This book series on research in international human resource management and strategy is designed to stimulate discussions on current developments in these disciplines. The scope of this series reflects the importance of the fields of strategy and human resource management in the international environment of a globalised world. Both fields have the potential to contribute essentially to the description and explanation of competitive advantage realisation, performance issues and to achieving other corporate goals and objectives. Therefore, these areas need attention in research as well as in practice. This series will focus on the latest research results in this field. This volume consists of a series of research articles divided into two sections. Part 1 examines the policy dimensions of clusters across Europe, Australia and the Middle East. Part 2 examines the strategy and management dimension of clusters. This book expands upon and develops the research around cluster development in a number of ways. First, the countries included in the research cover different regions in the world. Second, we have included several conceptual papers that provide interesting theoretical insights into the role of resources, cluster-specific knowledge and social exchange in clusters. Third, we have included several policy papers around the development of cluster policies and the operation of clusters. Fourth, we have included case studies that examine clusters in different national, industry and policy contexts. There are areas of cross over and complementarities in the research presented; as such the book provides an interlinked reflection of the scope and focus of contemporary research on clusters.

**Key words:** Clusters, Strategy, Competitive Advantages, Public Policy, Resources, Case Studies, Regional Business Development, Innovation, Knowledge Sharing

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Resources and Competitive Advantage in Clusters
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This book builds upon and further develops our previous work on industry clusters (Brown et al., 2010a). This book, and the previous volume, is the result of an international collaboration between researchers in Germany and Australia—the ‘GAP research project’ (see Royer et al., 2009 for more details regarding the GAP project). Through this project we have developed an analytical framework for understanding, analysing and evaluating clusters. This framework, the value adding web (VAW), provides a system for classifying actors, relationships and sources of competitive advantage within clusters (Brown et al., 2007). In particular, the framework has as its focal point the individual firm that participates in a cluster, and around this firm is a network of extensive commercial, social and policy/political relationships that are captured (and may be activated) through the VAW.

While the scope and disciplinary emphasis of the research is broadly around the arena of strategic management the approach reflects an interdisciplinary perspective. Given the nature of clusters and the encompassing VAW framework there are contributions from economic geography, industry economics, human resource management, public policy and entrepreneurship. The complexity of theoretical contributions and the uniqueness of individual clusters in different industry contexts and locations demands systematic analyses for understanding how value creation in clusters works and may be fostered. Such a systematic and in-depth analysis is only achievable by bringing together research of different experts in a consistent fashion which is the aim of this book. The editors specifically sought contributions that fit into the understanding of resources and competitive advantage realisation as suggested by the VAW framework. The aim is to thereby enrich and further develop our resource-oriented understanding of value creation in clusters.

This book expands upon and develops the research around cluster development in a number of ways. First, the number of countries included in the research has been extended to include Denmark in an in-depth fashion by including two chapters from the Danish country context. A European perspective on cluster development is further added to better understand the impact of regional trade-blocs on cluster development. Second, we have included several conceptual papers that provide interesting theoretical insights into the role of cluster-specific knowledge and social exchange in clusters, both potentially valuable resources for cluster actors at the firm and relationship levels. Third, we have included several policy papers around the development of cluster policies and the operation of clusters, in particular focussing on the key role of cluster managers. Fourth, we have included case studies that examine clusters in different national, industry and policy contexts, ranging from
traditional agriculturally-based clusters through to high-tech clusters in the biotechnology sector. The case studies utilise a range of research protocols for analytical purposes—documentary analysis, interviews and surveys. Finally, there are areas of cross over and complementarities in the research presented; as such the book provides an interlinked reflection of the scope and focus of contemporary research on clusters.

If anything, the forensic examination of clusters has become more important for three reasons. First, the impact of the global financial crisis (GFC) has been deep and long lasting on many economies, especially in Europe (Coen and Roberts, 2012). This situation has led governments to examine programs and policies that support local development, especially in those regions that have experienced low growth and high unemployment (Bristow, 2010; Roberge and Jesuit, 2012). Second, there is a clear recognition, in Europe at least, that clustered industry development with explicit public policy support is a potential path towards building internationally competitive industries (Brown et al., 2010b). Finally, existing analyses have shown that clusters are complex. The field of research continues to evolve and to date it includes many disciplines and different analytical approaches. As such, there is a need to bring scholars together who can contribute to better understanding the evolution, development and successful operation of clusters.

