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Towards Cross-Industry Information Infrastructure Provisioning – A Resource-Based Perspective

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Agenda

1. Motivation and Theoretical Foundations
2. Research Question and Methodology
3. Case Study Description
4. Results
5. Conclusion and Outlook

Can cooperation between private telco companies contribute to Next-Generation Access deployment?

Relevance of broadband provisioning

- Next-Generation Access networks are widely associated with economic growth
- Improving national broadband availability is a substantial interest for most countries

Countries differ in their mindsets about broadband provisioning

1 Regulation authorities and public investment are seen as driving forces of broadband provisioning

Measures

- Telecommunication infrastructure provided by public companies
- Public funding
- Strict regulatory measures for market participants

2 Intensive public involvement inhibits private investments and destroys existing market conditions

Measures

- Less public funding per capita
- Stimulation of private investments

In our paper we aim to assess how cooperation between telco and utility companies can contribute to Next-Generation Access provisioning.

We use the resource-based view for assessing sustainable competitive advantage of cooperation

We assume that telecommunication companies and utility companies will only cooperate if this creates sustainable competitive advantage.

Assessing sustainable competitive advantages in cooperation

Resource-based view

- General assumption: A firm's competitive advantage stems from the resources the firm disposes of
- Resources may be controlled or possessed by other organizations. Thus, organizations need to interact in order to acquire and maintain the resource mix necessary to survive

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We aim to assess cross-industry infrastructure provisioning with the concept of the resource-based view

Motivation and Goal

In our paper we aim to assess preconditions for improving cross-industry infrastructure provisioning.

Theoretical foundation

The resource-based view of the firm represents a theoretical framework that aims to explain how firms create competitive advantage and formulate sustainable competitive strategies.

Research questions

1. How can utility companies foster cooperative provisioning of information infrastructures with telecommunication companies?
2. Which utility resources reinforce or inhibit cooperative infrastructure provisioning?

The exploration of inter- and intra-firm cooperation drivers requires the conduction of interviews with practioners

The assessment of the research questions requires the exploration of inter- and intra-firm drivers and inhibitors of competition and cooperation. This requires:

- The conduction of interviews with practitioners
- Additional assessment of internal documents which are related to cooperation

Interview Identification Process

Contact to the participants of the group Interoperability at the NGA-Forum → Establish further contacts within the participant's company → Establish contacts to existing cooperation partners

Data Overview

33 Interviewees are represented in:

- Company management
- Cooperation departments
- Management with a technical background

The constellation allows to incorporate technical and strategic views on cooperation.

Overview on the assessed carrier types

	National	Metropolitan	Business
Geographical scope	Country-wide	Regional	Major cities and industrial parks
Customer focus	B2C B2B	B2C B2B	B2B
Company size	Revenues >> €1bn Employees >> 2k	Revenues < €1bn Employees < 2k	Revenues < €1bn Employees < 2k
Relationship with utilities	NGA deployment partner	Spin-off of utilities	Aggregator of utility infrastructures

The combination of Grounded Theory and Case Study Research provides a framework for assessing cooperative broadband provisioning

(Halaweh, Fidler and McRobb, 2008)

Research Frameworks

Grounded Theory
Glaser & Strauss 1967

Case Study Research
Yin 1994

Interview as primary unit of analysis

- Conduction of semi-structured expert interviews
- Researcher is required to be passive when conducting the interviews
- Seven general categories: *telecommunication value chain, cooperation initiation, cooperation design* and *success factors of the broadband provisioning*

Framework integration with Resource-based view

Case study analysis
Within-case analysis ⟶ Cross-case analysis

as case-study methodology

Grounded theory
Open coding ⟶ Axial coding ⟶ Selective coding

as guiding paradigm

Resource-based view

Propositions on cooperative IS infrastructure provisioning

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Some national carriers are generally willing to incorporate active network components of utilities into their network

Cooperation drivers & inhibitors

National carriers

Characteristics

- Aggregated market share > 60% in Germany
- Fully integrated service providers
- Large companies with many potential cooperation interfaces

Physical

- Networks in process of modernization
- Available ductwork capacities
- Passive infrastructure

Organizational

- Collection of property right agreements
- Maintenance of passive fiber infrastructure
- Generally, national carriers are willing to incorporate active products into their networks

Human

- Capabilities to gain access to public funding
- Experience of demployment of non-telecommunication networks

Metropolitan Carriers are very experienced with respect to cooperation with utility companies and aim to operate active equipment themselves

