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ORIGINAL RESEARCH

Building digital bridges: Investigating the impact of multi-stakeholder partnerships on rural telecommunications infrastructure development

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This study investigates the role of multi-stakeholder partnerships (MSPs) in advancing rural telecommunications infrastructure development in South Africa. Given the persistent digital divide in rural areas, the study explores how MSPs involving public and private sector stakeholders can address challenges such as inadequate infrastructure, high costs and regulatory barriers. A qualitative research design was employed, with semi-structured interviews conducted with 12 senior stakeholders from the telecommunications sector. The study highlights the critical importance of strategic communication and stakeholder engagement in ensuring the success of these partnerships. The findings indicate that while significant investments have been made, challenges such as competition among operators, community resistance and regulatory complexity remain. The study concludes that effective strategic communication, early stakeholder engagement and collaborative resource-sharing are essential for overcoming these barriers and achieving sustainable infrastructure development. The paper recommends a holistic approach to MSPs, focusing on capacity building, simplified regulatory processes and leveraging technological innovations to bridge the digital divide in South Africa.

Keywords: Multi-stakeholder partnership (MSP), rural telecommunications, strategic communication, stakeholder engagement, digital divide, South Africa, infrastructure development, Sustainable Development Goal (SDG)

Bou van digitale brûe: Ondersoek na die impak van vennootskappe met verskeie belanghebbers op die ontwikkeling van landelike telekommunikasie-infrastruktuur: Hierdie studie ondersoek die rol van multibelanghebbersvennootskappe (MBV's) in die bevordering van landelike telekommunikasie-infrastruktuurontwikkeling in Suid-Afrika. Gegewe die voortdurende digitale kloof in landelike gebiede, ondersoek die studie hoe MBV's wat openbare en privaatsektorbelanghebbers betrek, uitdagings soos onvoldoende infrastruktuur, hoë koste en regulatoriese hindernisse die hoof kan bied. 'n Kwalitatiewe navorsingsontwerp is gebruik, met semigestruktureerde onderhoude wat met 12 senior belanghebbers uit die telekommunikasiesektor gevoer is. Die studie beklemtoon die kritieke belangrikheid van strategiese kommunikasie en belanghebbersbetrokkenheid om die sukses van hierdie vennootskappe te verseker. Die bevindinge dui daarop dat, hoewel beduidende beleggings gemaak is, uitdagings soos mededinging tussen operateurs, gemeenskapsweerstand en regulatoriese kompleksiteit steeds bestaan. Die studie kom tot die gevolgtrekking dat effektiewe strategiese kommunikasie, vroeë belanghebbersbetrokkenheid en samewerkende hulpbrondeling noodsaaklik is om hierdie hindernisse te oorkom en volhoubare infrastruktuurontwikkeling te bereik. Die artikel beveel 'n holistiese benadering tot MBV's aan, met die fokus op kapasiteitsbou, vereenvoudigde regulatoriese prosesse en die benutting van tegnologiese innovasies om die digitale kloof in Suid-Afrika te oorbrug.

Sleutelwoorde: Multibelanghebbersvennootskap (MBV), landelike telekommunikasie, strategiese kommunikasie, belanghebbersbetrokkenheid, digitale kloof, Suid-Afrika, infrastruktuurontwikkeling, Volhoubare Ontwikkelingsdoelwit (VOD)

Introduction

According to the United Nations' (UN) Sustainable Development Goals (SDGs), access to telecommunications infrastructure is critical in developing regions (UNDP, 2020). Telecommunications is a key infrastructure sector that boosts the growth of other industries, such as agriculture, education, health, banking, defence, transportation and tourism (Wilson et al., 2013). However, it is difficult to provide telecommunications services in rural areas. This is, in part, because building and maintaining network infrastructure in South Africa and other developing countries is costly because the equipment to build and maintain the infrastructure is often imported (Mpwanya et al., 2016).

In addition, obtaining rights to install telecommunications infrastructure is notoriously difficult in South Africa, with lengthy processes that differ between municipalities and government entities. For instance, private operators have had to go through lengthy court proceedings to get their networks up and running (NT, 2019). Furthermore, the cost of communication is exorbitant, and broadband in rural areas tends to be poor, with one gigabyte of data costing approximately US$14.10 (NT, 2019). In line with this, people in

rural areas incur additional costs because of the profit margin added by local airtime resellers (Rey-Moreno et al., 2016). To effectively address these challenges, multi-stakeholder partnerships (MSPs) are essential, as they bring together the necessary resources, expertise and coordination between government, private sector and civil society, enabling a more collaborative and sustainable approach to overcoming the barriers to infrastructure development in rural areas.

MSPs are recognised as a significant driver for the exchange of ideas, sharing skills, increasing innovation and providing economic support for the worldwide implementation of the SDGs (UN, 2015). MSPs are needed in a country like South Africa, which has inequalities in access to telecommunications infrastructure (when comparing rural areas to cities). MSPs are widely regarded as a viable option for addressing challenges of this nature. However, research has revealed that there is limited information on the role of MSPs in telecommunications infrastructure development (Pattberg et al., 2016). MSPs are likely to fail if there is little understanding of the importance of strategic communication (Calabrese, 2008).

Zerfass et al. (2020) define strategic communication as the deliberate use of communication by organisations or individuals to engage in conversations essential for achieving objectives. Strategic communication plays a foundational role in the success of MSPs by fostering transparency, alignment of goals and mutual trust among diverse actors. In the context of infrastructure development, especially in rural areas, strategic communication enables stakeholders to navigate differing institutional logics, clarify responsibilities and build consensus. It also supports inclusive decision-making, ensures the visibility of marginalised voices and helps sustain commitment throughout the partnership lifecycle. Without clear, coordinated communication strategies, MSPs risk fragmentation, mission drift and reduced impact.

To address the complexities of sustainable development in the context of infrastructure development (SDG 9), multi-sectoral collaboration is required. No single sector can meet development challenges alone (Adam et al., 2007). As indicated by SDG 17, partnerships are critical for achieving the development goals (UNDP, 2020). Therefore, this study sought to answer the question, "How can multi-stakeholder partnerships contribute to the development of rural telecommunications infrastructure in South Africa?".

