Exploring the Integration of South African Indigenous Languages in ICT for Economic Growth

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Abstract

Information and Communication Technology (ICT) is vital for promoting economic participation and growth. However, the prevalence of English as the main language of ICT presents a significant hurdle for many individuals, especially in Africa, hindering their full involvement in the digital economy. Language is essential for understanding and interaction, and as industries increasingly move to digital platforms, integrating South African indigenous languages into ICT has become necessary for wider participation. Despite extensive research emphasising the need to incorporate African languages into ICT, highlighting key advantages and challenges, a considerable gap remains in examining practical approaches for implementation and a focus on a country perspective with South Africa as one of the examples. This qualitative study aims to explore the reasons behind the slow uptake of South African indigenous languages in ICT and suggest potential strategies for their integration. Data was gathered through a desktop review.

The findings reveal a strong demand for incorporating African languages into ICT; however, there is limited investment to support this initiative. The study also highlights issues with language translation, as many African languages lack support from commonly used translation tools, underscoring the need for greater involvement from South African indigenous language speakers in the development and application of these tools. Additionally, the motivation to embrace South African indigenous languages is often insufficient, as many South African language speakers may not fully appreciate the value of their languages due to the longstanding prevalence of English in global communication. The research suggests that highlighting the significance of these languages, enhancing their perceived worth, employing South African indigenous language speakers for ICT development, and securing increased investment are crucial steps for successful integration.

Keywords: ICT, Economic Development, South African Languages, Digital Inclusion, Language Adoption, and Digital Divide.

Introduction

As digital technology becomes increasingly integrated into Africa, particularly within economic, educational, and social sectors, access to these digital tools remains inconsistent. The digital divide stems not only from infrastructural and affordability issues but also from linguistic exclusion. While this issue affects Africa as a whole, the focus of this study is South Africa. According to Siziba and Maseko (2024: 4), a new language policy was introduced along with the 1996 Constitution in South Africa to direct and influence language use in the post-apartheid era. This policy recognises twelve (12) official languages; namely, Sepedi, Sesotho, Setswana, Siswati, Tshivenda, Xitsonga, Afrikaans, English, isiNdebele, isiXhosa, and isiZulu. This also includes sign language. However, the policy seems to remain undermined as only English and Afrikaans continue to be the dominant languages in instruction, government, and commerce in most contexts.

It is crucial to highlight that many South Africans struggle with reading, writing, understanding, and expressing themselves in English which significantly impacts their interactions in different sectors, especially the ones with digital tools. As noted by Onamadike (2025) in an opinion piece for "Mail & Guardian", language inclusion is frequently overlooked in the development of civic technology; design decisions are often made by teams who do not consider the linguistic realities of the users they aim to serve. Onamadike (Op cit.) highlights that most African civic tech platforms are designed in English or French, neglecting the indigenous languages that users are comfortable with such as Swahili, Yoruba, or isiZulu. Also, he states that "a key reason for this dominance is that English is the primary language of the internet where most training data for language technologies used in digital tools comes from." Furthermore, he acknowledges that South Africa has multiple languages and a high number of civic tech initiatives on the continent; however, government websites, mobile apps, and AI-driven chatbots are English-only. It is to be noted that government websites and mobile apps are significant tools to engage in economic activities, especially the process of searching for jobs or being updated about recent business or job opportunities by government institutions. Therefore, the failure to interact with these, due to language barriers, affects overall economic development, especially with this significant shift to a digital world.

The existing divide is exacerbated by factors such as infrastructure, data and device affordability, and the language barriers discussed in this study. Key obstacles to bridging the digital divide include insufficient infrastructure such as internet connectivity, fixed broadband, and mobile telecommunications alongside affordability concerns, as devices and data remain costly. This is coupled with a lack of knowledge and skills necessary to utilise digital technologies effectively (FoodBev SETA, 2022: 5-6). Consequently, when individuals encounter these devices through educational institutions, workplaces, or government services, they often struggle to engage, especially if they are new to the technology. The added complexity of language barriers further impedes their ability to adapt.

This difficulty and prolonged adjustment, due to language barriers, hinders engagement with economic activities, development, and overall growth. This affects ICT businesses given that these businesses fail to reach a high target of diverse individuals. Non-English speaking individuals who are seeking employment and small businesses that are owned by non-English speaking individuals are mainly affected by this. This is because language barriers reinforce exclusion from digital markets, financial tools, e-governance systems, and general everyday duties that require the use of digital tools. Mahlaule et al. (2024: 691) conducted a study on the constraints, challenges, and opportunities faced by entrepreneurs

and digital businesses in South African townships and rural areas. In their study, they highlight that businesses fail at effectively advertising their products and services to customers with diverse language and cultural backgrounds. They further highlight that the digital sphere has great potential for economic growth and inclusion; however, language and cultural diversity should be considered to ensure effective implementation. It is therefore important to note that overcoming key issues such as language barriers will assist rural and township businesses to "tap into the global markets, fostering economic diversification, and poverty alleviation" (Mahlaule et al., 2024: 694).