The book is organised as follows. The policy dimension of clusters forms the focus of the first part of the book which starts with an overview on the policy developments towards cluster support in the European Union (EU) by Ferruccio Bresolin. This second chapter outlines the various cluster programs and initiatives, and identifies the different phases of cluster policy development over the past 40 years. There has been an evolution from an organic/market-based policy to a highly directed strategic program with the EU driving the agenda. Bresolin notes that currently there are over 2,000 identifiable clusters operating in the EU and of these only 8% are considered strong/successful. Europe has experienced three stages of cluster policy. The first—the organic development phase—took place during the period preceding the 1990s and this form of development was essentially market driven, resulting from free action and free enterprise initiatives and ruled in a self-balancing fashion. The second stage was the extensive development stage characterising the period from the 1990s up to the first half of 2000. It was determined by a rise of clusters and industrial agglomerations in an urban context. The last phase is the quality consolidation of clusters through policies directed towards innovation to achieve excellence where social capital aspects of clusters, including relations, trust, reputation and territory, are recognised as being important. The ‘Innobarometer 2006’ report (European Commission, 2006) is identified as providing important contributions as to how the role of clusters can be used to encourage innovation in the EU.

Chapter 3 by Andreas Cornett considers the contribution of clusters to economic growth. Within the context of new growth theory the chapter explores how cluster development can be facilitated and supported through public policy. In particular the
chapter brings in the relevance of skills, social capital and entrepreneurship in cluster development. The chapter investigates two central issues: “How to create a business environment facilitating the beneficial condition ascribed to traditional industrial clusters with regard to positive externalities” and “Setting up a framework to identify and facilitate the potentials in a certain region; that is, to strengthen the endogenous potential and to identify existing and potential clusters within the area”. The analysis considers key aspects of cluster development, namely the co-location of firms, the dynamics of cluster development and the life cycle of clusters. Needless to say, there are considerable challenges and complexities with addressing the key questions and the chapter provides a framework within which cluster evolution and development can be understood. By investigating clusters from this perspective, supporting and creating clusters are suggested to be “both a means and goal in (regional) business development policy.”

Taking the public support and development of clusters further Chapter 4, by Mads Bruun Ingstrup and Torben Damgaard, investigates the role of cluster facilitators in cluster development. In particular the chapter reflects on the attributes and skills that cluster facilitators require in order to effectively carrying out their function. The aim of the authors is to understand the (potential) functioning of the public sector with regard to facilitating cluster development and the necessary skills to foster successful clusters. To reach this aim, two central questions are raised: (1) “How has the role of the public sector as a facilitator in cluster development been described in literature?” and (2) “What are the public sector cluster facilitator roles, competences, and qualifications in cluster development when interfering in the innovative and commercial activities of clusters?” For research question 1 the chapter provides a very comprehensive summary and discussion of the literature on cluster facilitators. This is supported by an extensive summary and evaluative table on the literature that is very useful for researchers and practitioners. To evaluate research question 2 the chapter presents a single case study of the Welfare Tech Region located in the Region of Southern Denmark. The focus on cluster facilitator roles, competences and qualifications to foster innovative and commercial cluster activities adds to the field of public policy in clusters while linking it to underlying resources and capabilities. Cluster framework policies and cluster interfering policies are at the core of this chapter in a theoretical sense as well as an illustrating fashion in the case study regarding the Welfare Tech Region.

Continuing with the examination of clusters in action and the pivotal role of policies Chapter 5, by Sidsel Grimstad and John Burgess, examines two case studies that involve traditional agricultural clusters that are developing eco tourism strategies to diversify the region and the local economy. The case studies are micro clusters in a wine producing region of Australia and an apple producing region of Norway. Through the VAW framework (Brown et al., 2007) the chapter highlights the importance of contextual resources in developing the competitive capability of the respective case study clusters. In particular, the chapter examines three types of resources: regional resources, industry resources and institutional resources. In
particular, the chapter discusses the drivers, and the barriers, to developing a sustainable and competitive agriculture microcluster in each of the case study regions. Using the VAW framework for clusters that cross industries adds additional insights and shows that understanding underlying resources makes it more feasible to also understand the borders of a cluster.