The following sub-questions guided the study:

- What challenges are encountered in rural contexts that affect the success of telecommunications infrastructure development partnerships?
- What challenges do MSPs face during the planning and implementation phases of telecommunications infrastructure development?
- How can strategic communication within MSPs be leveraged to achieve rural telecommunications infrastructure development?

12 semi-structured interviews were conducted with stakeholders currently engaged in, or planning to engage in, a multi-stakeholder partnership aimed at achieving rural telecommunications infrastructure development. The participants were recruited from South African government and private sector organisations involved in telecommunications infrastructure development, as well as independent experts from the sector.

Literature review

Theoretical Foundations: Stakeholder management and dialogic communication in MSPs

MSPs are essential in addressing the complex challenges of rural telecommunications infrastructure development, especially in regions with significant disparities in connectivity. Effective stakeholder management is critical to the success of these partnerships, requiring a strategic approach to identifying, evaluating and addressing stakeholder needs. Stakeholder management involves engaging, communicating and building relationships with stakeholders to ensure their active participation throughout the project lifecycle (de Oliveira et al., 2019). This process is designed to ensure that all stakeholders have a voice in decision-making and that their expectations are effectively managed (Mohamed et al., 2018).

Stakeholder Theory, as proposed by Freeman, asserts that organisations have a responsibility to consider the interests of all parties affected by their actions, not just shareholders (Castelo Branco et al., 2007). This holistic view encourages organisations to adopt a broader perspective in their decision-making processes, taking into account the diverse needs of internal and external stakeholders. By considering the interests of all parties involved, organisations are better positioned to build long-term, sustainable relationships that maximise value creation and foster collective success (Mahajan et al., 2023). For MSPs, this means that stakeholders – from local communities to government bodies – must be included in the development of strategies that guide the partnership, ensuring that their input is heard and integrated into the overall plan.

However, successful stakeholder management alone is insufficient for ensuring the effectiveness of MSPs. Communication plays a vital role in building and maintaining these relationships, and strategic communication is key to facilitating the exchange of information and ensuring that all parties are aligned. The dialogic theory of public relations provides an essential framework for understanding the role of communication in MSPs. This theory emphasises the importance of two-way, transparent communication, where all stakeholders have the opportunity to engage in meaningful dialogue. Kent et al. (2002) argue that dialogue is not just about exchanging information but is a process of co-creation, where each party can contribute to the development of shared meaning. This approach fosters mutual understanding and ensures that all stakeholders perceive their involvement as valuable, promoting stronger collaboration.

In the context of rural telecommunications infrastructure development, applying dialogic theory means engaging with stakeholders in a way that ensures their perspectives are not only heard but also respected. This approach moves beyond one-sided communication, creating an environment where stakeholders feel they are partners in the decision-making process. By ensuring that communication is mutual and participatory, organisations can build trust, reduce misunderstandings and increase stakeholder commitment to the goals of the partnership (Kent et al., 2002).

Furthermore, the concept of symmetrical communication – where all parties are treated with equal regard and their needs and concerns are given balanced attention – aligns with the objectives of MSPs in ensuring that no stakeholder group is marginalised. By prioritising dialogue and strategic communication, organisations can better manage stakeholder relationships, address potential conflicts and develop more effective solutions to the challenges of rural telecommunications infrastructure development. Often simplified to terms like collaboration or communication, stakeholder engagement is complex, involving power dynamics, socio-political issues and conflicting perspectives. The goal of stakeholder engagement is to foster mutual benefits through dialogue, particularly in South Africa (Shabangu et al., 2022).

Integrating Stakeholder Management Theory with Dialogic Theory provides a comprehensive approach to understanding how MSPs can be used to develop rural telecommunications infrastructure. The focus on inclusive stakeholder engagement and transparent, two-way communication ensures that all parties can contribute to the success of the partnership and that the needs of local communities are central to the decision-making process.

South African telecommunications infrastructure development in rural areas

Many rural areas in South Africa remain impoverished, with populations living below subsistence levels due to a lack of access to the basic infrastructure required for economic growth and development (Herselman, 2003). Apartheid spatial planning scarred South Africa's rural areas, particularly those designated for the majority black African population. Between 2009 and 2014, the government made an investment of over $54 billion in infrastructure, and the private sector also made significant investments in telecommunications infrastructure (The Presidency, 2019). Regardless, there has been little notable change in terms of rural telecommunications infrastructure development. The National Planning Commission (NPC) identified nine challenges that have slowed progress since the end of apartheid in 1994 (UNDP, 2020). Four of the nine identified challenges are related to infrastructure development, with one specifically highlighting the issues of poorly located, insufficient and poorly maintained telecommunications infrastructure (UNDP, 2020). Therefore, the digital divide remains a significant challenge in South Africa, particularly in rural areas, where access to telecommunications infrastructure continues to be limited.

The digital divide exacerbates existing socio-economic inequalities and hampers economic development in these communities (Mwansa et al., 2025). As the world becomes increasingly digital, the gap between those who have access to reliable internet and telecommunications services and those who do not continues to widen. Bridging this divide is essential not only for rural development but also for achieving the broader goals of social inclusion and economic empowerment, as outlined in the United Nations' Sustainable Development Goal 9 (SDG 9), which advocates for inclusive and sustainable industrialisation and innovation.

Efforts to bridge the digital divide in South Africa have been ongoing, with various initiatives aimed at improving rural connectivity. The South African government has recognised the importance of digital inclusion and has invested in programmes aimed at improving infrastructure and increasing access to technology in rural areas. For example, according to the Department of Communications and Digital Technologies (DCDT), roll-out of broadband infrastructure has been prioritised through initiatives such as the Universal Service and Access Fund (USAF), which seeks to ensure that all South Africans, particularly those in rural and underserved areas, have access to affordable telecommunications services (DCDT, 2025).

