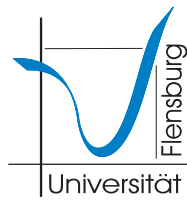


Danish – German **Research Papers**



SYDDANSK UNIVERSITET

Department for
Border Region Studies
(IFG)



International Institute
of Management
(IIM)

Peer-reviewed

Flensburg / Sønderborg
ISSN 1868-8160

Joint Research Paper Series: International Institute of Management and Department of Border Region Studies

The Department of Border Region Studies at the University of Southern Denmark and the International Institute of Management at the University of Flensburg have established a joint research paper series to further institutionalise the long-standing relationships between the two departments that is reflected in joint teaching programmes as well as joint research activities. The aim of the joint series is to establish a platform to further foster and develop this cooperation in the border region of Sønderjylland/Schleswig. The joint research paper series is open to contributions from the field of business, regional economics, social sciences, linguistics and culture studies as well as other topics researched by colleagues from both institutions. For more details with regard to our research and teaching activities please see www.sdu.dk/ifg and <http://www.iim.uni-flensburg.de>.

Contributions to the Joint Research Paper Series are going through a review process, i.e. papers submitted by a colleague from the Department of Border Region Studies are reviewed by a colleague from the International Institute of Management and vice versa. Joint papers go to a third institution for review. The papers should be formatted according to the Academy of Management Journal Style Guide for Authors (http://journals.aomonline.org/amj/style_guide.html). Further, the papers if possible should be in English and contain a Danish and a German abstract as well as up to six relevant keywords.

Legal Notice:

Danish – German Research Papers. ISSN: 1868-8160

Place of Publication: Flensburg / Sønderborg

Publisher: International Institute of Management (IIM), University of Flensburg, Flensburg
Department of Border Region Studies (IFG), University of Southern Denmark,
Sønderborg

Editors: Assistant Professor Susanne Gretzinger (University of Southern Denmark)
Prof. Dr. Susanne Royer (University of Flensburg)

**Danish-German Research Paper No. 1:
The Value Adding Web at Work -
Developing a toolbox to analyse firm clusters**

Prof. Dr. Susanne Royer

International Institute of Management, Flensburg University, Germany

Prof. Dr. Marion Festing

Chair of Human Resource Management and Intercultural Leadership
ESCP Europe, Campus Berlin, Germany

Charlotte Steffen (MBA)

International Institute of Management, Flensburg University, Germany

Professor Kerry Brown

School of Tourism and Hospitality Management, Southern Cross University, Australia

Professor John Burgess

School of Business, The University of Newcastle, Australia

Dr. Jennifer Waterhouse

School of Business, The University of Newcastle, Newcastle, Australia

ACKNOWLEDGEMENTS

We are grateful to the Australian Research Council (ARC) for their support of the project by granting the ARC International Linkage Award (Linkage No. LX0774768) and the German Academic Exchange Service (DAAD) for further funding of this international research project. For her support in developing first versions of the questionnaires we would like to thank Jana Okech, research assistant at the ESCP-EAP European School of Management.

The Value Adding Web at Work – Developing a toolbox to analyse firm clusters

ABSTRACT

Industry clusters have been studied for a long time from diverse perspectives. The results of this research have increased our understanding of knowledge flows in clusters, spillovers between cluster actors and regional development through clusters. However, there still remain deficits in knowledge about industry clusters and cluster development. A central gap in cluster research is an agreed conceptualisation of industry clusters and the underlying components within clusters. As a contribution to filling that gap our “value adding web” conceptualisation of clusters is described here. Building on this novel understanding of industry clusters, a case methodology is suggested. The resultant “toolbox” of techniques with which to study clusters has been used to analyse Australian and German cluster cases. This paper offers a series of templates to be used for comparative case study research in industry clusters.

Key words: Industry Cluster; Case Study Methodology, Value Adding Web; Public Policy, Strategic Management.

Cluster als Wertschöpfungsnetzwerke – Entwicklung eines Tools zur Analyse von Clustern

ABSTRAKT

Cluster werden seit langem aus verschiedenen Perspektiven untersucht. Die resultierenden Forschungsergebnisse haben das Verständnis und die Kenntnis über Wissensflüsse in Clustern, Spillover-Effekte zwischen Cluster-Akteuren und regionale Entwicklungen durch Cluster erhöht. Dennoch bestehen immer noch Wissensdefizite über Cluster und die Clusterentwicklung. Eine zentrale Lücke in der Clusterforschung besteht in einer allgemein akzeptierten Konzeptionalisierung von Clustern und den in einem Cluster wirkenden Faktoren. Die Konzeptionalisierung von Clustern als sich überlappende Wertschöpfungsnetzwerke, welche in diesem Artikel erläutert wird, ist ein Ansatz, um diese Lücke zu schließen. Aufbauend auf dem neuartigen Verständnis von Clustern wird eine Fallstudienmethodik vorgeschlagen. Der daraus resultierende „Werkzeugkasten“ von Techniken zur Analyse von Clustern wurde bereits genutzt, um australische und deutsche Cluster zu untersuchen. Der vorliegende Beitrag beinhaltet eine Reihe von Vorlagen, welche für vergleichende Fallstudienuntersuchungen von Clustern genutzt werden können.

Schlagworte: Cluster; Fallstudienmethodik; Wertschöpfungsnetzwerk; Public Policy; Strategisches Management.

Det værdifremmende netværk på arbejde – en værktøjskasse til analyse af virksomhedscluster.

ABSTRAKT

Industriclusters har længe været genstand for undersøgelser udfra diverse perspektiver. Resultaterne af denne forskning har øget vores forståelse af ”knowledge flows” i clusters, spillovers mellem clusteraktører og regional udvikling gennem clusters. Dog er der stadig mangler i den nuværende viden omkring industriclusters og clusterudvikling. Et centralt hul i clusterforskningen er en anerkendt begrebsopfattelse / koncept af industriclusters og de bagvedliggende komponenter indenfor clusters. Som et bidrag til at udfylde dette hul er vores clusterbegrebsopfattelse ”value adding web” beskrevet i det følgende. På baggrund af denne nye forståelse af clusters, anbefales en case-metodologi. Den deraf resulterede ”værktøjskasse” af de respektive teknikker, som anvendes ved studier af cluster, har været brugt til at analysere australske og tyske clustercases. Dette papir giver en række skabeloner som kan anvendes ved en sammenlignende casestudieforskning i industriclusters.