Chapter 6, by Julia Connell and Michael Thorpe, examines the case of clusters in the context of an emerging economy. While the previous chapters examined established clusters in mature economies, Chapter 6 specifically examines clusters in a growth context—a key focus of Cornett in the conceptual Chapter 3 of this book. The context for the chapter is the United Arab Emirates (UAE) (through the Gulf Cooperation Council—GCC). It provides an extensive overview of the development of the region. With extensive oil wealth the UAE has consciously pursued a program of modernisation and diversification to attract foreign capital and foreign labour. Within this development program industry clustering has a central role. Specifically the chapter addresses the following five questions: (1) “Why clusters as the antidote for growth and innovation?”, (2) “What has been the approach to regional development in Dubai and the GCC in general?”, (3) “What is the link between industry clusters and the shift to a knowledge economy?”, (4) “What are the competitive strengths and challenges for the GCC as it seeks to move to a knowledge-based regional economy?” and (5) “What does the future hold for industry cluster growth in the GCC?” The chapter examines each of the questions and provides a discussion of the problems and challenges. The approach to cluster development is public policy-led and centralised; however, the program of directed cluster development has encountered a number of problems including: insufficient skilled labour; a poorly developed institutional framework; and a lack of supporting infrastructure in competitive resources that are taken as given in advanced economies, such as marketing support and finance. In spite of these problems the authors suggest that valuable resources in the form of specialised knowledge bases are created in the different industry clusters that may be a valuable source for future development. Valuable resources that are created are mainly expected in the area of human resources in the investigated regional context, which in turn may be the driver for innovation and growth.

In Chapter 7 we return to issues associated with the adjustment of established clusters in an advanced economy. Contributed by David Collins, Mark Bray and John Burgess, this chapter examines the changes and challenges that are occurring in manufacturing and engineering workplaces in the Hunter Valley of Australia. The catalyst for change is global warming and the need to adjust to pressures around product standards, production systems and taxation programs that are all linked to carbon emission mitigation programs. Industries, especially traditional high carbon emitting manufacturing, have to engage in considerable investments in plant, technology and their employees in order to meet these challenges. The chapter demonstrates that in an established manufacturing/engineering cluster constituent companies were largely confused about the adjustments required and were not
prepared for the challenges associated with reduced carbon emissions. In terms of supporting and assisting the process the chapter argues that industry clusters provide a framework in which cluster coordinators (and facilitators, as Ingstrup and Damgaard deal with in Chapter 4) and technical specialists can improve knowledge transfer and dissemination, and assist cluster members to enhance their capabilities in adjusting to carbon reduction goals. To build on the established cluster arrangements there needs to be institutional depth added to the cluster; that is, developing institutions that facilitate knowledge generation, knowledge access, knowledge sharing and encoding knowledge for application within the cluster. In addition, the cluster could be strengthened through the incorporation of more vertical and lateral actors. In particular, and returning to Chapter 4, there is a role for professional cluster facilitators as they can bring diverse actors together and assist in incorporating technical specialists into the cluster and developing mechanisms to improve access to bridging capital.

While the chapters in the first part of the book focus on public policy issues, the following chapters are centred on the strategy and management dimension of clusters. Turning to cluster conceptualisation and theoretical understanding, Chapter 8 by Alexander Bode and Katja Müller highlights the role of social exchange in establishing clusters. The chapter argues that clusters are suitable for the application of social exchange theory as a result of the significant role personal relationships play within a cluster and how these relationships are important in facilitating resource development and exchange, and in turn generate relational rents within the cluster. The chapter highlights the importance of exchange-resources and exchange-relationships within clusters. Social exchange theory highlights the importance of personal relationships and cooperation within a cluster, and in turn how these relationships contribute to competitive advantage. In this context the authors link into the resource-oriented understanding on the network level of the VAW concept; they suggest that the determinants of relational rents of the relational view (Dyer and Singh, 1998) may be specified with the help of social exchange theory which is also compatible with the traditional resource-based view of the firm in terms of the underlying valuable resources of cluster firms.