Private sector partnerships have also played a key role in addressing this challenge. Several companies have made significant investments in expanding mobile and broadband networks in rural areas. However, despite these efforts, substantial gaps remain, particularly in the most remote and economically disadvantaged regions (SAIIA, 2025). In response to these challenges, the government has also focused on policy reforms to foster greater private sector participation in bridging the digital divide. The Electronic Communications Act and the National Broadband Policy have been revised to encourage investment in broadband infrastructure, with a focus on expanding coverage to rural areas (DCDT, 2025). The recent adoption of the South African National Digital and Future Skills Strategy (DCDT, 2020) aims to provide citizens with the necessary skills to participate in the digital economy, further supporting efforts to close the digital divide.

Despite these efforts, it is clear that bridging the digital divide requires more than just infrastructure investment. There is a need for a holistic approach that includes skills development, affordable access and a regulatory framework that supports innovation while addressing the unique challenges faced by rural communities. Only through coordinated efforts between the government, private sector and civil society will South Africa be able to create a more equitable digital landscape, empowering rural communities to participate fully in the digital economy and drive sustainable development.

The role of the SDGs in telecommunications infrastructure development

The SDGs illustrate "the magnitude and aspiration of the UN's 2030 Agenda for Sustainable Development", which aims to "transform the world onto an inclusive and sustainable path"

(UN, 2015). All United Nations member states adopted the 2030 Agenda for Sustainable Development in 2015, including 17 SDGs (UN, 2015). SDGs constitute and incorporate all current efforts to improve sustainability, including the establishment of a framework for integrated infrastructure planning to ensure long-term sustainable development (Thacker et al., 2019).

According to Popp et al. (2019), the telecommunications sector can help South Africa achieve SDG 9 by expanding and upgrading telecommunications infrastructure to connect more people, particularly in rural areas, thus stimulating economic participation. SDG 9 targets are based on the development of high-quality, dependable, long-term and adaptable infrastructure to support economic growth and universal access for all (UN, 2015). These targets emphasise support for national technology development, increased access to Information and Communication Technology (ICT), and promotion of widespread and affordable internet access (UN, 2015). Telecommunications has been identified as a critical developmental element because it plays a significant role in advancing society's economic and social development, such as providing access to healthcare and education, and advancing agricultural systems through affordable internet access (UNDP, 2020).

Developing telecommunications infrastructure in South African rural areas is challenging due to a lack of transportation and energy infrastructure, and low population density in most rural areas (Reigadas et al., 2015). The SDGs emphasise that countries need to use enabling technologies to provide universal and affordable internet access and ensure equitable citizen participation (Gillwald et al. 2018). This study asserts that the goals of SDG 9 cannot be achieved in South Africa without effectively leveraging the necessary partnerships. SDG 17 highlights the importance of knowledge-based partnerships, particularly in the telecommunications infrastructure sector.

MSPs and strategic communication

Strategic, cohesive and proactive strategic communication is important in MSP activities (Hemmati et al., 2015). Sharing progress and value-added information in MSPs helps keep the broader network up-to-date with progress being made, any challenges faced, delays and obstacles impacting implementation (Hemmati et al., 2015). Hallahan et al. (2007) define strategic communication as communicating to further your mission. Strategic communication serves a comprehensive purpose, prevents failure by detecting existing issues and possible sources of support, and serves as a feedback instrument at every stage, from planning to implementation (Calabrese, 2008).

SDG 17 emphasises the importance of partnerships in infrastructure development – whether informal, formal or consultative (UN, 2015). The increasing expectation for companies to go beyond serving shareholders and customers, and to actively contribute to societal well-being, has made corporate citizenship essential rather than optional (Meintjes, 2021). As governments can no longer be solely responsible for addressing social injustices, companies are under pressure to meet higher public expectations, especially in light of past corporate scandals. Therefore, corporate citizenship, viewed as the company's responsibility towards society, has evolved into a key aspect of modern business, aiming to contribute to the common good (Meintjes, 2021). Attaining the SDGs requires an integrated approach that reduces the barriers created by institutional silos while also improving intergovernmental and subnational coordination among implementing organisations (Haywood et al., 2019). Partnerships are needed to bring together existing and additional resources for strategic planning, raising financial resources and developing telecommunications infrastructure (UNDP, 2020).

Partnerships at various levels of government, the private sector and civil society connect and improve resources that will foster the development and change required to achieve the SDGs and improve people's lives (Stibbe et al., 2020). Partnerships involving different sectors, such as government, private industry and civil society, play a key role in enhancing resources and driving the necessary changes to achieve the SDGs and improve people's lives (Stibbe et al., 2020. However, to ensure the success of these partnerships, effective stakeholder engagement is essential in shaping strong relationships. Despite its importance, there is still a lack of consensus on what stakeholder engagement truly entails (Shabangu et al., 2022). Stakeholder engagement is crucial for shaping the relationships between organisations and their stakeholders, yet there is a lack of consensus on what it truly entails (Shabangu et al., 2022). There is growing emphasis on the importance of authentic stakeholder relationships, transparency and integrated reporting, especially following the publication of the third King Report in South Africa (Meintjes, 2021).

In the South African context, there are key groups that must form MSPs to meet the UN 2030 Agenda: government, private sector, the academic and scientific sector (including research institutes and universities) and international/multilateral institutions, particularly the United Nations and its various agencies and branches (Haywood et al., 2019). MSPs facilitate interactions and the formation of networks among relevant stakeholders to determine and address gaps and deficiencies through capacity building, innovative thinking and aid in developing and distributing relevant resources (UN, 2015).

Methodology

Research design

The exploratory nature of the study required that a generic qualitative research design be used to investigate the viewpoints and perspectives of the respondents (Percy et al., 2015). A generic qualitative approach provided a thorough understanding of the participants' perspectives and experiences of how to ensure that MSPs function more effectively and promote rural telecommunications infrastructure development.

Sampling

The sample consisted of 12 participants from public and private institutions functioning in the telecommunications sector. Senior managers are inherently involved with the organisation's partnership activities, from identifying partners to planning and implementation, thereby contributing to the overall success of rural telecommunications infrastructure development. The participants were selected based on purposive sampling. The selected participants were senior managers and experts in the telecoms industry who worked on telecommunications infrastructure development projects requiring MSPs, or who intended to work on such projects. Table I provides a profile of the individual participants.