Cooperation drivers & inhibitors

	Metropolitan carriers
Characteristics	• Market entry of more than seventy metropolitan carriers after the German market opened to competition followed by strong market consolidation and development of more differentiated business models • Among the most successful are subsidies of metropolitan utility companies
Physical	• Ductwork capacities hold by the utilities are potential source of synergies • However, synergies might be overestimated and need to be reevaluated for every deployment project
Organizational	• Maintaining passive fiber infrastructure • Utilities as predestinated to take over excavation work • Capabilities regarding the active network management such as the operation of active network layers are seen critically
Human	• Capabilities to gain access to public funding

As network aggregators business carriers are very skeptical with respect to utility companies that operate active equipment

Cooperation drivers & inhibitors

Business carriers

Characteristics

- Provider of broadband services whose customer base is dominated by business customers (B2B)
- Typically operate as wholesalers to other telecommunication companies and as retailers to business entities outside the telecommunications industry

Physical

- Spare ductwork infrastructure and passive fiber networks
- In their role as aggregators business carrier can help utilities to maximize network utilization
- Very skeptical regarding utilities which aim to operate active equipment

Organizational

- Utilities' capability to collect property rights agreements from landlords is a strong facilitator of broadband deployment
- Utilities as predestinated to take over excavation work
- Utility takes over the infrastructure maintenance

Human

- Experience with employment of non-telecommunication networks

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Telecommunication carrier types differ in their perception of co-operation enforcing and inhibiting resource types

Resource type	Concept	National	Metro-politan	Business
Physical	Networks in process of modernization	++ / 2		+ / 2
	Spare ductwork capacities	+ / 1	o / 2	+ / 2
	Passive fiber infrastructure	++ / 4	o / 4	++ / 3
Organizational	Collecting property rights agreements	++ / 2		++ / 2
	Executing excavation work	+ / 2	+ / 3	+ / 2
	Long-term infrastructure depreciation	+ / 3		
	Maintenance of passive infrastructure	++ / 3	+ / 1	+ / 3
	Operating active infrastructure	o / 4	- / 1	-- / 2
	Offering white label products	+ / 1		+ / 1
	Executing service operation	o / 1	- / 1	-- / 2
	Marketing products		- / 1	+ / 2
Human	Knowledge required for gaining access to public funding	+ / 1	++ / 3	
	Personal business relationships		+ / 2	
	Experience with employment of non-telecommunication networks	+ / 1	+ / 1	+ / 1

Observation

- More cooperation drivers than inhibitors
- National carriers identified the largest number of cooperation enforcing conditions
- Causal conditions which inhibit cooperation where more often identified by carrier categories Metropolitan and Business

+ + strong evidence that a factor contributes to co-opetitive performance

– – strong evidence that this factor does not contribute to co-opetitive performance

+, o, – intermediate levels

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Based on our analyses we derive four propositions for cross-industry infrastructure provisioning

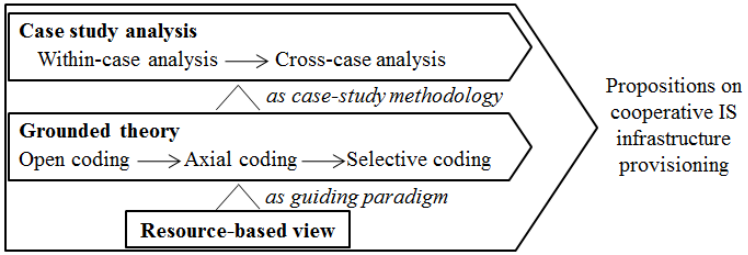
Research questions

1. How can utility companies foster cooperative provisioning of information infrastructures with telecommunication companies?
2. Which utility resources reinforce or inhibit cooperative infrastructure provisioning?

Approach

Resource-based View

- for assessing cross-industry infrastructure provisioning and sources of competitive advantage



Propositions

1. *Unless a utility company exhibits a stronger local brand than the telecommunication company, cooperation is more likely to evolve if the telecommunication company is accountable for service operation and marketing.*
2. *Utility companies that operate active telecommunication equipment and provide the corresponding services are more likely to establish cooperation with national telecommunication carriers than with metropolitan or business telecommunication carriers.*
3. *Utility companies can foster cooperation with telecommunication companies by focusing on the provisioning of physical infrastructures and related organizational capabilities.*
4. *Utility companies can facilitate cooperative infrastructure provisioning by unburdening access to public funding and customer premises.*

Limitations and Outlook

Limitations

- This paper focused on the assessment of the German Next-Generation Access market.
- Caution is advised in generalizing the results of our analysis for other countries as national broadband provisioning processes can differ largely due to country specific preconditions (cf. Ragoobar, Whalley and Harle 2010).

Outlook

- Further research will be aimed at assessing the utility perspective on cross-industry information infrastructure provisioning.

Thank you!

Any Questions?

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