oflimited disposable incomefurther shifts the benefits of ICT in improving income generation (Zizzamia, 2020).

Poverty: According to Garza-Rodriguez (2018), the link between poverty and economic growth has been extensively explored in economic development literature over the past few decades. However, much of this research has relied on cross-sectional studies, with only a limited number of studies using time-series methods to examine this critical issue. While poverty can be linked to limited economic growth there is evidence in literature of Nigerian economic growth besides the unabated poverty situation in the country (Dauda, 2017). In South Africa, poverty remains predominantly concentrated in rural areas and disproportionately affects women who bear the responsibility of caring for families and children. The 17 Sustainable Development Goals (SDGs) serve as a foundation for South Africa's National Development Plan (NDP). One of the key objectives of the NDP 2030 is the redistribution of income to alleviate extreme poverty (Ngubane *et al*., 2023).

Unemployment: According to a study by Shah *et al*. (2022) on Pakistan's economy, the empirical results indicate that both unemployment and inflation rates have a negative relationship with economic growth. Furthermore, In a study utilising borrowed annual time series data from secondary online sources, specifically the World Bank, covering the period from 1980 to 2020, the results indicate a negative but statistically insignificant relationship between unemployment and economic growth in South Africa (Hlongwane & Daw, 2021). South Africa continues to face persistent macroeconomic challenges, including stagnant economic growth, declining investment, and high unemployment (Pasara & Garidzirai, 2020). ICT continues to grow in contribution to the GDP surpassing theagricultural sector (Sats SA,2020).

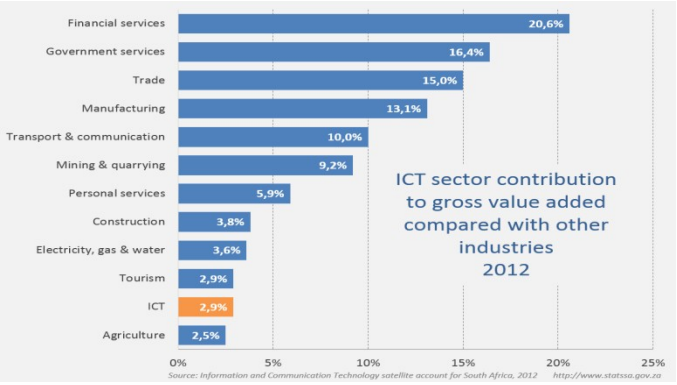

Image: Stats SA 2020

Figure 1. The direct contribution of the ICT sector to the gross domestic product (GDP)

Infrastructure Limitation and Access : According to Mahlaule *et al*. (2024), the adoption of digital technologies and digital business models in rural and township areas and developing countries faces numerous constraints given their contextual nuances. The ICT sector has become an increasingly crucial engine for sustained and inclusive growth in Africa, particularly considering post-COVID-19 recovery efforts (Nchake & Shuaibu, 2022). Africa's Information and Communication Technology (ICT) deficit represents a significant impediment to its development potential. To bridge this gap, an estimated annual investment of $3 billion will be necessary to spur economic growth. The private sector has played a pivotal role in providing ICT infrastructure across the continent, and further encouragement of such contributions will be essential for sustained progress (Corrigan, 2022). Compounding to infrastructure is the unreliable electricity supply in South Africa, power supply plays a crucial role in the socio-economic development of a nation, acting as a cornerstone for industrial growth, technological advancement, and overall economic progress. Adequate and reliable access to electricity is a fundamental requirement for various sectors (Menyah & Wolde-Rufael, 2010). The diverse structure in ICT continues to play asignificant role in theSouth African economy aspect of its historical and current growth performance (STATS SA, 2020).