Data collection

12 semi-structured interviews were conducted. Semi-structured interviews allowed for open-ended questions to be asked, which enabled participants to express themselves freely without being constrained by the researchers' viewpoints (Creswell, 2012). The interviews were conducted over live video-streaming platforms, such as Google Meet and Zoom, and one interview was conducted face-to-face, based on the respondents' preferences.

A discussion guide was developed and used to guide the interviewer. The interview questions were developed based on the research questions and a review of the literature. The discussion guide comprised 13 open-ended questions. The instrument was tested in a pilot study with a participant who met the sampling criteria. Following the pilot study, the discussion guide's questions and sequence were refined before commencing with the interviews. An online transcription tool was used to transcribe the interviews. The transcriptions were reviewed and compared to the audio recordings to ensure their accuracy.

Table I: Profile of study's participants

Pseudonym	Position	Sector
Participant 1 (P1)	Senior Project Manager	Private Sector
Participant 2 (P2)	Chief Technician Officer	Private Sector
Participant 3 (P3)	Director	Government
Participant 4 (P4)	Senior Project Manager	Private Sector
Participant 5 (P5)	Director	Government
Participant 6 (P6)	Deputy Director	Government
Participant 7 (P7)	Senior Manager	Private Sector
Participant 8 (P8)	CEO	Private Sector
Participant 9 (P9)	CEO	Private Sector
Participant 10 (P10)	CEO	Private Sector
Participant 11 (P11)	Chief Director	Government
Participant 12 (P12)	Senior Engineer	Regulator

Data analysis

The data was analysed using thematic analysis to identify patterns and categories within the participants' responses. The coding process began with the researchers reviewing the interview transcripts to identify preliminary codes. These codes were short phrases or terms that captured the essence of the data. For example, one code related to "barriers to communication" was used to group responses discussing difficulties in communication between stakeholders, such as language differences or misunderstanding of technical terms. Another code, "community resistance", was assigned to responses discussing challenges such as protests, mistrust and opposition from community members.

The researchers subsequently reviewed the codes, refining and merging similar codes into more abstract categories. For instance, several codes related to challenges faced by multi-stakeholder partnerships, such as "lack of trust", "competition among operators" and "resource allocation issues", were combined under the broader theme "Challenges in rural telecommunications infrastructure partnerships". The researchers continued to organise the codes into thematic categories that reflected the core aspects of the research questions, such as "Stakeholder management" and "Strategic communication". Themes were derived by grouping related codes and reflecting on how they answered the study's research questions. For example, the theme "Strategic communication processes" emerged from codes that dealt with the importance of communication in facilitating collaboration among diverse stakeholders. The final themes and sub-themes were reviewed and confirmed through team discussions to ensure consistency and validity. Each theme contained several sub-themes, each reflecting a more detailed aspect of the data, ensuring a comprehensive analysis of the responses.

Trustworthiness

To ensure the trustworthiness of a study, four criteria have to be met: credibility, dependability, confirmability and transferability (Koonin, 2014). Adhering to these criteria ensured that participants' perspectives were authentically gathered and accurately represented (Lietz et al., 2010). To ensure credibility, the research findings have to reflect the participants' genuine perspectives accurately and neutrally (Shenton, 2004; Lietz et al., 2010; Polit et al., 2012). The interviews were transcribed verbatim, which aligns with the principle of credibility. Probing questions were also used to clarify the participants' responses to avoid misinterpretation of the data in the findings.

Dependability is determined by the research process followed and the validity of a study's findings, should the study be replicated in future (Polit et al., 2012; Shenton, 2004). The study's dependability is indicated through the detailed research methodology developed and followed by the researchers.

Confirmability refers to a researcher's ability to conduct an impartial study free of bias and idealism that accurately reflects the viewpoints and responses of the participants (Koonin, 2014; Polit et al., 2012). The researchers ensured confirmability

by conducting a pilot study to reduce bias and any areas of potential discrepancy that may have been overlooked in the discussion guide. All errors identified after the pilot study were corrected. To further ensure confirmability, all recordings were transcribed verbatim, with no interpretations, additions or deletions by the researchers (Milne et al., 2005).

According to Kakar et al. (2023), transferability reflects the extent to which research findings can apply to other similar contexts, groups, people or settings. To ensure transferability, the researchers provided a detailed description of the study's context, participants and research processes, enabling others to assess its applicability to similar contexts.

Ethical considerations

The researchers received ethical clearance from their research institution to conduct this study. To ensure the safety of all participants and the study's ethical validity, participants signed informed consent forms to read and sign prior to the interviews. The consent forms stated that participants could withdraw from the study at any time. Participants' anonymity and confidentiality were further assured in terms of the consent forms. To honour commitments made in the ethical clearance and consent forms, all participants' names and organisations were removed from the transcripts and final article.

Findings

The study identified three main themes related to the research sub-questions. Table II below displays these themes and their corresponding sub-themes.

RQ1: Challenges encountered in rural contexts that affect the success of telecommunications infrastructure development partnerships

Ten of the 12 participants defined MSPs as collaborations between organisations from various sectors, such as government, private telecommunications operators, civil society organisations, academic institutions and communities, to achieve a long-term sustainable goal – in this case, the development of telecommunications infrastructure in rural areas. The following quote illustrates participants' understanding of MSPs:

> "When one talks about multi-stakeholder partnerships, you're talking about bringing together different stakeholders, to ensure that a certain project is implemented to its fullest… If you are looking at the rural space, you will want to bring in maybe the traditional leadership, you will want to bring in individual community members, you will want to bring in local government, you know, representatives of local government within that area you will want to bring in the Premier's office people, you'd want to bring in the private sector…" (Participant 3).

This quote illustrates that effective MSPs go beyond forming partnerships for the sake of it; instead, they aim to ensure that the full potential of each partner is realised. MSPs involved in the development of rural telecommunications infrastructure should strive to break down institutional silos and improve intergovernmental and subnational cooperation to enhance sustainable development (Haywood et al., 2019).

