Cooperative private Next-Generation Access deployment – A relational view

Abstract

World-wide deregulation activities on incumbent infrastructures educed competitive broadband markets in many countries around the world. However, as the customer’s data demand exceeds the technological capabilities of legacy infrastructures, large public or private investments in fiber-optic networks are required. In this paper we employ the relational view concept in order to assess how cooperation between private market players can contribute to reaching national broadband deployment goals. We base our findings on a combined grounded theory and case study approach with twenty-three managing experts from major telecommunication companies of the German broadband market. Our results indicate that the relational view concept can contribute to a better understanding of cooperative private Next-Generation Access deployment. Based on the result of our analysis we have been able to derive exemplary fields of action for regulators and carrier management for improving preconditions of cooperative broadband deployment.

1. Introduction

Next-Generation Access networks are widely associated with economic growth. Thus, most countries around the world have a substantial interest in improving national broadband availability. Even though measures to achieve this goal differ largely among countries, two generic mindsets can be distinguished [45]. Administrations with the first mindset perceive ubiquitously available telecommunication infrastructure as public good which should primarily be provided by public companies, public funds or strict regulatory measures for market participants [38]. Usually this kind of governmental intervention is justified with market failure with respect to private infrastructure provisioning. In the course of this mindset [23] argued that regulation authorities and public investment are the driving force of broadband provisioning. Administrations and telecommunication operators with the second mindset argue that intensive public involvement in broadband provisioning can inhibit private investments and destroy existing market conditions [51]. Administrations which act in the course of this mindset usually provide less funding per capita and aim to stimulate private investments [45]. Accordingly, the question how cooperation can foster Next-Generation Access deployment is fundamental for large supernational funding programs [5].

Despite its social and economic relevance IS infrastructure provisioning has been largely ignored by IS research and evoked calls for more research in this field [50]. It is known that IS infrastructures form organizational infrastructures at a corporate level [28]. A broader understanding of IS infrastructures extends this view to national and global infrastructures [50]. [50] demand that the assessment of infrastructures is put at the core of future IS research.

In this paper we aim to respond to this call by assessing how cooperation between private market players can contribute to Next-Generation Access provisioning. This general question can be subdivided into three supporting research questions. First, we ask which characteristics can contribute to a sustainable competitive advantage. Second, we assess if carriers which are perceived to be successful in the broadband provisioning market comprise relationship characteristics that foster sustainable competitive advantages. Third, we ask if the relational view concept can contribute to a better understanding of cooperation.

In order to assess these questions we structured this article in seven sections. The next section will provide an overview on the related literature and point out our contribution to the research field. In the subsequent sections we will introduce the theoretical foundations of the relational view theory. Thereafter, we will explicitly explain our research methodology and data. In section five and six we will present and compare our conducted case studies. Finally we will present our conclusion.
2. Related literature

Divergent views on Next-Generation Access deployment evoked a wide variety of publications which are related to our research questions. Thus, in discussing the related literature we will focus on the assessment of articles that have been published in high-ranking journals or conference proceedings. A major body of the identified articles is devoted to regulation policies and its effects on market players [2],[3],[12],[15],[29]. This literature has gained much attention among scientists and regulation authorities and contributed to a better understanding of measures which can be implied on legacy incumbent infrastructures. However, some scientists found evidence that regulation of legacy access infrastructures has had less impact on reaching Next-Generation Access goals than market based infrastructure competition [7]. Moreover, this body of literature does not focus on cooperative broadband provisioning of private telecommunication companies. Other scientists have assessed Public Private Partnerships [4],[13],[16],[23],[31],[34],[36]. This literature assesses the question how diverging interests of private and public stakeholders can be aligned. Moreover, articles focus on assessing risk sharing strategies between public and private partners in the context of infrastructure investments. Cooperation between private investors is usually out of scope. A third body of articles assesses the effect of broadband provisioning on economic growth [5],[8],[14],[17],[22],[24],[55]. This research area makes an important contribution to justifying public investments into the broadband market. However, due to considerations of national budget allocation countries like for example Finland, Germany, United Kingdom and the United States of America have decided to focus on stimulating the private broadband market instead of providing large public funds per capita for the setup of a universal broadband infrastructure [45]. This strategy requires a profound understanding of market forces, private investment strategies and Next-Generation Access business models. Several researchers have contributed to improving this knowledge [1],[25],[27],[30],[39],[40],[46],[47],[51],[53]. The contribution closest in spirit to our work shall be discussed in a more differentiated manner.