Information and Communication Technology (ICT) has emerged as a vital tool for fostering economic participation and growth. However, the lack of language inclusion within ICT creates barriers that impede this growth, as comprehension, knowledge, and skills are essential for successful engagement. The predominance of English in ICT tools restricts full participation, particularly for non-English speakers. Thus, this study is critical in demonstrating how the incorporation of all twelve (12) official South African languages into ICT tools can enhance economic participation, leading to greater economic growth. The study outlines the issues associated with language translation, as commonly used translation tools inadequately support many South African languages. These tools dominantly use English in South Africa. As highlighted by Onamadike (2025) earlier, "a key reason for this dominance is that English is the primary language of the internet where most training data for language technologies used in digital tools comes from." This situation calls for enhanced involvement from indigenous South African language speakers in the development and application of these tools. Additionally, there is often inadequate motivation to embrace South African languages since many of these language speakers may not fully recognise the value of their languages, given the longstanding dominance of English in global communication. The research suggests that raising awareness about the importance of these languages, enhancing their perceived value, employing South African language speakers in ICT development, and securing increased investment are essential steps for successful integration.

This qualitative exploratory study will utilise secondary data, specifically through desktop research. The study is structured as follows: it includes an introduction that provides background information, defines the research problem, and outlines the research significance and objectives. A literature review that situates the study within existing scholarship, while the discussion and findings section presents and interprets the collected data. A methodology section that explains the research approach and the theoretical or conceptual framework, defines key concepts, and theoretically grounds the study. Finally, the recommendation and conclusion encapsulate the findings and propose actionable steps.

Literature Review

The literature review compiles and analyses existing research, emphasising prior discussions surrounding the study's topic. During the literature collection process, two main themes emerged: the relationship between ICT and economic growth, and the role of ICT in integrating indigenous languages.

ICT and Economic Growth

Adeleye and Eboagu (2019:32) indicate that following the year 2000, the African continent emerged as the third-fastest growing region globally. This significant achievement can

be largely attributed to enhanced domestic investment in the services sector, which was notably influenced by improved ICT usage and efficiency. ICT services in rural areas of Africa have played a crucial role in transforming the lives and livelihoods of local populations. These changes have manifested in various ways such as job creation, income increases, cost reductions, decreased uncertainty and risk, and strengthened familial relationships, among other advantages. Furthermore, Saba et al. (2025: 444) noted that, as ICT continues to infiltrate every sector of the economy, its historical, contemporary, and potential future impacts on Africa's economy are significant, despite the various challenges it encounters. This highlights the significant challenges associated with fully integrating ICT. However, these challenges must be addressed considering that ICT is becoming essential in every sector. Without basic ICT skills or an understanding of ICT tools, individuals will miss out on the benefits of this transformation. The International Trade Administration (2024) highlighted that South Africa is a leader in Africa's digital economy, thanks to its strong infrastructure and supportive government. The sector is growing rapidly, driven by improved connectivity, e-commerce, and emerging technologies like AI and Block chain. By 2025, it is expected for the sector to contribute 15-20% to Gross Domestic Product (GDP), up from 8-10% in 2020 with an annual growth rate of 10-15% over the next five years. As a growing sector with an increasing contribution to GDP, South Africans need to engage with these tools. It must be ensured that no one is excluded due to language barriers or a lack of resources, not only for individual benefit but also for the economy. If more South Africans had access to and the ability to engage with these tools, the GDP would further increase.

In alignment with this, Andrianaivo and Kpodar (2010: 6) highlighted the rising interest in harnessing ICT to enhance financial inclusion in Africa, particularly through mobile financial services. They underscored the necessity of evaluating whether these initiatives can genuinely promote financial inclusion and, in turn, contribute to economic growth. Additionally, Lund and Cruz (2025) stressed the pivotal role of ICT in economic transformation, asserting that the adoption of digital technologies by businesses is a key driver of productivity and economic growth in developing economies. However, despite substantial progress in digitalisation, especially regarding mobile payments, the overall utilisation of digital technologies among African enterprises remains relatively low. The relatively low use of these tools can be attributed to individuals' distrust, lack of access, and difficulties in understanding the digital technologies due to language barriers. As a result, many people are left behind and are not engaging, not because they do not want to, but because of these obstacles.

Lund and Cruz (2025) identified several factors contributing to this gap. First, the cost of hardware and software is disproportionately high, as digital devices, machinery, and software in sub-Saharan Africa are roughly one-third more expensive than in the United States, even before accounting for the lower purchasing power. Second, the limited digital infrastructure continues to hinder digital adoption, with around 600 million Africans lacking access to electricity, alongside a similar number without 4G mobile coverage. Third, internet connectivity costs remain excessively high; for instance, fixed broadband internet in sub-Saharan Africa averages approximately 20% of per capita gross national income, in contrast to less than 6% in other developing regions and just 1% in North America.

