

**Telecommunications Technology Transfer/Diffusion Model Into Rural  
South Africa**

by

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## **DISSERTATION SUMMARY**

### **TELECOMMUNICATIONS TECHNOLOGY TRANSFER/DIFFUSION MODEL INTO RURAL SOUTH AFRICA**

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Telecommunication is one of the keys to sustainable national development in South Africa. Where other kinds of public infrastructure have collapsed, mobile operators are reaching people in rural areas (without roads, rails, or a stable power supply).

Telecommunication also is a fast moving high-tech field where technology transfers occur regularly. Technology transfer however is a complex subject where governmental regulations, social and cultural aspects, needs, expectations, aspirations, financial abilities, and technological capabilities play a major role. Therefore transfer models that neglect these aspects often cause ineffective utilization of technology. Telecommunication technology transfers between two parties at different hierarchical levels of technology know-how/utilization (as between multi-national companies and less developed countries (LDCs)/South Africa) often occur with limited or no advantages to the LDC. A transfer model is therefore needed to improve the situation and make technology transfers a process from which both parties can benefit simultaneously. This research attempts to supply advice and guidelines to the telecommunication industry of South Africa on how to improve the situation and conduct action in the future.

The model was derived at through a background study and analysis, a literature study on existing transfer models, research on the current problem and a situation analysis on the basis of the model. A number of aspects present are not up to standard and should get special attention urgently. It is within the industry's power to correct these. The government also has a vital role to play to ensure sustainable growth and to allow telecommunications to play its part in national development. The situation can be improved through the use of the transfer model but also with a "simultaneous-situation-improvement-plan" which involves rural awareness, quality of education, crime reduction and a focus alignment when doing rural network expansion and/or investments

Telecommunication can no longer remain just as a luxury to the few privileged in big civilised cities and a dream to the rural citizens. If this way of thinking is continued, South Africa will certainly pay a very high price.

## **SAMEVATTING VAN VERHANDELING**

### **TELECOMMUNICATIONS TECHNOLOGY TRANSFER/DIFFUSION MODEL INTO RURAL SOUTH AFRICA**

**deur**

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Telekommunikasie is een van die sleutels tot voortdurende nasionale ontwikkeling in Suid-Afrika. Mobiele diensverskaffers bied reeds dienste aan afgeleë gebiede sonder paaie, spoornetwerke, of 'n stabiele kragtoevoer waar ander publieke infrastrukture onderbreek.

Telekommunikasie is verder ook 'n hoogs gesofistikeerde tegnologiese veld waar ontwikkeling spoedig plaasvind en tegnologie oordrag algemeen voorkom. Die oordrag van tegnologie is egter 'n komplekse onderwerp was aspekte soos regulatoriese maatstawwe, sosiale en kulturele aspekte, behoeftes, verwagtinge, aspirasies, finansiële moontlikhede asook tegnologiese vaardighede insluit. Oordragsmodelle wat nie hierdie aspekte in ag neem nie lei tot oneffektiewe aanwending van die tegnologie

Telekommunikasie tegnologie oordrag tussen twee partye op verskillende vlakke van tegnologie aanwending en vaardighede (so in die geval van ontwikkelde lande en Suid-Afrika) vind meestal plaas met beperkte tot geen voordele vir die minderontwikkelde land. 'n Tegnologie oordrag model word benodig om die situasie te verbeter en oordragte voordelig te maak vir beide partye gelyktydig. Hierdie navorsing poog om advies en riglyne aan die telekommunikasie bedryf van Suid-Afrika te lewer om die situasie te verbeter en toekomstige oordragte en handelinge te verbeter.

Die model was gevorm deur die agtergrond te ontleed, 'n literatuurstudie uit te voer, navorsing te doen en die huidige situasie te ontleed op grond van die voorgestelde model. 'n Aantal aspekte is huidig teenwoordig (waaroor die bedryf beheer het) wat nie na wense verloop nie. Hierdie aspekte het dringende aandag nodig. Die regering het ook 'n belangrike rol om te vertolk wat telekommunikasie is staat sal stel om weer sy deel te doen in nasionale ontwikkeling. Die situasie kan verbeter word deur tegnologie oordrag in die vervolg aan die hand van die model te bestuur maar ook gelyktydig 'n "toestands verbeteringsplan" te volg. Hierdie plan bevat aspekte soos bewustheid van plattelandse gemeenskap, hul onderrigstelsel, misdaadvermindering asook die rig van fokus op die regte gebiede wanneer netwerkuitbreiding en investering onderneem word.

Telekommunikasie mag nie meer beskou word as 'n luuksheid wat alleenlik vir 'n handjievol bevoorregtes in groot stede beskore is, en 'n droom vir die plattelandse gemeenskap is nie. Indien hierdie tipe denkwysse gekoester word sal Suid-Afrika 'n baie hoë prys in die toekoms moet betaal wat vermy kan word deur nou aandag daaraan te skenk.

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Figure A2. A Diagrammatic Definition of Technology (The technology triangle)

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## List of Abbreviations

- AC- Alternating Current
- AHI- Afrikaans Handels Intituut
- AHP- Analytic Hierarchical Process
- ASSA- Actuarial Society of South Africa
- CFL- Centre for Learning (Telkom)
- COSATU- Congress of South African Trade Unions
- DA- Democratic Alliance
- DC- Direct Current
- DECT- Digital Enhanced Cordless Telecommunications
- DIS- Dialectical inquiry system
- EA- Enumeration or Enumerator Area
- EMS- Environmental Management System
- ESOP- Employee share ownership program
- FDI- Foreign Direct Investment
- FNB- First National Bank
- FRD- Foundation for Research Development
- GATT- General Agreement on Tariffs and Trade
- Icasa- Independent Communications Authority of South Africa
- LDC- Less develop country
- MNC- Multi-National Corporation
- MRTD- Modified Relevance Tree Diagram
- MTN- Mobile Telephone Network
- NAFCOC- National African Chamber of Commerce
- NIC- Newly industrialized countries
- OAU- Organization of African Unity
- OPEC- Organization of Petroleum Exporting Countries
- PIN- Personal Identification Number
- PSDN- Public Switched Data Network
- PSTN- Public Switched Telephone Network
- PUK- Personal Unblocking Key
- R&D- Research and Development
- RDP- Reconstruction and Development Program
- RFI- Request For Information
- RFP- Request For Proposal
- Rudasa- Rural Doctors' Association of Southern Africa
- SA- South Africa
- SAA- South African Airways
- SAB- South African Breweries
- SABC- South African Broadcasting Commission



- SACOB- South African Chamber of Business
- SADC- Southern African Development Community
- SAPA- South African Press Association
- SATRA- South African Telecommunications Regulatory Authority
- SIM- Subscriber Identification Module
- SJA- Social Judgment Analysis
- SMME- Small, Medium and Micro Enterprise
- SPII- Support Project for Industrial Innovation
- Stats SA- The Statistical department of South Africa
- TAH- Technology Acquisition Hierarchy
- TDMA- Time Division Multiple Access
- TEFSA- Tertiary Education Fund of South Africa
- Telkom- South African telecommunications service provider
- USA- Universal Service Agency
- VANS- Value Added Networks
- VAT- Value Added Tax
- VSAT- Very Small Aperture Terminal
- WTO- World Trade Organization