[39] use a grounded theory approach in order to assess constrains in the deployment of mobile networks in India. Their analysis focuses on the assessment of supply chain strategies and dependencies between various supply chain activities. In this paper we use a similar analysis technique but employ the relational view concept on the assessment of cooperation characteristics that can contribute to sustainable inter-firm relationships. That is, we provide a border but less detailed view on broadband deployment. Moreover, we explicitly explore how cooperation can foster private investments in novel telecommunication infrastructures.

3. Theoretical foundations

In this section we discuss the theoretical foundation of our work in a two-step process. In the first paragraph we discuss the theoretical foundation of cooperation in the telecommunication industry. The remaining part of this section introduces the relational view concept.

According to [19] cooperation between network operators are predominantly operative or strategic in nature. Operative cooperation can be observed if operators mutually grant each other access to their networks or resources at operating sites [48]. Usually this cooperation is characterized by little implementation and contractual complexity and has become common practice for mobile operators. Network operators establish strategic cooperation for the concerted setup of capital intensive infrastructure investments in evolving markets and international projects. This type of strategic cooperation is characterized by a high degree of interdependence between operators and is common for international sea cable projects. Strategic cooperation can also be observed between network operators at the national level. Especially broadband offers of cable operators force traditional telecommunication companies into large investments and into the exploration of strategic partnerships [7]. In a situation like this cooperation partners need to align competitive and cooperative strategies in order to develop a sustainable competitive advantage.

With the relational view [10] proposed a widely recognized concept for assessing cooperative strategy and sources of competitive advantage based on inter-firm relationships. The relational view concept addresses the limitations of [39] industry based view which explains competitive advantage based on a firm’s membership in an industry and it aligns with the widely recognized value based view of a firm which explains competitive advantage based on a firm’s set of resources [10],[32]. At its core the relational view concept proposes that cooperation partners need to create relational sources of supernormal profit along with mechanisms that preserve profits. As depicted in Figure 1 both relationship characteristics need to be
met in order for the cooperation to provide sustainable competitive advantages. If profit preserving mechanisms do not exist, competing firms can easily copy the sources of supernormal profit. If the relationships do not yield sources of supernormal profit a firm will prefer Arm’s length market relationships over more complex cooperative relationships.

3.1. Sources of supernormal profits

Relation-specific investments can be a source of supernormal profits and usually require long contract durations and high transaction volumes in order to prevent opportunistic behavior of alliance partners [10],[52]. Knowledge sharing routines can range from pure information exchange to transfer of know-how and joint utilization of innovations [10],[44]. In general the exchange of knowledge and innovations promises more supernormal profit returns than the exchange of information which can be reproduced easily. Trust and self-enforcement mechanisms are associated with Effective Governance as opposed to contracts and third-party-enforcement mechanisms [57]. Finally, in alignment with the Resource Based View the combination of complementary resources is another source of supernormal profit. In order to capitalize these synergies the firm needs to be able to identify suitable partner and provide the organizational capability to utilize synergies [10].

3.2. Profit preserving mechanisms

Casual ambiguity refers to a situation where tacitness, complexity or specificity contribute to competitive advantage that is difficult to observe and thus difficult to copy by competitors [43]. Time compression diseconomies are associated with processes that cannot be speeded up at all or only at prohibitively high costs [18],[37]. Thus, time compression diseconomies favor first movers within the market. Resource indivisibility contributes to the preservation of profits as specialized resources are hard to redeploy by any cooperation partner [10]. Finally, the institutional environment which is related to implicit rules and social controls can serve as a profit preserving mechanism as an environment of trust can lower coordination costs of alliance partners [42].