Slagord: cluster; case-metodologi; værdifremmende netværk; public policy; strategisk management.

1. INTRODUCTION: INDUSTRY CLUSTERS, PUBLIC POLICY AND STRATEGIC MANAGEMENT

Clusters are investigated in a wide variety of disciplines including economic geography, public policy, innovation and technology management, organisation theory, strategy, communication studies, industrial economics, and knowledge management. This variety of perspectives leads to many differing understandings of industry clusters and consequently many different methodological techniques are applied to study them.

The aim of this paper is to present a methodological approach suitable for analysing clusters in a comparative way. Cluster analysis methodologies have focused previously on describing the features and elements of different industry clusters and this approach has provided valuable insights into the functioning and operation of clusters (e.g., Audretsch & Feldman, 1996; Austrian, 2000; Cortright, 2002). However, there has been less emphasis on delivering a set of tools for undertaking comprehensive comparative case analyses. While case studies of clusters have been undertaken in various industry contexts (e.g., Austrian, 2000; Porter, 1998), there has been little concerted activity to develop cases that are comparable among different research teams. We suggest that this is a consequence of a lack of a common definition for the term “cluster” and common conceptual and methodological tools to investigate industry clusters. Since the findings from different research teams are not easily comparable, there is a lack of comparative data especially with regard to different industries and countries. The drawbacks have been limited replication and an inability to undertake multiple large-scale investigations. This is the point of reference for this paper.

The German Australian Research Project on Clusters (GAPCluster), a large-scale project to investigate clusters in an international context, offered the opportunity to develop a robust framework to analyse industry clusters (Brown et al., 2007, 2008, 2009). The original intention was to compare industry clusters in Germany and Australia in order to establish an understanding of the effect of industry clusters on regional economic development. This focus on regions meant that public policy directed to locational development was relevant to the overall research agenda. The main contributors to regional development in terms of job creation, economic stimulus and growth are single firms. They are also the main actors in industry clusters that are often seen as valuable for regional development by public policy

actors. Therefore, regionally-based initiatives have focused increasingly on cluster development. However, often these public policy cluster development initiatives did not easily fit with the interests of individual firms. We suggest that one of the reasons for the lack of “fit” is that the role and function of single firms in clusters has not been sufficiently taken into account (although Maskell, 2005; Folta et al., 2006, and Festing et al., 2009, provide starting points in that direction).

The research perspective taken here is multidisciplinary. It takes into account public policy which plays a dominant role with regard to cluster development. Furthermore, it is deeply rooted in strategic management research, the discipline that investigates competitive advantage of firms. We suggest that insights from both disciplines should be combined in order to provide more encompassing explanations in cluster research. On the one side is the potential for realising firm-specific competitive advantage and on the other, relational competitive advantages resulting from relationships within clusters should be more in the focus of cluster research. It would not only help to understand strategic implications for firms that are located in clusters but also offer helpful insights to public policy actors who aim to better understand how to develop well-performing clusters.

In order to develop a common understanding of clusters and their parameters, various definitions of clusters were brought together and analysed in terms of their relevance to the breadth of cluster interaction (Brown et al., 2007). Moreover, the specificity of cluster participants, particularly cluster actors, is seen as relevant with regard to determining cluster performance. The applicability of ideas about cluster formation and changes in clusters over time was a further consideration for the research agenda. The intention was to accurately describe clusters, cluster firm activities and the relationship of the cluster to the surrounding local area. The wide variety of cluster attributes, actors and characteristics were distilled from the literature into a comprehensive concept that seeks to explain multilayered and multiple resources on different cluster levels (Brown et al., 2008).

In our conceptualisation, industry clusters are interpreted as a combination of a certain number of value adding webs (VAWs) around single firms. A value adding web is:

A connection of horizontal, vertical and lateral value adding activities contributed by different actors in proximity to one another which all act in relation to a specific

industry sector. The actors have relationships characterised by interdependencies of different strengths and quality that define the boundaries. (Brown et al., 2007: 20).

We argue that using this conceptualisation facilitates the accurate mapping of clusters. Further, it reflects a holistic view of the cluster that incorporates a range of different actors within the cluster. The single firm is the core contributor and the core units of analysis in our cluster conceptualisation are firm-specific resources as well as relationship-specific and cluster-specific resources.

From this starting point of a common understanding of the dimensions of industry clusters, we needed to create a methodological approach that would encompass cross-national and cross-industry analysis. The preliminary thinking was to develop a series of case studies that could be compared by the researchers operating in different national contexts. It became clear that in order to make robust research possible, we needed to develop a comprehensive set of research protocols and written guidelines. The result is a “toolbox” containing our resource-based cluster understanding as well as pre-tested questionnaires for different cluster actors together with interview guidelines for conducting in-depth expert interviews with cluster members.

The remainder of this paper is concerned with outlining and justifying the selection strategy for the new cluster conceptualisation and the constituent elements selected for the VAW operationalisation. It follows the description how the specified methodology can be used to analyse a cluster. This research links firm strategy, public policy, resources and value creation to investigate industry clusters. One part of the method seeks to differentiate the public policy responses and allied policy instruments across the various levels of the cluster. The other direction is the understanding of competitive advantage realisation of single firms located in clusters. Therefore, our empirical approach has been to implement a case-based research strategy. The resulting toolbox is presented in this paper. The paper concludes that the developed and employed toolbox for cluster research provides a new approach to understanding industry clusters as overlapping value adding webs as well as offering practical implications for cluster firm managers, cluster managers and public policy actors. Avenues for future research methodologies are also identified.

2. THE VALUE ADDING WEB CONCEPT OF CLUSTER ANALYSIS

Clusters are considered to be comprised of a combination of value adding webs. Horizontal, vertical and lateral actors and actor groups can be identified within these webs. While horizontal actors produce the core products of the cluster, vertical actors are their buyers or suppliers. Lateral actors support the other cluster actors through the provision of expertise, infrastructure or funding. Government as a typical lateral actor provides resources such as infrastructure (Tallman et al., 2004), training and education (Andersson et al., 2004) as well as funding for research activities within clusters (OECD, 2007).