11 of the 12 participants indicated that MSPs collaborate to share resources, provide different expertise, fast-track implementation processes and save costs. The active participation of various partners in rural telecommunications infrastructure development through MSPs plays a role in ensuring alignment between business and government interests, ensuring that the focus remains on delivering long-term solutions (Adam et al., 2007), illustrated by the following quote:

> "They all bring different competencies, for example: private sector will bring the entire communication infrastructure or bring the radios, the networks but your government

Table II: A summary of research questions and related themes

Research question (RQ)	**RQ1:** What challenges are encountered in rural contexts that affect the success of telecommunications infrastructure development partnerships?	**RQ2:** What challenges do MSPs face during the planning and implementation phases of telecommunications infrastructure development?	**RQ3:** How can strategic communication within MSPs be leveraged to achieve rural telecommunications infrastructure development?
Themes	Theme 1: MSPs in rural telecommunications infrastructure development	Theme 2: Rural telecommunications infrastructure development challenges	Theme 3: Strategic communication processes
Sub-themes	Understanding how MSPs work Challenges in rural telecoms infrastructure partnerships	Rural community dynamics Challenges faced by MSPs Socioeconomic benefits Sustainable development	Stakeholder management Strategic communication Monitoring and evaluation

> institutions will bring the policies and the laws… in order for your network to be safe and conducive" (Participant 12).

These findings support the UN's (2015) assertion that MSPs enhance communication and the formation of networks among relevant stakeholders to categorise and analyse technology requirements and disparities, as well as capacity building and innovative thinking, and aid in the development and distribution of relevant technologies. These findings also confirm that MSPs promote participation and encourage partners to develop strategic and innovative solutions to infrastructure development challenges (Adam et al., 2007).

The findings indicate that telecommunications organisations are often hesitant to share their organisational insights within MSPs for fear of revealing their business strategies. They frequently require all partners to sign nondisclosure agreements (NDAs) to limit the flow of information. Partners who sign NDAs have access to or are given information related to the deployment of that specific project and nothing else outside those parameters. Three participants indicated that MSPs face competition among themselves, specifically the private sector operators, as indicated by Participant 9:

> "The biggest challenges are that the operators see themselves as competitors, so they don't like to collaborate" (Participant 9).

The lack of transportation and energy infrastructure, and low population density in most rural locations, make deploying telecommunications infrastructure more difficult (Reigadas et al., 2015). Four of the 12 participants qualified this statement by indicating that most telecommunications operators are hesitant to form rural telecommunications infrastructure deployment partnerships due to organisational politics and a lack of essential amenities, such as electricity and proper road infrastructure. This quote illustrates some challenges in rural telecommunications infrastructure development partnerships:

> "…if they can't get electricity and the water, roads, right, they're not going to be able to get the telecom" (Participant 8).

Such partnerships face challenges in managing various interests while remaining efficient (Clarke et al., 2019). Due to the limited research on the role of MSPs in rural telecommunications infrastructure development, partners do not fully understand how to address some of the complex challenges they encounter during the planning and implementation phases.

RQ2: Challenges MSPs face during the planning and implementation phases of telecommunications infrastructure development

In South Africa, obtaining rights to build telecommunications infrastructure is difficult, with lengthy processes that vary in each municipality and government entity (NT, 2019). Four of the 12 participants had sentiments that aligned with this, with one respondent stating the following:

> "…there's a lot of things before you can do business in municipalities, you have to get approvals, but those approvals can take years, and it's slow, and it's cumbersome, and it's outdated, and municipalities haven't geared themselves to make it easier for private sector to deploy infrastructure" (Participant 10).

These findings align with reports that private operators face several challenges in establishing and operationalising their infrastructure. As a result of this disincentive, telecommunications companies have historically shown little interest in providing telecommunications infrastructure in rural areas (Rey-Moreno et al., 2016).

The findings also indicate that the deployment of telecommunications infrastructure in remote villages is expensive due to exorbitant infrastructure costs and a small return on investment. Private operators are typically hesitant to deploy infrastructure in rural areas, as illustrated by the following quote:

> "Usually, in the rural areas, when there is no coverage, the operators will say there is no population. Even if they roll out the network, they might not realise the return on their investment in that particular area" (Participant 12).

This finding confirms that building and maintaining network infrastructure in South African rural areas is expensive because operators must import infrastructure and equipment to build and maintain the telecommunications infrastructure (Mpwanya et al., 2016). Operators are extremely cautious to enter into rural telecommunications infrastructure development MSPs due to the risk of limited returns on their infrastructure investments.

Many of South African rural areas are still governed by traditional leaders, their tribal councillors and municipal ward councillors. Seven participants stated that it is critical to know and understand rural community dynamics because they have the potential to delay or interfere with the deployment of the telecommunications infrastructure rollout, as indicated by Participant 4:

> "…in terms of lessons in some communities, you might find that there's some infighting within forums that exist within that community; you need to understand those dynamics and find a way of how you bring all of them on board around the team so that your projects don't suffer when you implement" (Participant 4).

These findings support the idea that partners in MSPs should work together to discover new solutions to complex social and rural telecommunications infrastructure development issues that go beyond individual organisational issues (Reypens et al., 2016). During the planning and implementation phases, MSPs require strategic communication to ensure that there are systematic communication processes involving all stakeholders to encourage effective community dynamics and foster implementation (Mefalopulos et al., 2004). These findings also

confirm that many rural communities in South Africa are governed by traditional leaders, making it impossible for the government to succeed in rural telecommunications infrastructure development without the assistance of traditional authorities (Dansoh et al., 2020).

Nine participants indicated that some of the challenges they face during rural telecommunications infrastructure deployment involve extortion from people who claim to be from the community's local business forums, which in most cases is not true:

> "…[A] stumbling block is that there is also illegal business forums that come in and extort money from fibre optic or broadband…" (Participant 10).