4. Research methodology and data

In order to assess the private cooperative broadband provisioning process based on the relational view concept we need to explore inter- and intra-firm drivers and inhibitors of competition and cooperation. As stated in [33] this kind of assessment requires the conduction of interviews with practitioners as the nature of relationships between firms can hardly be explored based on pure literature reviews and desk research. In assessing the broadband provisioning process we advert to the Glaserian grounded theory approach [21]. This approach requires the researcher to be passive when conducting the interviews. That is, we refrain from mapping the relational view concept in interview questions like it would be demanded from a Straussian grounded theory approach [26]. Accordingly interview questions cover a broad spectrum of questions correlated with seven general categories including telecommunication value chain, cooperation initiation, cooperation design and success factors of the broadband provisioning. We choose a semi-structured interview setup for exploring the seven categories. Thus, our initial questions serve as a basis for exploring the categories but during the interview additional questions can be asked as a response to the interviewees answers. In its most pure execution the Glaserian approach of grounded theory demands that the research does not consult any literature at all before designing interview questions. However, given the large body of literature that has been published on transaction cost theory, the resource based view, make or buy decisions and competitive advantages we designed questions in such a manner that interviewees would be able to refer to those theories if they were used for solving practical problems. At the same time questions were designed generic enough to allow the
interviewees to refer to other concepts that are being used during private cooperative and competitive broadband provisioning. In this execution of the Glaserian grounded theory approach we follow common practice in IS research [35],[54].

Following [26] we combine the fundamental concept of the Glaserian grounded theory approach with the concept of case study research as proposed by [56]. Both frameworks regard an interview as primary unit of analysis and aim to identify general concepts which may be applied to a similar context [26],[49].

Following [26] we combine two frameworks that have been widely used and accepted in IS research. [9] assessed more than 1500 articles in leading IS journals and found that 15 percent of them use case study research. [35] found that 30 out of 50 leading IS journals have published articles that apply grounded theory.

In selecting the companies for our interviews we follow a multiple-case approach in order to ensure external validity [56]. That is, we conduct interviews with several national and rural telecommunication companies in addition to the assessment of city carriers. This approach aims at the literal and the theoretical replication of results. It is based on the theoretical clusters proposed by [20] for systemizing broadband cooperation according to the geographic scope. We ensure the reliability of our interviews by using a case study protocol and by documenting the interviews with audio records. Moreover, we ensure construct validity by using additional sources of evidence like internal documents which have been identified as relevant to the cooperative broadband provisioning process and are provided by the interviewees. We complement this information with press releases and company specific information which is available on the internet.

We identified and selected our interview partners based on a sequential three step process. The initial starting point of our interviewee identification process was a contact to participants of the Next-Generation Access interoperability work group which was initiated by the German regulation authority in order to foster the development of technical standards for Next-Generation Access networks. Though the work of this group focuses on operational cooperation its members have in several cases been the messengers of strategic cooperation interests between companies. Moreover, the group members represent companies which together account for more than 75 percent of the German broadband access market.

In a second step we asked the group members to establish further contacts with members of the company’s cooperation department or management. Though this phase naturally had to follow opportunistic selection criteria we managed to arrange between two and five interviews per company. Following [56] we argue that it is necessary to conduct several interviews per company in order to increase result robustness by triangulating results during the interview analysis phase. In many cases interviewees were very helpful in establishing contacts with cooperation departments or top management of other telecommunication companies. Usually the contacts resulted from previous cooperation talks or existing cooperation relationships. With this incremental process we were able to conduct interviews with twenty-three experts in seven telecommunication companies. Table 1 provides an overview on the assessed data broken down by carrier type.

<table>
<thead>
<tr>
<th>Carrier Type</th>
<th>Number of Interviewees</th>
<th>Number of Transcribed Pages</th>
<th>Number of Companies</th>
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</thead>
<tbody>
<tr>
<td>National</td>
<td>13</td>
<td>235</td>
<td>3</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>8</td>
<td>67</td>
<td>3</td>
</tr>
<tr>
<td>Municipal</td>
<td>2</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
<td><strong>325</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>

All interviewees are either a member of the company management, cooperation departments or managers with a technical background. With this interviewee constellation we managed to incorporate technical and strategic views on cooperation in our assessment.