In this context, Fadipe (2024) examined the issue of ICT and economic growth through the lens of digital language barriers, arguing that such barriers can obstruct the financial progress of numerous African countries by preventing speakers of indigenous languages from gaining access to job opportunities and online markets. According to Onamadike

(2025), language inclusion in civic tech is frequently overlooked, as design choices are made without acknowledging users' linguistic realities. This gap is exacerbated by insufficient language policies and a lack of government mandates for digital platforms to support indigenous languages. Furthermore, the digital divide has shifted from infrastructure to language barriers, as noted by Primus (2025). This linguistic exclusion limits access to e-commerce, online education, and digital banking, leading to low adoption of digital public services among non-English-speaking communities. This results in a less competitive workforce and isolates entrepreneurs using indigenous languages from broader digital platforms. As AI drives economic growth, Africa risks falling behind due to the neglect of its languages in the digital landscape. This shows the link between digital economic development and language integration, highlighting the significance of language inclusion to ensure increased economic activity.

ICT and Language Integration

Osborn (2006: 86) addressed the digital divide in Africa, emphasising that the continent is often viewed as being on the disadvantaged side of this divide due to low connectivity and access to the internet and computers. While most discussions primarily focus on technical issues like connectivity, Osborn (2006: 87) also drew attention to the linguistic aspect of the divide and its connection to literacy and access. He pointed out that the use of African languages in information and communication technology (ICT) is essential for several reasons: if a language is spoken and utilised elsewhere, it should be compatible with modern technologies. Moreover, African languages are crucial for knowledge generation and expression; however, structured educational support remains minimal. Consequently, relying solely on English, French, and Portuguese places non-speakers at a disadvantage. Using diverse languages in ICT can enhance engagement by making it easier for users to access and understand the knowledge created. Non-English speakers often feel more comfortable participating in their native languages, which fosters a deeper understanding and encourages more significant contributions to ICT tools.

Osborn raised concerns about the future of languages that lack active use in digital spaces, noting that while African languages are present online, they are not prominently used as communication media. Notably, email has emerged as a key application of the internet in Africa, with platforms such as Africast.com and Mailafrica.net facilitating communication in various African languages. Additionally, various email lists exist, often dominated by languages like Hausa and Swahili. However, measuring offline usage such as word processing is more challenging. Anecdotal evidence from telecentres in Senegal, for instance, indicates the use of Pulaar and Wolof. The NGO ANAFA has been conducting computer literacy programs in national languages, while the localisation of software and web interfaces for African languages is gaining traction (Osborn, 2006: 88). This indicates that there are some platforms attempting to utilise these languages in Africa, but their efforts are limited. In South Africa, there is little to no record of platforms using the official languages for ICT communication or other tools. While South Africa may be a leader in the digital transition, it faces the risk of widening the digital divide due to exclusion stemming from a lack of resources and language barriers. Therefore, South Africa needs to prioritise these issues to fully lead and benefit from the digital wave.

Furthermore, Osborn (2006: 89) identified motivational barriers that affect ICT usage. He noted that individuals who have access to ICT are typically educated in official languages used such as English or French, making them less likely to engage in their native languages

online. In contrast, native speakers who are not proficient in official languages often find themselves unable to engage with ICT, even if they desire to do so. Many individuals want to use ICT tools but struggle due to language barriers. As a result, only the elite and those educated in official languages can effectively engage with these tools. This situation is contributing to a significant digital divide. Additionally, he highlighted structural factors that impede the usage of African languages in ICT such as inconsistent orthography standardisation, changes in written forms, and the absence of formal writing systems for some lesser-spoken languages (Osborn, 2006: 90). Similarly, Dia (2013: 113) observed that the potential of African indigenous languages to foster sustainable development has frequently been overlooked. He noted that efforts to advance African languages in cyberspace have encountered various challenges, including infrastructural, financial, and sociocultural barriers, along with a lack of strong political commitment. Nevertheless, there is a growing recognition among stakeholders regarding the developmental potential at the intersection of ICTs and indigenous languages. Furthermore, Primus (2025) points out that in South Africa, colonial and apartheid policies favoured English and Afrikaans, sidelining indigenous languages to informal contexts. Even in the post-apartheid era, English continues to dominate business, academia, and digital communication, perpetuating the marginalisation of many indigenous languages and reinforcing existing socio-economic inequalities.

Furthermore, Dia (2013: 118) highlighted that in South Africa, both civil society and corporate initiatives, have sought to enhance women's access to affordable ICTs. Initiatives include training programs designed to empower women to report gender-based violence through mobile and radio platforms, as well as to search online for artisan information and marketing opportunities. While participation in these initiatives has been enthusiastic, challenges such as illiteracy and language barriers remain significant obstacles to utilising ICT tools aimed at promoting gender equality, livelihood, and education in rural areas. In addition, Dia (2013: 121) pointed out that both state and non-state actors have been implementing educational programs that combine ICT with indigenous languages. An example is the ANAFA project (Alf@net), launched in 1997, which focused on female literacy in Senegal and Mali, incorporating language localisation and ICT training. Its subsequent phases such as the Batik program merged literacy, ICT skills, and vocational training. Notably, the interplay between ICT and indigenous languages has also played a role in political transitions within Sub-Saharan Africa, despite ongoing language barriers that hinder ICT-supported decentralisation efforts.