Access to ICT Funding: Bvuma & Marnewick (2020) argue that township SMMEs are dynamic entities, facing distinct challenges compared to their counterparts in urban areas. These township SMMEs possess unique characteristics shaped by their socio-economic environment and historical context, setting them apart from city-based SMMEs in terms of their operational dynamics and constraints.The geolocation of townships, coupled with their limited access to funding, significantly hinders their ability to adopt ICT as a tool for promoting economic development (Mboup & Oyelaran-Oyeyinka, 2019).Despite the presence of ICT infrastructure, including fibre networks, which remain underdeveloped in most townships, the affordability of smart devices and the high cost of data have emerged as significant barriers to fully participating in the digital economy (Tsolekile, 2021). To promote economic growth, ICT adoption of Township SMMEs needs financial support (Cant, 2017).

Information Technology Literacy: The adoption of digital technologies and business models in rural and township areas of developing countries faces numerous challenges due to the unique contextual factors present in SA (Mahlaule *et al*., 2024). Amongst these challenges is the low level of digital skills,andlack of understanding of online marketing, e-commerce platforms, and digital business tools (Mutula & Brakel, 2007). In a study conducted by Naik *et al*. (2023) on India's economy, the authors conclude that the growth of start-ups is influenced by multiple factors, with digitalisation being identified as a significant barrier to the full-scale adoption and expansion of start-ups. According to Ntsobi (2024), a key strategy to bridge the digital gap and promote economic development is through the creation of innovative partnerships between thegovernment and the private sector.

One indicator of success in this approach is the business sector's innovation in exports, as demonstrated by an increase in the number of exporting firms, the introduction of new export products, and the expansion into new export markets. These partnerships can help address the digital divide, facilitating greater access to global markets and driving inclusive economic growth.The rapid advancement of information and communications technologies (ICTs) holds great potential for closing the gap in addressing the socio-economic challenges posed by the growing urban youth populations in developing countries. ICTs provide crucial opportunities for young people, enabling access to education, skill development, and employment, ultimately contributing to more inclusive economic growth and social development. By integrating ICT into development strategies, the barriers to progress can be effectively reduced, fostering sustainability (Yigitcanlar, 2008).

Regulatory and Policy Barriers: Bruhn and McKenzie (2014) argue that despite over a decade of reform efforts aimed at simplifying and reducing the cost of formalising microenterprises, the majority of such businesses in developing countries remain informal. Policy interventions must prioritise and actively promote the formalisation of business to promote LED to achieve a meaningful impact on economic development, particularly in township economies.Mahajan (2014) asserts that for township economies to fully harness the benefits of ICT, a more targeted regulatory intervention is required. These interventions should include:

- Establishing an investment-friendly environment through clearer legislation on land and business ownership to foster business growth.
- Developing policies to address supply chain challenges and enhancing understanding of Broad-Based Black Economic Empowerment (B-BBEE) legislation to promote ICT adoption and economic expansion.
- Reviewing and implementing policies that improve access to funding, particularly for women and youth engaged in township economies.
- Creating specific support mechanisms to facilitate trade, including import/export and inter-trade between large and small businesses, particularly in agriculture and small-scale manufacturing.
- Providing continuous training and development in ICT and business management to support the sustainability and growth of township businesses.

The adoption of ICT to promote business development, especially in underserved townships, incorporates key factors that can guide SMME owners, managers, and policymakers in developing effective strategies for ICT integration within township SMMEs. The Fourth Industrial Revolution (4IR) offers businesses the opportunity to harness emerging technologies to lower operational costs, enhance efficiency, and strengthen their competitive position in the marketplace (Bvuma & Marnewick, 2020).

Adoption of E-Government Services in Promoting Township Economy : E-government services continue to evolve, andtraditional applications like online portals face challenges in a new digital era, where people increasingly seek more convenient and diverse ways to communicate with their government. Despite efforts in recent years to promote the use of Social Networking Services (SNS) in e-government, there remains a shortage of empirical studies on this emerging trend (Yang, 2017). Recent developments in South Africa indicate significant progress in e-services since the implementation of e-government policy initiatives within state institutions. However, the reviewed literature has primarily concentrated on Government-to-Citizen (G2C) e-services, with limited attention given to internal communication within the affected departments. Additionally, the link between government and businesses remains a significant barrier, particularly for new start-ups and in areas such as trade administration and payment compliance (Nokele & Mukonza, 2021). According to (Mahlangu & Ruhode, 2021) study on the shortage of government-