In Figure 2 we summarize the previously described research model and indicate which section correlates with the three steps of our assessment process.

**Figure 2. Case assessment process**

5. Case study description

In this section we introduce the conducted case studies. In order to ensure the anonymity of the interviewees and their employer we will describe the case studies grouped by geographic scope as explained in the previous section. In this process we will
aggregate information whenever it would be possible to relate non-aggregated information to a specific company. In each section we will first describe the carrier characteristics. Subsequently, we discuss the sources of supernormal profits and profit preserving mechanisms.

5.1. National carriers

The aggregated market shares of the assessed national telecommunication companies account for more than sixty percent of the private and cooperative broadband access market share in Germany. This set of carriers includes the national incumbent and its main national rivals in the business to customer (B2C) and the business to business (B2B) market. Some of today’s non-incumbents are national subsidiaries of incumbent companies from other European countries. Others are national non-incumbents that have either started out as a local fully integrated provider and extended their offer nationally or entered the market as reseller of the incumbent’s wholesale products. Most of the interviewed national carriers are fully integrated service providers. That is, carriers plan, build, operate and sell broadband access products. The conducted interviews show that the experts who work for national carriers are well-informed about the Next-Generation Access activities of other national carriers. Moreover, interviewees partially referred to existing cooperation with other interviewed carriers. In other cases cooperative relations were explained in general manner.

National carriers are usually large companies which exhibit many potential cooperation interfaces to other companies. Thus, national carriers need to make sure that cooperation at all company interfaces fulfills requirements with respect to technology standards and operational flexibility. Due to these requirements national carriers usually invest in standardized technology which is often provided by specialized international suppliers. Moreover, our interviews and several publications indicate that non-incumbents opt for national broadband co-investment models which result in a jointly owned infrastructure that leaves little room for infrastructure-based competitive advantages. However, regarding the necessity for the establishment of a co-investment model, interviewees from different national companies turned out not to have contrary opinions. With respect to knowledge sharing routines all interviewees who participated in the Next-Generation Access interpretability workgroup confirmed a very productive knowledge exchange regarding standardization issues and operative cooperation. At the same time all major national carriers stated that regulatory rules inhibit the free exchange of knowledge and information. Interviewees also stated that in some cases mechanisms have been established in order to make sure that no more information is been exchanged than actually required in order to accomplish a certain goal. Our interviews indicate that between national carriers cooperation governance is dominated by legal agreements whereas trust-based governance is currently an exception. Complementarity could be identified as a strong motive for cooperation. One interviewee for example stated that the perfect cooperation partner for private Next-Generation Access deployment would be a utility company which shares the investment risk and primarily aims at the installation of smart meters as opposed to entering the broadband access market. The importance of complementary resources was repeated similarly by other national carriers.

Based on our interviews we could not identify casual ambiguity as a profit preserving mechanism of national carriers. Desk research showed that cooperation between large carriers is not only accompanied by press releases but also often requires the approval of the regulation authority. For this reason the scope of cooperation is usually published and leaves little room for causal ambiguity. According to the interviewed experts the identification and the complexity of identifying synergies between potential cooperation partners constitutes a time compression diseconomy. Especially diagonal cooperation between utility companies and carriers can be time consuming due to different levels of knowledge on broadband provisioning. Resource indivisibility could be identified as a strong mechanism of profit preservation. That is, companies focus on long-term contracts with durations of up to 20 years. Moreover, some carriers aim to preserve profits by building networks in such a manner that latter unbundling obligations can only be enforced on a bit stream layer but not within the physical infrastructure. The institutional environment only partially fosters cooperation in broadband access. Even though politicians and the regulation authorities want to stimulate cooperative broadband provisioning traditional competitive considerations are still present in many cooperation negotiations.