This confirms the growth of what some respondents labelled as the "construction mafia". These illegal business forums are primarily interested in financial gain and have little interest in the development of rural communities' telecommunications infrastructure. This indicates the need to engage with law enforcement as a critical stakeholder.

The cost of communication in South Africa is high and Internet quality is poor, particularly in rural areas, with a gigabyte of data costing approximately US$14.10 (NT, 2019).

> "People think that by bringing a lot of communication or infrastructure to the community will bring down the cost of communication, which is not the case because the most of the money that gets paid on the call for when we make calls, is relating to interconnection charges that are made by the bigger operators" (Participant 9).

Despite South Africa having the highest mobile phone penetration on the continent, research has indicated that South Africans speak on their phones less than consumers in other African countries due to expensive voice and data service fees (Rey-Moreno et al., 2016). This indicates that the government has not fully achieved its goal as stated in Section 2 of the Telecommunications Act no. 103 of 1996, namely to ensure universal service and affordable access to telecommunications services (Sumbwanyambe et al., 2010).

RQ3: How strategic communication within MSPs can be leveraged to achieve rural telecommunications infrastructure development

All 12 participants emphasised the importance of community stakeholder management before, during and after the planning and implementation phases of rural telecommunications infrastructure development. The majority of participants indicated that if one did not engage all relevant community stakeholders before the telecommunications infrastructure rollout, one's project is more likely to be delayed or interrupted during implementation.

> "[The] community is one of the most important stakeholders that you will involve because they understand the dynamics within their area… you want to involve them right from the beginning of the project that will really be sort of beneficial and you also must make sure that within the community, you identify and understand the dynamics…" (Participant 4).

These findings align with the foundation of stakeholder theory, which emphasises the importance of considering external stakeholders, broadening the focus beyond partners to include any person, group or organisation that influences and/or is influenced by the intervention, leading to value co-creation (Reypens et al., 2016).

> "If you don't get buy-in from these stakeholders, especially the community people, you will have a situation whereby when the project starts, people come in and say no, you have not employed people within our area" (Participant 3).

Stakeholder participation is an essential feature of an effective MSP. Nine participants indicated that stakeholder engagement is an important factor in rural telecommunications infrastructure development plans and implementation strategies. The findings indicate that most MSPs overlooked the significance of stakeholder engagement and anticipated that communities would embrace new entrants if they were bringing in much-needed infrastructure to improve and provide access to connectivity where there was previously none.

> "You need those stakeholders to be part and parcel of what you're working on, [or] what you will experience is significant delays, you'll experience disruptions on the work that you're doing, you might experience extra cost" (Participant 5).

The findings indicate that managers of MSPs must identify relevant stakeholders within the community, understand rural community dynamics and the community's needs during the planning and deployment phases of the infrastructure.

In an MSP, sharing information on progress keeps the broader network informed of issues, delays and impediments that affect implementation (Hemmati et al., 2015). The findings indicate that strategic communication is often not prioritised in rural telecommunications infrastructure development partnerships, and a lack of effective strategic communication is an impediment to implementation.

> "We cannot be oblivious of the fact that those partnership may experience challenges, …and one of those may be communication…" (Participant 1).

These findings align with the notion that strategic communication ensures that decision-making processes across diverse partners are structured to encourage effective execution and encourage a shared vision within MSPs during the planning and implementation phases (Mefalopulos et al., 2004).

> "And also make sure that the messages that are being shared can be made simpler for the community to understand, not to use a lot of, for example, jargon that people like professionals and the intellectuals usually use, and try and bring the communication aspects to a level of the community, so they understand" (Participant 5).

It's important that community stakeholders be included in the planning and implementation of infrastructure development

projects. Furthermore, communication with them should be in a language with which they are familiar. MSPs require meticulous localised strategic communication that supports meaningful participation, engagement and learning during the rural telecommunications infrastructure planning and implementation phases (Hemmati et al., 2015).

Nine respondents indicated that, when they participate in MSPs, they do not track and analyse their communication efforts to determine if the communication among the partners and stakeholders was effective. As a result, they experienced implementation delays.

> "We often don't. Even assessing lessons learned from a communication within the project, let alone the impact of the project itself" (Participant 11).

SDG Goal 17 indicates that reflective strategic communication is crucial in MSPs to strengthen policy coherence for long-term development (UN, 2015). Effective communication ensures that decision-making processes across diverse partners are structured to encourage effective execution, and delivers a shared vision of rural telecommunications infrastructure development (Mefalopulos et al., 2004), facilitating implementation.

Conclusions and recommendations

This study highlights the essential role that MSPs play in overcoming the barriers to rural telecommunications infrastructure development in South Africa. The findings reveal that although significant progress has been made in addressing some of the challenges through MSPs, several key issues persist. Rural telecommunications infrastructure remains underdeveloped, mainly due to high costs, regulatory complexities and the lack of access to essential resources like energy and transportation infrastructure.

Stakeholder engagement is identified as a critical factor in the success of these partnerships. However, the study also finds that MSPs in South Africa often struggle with effective communication, particularly in engaging communities and aligning the interests of all partners. Strategic communication, while acknowledged as important, is often not prioritised, leading to delays and challenges during implementation. Moreover, the role of trust and transparency in MSPs was found to be crucial to fostering long-term collaboration among diverse stakeholders.

The research also sheds light on the importance of understanding local community dynamics and involving them from the early stages of infrastructure development projects. Failure to do so leads to disruptions, delays and increased costs. Despite the government and private sector's efforts to invest in rural connectivity, gaps remain, particularly in the most remote and economically disadvantaged areas.