Clusters combine elements of cooperation and competition. This impacts on competitive advantage realisation for single firms located in clusters. The value adding web concept recognises this tension and therefore, chooses a strategic approach to the understanding of valuable resources on different cluster levels. The resource-based view of the firm (e.g., Collis & Montgomery, 2005; or Peteraf, 1993) focuses on firm-level competitive advantage. It is suggested that resource heterogeneity leads to rent creation for single firms (Peteraf, 1993). The resource-based view is considered a useful perspective for analysing valuable firm resources. It may, however, also be used to analyse resource bundles that transcend firm boundaries (see Dietl, Pauli, & Royer, 1999a, 1999b regarding the analysis of the competitiveness of financial centres worldwide). A resource-based view of clusters has been developed accounting for resources on multi-levels related to industry clusters (Brown et al., 2007, 2008, 2009; Festing et al., 2009, under review).

Building on the understanding of resources as the basis for competitive advantage realisation, we differentiate context-specific, web-specific and firm-specific resources as critical to cluster members and overall cluster performance and competitiveness.

Firm-specific resources may occur in the form of tangible (e.g., buildings), intangible (e.g., patents) and human resources (e.g., motivated personnel). Resource scarcity leads to *Ricardian rents*. Valuable resources improve effectiveness and efficiency of firms. Valuable resources are characterised by scarcity, non-substitutability and inimitability (e.g., Barney, 1991; Collis & Montgomery, 2005; Grant, 1991).

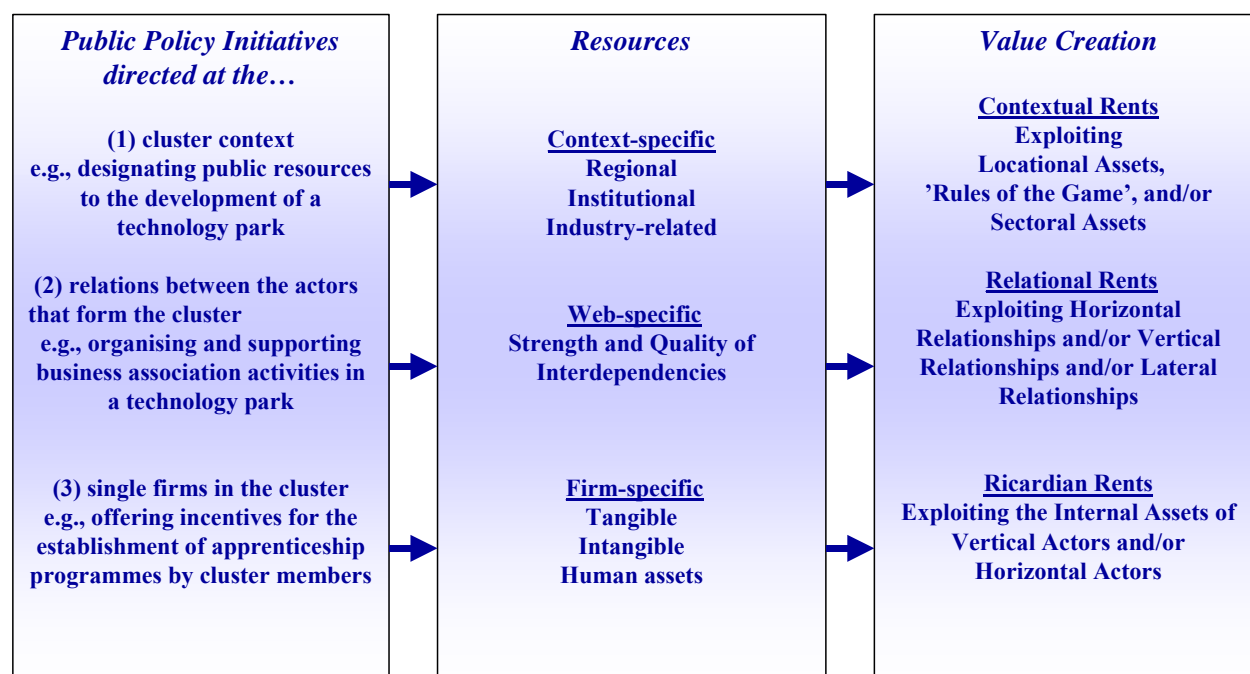
While firm-internal rents may result from the shared and non-shared resources of a focal firm (Lavie, 2006: 644) in a cluster, *relational rents* (Dyer & Singh, 1998) result from web-specific resources. Web-specific resources are joint resources of different cluster actors; it is the relational capital resulting from interactions between cluster actors. The relationships and resulting dependencies between the different cluster actors are central here. The focus lies on jointly owned or exploited resources of cluster actors. Relational rents are “supernormal profit jointly generated in an exchange relationship that cannot be generated by either firm in isolation and can only be created through the joint idiosyncratic contributions of specific alliance partners” (Dyer & Singh, 1998: 662). Lavie (2006) further suggests inbound and outbound spillover rents as a potential consequence of opportunistic behaviour of firms in relationships with other firms. Outbound spillover rents lead to a transfer of benefits from the focal firm to a partner, while inbound spillover rents flow in the opposite direction (for a more detailed discussion see Festing et al., 2009, under review).

To understand the relational rents as well as inbound and outbound spillover rents with regard to a focal actor and related actors it is necessary to investigate the interdependencies between these actors. A categorisation into pooled, sequential, reciprocal and team-oriented interdependencies in accordance with Thompson (1967) is used for this purpose. The quality of interdependencies is directly related to the potential of the actors to gain relational rents. The possibility of inbound and outbound spillover rents has to be taken into consideration in this context. According to Thompson (1967) the lowest degree of interdependency is the *pooled interdependency*. In this case interconnected actors compete for valuable resources such as the budget of consumers in a certain region. However, as these actors do not use common resources, this type of interdependency does not have an impact on the relational rents. On the contrary, *team-oriented interdependencies* are the strongest kind of interdependence and imply actors that only jointly can achieve a particular outcome. In this case there is a potential for extremely high relational rents. Sequential and reciprocal interdependencies represent mixed forms. A *sequential interdependency* means that the output of one firm is the input of another. *Reciprocal interdependence* indicates that there is a mutual exchange of inputs and outputs between cluster actors. For both types the rent generation process strongly depends on the individual case and varies depending on whether horizontal, vertical or lateral relationships are concerned.