5.2. Metropolitan carriers

After the German market was opened to competition more than seventy metropolitan carriers entered the market with different business models [11]. During the following ten years the market was experiencing a strong consolidation and carriers developed more differentiated business models. Some
carriers were focusing on business costumer products and extended their activities to other cities and later to business customers all over Germany. Others were bought by larger market players or in few cases established a strong local brand. Among the most successful metropolitan carriers are subsidiaries of metropolitan utility companies. We were able to conduct interviews with the three major metropolitan carriers in Germany. Today all three interviewed metropolitan carriers are fully integrated. In our findings we integrated the views of eight interviewees.

Metropolitan carriers point out that cooperation efforts between metropolitan and national carriers need to overcome the difficulty that national carriers have specific requirements with respect to the technological preconditions. These requirements force metropolitan carriers to make comparatively high investments into their own interconnection capabilities. The conducted interviews showed that metropolitan carriers have established advanced knowledge sharing routines with their partners. These carriers have started fiber roll out projects earlier than other carriers in the market and thus have been able to establish processes required to plan and roll-out new infrastructure efficiently. Interviewees pointed out that metropolitan carriers have established advanced knowledge sharing routines with their partners. These carriers have started fiber roll out projects earlier than other carriers in the market and thus have been able to establish processes required to plan and roll-out new infrastructure efficiently. Interviewees made clear that potential partners and some competitors in the German market often overestimate the synergy effects that can be derived from using existing ducts. According to one interviewee the key to an efficient roll-out of a fiber infrastructure is a sound master plan but not a focus on the utilization of infrastructure synergies. With regard to the governance of projects the majority of the interviewees indicated that trust is an essential part of a partnership. Interviewees pointed out that a bilateral face to face communication can be very helpful in order to setup and steer cooperation. Whereas the involvement of legal departments can slow down processes drastically and should only be applied when necessary. Similar to the national carriers metropolitan carriers agree that complementary resources are an essential part of a successful cooperation. In several cases cooperation negotiations could not be completed successfully because the potential partner could not provide the required assets necessary for a partnership at eye level. Metropolitan carriers are currently in process of opening up their fully integrated infrastructure to potential cooperation partners. That is, metropolitan carriers plan to offer wholesale products to carriers at different value added steps of the telecommunication value chain.

Our interviews indicate that some metropolitan carriers are well aware of casual ambiguity effects which will be hard to copy by competitors that have entered the fiber market at a later point in time. While the technological know-how for the setup of Next-Generation Access networks is widely available in books, processes and planning know-how can hardly be observed by and transferred to competing companies. Thus, casual ambiguity is currently a strong profit preserving mechanism of metropolitan carriers. According to the conducted interviews time compression diseconomies are not only related to learning processes in Next-Generation Access deployment processes but are also important with respect to the accumulation of property rights agreements as the German law requires all property owners to agree to the installation of new cables on their property. Especially negotiations with private property owners can be very time consuming. The strong local brand of carriers constitutes a indivisible resource which serves as a profit preservation mechanism that leaves competitors view other options than buying wholesale products from the city carrier. Currently the national institutional environment constitutes another profit preservation mechanism for metropolitan carriers as local monopolies are currently not deregulated by the German regulator.

5.3. Municipal carriers

Just like metropolitan carriers the first municipal carriers evolved after the liberalization of the German broadband market. Usually these companies have strong local ties in rural areas. In many cases municipal carriers evolved in regions were the traditional incumbent offers did not meet the customers’ demands in terms of the provided broadband speed. Even though broadband deployment strategies of municipal carriers are based on economic considerations another important driver of deployment projects is the entitlement to provide the required infrastructure for the settlement of new companies and citizens. In many cases the infrastructure of municipal carriers is only provided to a few thousand customers. In general competition dynamics are less intense than in metropolitan areas. Moreover, public funding is an essential part of most broadband deployment business cases. In the course of our analysis we conducted interviews with two experts from a municipal broadband provisioning company. We triangulated the findings with intensive desk research in order to enhance generalizability.