Finally, the study demonstrates that successful rural telecommunications infrastructure development requires more than just infrastructure investment. A holistic approach that integrates strategic communication, stakeholder management and local community involvement is necessary for achieving the SDGs, particularly SDG 9 and SDG 17. Based on the findings and the analysis of the literature, the researchers make the following recommendations:

1. Enhance strategic communication: Effective and proactive strategic communication should be prioritised in all phases of multi-stakeholder partnerships. This includes ensuring that all stakeholders are kept informed of progress, challenges and changes throughout the project lifecycle. Strategic communication should be localised, clear and inclusive, with particular attention to ensuring that technical jargon is simplified for community stakeholders.
2. Strengthen stakeholder engagement: Stakeholder engagement should be an ongoing process, not limited to the planning phase. Ensuring that all relevant stakeholders, particularly local communities, are involved early in the process will help avoid delays, reduce community resistance and foster ownership of the infrastructure projects. This approach will also improve trust and reduce the likelihood of disruptions during implementation.
3. Focus on capacity building and resource sharing: It is essential for MSPs to facilitate capacity building among stakeholders, particularly local communities. Empowering communities with the necessary skills and knowledge will help ensure that the infrastructure is used effectively and maintained in the long term. Additionally, greater efforts should be made to share resources and expertise among partners, ensuring that the skills and knowledge of all stakeholders are utilised for the benefit of the project.
4. Address regulatory and policy barriers: Policymakers must streamline the regulatory processes related to infrastructure development, particularly in rural areas. Simplifying the approval process for telecommunications infrastructure, reducing bureaucracy and encouraging inter-governmental cooperation can help reduce delays and facilitate the smoother rollout of projects.
5. Encourage multi-sectoral collaboration: Future projects should emphasise collaboration across multiple sectors, including government, private sector, civil society and academic institutions. Each sector brings unique resources, expertise and perspectives that can strengthen the overall success of the project. A more coordinated approach will help break down the institutional silos that currently hinder progress.
6. Leverage technology and innovation: Technological innovation should be integrated into rural telecommunications infrastructure development. Government and private sector partners must explore cost-effective technologies, such as satellite or wireless broadband, that can help overcome infrastructure and geographical challenges, particularly in the most remote areas.
7. Continuous monitoring and evaluation: To ensure that MSPs achieve their goals, regular monitoring and

evaluation mechanisms should be established. These should focus not only on infrastructure deployment but also on the effectiveness of communication strategies, stakeholder engagement and the long-term sustainability of the infrastructure.

By implementing these recommendations, South Africa can improve the effectiveness of MSPs in rural telecommunications infrastructure development, bridging the digital divide, and advancing the achievement of SDGs, particularly SDG 9 and SDG 17.

Limitations and directions for future research

The study presents several key limitations. Firstly, the study's sample size may not represent the broader population, thus limiting the study's generalisability. Secondly, the study also did not consider the country's telecommunications policy implications for rural telecommunications infrastructure development. Thirdly, further studies could be encouraged to be conducted with a focus on South Africa's telecommunications policy implications for rural infrastructure development. Furthermore, future researchers could also develop a bibliometric study to determine where the main literature gaps are, globally and locally.

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References

Adam, L., James, T., Wanjira, A.M., 2007, Frequently asked questions about multi-stakeholder partnerships in ICTs for development: A guide for national ICT policy animators. *Association for Progressive Communications (APC)*.

Calabrese, D., 2008, Strategic communication for privatization, public-private partnerships, and private participation in infrastructure projects, *Washington: The International Bank for Reconstruction and Development/The World Bank*. https://doi.org/10.1596/978-0-8213-7499-3.

Clarke, A., MacDonald, A., 2019, Outcomes to partners in multi-stakeholder cross-sector partnerships: A resource-based view, *Journal of Business and Society* 58(2), 298-332. https://doi.org/10.1177/0007650316660534.

Castelo Branco, M., Lima Rodriques, L., 2007, Positioning stakeholder theory within the debate on corporate social responsibility, *EJBO-Electronic Journal of Business Ethics and Organization Studies* (1). Available from: https://www.researchgate.net/publication/228703111_Positioning_stakeholder_theory_within_the_debate_on_corporate_social_responsibility.

Creswell, J.W., 2012, Education research: planning, conducting and evaluating quantitative and qualitative research. 4th edition. Boston, MA: Pearson.

Dansoh, A., Frimpong, S., Oppong, G., 2020, Exploring the dimensions of traditional authority influencing stakeholder management at the pre-construction stage of infrastructure projects, *Journal of Construction Management and Economics* 38(2), 189-206. https://doi.org/10.1080/01446193.2019.1589647.

De Oliveira, G.F., Rabechini, R., 2019, Stakeholder management influence on trust in a project: A quantitative study, *International Journal of Project Management* 37,131-144. https://doi.org/10.1016/j.ijproman.2018.11.001.

Department of Communications and Digital Technologies (DCDT), 2025. National Broadband Policy for South Africa 2025. Department of Communications and Digital Technologies. Available at: https://www.dcdt.gov.za/ [Accessed: 2025-05-23].

Department of National Treasury (NT), 2019. Economic transformation, inclusive growth, and competitiveness: A contribution towards a growth agenda for the South African economy. Pretoria. Department of National Treasury. [Online] Available from: http://www.treasury.gov.za/comm_media/press/2019/TowardsanEconomicStrategyforSA.pdf [Accessed: 2021-06-23].

Gillwald, A., Mothobi, O., Rademan, B., 2018, The state of ICT in South Africa. [Online] Available from: https://media.africaportal.org/documents/after-access-south-africa-state-of-ict-2017-south-africa-report_04.pdf [Accessed: 2021-02-25].

Hallahan, K., Holtzhausen, D., van Ruler, B., et al., 2007. Defining strategic communication, *International Journal of Strategic Communication* 1(1), 3-35. https://doi.org/10.1080/15531180701285244.

Haywood,L.K.,Funke,N.,Audouin,M.,Musvoto,C.&Nahman,A.,2019.TheSustainable Development Goals in South Africa: Investigating the need for multistakeholder partnerships. Journal of Development Southern Africa, 36(5):555-569. https://doi.org/10.1080/0376835X.2018.1461611

Hemmati, M., Rogers, F., 2015, Multi-stakeholder engagement and communication for sustainability, *CatalySD Sustainability*. Available from: https://sustainabledevelopment.un.org/content/documents/1894CatalySD_MSEC_for_Sustainability_300615.pdf.

Herselman, M.E., 2003, "Where parallels intersect" ICT in rural areas in South Africa: Various case studies, *Journal of Informing Science* 3, 946-950. https://doi.org/10.28945/2680.