Context-specific resources derive from the cluster location and industry sector. Locational factors such as type of area (e.g., rural or urban) or the existence of natural resources (e.g., minerals or the climate) (Dunning, 2000a, 2000b; Tesch, 1980) play a role here as well as social, cultural and/or legal specificities that may affect value creation in a certain location (Cortright, 2002). Further, sectoral attractiveness (Porter, 1980, 1985) is a relevant resource on the cluster level. Porter classified sources of market power into: threat of entry, rivalry, threat of substitute, and the bargaining power of buyers and suppliers. These competitive factors are used to systematise valuable resources on cluster level. The embeddedness of cluster actors in a certain cluster location leads to *contextual rents*, i.e. rents achieved by cluster actors as a consequence of advantageous locational (including cultural and legal factors) or sectoral conditions.

Additionally, we suggest that at each of the outlined levels, public policy initiatives may be usefully directed at establishing and nurturing cluster resources and firm resources. Figure 1 summarises the resource-based view of clusters and links it to public policy.

Figure 1: Public Policy, Resources and Value Creation Framework



Source: Brown et al., (2009).

Figure 1 forms the conceptual basis for the case analyses. The operationalisation of the identified Ricardian, relational and contextual rents is outlined in the next section. Separating the different cluster levels offers a comprehensive framework in which to systematically investigate different kinds of resources and their underlying value. In bringing together a public policy and strategic management perspective by linking public policy initiatives with resources and rents, the research study advances previous less holistic approaches.

3. DEVELOPING A METHODOLOGY TO ANALYSE VALUE ADDING WEBS

The research team in the GAPCluster project has developed the described value adding web perspective on clusters that allows for a holistic view of clusters and extends existing literature through providing a lens to better understand how public policy and strategic management can contribute to the development of valuable resources in clusters. This conceptualisation allows us to bring together a range of methodological techniques to investigate industry clusters from countries and sectors. The idea is to:

1. map the clusters, identifying vertical, horizontal and lateral actors and their roles;
2. place the individual firm at the centre of cluster analysis;
3. analyse the internal dynamics of clusters on different levels and classes resulting in Ricardian, relational and contextual rents; and
4. identify the role of lateral actors, in particular public policy, in cluster development.

The empirical approach takes the form of comparative case study analyses of industry clusters which have been subject to different policy and strategic interventions. A case study methodology is appropriate in the following circumstances (Yin, 2002):

- ‘how’ or ‘why’ research questions are posited;
- multiple levels of analysis are addressed;
- little control of investigators over events is possible; and
- a contemporary phenomenon is investigated.

The type of industry cluster research carried out in the GAPCluster project lends itself particularly well to a case study research strategy because all of the above conditions are met.

Cases are seen as useful means of illustrating general facts or theoretical concepts (e.g., Stake, 1994). This research strategy allows the investigation of contemporary and dynamic phenomena and contributes to a related emerging body of knowledge in a subject area (e.g., Eisenhardt, 2002; Yin, 2002). The analysed levels and actors are too complex for other methods, i.e. causal links are too complex for surveys or experiments (e.g., Eisenhardt, 2002). Moreover, inclusion of data from many sources is desirable (e.g., Yin, 2002). Under these conditions, case study research is considered a suitable approach. Case studies are related to single cases, thus the unit of analysis in our research is a cluster conceptualised as an agglomeration of value adding webs around single horizontal actors. It is the goal of the researchers to confront single cases with an in-depth analysis (e.g., Punch, 2003).

The ability to work with different types of evidence is the strength of case study research. Data collection and analysis in the GAPCluster project so far has taken place in four stages. A mix of data has been acquired and aggregated through interviews, surveys and analyses of documents:

1. Preliminary mapping of the clusters to identify actors, linkages, key stakeholders and public policy involvement. This stage involves evaluation of secondary data (reports, web pages) and telephone contact with key informants. A detailed analysis of documents is required to develop a cluster map and a policy framework for each cluster.
2. A data sheet that gathers background details about the cluster, firm positioning and operation in the cluster and the role of public policy actors in the cluster is sent out to all cluster actors that can be identified: horizontal cluster firms, cluster lateral actors and cluster vertical actors (see Appendices A, B and C for the data sheets). These actors are asked if they would be willing to participate in in-depth interviews.
3. Personal in-depth interviews make it possible to gain an understanding of the complexity of the cluster, the range and types of actors involved, their underlying resources and the interdependencies between them. In order to get a diversity of actors and data, as many interviews are conducted as possible. The natural conclusion of the interview schedule comes when data redundancy becomes obvious (see Appendix D for the interview guidelines). The interview transcripts are the basis for further analysis. The data analysis follows a series of steps (Strauss & Corbin, 1996). The data

is coded according to the described cluster levels and related resources. The codes are allocated to the five themes: context-, web-, firm-level, actors, other relevant information. The GAPCluster team has used the software NVIVO to support this process.

4. A cluster policy framework matrix (Brown et al., 2009) is completed following in-depth interviews with key informants in each cluster (see Appendix E for the matrix). It is designed specifically to identify and analyse public policy in the case studies and to determine the type of public policies applied to the different levels of the cluster.

The described triangulation procedure has been used to minimise personal perspective bias and ensure data validity (Seale, 1999; Wrona, 2005; Yin, 1981). To achieve a consensual validation, first the researcher involved in a case study individually analyses the data and then compares and discusses their results. Further, the summarised transcribed interviews are sent to the interviewees with the request for feedback (communicative validation). By using data from the data sheets and the interviews together with firm external and internal documents, internal data validity is achieved in a triangulation process. In order to contribute to procedural reliability the research process is made available to the scholarly community. This leads to possibilities for inter-subjective assessment of the research (see Festing et al., 2009, under review; Eisenhardt & Graebner, 2007).

Empirical evidence up to 2009 has been gathered through different single case studies in Germany and Australia (Brown et al., 2008, 2009; Festing et al., 2009, under review). The initial aim is to generate new testable propositions (Charmaz, 2000; Eisenhardt & Graebner, 2007) that have to be further investigated in follow-up studies.