Moreover, Xulu (2024: 1) underscored the transformative potential of ICT within the educational sector, asserting that it can enhance both teaching and learning in African languages while also serving as a crucial tool for their preservation and promotion. Xulu noted that while educators in other disciplines can source online materials and adapt lessons, those teaching African languages face difficulties due to the underrepresentation of these languages on ICT platforms. In a related update, Fadipe (2024) reported on recent advancements in digital language inclusion efforts by global technology companies. For instance, on October 28, Google announced the incorporation of 15 African languages into its services, including Voice Search, Gboard, and Translate Dictation. The languages added include Chichewa, Hausa, Igbo, Kikuyu, Oromo, Rundi, Shona, Somali, South Ndebele, Seswati, Tigrinya, Twi, Setswana, Nigerian Pidgin, and Yoruba. This milestone is anticipated to allow 300 million additional Africans to engage with the web through voice interaction. However, despite this progress, significant work still lies ahead. Although AI tools are increasingly automating daily tasks, access to these technologies in African

languages remains limited, further exacerbating the digital divide. Across the continent, African start-ups are vigorously working to bridge this gap. For example, in Nigeria, Awarri is developing a multilingual Large Language Model. Meanwhile, Code Vast in Kenya is providing healthcare advice using AI in local languages like Swahili, Meru, Kikuyu, and Luo. In South Africa, there is a project and organisation called "Masakhane", which is an isiZulu word meaning "We build together" and is aimed at attempting to solve the issues of low-resource languages in machine translation (Gitau et. al., 2021: 8).

Williams (2023) contextualised the technological advancements by noting that by the year 2050, a significant portion of the global population, one quarter, will be African. This underscores the urgent need for the inclusion of native languages in all technological innovations. However, despite the rich linguistic and cultural diversity present in Africa, global tech companies have largely neglected these languages. For instance, Google's recent decision to expand Gboard to accommodate nine African languages, which includes eight official languages from South Africa and one from Rwanda reflects a growing acknowledgment of Africa's impending role in the global economy. Nevertheless, Primus (2025) cautioned about the potential threats to African linguistic diversity posed by the rise of artificial intelligence (AI). She states that with over 2,000 languages spoken across the continent, the risk of being excluded from AI tools could perpetuate historical inequalities and deepen the digital divide. In the case of South Africa, colonial and apartheid-era policies promoted English and Afrikaans while marginalising indigenous languages. This trend of exclusion continues to the present day, with English predominantly dominating digital and academic landscapes.

Moreover, educational outcomes improve when children are taught in their mother tongues, yet AI-driven educational platforms frequently overlook this crucial aspect. Echoing this concern, Nkhwashu (2025) highlighted the ramifications of excluding African languages from AI systems. During the ITWeb Artificial Intelligence Summit, Neda Smith articulated the importance of incorporating African languages into AI development, emphasising that language encompasses not merely words but also culture, heritage, and identity. Currently, AI datasets are predominantly comprised of Western languages, thereby marginalising countless African users. This exclusion adversely impacts access to education, communication, and economic development. Additionally, Nkhwashu (2025) identified major challenges that hinder this inclusion such as data scarcity, insufficient funding, inconsistent orthographies, and the lack of AI-compatible data in African languages. The exclusion of African or South African languages in ICT is a significant concern, especially given the increasing integration of ICT into educational, social, and economic sectors. This literature review emphasises the importance of incorporating these languages to enhance engagement and understanding which can ultimately lead to improved financial outcomes.

Methodology

The research study at hand titled, "Bridging the Digital Divide: Exploring the Integration of African Languages in ICT for Economic Growth", is particularly relevant considering the increasing use of digital tools in economic settings. This study is significant as it examines the necessity of incorporating all South African official languages into Information and Communication Technology (ICT) to enhance economic participation and foster growth. Characterised as qualitative research, the study emphasises the collection and interpretation of verbal data rather than numerical statistics (Ugwu and Eze, 2023: 20). The context of the

study is South African; however, some of the literature is drawn from the overall African context. This is due to the limited availability of literature in the South African context.

The qualitative aspect of this research addresses the challenges that language barriers create when it comes to digital tools. It investigates the reasons behind the slow adoption of South African official languages besides English, as it is already being used in ICT, and highlights the importance and advantages of such integration. As an exploratory study, it seeks to answer key questions. Exploratory research is defined as a study aimed at answering a question or addressing a phenomenon (Singh, 2021: 2). The specific questions guiding this research include: What problems are associated with language barriers concerning digital tools? What factors contribute to the sluggish uptake of South African indigenous languages in ICT? Furthermore, what are the benefits of integrating these languages?