Interviewees of the municipal carriers point out that very close relations with suppliers result in long-term contracts with very specific technology investments. Due to small economies of scale municipal carriers invest in different technology than
larger carriers. This strategy results in higher expenses for interoperability with larger carriers. In the conducted interviews with municipal carriers we identified several knowledge sharing mechanisms. While metropolitan and national carrier foster operational knowledge exchange within workgroups that have been setup by the regulation authority, municipal carrier foster knowledge exchange within the national confederation of local carriers. Moreover, municipal carriers exchange knowledge with local utility companies and authorities. According to the interviewees trust is an important governance mechanism. However, just like national and city carriers municipal carriers use contracts at every phase of the cooperative broadband provisioning process. The interviewees from municipal companies indicate that the combination of complementary resources can be multifold. That is, local carriers can jointly accomplish planning activities for new electric and fiber optic networks. Moreover, cooperation partners jointly use marketing and network operation know-how.

Due to limited financial and personal resources municipal carriers predominantly invest in broadband infrastructure which is less expensive than solutions installed by larger carriers. This precondition contributes to less complex infrastructures, processes and accordingly less casual ambiguity. Time compression diseconomies can evolve from the fact that within the broadband provisioning market prices for wholesale products are usually negotiated bilaterally. Thus, market entrants need to conduct a series of negotiation talks before they have a profound understanding of a product’s or service’s market value. In the case of municipal carriers potential cooperation partners often know each other from previous infrastructure projects. Due to the small company size of the potential cooperation partners a single person can subsume multiple roles within a company. Thus, cooperation initiation operation can be a lot less time consuming than in larger companies. Naturally this competitive advantage is limited to the home region of the local carrier. Just like larger carriers municipal carriers try to agree on large contract durations of up to 18 years. Due to remote competition dynamics infrastructure investments are often cooperation specific and hard to redeploy to a different utilization. Thus, these investments and contracts constitute an indivisible resource and contribute to the preservation of profits. The institutional environment of municipal carriers is characterized by trustful long-term relationships and a strong commitment to the improvement of local infrastructures. Interviewees have stated that even though it would be possible to extend activities beyond the boundaries of the municipality this possibility will not be explored before all economically feasible projects within the home municipality have been assessed.

6. Case comparison and interpretation

In this section we will summarize the case study results which were introduced in the previous section. In line with [39] we used open and selective coding techniques in order to map the findings from the case study description section to the relational view concept. The relational view concepts that emerged from the grounded theory codes are presented in subsequent table. In Table 2 ++ denotes a strong evidence that a factor contributes to co-operative performance of a carrier. Whereas -- indicates strong evidence that this factor does not contribute to co-operative performance. The symbols +, o and – denote intermediate levels between those extremes. In the case of national and metropolitan carriers Table 2 comprises a checkmark if a result could be replicated literally. That is, if all assessed carriers of one carrier type appraised a co-operative factor the same way. Otherwise a cross will indicate that the results could not be replicated literally. In the case of municipal companies we base our findings on two expert interviews within one municipal company. Thus, the literal replication logic cannot be applied. The last column of Table 2 indicates if the results could be replicated theoretically.

<table>
<thead>
<tr>
<th>Table 2. Relational view case comparison and result replication</th>
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<tr>
<td><strong>Sources of supernormal profits</strong></td>
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<tr>
<td>Relation-specific investments</td>
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<td>Knowledge sharing routines</td>
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<td>Profit preserving mechanisms</td>
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<td>Casual ambiguity</td>
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<td>Time compression diseconomies</td>
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<td>Resource indivisibility</td>
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<td>Institutional environment</td>
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<td>Precondition for sustainable co-opetition</td>
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<td><strong>Preparation</strong></td>
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* = Literal replication, ** = Theoretical replication

That is, if the findings support the assumption that carrier types differ with respect to their capability to establish sustainable co-operative relationships. If the preposition can neither be accepted nor rejected we will indicate this with the symbol (✓). The cases
comparison shows that we are able to access the relational view characteristics for all carrier types. As indicated by the theoretical replication column four out of eight relationship characteristics clearly differ between carrier types. For the characteristics relation-specific investments and effective governance two out of three characteristics are not identical. The relation specific characteristic complementary resources shows a strong evidence that this factor contributes to supernormal profits for all carrier types. Accordingly, carriers do not differ with respect to this characteristic. Moreover, the results indicate that carriers do not differ with respect to the profit preserving mechanism resource indivisibility. However, as opposed to the previous characteristic this finding could not be replicated laterally for national carriers.