4. CONCLUSIONS

In conclusion, this paper brings together the value adding web conceptualisation of clusters, strategic management and public policy considerations and an appropriate methodology to study industry clusters. Analysing and combining cluster definitions from the literature to come to a useful concept for this research was a necessary first step, especially in a project with international partners in order to have a common understanding of the term

cluster. The resultant overall framework has been used for analysing cases in Australia and Germany.

The described approach seeks to address a gap in cluster research by focussing rent creation on the cluster level, the web level and the firm level. Thereby the role of the single firm as a core contributor to cluster success is acknowledged. This understanding of industry clusters as comprising various actors (horizontal, vertical and lateral) and resources on multiple levels (the firm itself, the cluster as a whole and the relationships between the actors) has assisted the development of a comprehensive set of techniques by which to describe and analyse industry clusters. Firm-specific resources, shared resources and locational and industry-specific resources lead to competitive advantage in terms of Ricardian, relational as well as inbound and outbound spillover rents and contextual rents. Better understanding of competitive advantage realisation of actors embedded in a cluster becomes possible. This leads to practical implications for individual cluster firms as well public policy actors in clusters.

The result of this paper is a toolbox which should be understood as a starting point for further investigations in this field. The GAPCluster project is an ongoing collaboration. The ambitions of the project to study clusters in Australia and Germany have been expanded to include other national contexts and more cases within sectors that have already been investigated such as mechanical watches and wine.

In the already investigated case studies, the developed toolbox proved to be very useful for analysing industry clusters and understanding implications for individual firms in clusters and public policy initiatives to direct cluster development. It makes it possible for firms and cluster managers to understand the valuable shared and non-shared resources in a cluster context. This builds the basis for developing firm and cluster strategy.

For the future, the aim of the GAPCluster project is to undertake additional case studies with the shown methodology and thereby further improve the toolbox. Also, other researchers are invited to follow a similar approach so that more comparable data will emerge and the comparative approach to studying clusters will be further developed in order to close a long-lasting gap in cluster research.

REFERENCES

- Andersson, T., Schwaag Serger, S., Sörvik, J., & Wise Hansson, E. 2004. *The Cluster Policies Whitebook*. Malmö, Sweden: IKED (International Organisation for Knowledge Economy and Enterprise Development).
- Audretsch, D. B. & Feldman, M.P. 1996. Innovative clusters and the industry life cycle. *Review of Industrial Organisation*, 11: 253-273.
- Austrian, Z. 2000. Cluster case studies: The marriage of quantitative and qualitative information for action. *Economic Development Quarterly*, 14(1): 97-110.
- Barney, J.B. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17(1): 99-120.
- Brown, K., Burgess, J., Festing, M., Royer, S., Steffen, & C. Waterhouse, J. 2007. *The value adding web - A multi-level framework of competitive advantage realisation in firm-clusters*. ESCP-EAP Working Paper no. 27, Herausgegeben von ESCP-EAP European School of Management Berlin, Berlin.
- Brown, K., Burgess, J., Festing, M., Royer, S., Steffen, & C. Waterhouse, J. 2008. Single firms and competitive advantage in clusters - Context analysis identifying the embeddedness of a winery in the Hunter Valley. In: M. Festing & S. Royer (Eds.), *Current issues in international human resource management and strategy research (Schriftenreihe Internationale Personal- und Strategieforschung)*: 157-178. München: Bd. 1.
- Brown, K., Burgess, J., Festing, M., Keast, R., Royer, S., Steffen, C., & Waterhouse, J. 2009. *Public Policies to Enhance Industry Cluster Development*, In Proceedings of SGBED (Society for Global Business & Economic Development) Second Research Symposium, Business Clusters: A Source of Innovation & Knowledge for Competitive Advantage, The University of Wollongong in Dubai, Dubai, January 12-14, 2009.
- Collis, D. J., & Montgomery, C.A. 2005. *Corporate Strategy – Resources and the scope of the firm* (2nd ed.). Boston et al.
- Charmaz, K. 2000. Grounded theory: Objectivist and constructivist methods. In N. K. Denzin & Y.S. Lincoln (Eds), *Handbook of Qualitative Research* (2nd ed.). London: Sage Publications.
- Cortright, J. 2002. The economic importance of being different: regional variations in tastes, increasing returns, and the dynamics of development. *Economic Development Quarterly*, 16(1): 3-16

- Dietl, H., Pauli, M., & Royer, S. 1999a. *Internationaler Finanzplatzwettbewerb - Ein ressourcenorientierter Vergleich*. Wiesbaden: Gabler.
- Dietl, H., Pauli, M., Royer, S. 1999b. *Frankfurts Position im internationalen Finanzplatzwettbewerb - Eine ressourcenorientierte Analyse*. CFS Working Paper No.1999/10, Institut für Kapitalmarktforschung, Center for Financial Studies an der Johann Wolfgang Goethe Universität, Frankfurt.
- Dunning, J.H. 2000a. The eclectic paradigm as an envelope for economic and business theories of MNE activity. *International Business Review*, 9: 163-190.
- Dunning, J. H. 2000b. *Relational Assets, Networks, and International Business Activity*. Keynote Address, 26th Annual Conference of the European International Business Academy (EIBA), Maastricht.
- Dyer, J.H., & Singh, H. 1998. The relational view: cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review*, 23(4): 660-679.
- Eisenhardt, K. M. 2002. Building Theory from Case Study Research. In A. Huberman & M. Miles, *The qualitative researcher's companion*: 5-37. London: Sage.
- Eisenhardt, K.M. & Graebner, M. E. 2007. Theory building from case studies: Opportunities and challenges. *Academy of Management Journal*, 50(1): 25-32.
- Festing, M., Royer, S., & Steffen, C. 2009. *Können Unternehmen durch Cluster Wettbewerbsvorteile realisieren? Eine ressourcenbasierte Analyse am Beispiel des Uhrenclusters Glashütte*. Under Review.
- Folta, T.B., Cooper, A.S., & Baik, Y.S. 2006. Geographic cluster size and firm performance. *Journal of Business Venturing*, 21(2): 217-242
- Grant, R.M. 1991. The resource-based theory of competitive advantage: implications for strategy formulation. *California Management Review*, 33(3): 119-135.
- Lavie, D. 2006. The competitive advantage of interconnected firms: An extension of the resource-based view. *Academy of Management Review*, 31(3): 638-658.
- Maskell, P. 2005. Towards a knowledge-based theory of the geographical cluster. In S. Breschi & F. Malerba (Eds.), *Clusters, networks, and innovation*: 411-432. Oxford et al.
- Organisation for Economic Co-operation and Development (OECD). 2007. *OECD Reviews of regional innovations: Competitive regional clusters – national policy approaches*. Paris: OECD