The study utilises secondary data, primarily relying on existing literature and information collected through desktop data collection methods, which involve internet searches. According to Ugwu and Eze (2023: 27), secondary research, also known as desk research, uses data that has already been compiled. This approach improves the overall effectiveness of the research by compiling and summarising previously collected information. This desktop study used publicly accessible sources, including journal articles, websites, opinion pieces, and newspaper reports focusing on ICT and language inclusion. Data were collected through targeted keyword searches such as "ICT, language inclusion and economic growth in South Africa," using general search engines (e.g., Google or ResearchGate), institutional repositories, and online media platforms. No single academic database was used exclusively, as the study prioritised thematic breadth and contextual relevance over systematic database coverage. Sources were selected based on their relevance to themes of linguistic accessibility, digital infrastructure, and socio-economic participation. Documents lacking sufficient detail on language use or digital access, or those focused solely on non-African regions were excluded. A thematic analysis was conducted to synthesise insights from journal articles, websites, and newspaper reports. Data were organised under emergent themes such as ICT and the Promotion of Economic Growth, Inconsistent Orthographies Disrupting Language Integration, Lack of Motivation to Integrate or Use Indigenous Languages in ICT, and issues with English being the key language in ICT. This approach enabled a nuanced exploration of recurring patterns and contextual dynamics across African and South African digital landscapes.

However, the study does acknowledge certain limitations. A primary issue is that the reliance on secondary data may restrict the representation of individual experiences and insights, as authentic and direct data collection from those affected by these language barriers would provide more depth. This would have been collected if primary data collection had also been utilised. Additionally, a significant limitation is the scarcity of disaggregated, language-specific data regarding ICT access and the usage of digital services among indigenous language speakers in South Africa. While national broadband statistics are available, they frequently lack granularity concerning linguistic diversity, rural connectivity, and levels of digital literacy. This gap in data limits the ability to conduct meaningful comparative analyses across language groups and undermines the precision of policy recommendations. This study serves as an entry-level exploration into the intersection of digital integration and language inclusion in the South African context, with special attention to implementation and economic development. While these limitations exist, they are acknowledged as inherent to the exploratory nature of the desktop review. Rather than undermining the

study's value, these limitations highlight areas for deeper investigation and provide a foundation for future, more targeted research.

Conceptual and Theoretical Framework

This section provides detailed definitions of significant concepts in the study. The concepts are as follows: Information Communication Technology (ICT), the digital divide, and indigenous languages. It further emphasises two pivotal theories that underpin the study of how incorporating indigenous languages into ICT can foster economic participation and growth. These theories are the linguistic justice theory and the digital inclusion theory. They will be explicated in detail after the conceptual framework discussion.

Conceptual Framework

This study examines the impact of language marginalisation on the digital divide in South Africa with a specific focus on speakers of indigenous languages who face significant obstacles to economic opportunities and essential services, due to their exclusion from Information and Communication Technology (ICT) platforms. Three foundational concepts frame this investigation; namely: ICT, the digital divide, and indigenous languages.

Information Communication Technology (ICT)

Mwiinga (2023: 4) defines ICT as the amalgamation of technology used to manage, process, and share information. This definition encompasses a broad array of technologies, including computers, the internet, mobile phones, and various digital devices. Mwiinga (2023: 4) also highlights that ICT includes the hardware, software, and services crucial for the creation, storage, retrieval, and sharing of information. As a vital component of contemporary society, ICT is essential for individuals, businesses, and organisations to operate effectively and efficiently. Therefore, given the ongoing transition to a digital-centric world, it is pivotal to recognise that ICT plays a crucial role in fostering economic advancement and growth.

Digital Divide

The term "digital divide" describes the inequality in access to ICT, leading to a scenario where certain individuals enjoy availability while others do not. This disparity results in an unequal capacity to utilise and benefit from ICT resources, thereby exacerbating a global knowledge gap between those with adequate resources and those without (Lediga and Fombad, 2018: 298). Hence, the implications of this divide have wide-ranging effects on social equity and economic inclusion.

Indigenous Languages

According to Siziba and Maseko (2024: 4), the South African Constitution recognises twelve (12) official languages; namely, Sepedi, Sesotho, Setswana, Siswati, Tshivenda, Xitsonga, Afrikaans, English, isiNdebele, isiXhosa, isiZulu, and sign language. Finnan (2025) highlights that of all the official languages, nine are indigenous to the region, while Afrikaans and English are of European origin introduced through colonialism. Despite constitutional protections for all languages, indigenous languages frequently face marginalisation and are at risk. Therefore, this study highlights that the predominant language speakers in

the nation are indigenous, underscoring the vital role of ICT not only in preserving these languages, but also in ensuring access and participation in economic activities.

The exclusion of indigenous languages from ICT platforms significantly exacerbates the digital divide by restricting access to essential services such as e-governance, education, and entrepreneurial opportunities. This systemic gap hinders equitable involvement in South Africa's digital economy, ultimately obstructing overall economic growth and development.