owned infrastructure, lack of systems integration, insufficient e-government funding, and the limited commitment to supporting and coordinating e-government initiatives identified the design-reality gap and policy inconsistencies as key factors contributing to service gaps in Zimbabwe's e-government sector. Despite differences in e-government between wealthy and developing countries, e-government holds the potential to offer numerous benefits to developing nations if effectively designed and managed. South Africa, in particular, has significant opportunities given its current stage of e-government development, provided it can overcome obstacles and address challenges related to e-government maturity levels (Enaifoghe *et al*., 2023).

ICT Hubs: ICT knowledge hubs are essential assets for a country striving to develop an innovation-driven economy (Mahlangu, et al., 2018). ICT hubs play a crucial role in fostering innovation, economic growth, and digital transformation by nurturing the next generation of technology entrepreneurs and professionals(Bala Subrahmanya, 2017). A key characteristic of tech hubs is their role as collaborative workspaces and competence centres, leveraging digital technology to incubate startups and accelerate business growth (Abrahams, 2020).Scholars like Abrahams (2020) and Bala Subrahmanya (2017) support the full adoption of hubs as part of business ecosystems to further grow the township economy-wide similar to that of the Harmmrdale area. Abrahams (2020) and Bala Subrahmanya findings highlight how tech startups and hubs scale and sustain by leveraging competing ecosystem factors and building complex external relationships within the innovation ecosystem.

CONCLUSION

This study highlights the critical role of Information and Communication Technology (ICT) in enhancing the township economy in South Africa, particularly in areas like Hammarsdale. As South Africa integrates into the global economy, the advancement of ICT presents significant opportunities for local economic development (LED) and the growth of Small, Medium and Micro Enterprises (SMMEs). However, the research identifies several limiting factors, including socio-economic challenges, infrastructure deficiencies, and regulatory barriers, that hinder effective ICT adoption in township economies. Furthermore, while government initiatives in e-governance aim to improve service delivery and facilitate communication, significant gaps remain in the integration of these services with the needs of local businesses. To unlock the full potential of ICT in driving economic growth, targeted policy interventions and support mechanisms are essential. By addressing these challenges, South Africa can leverage ICT to foster innovation, create jobs, and promote inclusive economic development within township communities. These developed will include the deliberateinstallation, commission, and funding of ICT hubs across the towships to support LED.

REFERENCES

Abrahams, L., 2020. Innovation entanglement at three South African tech hubs. *The African Journal of Information and Communication,* Volume 26, pp. 1-29.

Awad, A. & Albaity, M., 2022. ICT and economic growth in Sub-Saharan Africa: Transmission channels and effects. Telecommunications Policy, 46(8), p. 102381.

Bala Subrahmanya, N., 2017. How did Bangalore emerge as a global hub of tech start-ups in India? Entrepreneurial ecosystem—Evolution, structure and role. *Journal of Developmental Entrepreneurship,* 22(1), p. 1750006.

Bruhn, M. & McKenzie, D., 2014. Entry Regulation and the Formalization of Microenterprises in Developing Countries,. The *World Bank Research Observer, 29*(2), pp. 186–201,.

Bvuma, S. & Marnewick, C., 2020. An information and communication technology adoption framework for small, medium and micro-enterprises operating in townships South Africa. *The Southern African Journal of Entrepreneurship and Small Business Management,* 12(1), p. 12.

Bvuma, S. & Marnewick, C., 2020. An information and communication technology adoption framework for small, medium and micro-enterprises operating in townships South Africa. *The Southern African Journal of Entrepreneurship and Small Business Management,* 12(1), p. 12.

Bvuma, Stella & Marnewic, 2020. "Sustainable Livehoods of Township Small ,Medium and Micro Entreprices Towards Growth and developemt". Sustanability, 12(8), p. 3149.