- Peteraf, M.A. 1993. The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14(3): 179-191.
- Porter, M.E. 1980. *Competitive strategy. Techniques for analysing industries and Competitors*. New York
- Porter, M.E. 1985. *Competitive advantage*. New York .
- Porter, M.E. 1998. Clusters and the new economics of competition. *Harvard Business Review*, November-December: 77-90.
- Punch, K. 2003. *Introduction to social research*. London: Sage
- Seale, C. 1999. Quality in qualitative research. *Qualitative Inquiry*, 4: 465-478.
- Stake, R. 1994. Case Studies. In K. Denzin, & Y. Lincoln (Eds.). *Handbook of qualitative research*: 237-247. Thousand Oaks: Sage.
- Strauss, A.L. & Corbin, J. 1996. *Grounded theory: Grundlagen qualitativer Sozialforschung*. Weinheim.
- Tallman, S., Jenkins, M., Henry, N., & Pinch, S. 2004. Knowledge, clusters, and competitive advantage. *Academy of Management Review*, 29(2): 258-271.
- Tesch, Peter (1980): *Die Bestimmungsgründe des internationalen Handelns und der Direktinvestition. Eine kritische Untersuchung der außenwirtschaftlichen Theorien und Ansatzpunkte einer standorttheoretischen Erklärung der leistungswirtschaftlichen Auslandsbeziehungen der Unternehmen*. Volkswirtschaftliche Schriften, Heft 301. Berlin: Duncker & Humblot
- Thompson, J.D. 1967. *Organizations in action*. New York et al.
- Wrona, T. 2005. *Die Fallstudienanalyse als wissenschaftliche Forschungsmethode*. ESCP-EAP Working Paper Nr. 10. Herausgegeben von ESCP-EAP European School of Management Berlin, Berlin.
- Yin, R.K. 1981. The case study crisis: Some answers. *Administrative Science Quarterly*, 26(1): 58-65.
- Yin, R.K. 2002. *Case study research, design and methods* (3rd Ed.), Newbury Park.

APPENDIX A

Questionnaire for Horizontal Actors

Questionnaire for Horizontal Actors

Please try to answer all questions.
Even if you do not answer all questions,
please fax or send the questionnaire back until <insert date>.
All data will be treated strictly confidential and anonymised!

1. **What is your position in the firm?**.....

2. **For how many years have you**
 - a) worked in the firm?
 - b) worked in your today's position?

3. **Which products does your firm produce?**.....
.....
.....

4. **Can you identify suppliers with whom you cooperate intensively?**
If yes, in which area?
 No Yes, with the following suppliers:

5. **What is the price range of the finished goods?** *(Please indicate the currency e.g. AUS\$ or €).*

6. **How did the turnover of the firm develop within the last 5 years?**
 Increase No change Decline Not applicable

7. **Does your firm cooperate with other businesses, e.g. with suppliers or with research institutions and universities?**
 No Yes, we cooperate with the following partners:

8. Please indicate how important you deem cooperation.

Please utilise the following scale for your answers: 1=most important, 2=very important, 3=important, 4=less important, 5=unimportant; n/a=not applicable.

	1	2	3	4	5	n/a
a) With suppliers	0	0	0	0	0	0
b) With research institutes:	0	0	0	0	0	0
c) With universities:	0	0	0	0	0	0
d) With training schools:	0	0	0	0	0	0
e) With business associations:	0	0	0	0	0	0
f) With businesses from your industry:	0	0	0	0	0	0
g) Are there other types of cooperation with your business? How important are they in your opinion?.....	0	0	0	0	0	0

9. How important are the following input factors for your business and how available are they at your location? Please utilise the following scale for your answers: 1=very important/ good availability, 2= rather important/average availability, 3=important/available, 4=rather unimportant/low availability, 5=unimportant/not available; n/a=not applicable.

		1	2	3	4	5	n/a
a) Suppliers who offer qualified and partly balanced supply to your requirements.	Importance	0	0	0	0	0	0
	Availability	0	0	0	0	0	0
b) Favourable input costs, e.g. via economies of scale with regard to your suppliers or via divided (transport) costs through cooperation with other businesses.	Importance	0	0	0	0	0	0
	Availability	0	0	0	0	0	0
c) Specialised research institutes, e.g. universities.	Importance	0	0	0	0	0	0
	Availability	0	0	0	0	0	0
d) A specialised labour force.	Importance	0	0	0	0	0	0
	Availability	0	0	0	0	0	0
e) Others:	Importance	0	0	0	0	0	0
.....	Availability	0	0	0	0	0	0

10. How strategically valuable do you consider the following resources to be in reference to your business? *Please use the following scale for your answers: 1=strategically most valuable, 2=strategically very valuable, 3=strategically valuable, 4=strategically less valuable, 5=strategically not valuable; n/a=not available.*

Category 1:	1	2	3	4	5	n/a
Land	0	0	0	0	0	0
Buildings	0	0	0	0	0	0
Technical equipment	0	0	0	0	0	0
Financial configuration	0	0	0	0	0	0
Category 2:						
Knowledge	0	0	0	0	0	0
Image	0	0	0	0	0	0
Patents	0	0	0	0	0	0
Reputation	0	0	0	0	0	0
Others:						
.....	0	0	0	0	0	0
.....	0	0	0	0	0	0

11. Which of the mentioned resources in question 10 do you consider to have the highest strategic importance? Please evaluate the resources with the aid of the presented characteristics. *Please use the following scale for your answers: 1=I highly agree, 2=I rather agree, 3=I agree, 4=I rather do not agree, 5=I do not agree; n/a=not applicable.*

Category 1:
 Category 2:

		1	2	3	4	5	n/a
The resource is rare.	Category 1	0	0	0	0	0	0
	Category 2	0	0	0	0	0	0
The resource cannot be traded.	Category 1	0	0	0	0	0	0
	Category 2	0	0	0	0	0	0
The resource is replaceable by other resources without problems.	Category 1	0	0	0	0	0	0
	Category 2	0	0	0	0	0	0
Competitors can imitate the resource without any problems.	Category 1	0	0	0	0	0	0
	Category 2	0	0	0	0	0	0

12. Can you identify resources for which your business competes with other businesses, e.g. qualified employees or buildings?