Theoretical Framework

Linguistic Justice Theory

As indicated above, this study utilises Linguistic Justice Theory as its main analytical framework to investigate the incorporation of African languages into digital information and communication technologies (ICT) in South Africa. According to Morales-Gálvez and Riera-Gil (2017: 44), rooted in political philosophy, this theory tackles two essential questions: Why is it important to consider languages in discussions of justice? And how should the values that are associated with communication and language identity be fairly distributed within society? Linguistic Justice Theory argues that languages possess both instrumental value, facilitating communication, mobility, and access to socioeconomic opportunities, as well as identity value which upholds cultural dignity, autonomy, and a sense of belonging (Morales-Gálvez and Riera-Gil, 2017: 45). It is also founded on two normative principles: moral individualism, which views individuals as the primary agents whose linguistic choices deserve protection, and ethical pluralism, which asserts that various linguistic identities must be acknowledged and embraced within society's legal and policy frameworks (Morales-Gálvez and Riera-Gil, 2017: 42).

A key concept within this theory is the fair background conditions position, which, according to Lewis (2016: 3), posits that the fundamental requirement for justice in the realm of language is the creation of conditions that allow individuals the opportunity to use their preferred language and to work towards its viability and survival. Providing such opportunities necessitates the elimination of any unjust pressures that discourage certain linguistic behaviours while favouring others. These unjust pressures may include overt coercion, such as bans on using one language and mandates to use another. In South Africa, a constitutionally multilingual country with 12 official languages, the supremacy of English on digital platforms has led to the exclusion of numerous indigenous language speakers from equitable participation in digital and economic spaces. As the nation progressively integrates ICT systems into government services, education, and financial activities, the marginalisation of African languages poses a threat to both communicative equity and cultural preservation.

Thus, Linguistic Justice Theory serves as a strong normative framework to direct inclusive digital design and policy reform. Fostering the integration of African languages into ICT transcends cultural or political aspects; it is a justice-oriented necessity that promotes democratic engagement, socioeconomic mobility, and administrative effectiveness. By acknowledging both the functional and symbolic aspects of language and advocating for equitable background conditions, this theoretical lens empowers South Africa to close the

digital divide in a manner that respects its linguistic diversity and encourages sustainable, inclusive development.

Digital Inclusion Theory

To complement the framework of Linguistic Justice Theory, this research uses Digital Inclusion Theory to explore how language obstacles intersect with digital access and engagement in South Africa's diverse linguistic landscape. Digital inclusion acknowledges that merely having access is not enough, genuine inclusion necessitates that individuals can effectively interact with digital tools, possess the skills to navigate them, and harbour positive attitudes towards their usage (Wiley and Goulding, 2023: 527). A study by Wiley and Goulding (2023: 527) highlights Helsper's framework that identifies four essential elements: use, access, skills, and attitudes, each crucial for comprehending the complex nature of digital equity.

The four pillars are outlined as follows:

- Use refers to digital engagement, incorporating both the nature of engagement, how people utilise technologies, and the extent of engagement – how much time individuals spend on various ICTs.
- Access involves where and how individuals utilise ICTs, including location (where internet access is available), quality (the type of connection such as broadband, wireless, or dial-up), and platforms (the diversity and richness of available media).
- Skills pertain to the ability to utilise ICTs, encompassing transferable skills that enable participation in a digital environment and self-efficacy, which reflects a person's confidence in their capability to use ICTs.
- Attitudes concern perceptions regarding the usefulness and potential risks associated with ICTs, including general attitudes toward ICTs and evaluations of their impact on individuals or society, as well as views on the opportunities and dangers of digital engagement and their significance in everyday life.

In the context of the discourse at hand under the title "Bridging the Digital Divide: Exploring the Integration of African Languages in ICT for Economic Growth", three of these pillars; use, skills, and attitudes are particularly affected by linguistic exclusion. Firstly, use, which denotes digital engagement, involves both how people interact with technology and the amount of time spent online. Indigenous language speakers struggle to fully engage with digital systems when they lack comprehension of the platform's language, hindering participation in education, e-commerce, and e-governance. Secondly, skills encompass both transferable abilities and self-efficacy, or the confidence users have when navigating ICT environments. Language barriers negatively impact both technical skills and users' confidence, resulting in alienation from digital processes. Thirdly, attitudes reflect beliefs regarding the usefulness, risks, and societal relevance of ICTs. If technologies fail to support indigenous languages, users may distrust them or view them as irrelevant, exacerbating the digital divide.

While access (including location, quality of infrastructure, and the variety of platforms) is foundational, this study underscores that linguistic accessibility is equally important. Language exclusion serves as a hidden barrier even when infrastructure exists. Consequently, incorporating South African languages into ICT tools actively promotes digital inclusion by enhancing engagement, improving navigational skills, and cultivating trust in technology.