Cant, M., 2017. The Availability of Infrastructure in Townships: Is there Hope for Township Businesses?. *International Review of Management and Marketing*, 7(4), p. 108.

Cant, M., 2017. The availability of infrastructure in townships: Is there hope for township businesses?.. International Review of Management and Marketing, 7(4), p. 108.

Casula, M., Rangarajan, n. & Shields, P., 2021. The potential of working hypotheses for deductive exploratory research. Quality & Quantity, 55(5), pp. 1703-1725.

Corrigan, T., 2022. "Africa's ICT Infrastructure: Its present and prospects.". Policy Briefing, Volume 197, pp. 1-9.

Dauda, R., 2017. Poverty and economic growth in Nigeria: Issues and policies. Journal of Poverty, 21(1), pp. 61-79.

Enaifoghe, A., Dlamini, N., Jili, N. & Mthethwa, R., 2023. The role of e-government as enabler of good governance for socio-economic development in South Africa.. International Journal of Social Science Research and Review, 6(1), pp. .493-508.

Fosu, A., 2019. The Use of ICT by SMMEs in the Digital Economy : Acase Study in Bauffalo City Metropolitan in South Africa. In site 2019:Information Science + IT Education Confrence: Jerusalem, Informingscience.

Garza-Rodriguez, J., 2018. Poverty and economic growth in Mexico. Social Sciences,. Social Sciences, 7(10), p. 183.

Grover, V., Chiang, R., Liang, ,. & Zhang, D., 2018. Creating strategic business value from big data analytics: A research framework. Journal of management information systems,, 35(2), pp. 388-423..

Hlongwane, N. & Daw, O., 2021. Unemployment and economic growth in South Africa from 1980 TO 2020 an ARDL approach. *International Journal of Economics and Finance Studies*, 13(2), pp. 179-198.

Houston, M., 2004. Assessing the validity of secondary data proxies for marketing constructs. Journal of Business Research, 57(2), pp. 154-161.

Johnston, K., Jali, N., Kundaeli, F. & Adeniran, T., 2015. ICTs for the broader development of South Africa: An analysis of the literature. *The Electronic Journal of Information Systems in Developing Countries,* 70(1), pp. 1-22..

Karambakuwa, R. et al., 2020. Special economic zones and transnational zones as tools for Southern Africa's growth: Lessons from international best practices (No. 2020/170).. WIDER Working Paper.

Kowal, J. & Paliwoda-Pękosz, G., 2017. ICT for Global Competitiveness and Economic Growth in Emerging Economies: Economic, Cultural, and Social Innovations for Human Capital in Transition Economies. *Information Systems Management,* 34(4), pp. 304-307.

Mahajan, S., 2014. Economics of South African townships: special focus on Diepsloot. Wahington DC: World Bank Publications.

Mahlangu, G. & Ruhode, E., 2021. Factors enhancing e-government service gaps in a developing country context. arXiv preprint arXiv.

Mahlangu, G., Musungwini, S. & Sibanda, M., 2018. A framework for creating an ICT knowledge hub in Zimbabwe: A holistic approach in fostering economic growth. *Journal of Systems Integration, 1*9(1), p. 1.

Mahlaule, M., Marwa, N. & Akinrinde, O., 2024. CONSTRAINTS, CHALLENGES, AND OPPORTUNITIES FOR DIGITAL BUSINESS IN RURAL AND TOWNSHIP ECONOMY.. *Indonesian Journal of Business and Entrepreneurship*,.

Mahlaule, M., Marwa, N. & Akinrinde, O., 2024. CONSTRAINTS, CHALLENGES, AND OPPORTUNITIES FOR DIGITAL

BUSINESS IN RURAL AND TOWNSHIP ECONOMY.. *Indonesian Journal of Business & Entrepreunership*, 10(3).

Mahlaule, M., Marwa, N. & Akinrinde, O., 2024. CONSTRAINTS, CHALLENGES, AND OPPORTUNITIES FOR DIGITAL BUSINESS IN RURAL AND TOWNSHIP ECONOMY *Indonesian Journal of Business & Entre. Indonesian Journal of Business & Entrepreunership*, 10(3).