No Yes, namely for the following resources:

.....

.....

If yes, which of the mentioned resources do you see as being especially critically, that is as being especially valuable for the economic activities and the success of your business?

.....

.....

.....

Thank you very much for your support and collaboration!

APPENDIX B

Questionnaire for Vertical Actors

Questionnaire for Vertical Actors

Please try to answer all questions. Even if you do not answer all questions,
please fax or send the questionnaire back until <insert date>.
All data will be treated strictly confidential and anonymised!

1. **What is your position in the firm?**

2. **For how many years have you**
 - a) worked in the firm?
 - b) worked in your today's position?

3. **Which products does your firm produce?**.....
.....
.....

4. **What is the price range of the finished goods?** *(Please indicate the currency e.g. AUS\$ or €).*
.....
.....

5. **How did the turnover of the firm develop within the last 5 years?**
 Increase No change Decline Not applicable

6. **Can you identify suppliers and customers with whom you cooperate intensively? If yes, in which area (e.g. development of new products)?**
Please differentiate between suppliers (S) and customers (C).
 No Yes, with following suppliers and/or customers:

7. **Where do your suppliers and/or customers originate from?** *Please identify from which countries and please differentiate between suppliers (S) and customers (C):*
 Europe
 Asia
 America
 Australia
 Africa

8. Does your firm cooperate with other businesses, e.g. with suppliers or with research institutions and universities?

No Yes, we cooperate with the following partners:

.....

.....

9. Please indicate how important you deem cooperation.

Please utilise the following scale for your answers: 1=most important, 2=very important, 3=important, 4=less important, 5=unimportant; n/a=not applicable.

	1	2	3	4	5	n/a
a) With suppliers	0	0	0	0	0	0
b) with customers:	0	0	0	0	0	0
c) with research institutes:	0	0	0	0	0	0
d) with universities:	0	0	0	0	0	0
e) with training schools:	0	0	0	0	0	0
f) with business associations:	0	0	0	0	0	0
g) with businesses from your industry:	0	0	0	0	0	0
g) Are there other types of cooperation with your business? How important are they in your opinion?.....	0	0	0	0	0	0
.....	0	0	0	0	0	0

10. How important are the following input factors for your business and how available are they at your location?

Please utilise the following scale for your answers: 1=very important/ good availability, 2= rather important/average availability, 3=important/available, 4=rather unimportant/low availability, 5=unimportant/not available; n/a=not applicable.

		1	2	3	4	5	n/a
a) Suppliers who offer qualified and partly balanced supply to your requirements.	Importance	0	0	0	0	0	0
	Availability	0	0	0	0	0	0
b) Favourable input costs, e.g. via economies of scale with regard to your suppliers or via divided (transport) costs through cooperation with other businesses.	Importance	0	0	0	0	0	0
	Availability	0	0	0	0	0	0
c) Specialised research institutes, e.g. universities.	Importance	0	0	0	0	0	0
	Availability	0	0	0	0	0	0
d) A specialised labour force.	Importance	0	0	0	0	0	0
	Availability	0	0	0	0	0	0
e) Others:	Importance	0	0	0	0	0	0
	Availability	0	0	0	0	0	0

13. Can you identify resources for which your business competes with other businesses, e.g. qualified employees or buildings?

No Yes, namely for the following resources:

.....

.....

If yes, which of the mentioned resources do you see as being especially critically, that is as being especially valuable for the economic activities and the success of your business?

.....

.....

.....

Thank you very much for your support and collaboration!

APPENDIX C

Questionnaire for Lateral Actors

As different lateral actors can be identified like e.g. schools, economic development agencies, public authorities, no standardised questionnaire is available. The services and activities differ broadly from actor to actor. This means that for each lateral actor a specific questionnaire has to be developed. As a template the following questionnaire can be used, which was developed for a German vocational school.

Questionnaire for Lateral Actors

Please try to answer all questions. Even if you do not answer all questions,
please fax or send the questionnaire back until <insert date>.

All data will be treated strictly confidential and anonymised!

1. **What is your position in the firm?**
2. **For how many years have you**
 - c) worked in the school?
 - d) worked in your today's position?
3. **When was the school established?**
4. **Do you offer a dual education system or a full-time apprenticeship?**
 Dual Full-time Both Others:

5. **How many scholars are trained every school year?**
6. **To what extent do you cooperate with the local firms (e.g. with regard to practical trainings, plant visits)?**

7. **Do the local firms engage in an active way to support and form the apprenticeship (e.g., visiting the classes, realising classes)?**

8. Can you think of other relationships between the school and local firms?

9. Which kinds of relationships does the school has to other actors, e.g. which relationships are established between the city and the school?

10. How do you assess the career opportunities of the apprentices?

Thank you very much for your support and collaboration!

APPENDIX D

Interview Guide

Interview Guide for Horizontal and Vertical Cluster Actors

Preliminary remark: The interview guide has to be adapted to the information which are already known (e.g. from a questionnaire or an online-research).

Introduction to the interview: The interview starts with a presentation of the interviewer and a short presentation of the project.

1 General Part

- 1.1 Information regarding the interview partner
 - 1.1.1 Please describe shortly your career development in general as well as with regard to your position within the firm.
 - 1.1.2 How would you describe your field of activity?
- 1.2 Information regarding the firm
 - 1.2.1 Which legal form does the company have?
 - 1.2.2 When was the business founded?
 - 1.2.3 Please describe shortly the history of the business development.
 - 1.2.4 Are there more places of business?
If yes: how many and where?
 - 1.2.5 Were there more places of business?
Why were they closed?
 - 1.2.6 What do you produce?
 - 1.2.7 Which goods are traded (e.g. luxury goods, commodities)?
 - 1.2.8 Were there other products which were offered in the past (other segment, customer groups...)?
Why are they not offered any longer?
 - 1.2.9 Which customer groups do you differentiate?
 - 1.2.10 How many people are employed?
How did the number of employees developed within the last five years?
 - 1.2.11 How high is the annual sales revenue?
How did the sales revenue develop within the last five years?
 - 1.2.12 Could you please give us an organisational chart of the business?
If not: please describe the organisational structure of the business.