When the use, skills, and attitudes toward digital tools are inclusive and supportive, they facilitate greater participation, economic empowerment, and collective advancement, particularly among linguistically marginalised communities. Thus, Digital Inclusion Theory offers a dynamic perspective for identifying intersections between language and digital disadvantage, as well as how adaptive ICT policies can foster both equity and development in multilingual settings such as South Africa.

Findings and Discussion

This section presents the key findings regarding the incorporation of South African indigenous languages into ICT to bridge the economic digital divide. By enhancing economic participation, this approach aims to lead to economic growth. This qualitative study sought to explore the reasons for the slow adoption of South African languages in ICT and to propose potential strategies for their integration. Furthermore, the study emphasises challenges related to language translation, noting that many South African languages lack support from widely used translation tools. This issue underscores the necessity for greater involvement from indigenous language speakers in the development and application of these tools. Additionally, the motivation to adopt South African languages is frequently inadequate, as many speakers of indigenous languages may not fully recognise the significance of their languages due to the longstanding dominance of English in global communication. The research indicates that it is crucial to highlight the importance of these languages, enhance their perceived value, employ indigenous language speakers in ICT development, and secure increased investment to achieve successful integration.

The key findings of this study are as follows:

- ICT and the Promotion of Economic Growth

The findings confirm that ICT in South Africa holds substantial potential to foster economic growth. It is believed that ICT services and tools can enhance productivity, improve efficiency, and reduce costs. With the appropriate skills, knowledge, and accessibility, ICT has the potential to generate job opportunities. Moreover, ICT services have played a transformative role in rural areas of Africa, significantly impacting the lives and livelihoods of local communities. These transformations have been observed in various forms, including job creation, income growth, cost savings, reduced uncertainty and risk, and enhanced familial relationships, among other benefits (Adeleye and Eboagu, 2019: 32). In addition, Lund and Cruz (2025) emphasised the critical role of ICT in economic transformation stating that the adoption of digital technologies by businesses is a primary driver of productivity and economic growth in developing economies. Although the study acknowledges this potential, it emphasises that due to digital language barriers, the promise of promoting economic growth appears distant. Fadipe (2024) examined the interaction between ICT and economic development through the lens of digital language barriers, arguing that these barriers can hinder the economic advancement of many African countries by denying indigenous language speakers access to job opportunities and online markets.

The study believes that this situation arises because a significant portion of the population in South Africa is indigenous speakers; thus, the ICT tools and services geared toward economic activities often exclude them. Most aspects are now conducted through online markets or e-governance; therefore, the South African government must invest more in ICT to boost economic development and overall growth. From the perspective of digital

inclusion theory, ICT and the promotion of economic growth rely on four pillars: use, access, skills, and attitudes. In a sense, ICT can foster economic growth in South Africa when more people have the necessary skills, attitudes, and access which also includes understanding the language used in these tools. Individuals will not be motivated to use tools they do not understand out of fear of embarrassment; likewise, one may know how to operate ICT tools, but without understanding the language, those skills are useless. Therefore, for individuals to effectively use ICT tools for the right reasons such as seeking job opportunities, advertising businesses, or accessing e-governance, they need to be motivated, possess the right skills, and have enough access.

- Inconsistent Orthographies Disrupting Language Integration

The ICT tools that are currently available do not adequately accommodate African or South African indigenous languages, and those few tools that do still struggle to represent these languages accurately. For instance, tools like Google Translate are not effective when it comes to indigenous languages. This situation highlights the potential requirement for indigenous language speakers to participate in the integration process of these languages. If the ICT tools that utilise indigenous languages do not accurately represent them, then their integration would be meaningless. Conversely, if integrated successfully, the benefits would extend beyond economic factors to include the preservation and promotion of these languages. Xulu (2024: 1) stressed the transformative potential of ICT within the educational sector, asserting that it can improve both teaching and learning in African languages, while also serving as a vital tool for their preservation and promotion. Moreover, Nkhwashu (2025) identified significant challenges hindering this inclusion, including data scarcity, insufficient funding, inconsistent orthographies, and the lack of AI-compatible data for African languages.

Incorporating indigenous languages into ICT is essential, but it must be done correctly. This means hiring individuals who are fully knowledgeable in these languages rather than relying on inadequate digital tools. Employing South African indigenous language speakers will not only facilitate successful integration but also create job opportunities for those individuals. The integration of these languages aligns with the principles of linguistic justice theory, which advocates for conditions that allow individuals to use their preferred languages, supporting their viability and survival. By promoting and sustaining these languages, many people are enabled to engage with economic platforms in their home languages. It is unjust for the digital realm to feature inconsistent orthographies or lack AI-compatible data for indigenous languages, particularly in South Africa. The language policy was established to rectify historical linguistic injustices and to promote African languages across various domains (Siziba and Maseko, 2024: 4). This situation contradicts the core objectives of the language policy. To uphold this policy, the South African government should advocate for greater integration of indigenous languages into ICT tools.