As indicated in Table 2 metropolitan carriers have been able to establish cooperative relationships that exhibit four sources of supernormal profits and four profit preservation properties. Thus, following the relational view concept metropolitan carriers exhibit relationship properties which foster sustainable competitive advantage. The municipal carrier shows similar relationship characteristics with respect to knowledge-sharing, effectiveness of governance and complementary resources. Resource indivisibility and the institutional environment contribute to the preservation of municipal carrier profits. In general the precondition for sustainable co-operation of the municipal carrier is less beneficial than for metropolitan carriers. National carriers have pointed out that complementary resources are the central driver for the generation of supernormal profits. Whereas other sources of supernormal profits are difficult to establish. Furthermore, Table 2 indicates that time compression diseconomies are the only relationship characteristic that contributes to profit preservation of all assessed national carriers. Accordingly national carriers exhibit the least advantageous preconditions for sustainable competitive advantage in cooperative relationships.

In addition to the results indicated in Table 2, interviewees revealed that more than three forth of the interviewees perceived the broadband provisioning activities of metropolitan carriers as successful. Our findings support the assumption that carriers which are perceived to be successful in providing Next-Generation Access networks have established relationship mechanisms that support sustainable competitive advantage. Furthermore, our results indicate that today national German carriers are inhibited from establishing sources of supernormal profits in private cooperative broadband provisioning by the same regulatory measures that aim at the prevention of collusion between market leaders in the traditional broadband market. Thus, we can draw the conclusion that the established regulatory mechanisms are currently not optimized for reaching two contradicting governmental goals of fostering private cooperative investments in Next-Generation Access networks and preventing collusion in the current broadband market. Moreover, our results point the fields of action for regulators and carrier management. That is, measures should be taken to improve sources of supernormal profits such as relation-specific investments, Knowledge sharing routines and Effectiveness of governance. Strong profit preservation mechanisms may contradict with the goal of preventing collusion. Thus, regulators and carrier management should carefully discuss the necessity of those mechanisms for receiving the required infrastructure investments. In the course of this discussion regulators will also have to address the fact that national carriers denounced the situation that metropolitan carriers are currently not subject to regulatory measures even though they are in several cases regional market leaders and have established strong profit preservation mechanisms. Our results do not allow the conclusion that the players of the German broadband market are heading for arm’s length competition or that competing firms can easily copy the behavior of successful market players.

Based on the relational view concept we have been able to derive several implications for improving the preconditions for cooperative private Next-Generation Access provisioning in the German broadband market. The specific characteristics of the relational view analysis are likely to differ between countries due to different regulatory, economic and historic preconditions [45]. However, our results indicate that the proposed concept could be used to identify fields of action for regulators and carrier management of different countries.

7. Conclusion

In this paper we have provided an overview on the literature that has been published on Next-Generation Access provisioning. Moreover, we have pointed out that the relational view concept can contribute to a better understanding of cooperative private broadband provisioning. Our results indicate that national, metropolitan and municipal carriers can differ with respect to their cooperative relationship characteristics and that carrier types which are perceived to be successful in providing Next-Generation Access networks can be successful in establishing the
preconditions required for sustainable competitive advantage. Based on the results of our analysis we have been able to derive exemplary fields of action for regulators and carrier management.

The generalization of our findings is limited by the fact that we base our findings on the assessment of the German Next-Generation Access market. Moreover, our database did not allow the literal replication of the interviews conducted in the municipal company. Thus, further research will be aimed at the triangulation of our findings with results from further interviews.

8. References


[33] The author’s name is withheld to maintain review blindness.