2 Resource-Embeddedness

- 2.1 Regionalness
 - 2.1.1 Which natural resources are needed by your company especially for production (gas/oil; wind, sun, minerals, water, land)?
If there are: are these especially available in this region/easy to access?
 - 2.1.2 Which importance do the following infrastructural aspects have for your business:
 - Roads
 - Rails

- Water
- Air
- Electricity
- ICT

How available are these infrastructures at your location?

- 2.1.3 Which importance do the following input factors have for your business:
- Sophisticated suppliers, i.e. suppliers, which offer specialised and partly custom-tailored supplies
 - Favourable input costs, e.g. via economies of scale regarding the suppliers or divided (transport) costs due to cooperation with businesses
 - Specialised research institutes, like universities or a Fraunhofer Institute
- If these input factors have a high relevance, why is this the case?

How available are these input factors at your location?

- 2.1.4 To what extent are there specific features in your region/ for your business/ production regarding the following environmental factors:
- Tax rates
 - Legal system
 - Economic system
 - Policies of government
 - Artificial barriers to trade of goods
 - Investment incentives and disincentives

- 2.1.5 To what extent are the following effects connected to your location:
- Availability of capital, are there e.g. special support programmes for businesses in your region?
 - Local competition. Are there producers at your location which produce the same or similar products? Maybe even for the same customer?
 - Entrepreneurial energy. Are there many new firms being started in a university or other company?
 - R&D capacity due to cooperation?

2.2 Tangible & Intangible Resources

- 2.2.1 What do you think about the strategic relevance of territory (buildings, technical equipment, financial resources)?

Are there any other strategic relevant tangible resources available within your company?

Which of the named tangible resources is most important to you?

- 2.2.2 What do you think about the strategic relevance of Know-How (image, patents, reputation)?

Are there any other strategic relevant intangible resources available within your company?

Which of the named intangible resources is most important to you?

- 2.2.3 Which of the named resource is of specific importance/is crucial for your economic activity?

2.3 Human Resources

- 2.3.1 Which importance has a specialised labour-pool for your business?

Which specialised employees do you need especially?

How available is such a labour pool at your location?

- 2.3.2 What do you think about the strategic relevance of different groups of employees within your company (e.g. unskilled, skilled workers, academic persons, executives)?
- 2.3.3 Which of the named groups is most important to you?

3 Industry Characteristics

- 3.1 To what extent influence the following market characteristics your business activities?
- Proximity to markets
 - Access to specialised information and services
 - Transport costs
 - Local, sophisticated buyers
- 3.2 How do you feel about the negotiating power of the buying businesses within your branch?
Concentration of buyers; are there some dominating buyers and many vendors?
Switching costs - Is it easy for buyers to change the supplier?
- 3.3 How do you feel about the negotiating power of the suppliers within your branch?
Concentration of buyers; are there some dominating suppliers and many buyers?
Switching costs – Is it easy for the suppliers to find new buyers?
- 3.4 What do you think about a market entry into your branch? Is it difficult?
If yes, which aspects influence this difficulty?
- Political regulations/market limitations
 - Financial investments
 - (Buying) behaviour of the buyers
 - Access to key markets and distribution channels and suppliers
 - Technological demands
 - Know-How-Intensity, relationships
- If not: why not?*
- 3.5 Which laws/regulations are relevant for your branch?
- 3.6 Can you think of substitute goods for your product?
If not: why not?
If yes: which ones?
Is it easy for the buyer to switch to a substitute?
Are the buyers willing to substitute?
How high is the price and what do you think about the benefit of the substitute?
- 3.7 Do you feel a high rivalry in your branch?
If not: why not?
If yes: what is responsible for that?
- 3.8 Are there market leaders, many small producers or producers of equal size?
- 3.9 Do you compete with other companies about certain resources, e.g. qualified employees?
- 3.10 Which conventions, norms, practices etc. have developed/exist in your branch?
- 3.11 How would you describe the culture within the branch (artefacts (language, symbols, buildings), values and norms)?

4 Cooperation

- 4.1 Is your product the input for other businesses/ institutions/actors?
If yes: for which companies/ institutions/ actors?
And how important is your product for these companies/ institutions/ actors in your opinion?
- 4.2 Do you need special products/ services of other companies/ institutions/ actors to produce your product?
If yes: which companies/ institutions/ actors and products/ services are we talking about?
How do you classify the importance of these for your production?
- 4.3 Do you have a mutual exchange relationship with other companies/institutions/ actors?
If yes: what do you exchange (e.g. Know-How, contacts, R&D activities, products)?
If yes: how often does the exchange happen with these other companies/ institutions/ actors?
With which companies/ institutions/ actors do you have such exchange relationships?
How important is this exchange in your opinion?
- 4.4 Are there outputs which you can only produce when you work closely together with other companies/ institutions/ actors?
If yes: which outputs are we talking about (e.g. research results)?
If yes: with which companies/ institutions/ actors do you have such relationships?
If yes: how often do you produce these outputs?

End

Do you have any (further) questions?

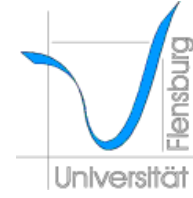
Thank you very much for your time and your cooperation!

APPENDIX E

Cluster policy framework matrix

		PUBLIC POLICY INSTRUMENTS		
		Demand Policies Training Policies	Broker Policies International Links	Framework Policies
LEVEL OF INTERVENTION	Mandatory	XXX	XXX	XXX
	Incentive	XXX	XXX	XXX
	Voluntary	XXX	XXX	XXX
		Single Firm	Cluster	Context
		UNIT OF ANALYSIS		

Source: Adapted from Hood, 1983; Brown et al., 2007; & Andersson et al., 2004.



**Joint Research Paper Series: International Institute of Management
and Department of Border Region Studies**

Place of publication: Flensburg / Sonderborg - ISSN: 1868-8160

The Danish-German Research Paper Series:

No. 1 Royer, S., Festing, M., Steffen, C., Brown, K., Burgess, J. & Waterhouse, J.: The Value
Adding Web at Work – Developing a toolbox to analyse firm clusters, 2009.