- Lack of Motivation to Integrate or Use Indigenous Languages in ICT

The study reveals that the failure to utilise or incorporate indigenous languages into ICT tools and services sometimes stems from a lack of motivation. As English has been the predominant and official language in South Africa, indigenous languages have been overlooked, especially in the current digital era. Privileged speakers of indigenous languages often place greater value on English than on their languages, resulting in demotivation when it comes to engaging with ICT tools and services in their native tongues. This lack of motivation consequently affects the motivation of creators of ICT tools and service

providers, leading them to be less inclined to incorporate indigenous languages into their offerings. Osborn (2006: 89) identified motivational barriers influencing ICT usage, noting that individuals who access ICT tools generally receive their education in official languages such as English, making them less likely to interact with online content in their native languages. The educational, economic, and social sectors all utilise English, and ICT is increasingly adopting English in these fields as well. As a result, individuals feel demotivated to use their native languages in these contexts and often do not question why their languages are not included in these tools. They have simply become accustomed to this situation. Moreover, what is the point of feeling motivated when all the available tools exclude native languages? These languages are often left out in translation, interpretation, and communication provided by these tools.

- Issues with English being the Key Language in ICT

ICT tools and services predominantly utilise English as their primary language. The study recognises that not everyone is capable of understanding or engaging effectively with these ICT tools and services when English is the chief language. This situation arises primarily because, in many African nations, English is regarded as a second language and not all individuals possess proficiency in it. According to Primus (2025), particularly in South Africa, policies from the colonial and apartheid periods favoured English and Afrikaans while simultaneously marginalising indigenous languages. Moreover, this trend of exclusion persists today as English continues to dominate both digital and academic spheres. Consequently, without the incorporation of linguistic diversity in AI tools, millions of individuals find themselves unable to access essential services, which include e-commerce, online education, or digital banking.

- The findings in connection with the theories that frame the study

The two central theories that frame the study are Linguistic Justice and Digital Inclusion. One key concept within linguistic theory is the fair background conditions position. According to Lewis (2016: 3), this position maintains that a fundamental requirement for justice within the field of language is to establish conditions that enable individuals to use their preferred language while also working toward its viability and survival. In addition, Digital Inclusion recognises that simply having access to digital resources is insufficient; true inclusion demands that individuals can not only interact effectively with these digital tools but also possess the requisite skills to navigate them and develop positive attitudes toward their use (Wiley and Goulding, 2023: 527). Thus, the study argues that the reliance on English as the primary language in ICT tools and services contributes significantly to both a digital divide and a situation of linguistic injustice. This is primarily because it confines individuals to using English, a language that many indigenous language speakers do not understand. Therefore, this limitation hinders their ability to interact effectively with digital tools and comprehend the language used to navigate these services. Consequently, language barriers severely impact individuals' abilities to thrive and leverage digital tools for their benefit, particularly in today's digital economy.

Conclusion

The study investigated the reasons behind the slow integration of African languages into ICT and proposed potential strategies for their inclusion. It emphasised the significance of incorporating African indigenous languages for fostering economic development. The study underscored the need to involve speakers of these languages in the integration

process to prevent inconsistencies in orthography, which can hinder effective and efficient incorporation. It also pointed out the lack of motivation to use indigenous languages, which results in disheartened creators of ICT tools and services when trying to incorporate these languages. Additionally, the dominance of English as the primary language used in ICT tools is highlighted as a challenge since it excludes those who do not comprehend English. This lack of understanding prevents individuals from fully engaging with the tools and services, even if they have access to digital technologies. Besides other obstacles such as infrastructure, devices, and costly data for using ICT tools and services, a significant yet often overlooked barrier is the impact of language. Therefore, it is crucial to recognise that language is fundamental and should be a primary focus when addressing barriers to digital access.

The study is grounded in two theoretical frameworks: linguistic justice and digital inclusion. Through the examination of these theories, the study argues that prioritising English in ICT tools while disregarding indigenous languages perpetuates linguistic injustice and contributes to a digital divide, thereby hindering economic involvement and growth. Consequently, the study contends that indigenous languages should be integrated into ICT tools to facilitate economic participation, ultimately driving economic development. It acknowledges that this integration will be challenging and time-consuming, but it asserts that it is feasible, given sufficient interest and emphasis on its importance.

For successful incorporation, the study recommends several actions. First, it is essential to recognise the value and significance of indigenous languages and their inclusion in ICT tools and services, not only for economic advancement but also for their preservation and promotion. This recognition would motivate users to engage with these languages in their interactions with ICT tools, consequently encouraging creators to incorporate them into their services. Second, it is advisable to employ speakers of indigenous languages during the integration process to avoid inconsistencies in orthography and to ensure proper representation of these languages. Lastly, the government should increase investment in ICT tools and services, as well as in the integration of indigenous languages into them. This investment would enhance the promotion of ICT tools, and incorporating indigenous languages would boost economic participation, leading to economic growth. Thus, given their substantial importance, indigenous languages must be acknowledged in the transition to the digital era, ensuring their inclusion.

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