Kakar, Z.U.H., Rasheed, R., Rashid, A., et al., 2023, Criteria for assessing and ensuring the trustworthiness in qualitative research, *International Journal of Business Reflections*. [Online] Available from: https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1386&context=yc_pubs [Accessed: 2025-06-20].

Koonin, M., 2014, Validity and reliability. In: du Plooy-Cilliers, F., Davis, C. & Bezuidenhout, R.M. (Eds.). Research Matters. Cape Town, South Africa: Juta & Company.

Mahajan, R., Lim, W.M., Sareen, M., et al., 2023, Stakeholder theory, *Journal of Business Research* 166, 114104. https://doi.org/10.1016/j.jbusres.2023.114104.

Mefalopulos, P., Grenna, L., 2004, Communicating protected areas. [Online] Available from: http://citeseerx.ist.psu.edu/viewdoc/download? [Accessed: 2021-02-15].

Mohamed, S., Nguyen, T.S., Panuwatwanich, K., 2018, Stakeholder management in complex project: Review of contemporary literature, *Journal of Engineering, Project, and Production Management* 8(2), 75-89. https://doi.org/10.32738/JEPPM.201807.0003.

Mpwanya, M.F., Van Heerden, C.H., 2016, Perceptions of mobile network operators regarding the cost drivers of the South African mobile phone industry, *Acta Commercii* 16(1), 398-398. https://doi.org/10.4102/ac.v16i1.398.

Mwansa, G., Ngandu, M.R., Mkwambi, Z., 2025, Bridging the digital divide: exploring the challenges and solutions for digital exclusion in rural South Africa, *Discover Global Society* 3(1), 54. https://doi.org/10.1007/s44282-025-00189-2.

Pattberg, P., Widerberg, O., 2016, Transnational multistakeholder partnerships for sustainable development: Conditions for success, *Ambio* 45(1), 42-51. https://doi.org/10.1007/s13280-015-0684-2.

Percy, W.H., Kostere, K., Kostere, S., 2015, Generic qualitative research in psychology, *The Qualitative Report* 20(2), 76-85. https://doi.org/10.46743/2160-3715/2015.2097.

Polit, D.F., Beck, C.T., 2012, Nursing research: generating and assessing evidence for nursing practice. 9th edition. Philadelphia, PA: Wolters Kluwer Health | Lippincott Williams & Wilkins.

Popp, W., Va Rathi, V., Kukulies, D., et al., 2019, Unlocking digital in South Africa's value telecoms sector, *Accenture Strategy*. [Online] Available from: https://www.accenture.com/_acnmedia/PDF-116/Accenture-Unlocking-Digital-Value-South-Africa-Telecoms-Sector.pdf [Accessed: 2021-02-28].

Reigadas, J.S., Municioa, E., Morgadoa, E., et al., 2015, Sharing low-cost wireless infrastructures with telecommunications operators to bring 3G services to rural communities, *Computer Networks* 93, 245-259. https://doi.org/10.1016/j.comnet.2015.09.006.

Reypens, C., Lievens, A., Blazevic, V., 2016, Leveraging value in multi-stakeholder innovation networks: A process framework for value co-creation and capture, *Industrial Marketing Management* 56(0), 40-50. https://doi.org/10.1016/j.indmarman.2016.03.005.

Rey-Moreno, C., Blignaut, R., Tucker, W.D., et al., 2016, An in-depth study of the ICT ecosystem in a South African rural community: unveiling expenditure and communication patterns, *Journal of Information Technology for Development* 22(1), 101-120. https://doi.org/10.1080/02681102.2016.1155145.

South African Institute of International Affairs (SAIIA), 2025. Africa's ICT infrastructure: Its present and prospects. Available from: https://saiia.org.za/research/africas-ict-infrastructure-its-present-and-prospects [Accessed: 2025-04-19].

Shenton, A.K., 2004, Strategies for ensuring trustworthiness in qualitative research projects, *Education for Information* 22(2), 63-75. https://doi.org/10.3233/EFI-2004-22201.

Stibbe, D., Prescott, D., 2020, United Nations Department of Economic and Social Affairs. 2015. Partnerships for Sustainable Development Goals: United Nations A legacy review towards realizing the 2030 Agenda. [Online] Available from: https://sustainabledevelopment.un.org/sdinaction/publication/partnerships-a-legacy-review [Accessed: 2021-03-13].

Sumbwanyambe, M., Nel, A., Clarke, W.A., 2010, Telecoms policy and regulation for social and economic development in South Africa: A comparative study, *Telecommunications forum Serbia. Belgrade*, (18), 23-25.

Thacker, S., Adshead, D., Fay, M., et al., 2019, Infrastructure for sustainable development, *Journal of Nature Suitability*. [Online] Available from: https://www.greengrowthknowledge.org/sites/default/files/downloads/resource/ [Accessed: 2021-04-20].

The Presidency, 2019, 2019 South Africa Voluntary National Review (VNR): Empowering people and Ensuring inclusiveness and Equality. Pretoria. The Presidency.

United Nations Development Programme (UNDP), 2020, The South Africa SDG investor map. [Online] Available from: https://www.za.undp.org/content/south_africa/en/home/library/sa-sdg-investor-map-2020- [Accessed: 2021-05-13].

United Nations (UN), 2015, Transforming our World: The 2030 Agenda for Sustainable Development. Outcome Document for the United Nations Summit to Adopt the Post 2015 Development Agenda. [Online] Available from: https://sustainabledevelopment.un.org/post2015/transformingourworld [Accessed: 2021-03-09].

Wilson, A., Ifeoma, O.M., Ugwunta, D., 2013, Telecommunication development and regional economic growth: Evidence from ITU ICT Development Index (IDI) top five Countries for African Region, *African Journal of Business and Economic Research*, 8(2), 85-100.

Zerfass, A., Verčič, D., Nothhaft, H., et al., 2020, Strategic communication: Defining the field and its contribution to research and practice. In: Future directions of strategic communication (pp. 159-177). Routledge.