Majeeed, Muhaamad, A. & Tayba, 2018. "Information and Communication Technology (ICT) and Economic Growth Nexus: A comparative Global Analysis.". *Pakistan Journal of Commerce and Social Sciences,* 12(2), pp. 443-476.

Mboup, G. & Oyelaran-Oyeyinka, B., 2019. Relevance of smart economy in smart cities in Africa. *Smart economy in smart African cities. Springer,* pp. 1-49..

Menyah, K. & Wolde-Rufael, Y., 2010. Energy consumption, pollutant emissions and economic growth in South Africa. Energy economics, 32(6), pp. 1374-1382.

Mosoetsa, S., 2004. The legacies of apartheid and implications of economic liberalisation: A post-apartheid township.. eprints .

Mutula, S. & Brakel, V., 2007. ICT skills readiness for the emerging global digital economy among small businesses in developing countries: Case study of Botswana. Library Hi Tech, 25(52).

Naik, M., Ayarekar, S., Vidyapeeth, B. & Naik, M., 20223. Challenges faced by Start-ups in adoption of Digital marketing and E-Commerce platforms. *The Online Journal of Distance Education and e-Learning,* 11(2).

Nchake, M. & Shuaibu, M., 2022. Investment in ICT infrastructure and inclusive growth in Africa. *Scientific African*, Volume 17, p. 1293.

Ngubane, M., Mndebele, S. & Kaseeram, I., 2023. Economic growth, unemployment and poverty: Linear and non-linear evidence from South Africa.. Heliyon, 9(10).

Nokele, K. & Mukonza, R., 2021. he Adoption of E-Government in the Department of Home Affairs–Unpacking the Underlying Factors Affecting Adoption of E-Government within the Selected Service Centres in Limpopo Province, South Africa. *African Journal of Governance and Development,* 10(1), pp. 98-117.

Ntsobi, M., 2024. A Holistic Barometer for Measuring the Impact of Science, Technology and Innovation in South Africa. *Medicon Engineering Themes,* 6(1), pp. 3-18.

Odendaal, N., 2003. Information and communication technology and local governance: Understanding the difference between cities in developed and emerging economies.. Computers, environment and urban systems, pp. 585-607.

Özemre, M. & Kabadurmus, O., 2020. A big data analytics based methodology for strategic decision making. *Journal of Enterprise Information Management,* 33(6), pp. 1467-1490.

Pasara, M. & Garidzirai, R., 2020. Causality effects among gross capital formation, unemployment and economic growth in South Africa. Economies, 8(2), p. 26.

Rogerson, C., 2018. Local Economid Developemnt In the Changing World: the Experince of Southern Africa. Routlege.

Shah, S., Shabbir, M. & Parveen, S., 2022. The impact of unemployment on economic growth in Pakistan: An empirical investigation.. *iRASD Journal of Economics*, 4(1), pp. 78-87.

Sutrisno, S., 2023. Strategies for Utilising Educational Technology to Improve the Competitiveness of Student Small Businesses. *Indo-MathEdu Intellectuals Journal,,* 4(2), pp. .268-286.

Sutrisno, S., 2023. Strategies for Utilising Educational Technology to Improve the Competitiveness of Student Small Businesses. *Indo-MathEdu Intellectuals Journal,* 4(2), pp. 268-286.

Tsolekile, S., 2021. The plausibility of developing a digitised township economy: A study of townships in Cape Town. wiredspace.wits.ac.za.

Yang, Y., 2017. Towards a new digital era: observing local e-government services adoption in a Chinese municipalit. Future Interne, 9(3), p. 53.

Yigitcanlar, T., 2008. Providing youth with skills, training and employment opportunities through ICT initiatives. Public-Private Partnerships and ICTs. eprints.qut.edu.au, pp. 111-138.

Zizzamia, R., 2020. Is employment a panacea for poverty? A mixed-methods investigation of employment decisions in South Africa.. World Development, 130(104938).

****