In Chapter 9, by Lisa J. Daniel, Fang Huang, Sasikala Rathnappulige and Lisa Neale, the issue of knowledge sharing among entrepreneurs in an emerging cluster is assessed. Using the emerging biotechnology industry in Australia as the case study example, the key research question is: “How did the initiating entrepreneurial leaders interact to support foundation of knowledge and innovation in the emerging biotechnology industry?” Here are obvious synergies with Chapter 8 by Bode and Müller on the importance of social exchange processes to cluster development. The chapter argues that the relationships and interactions of entrepreneurial leaders are vital in establishing a common professional knowledge base to enable cluster development. The authors argue that this is particularly the case for high technology clusters, such as in the emerging biotechnology sector, where new knowledge is an important strategic capability and thus a major driver of innovation and competitive
advantage. Through examining the interaction between new firm developers (the entrepreneurs) the chapter highlights the importance of knowledge, communities of practice, open innovation and social capital in cluster development. Through interviewing these innovators and entrepreneurs the chapter highlights “the recognition that the initiating entrepreneurs implicitly cultivated a foundation of social capital in a dynamic environment that was fundamental to commercial leverage, innovation advancement and bioindustry development. This contributes to the growing academic discussion on the sociology of innovation in the area of novel technologies and new industry creation.”

Chapter 10 by Marion Festing and Lynn Schäfer turns to the role that human resource development, and in particular talent management programs, can contribute to value creation within clusters. The focus of the chapter are small and medium sized enterprises in the German economy, since “these companies do not have enough resources to set up a professional and competitive HRM [human resources management] function themselves, so they have started to create networks to promote and benefit from cooperation in various areas of HRM and talent management with other horizontal, vertical, and lateral cluster actors.” To address the research focus the chapter examines a case study of a cluster of intelligent technical systems in Germany—a return to a high-tech and emerging cluster linked to the development and adaption of artificial intelligence systems across a range of industries building on the conceptualisation of clusters as overlapping VAWs around single firms developed by Brown et al. (2007, 2008, 2010a). The context for the case study is the German region of East Westphalia Lippe where the cluster has emerged as a network of small firms, universities and government agencies. There is no single product (unlike wine or apples) but a system of strong entrepreneurial networks (see Chapters 8 and 9) has emerged around personal relationships (social networking, see Chapter 5). One problem the cluster has faced is that of skill shortages and attracting and retaining labour. Through using the cluster framework, participants can benefit from the establishment of HRM and talent management networks to ensure that labour is retained within the region and within the cluster. Hence, co-operation extends beyond knowledge sharing as it can extend into resource sharing. The case study also highlights the importance of lateral actors in cluster development, especially through programs that provide funding to bring the different actors together to address shared challenges such as skilled labour shortages.

Chapter 11 by Carola Jungwirth and Susanne Ruckdäschel examines the pivotal role of leadership in cluster development. Specifically the chapter uses complexity leadership theory to discuss how the leadership of cluster managers contributes to the success of cluster development. Three research questions are evaluated: (1) “How can a cluster manager lead without hierarchical fiat?”, (2) “Which relational and administrative-hierarchical components of leadership can be identified within the cluster management?” and (3) “How does this leadership behaviour of the cluster manager influence cluster management effectiveness?” To answer the questions the chapter uses a mixed methods approach to examine the leadership behaviour of 85
cluster managers from the United States of America (USA), England, Austria, Germany and Switzerland. The research demonstrates the centrality of the leadership of cluster managers to the effectiveness of the cluster. The findings highlight the differences in the organisational structure of firms and clusters and, as such, cluster managers are required to develop and implement different leadership attributes than those found in single organisations.

Finally, in Chapter 12, Timo Runge—examines the pivotal role of cluster-specific knowledge. The chapter examines the conceptualisation of cluster-specific knowledge and how it is created. Second, there is an extended analysis of how cluster-specific knowledge is important in contributing to the competitive advantage of firms within the cluster. In turn, the identification and analysis of cluster-specific knowledge provides an important theoretical justification for clustering.

In prior research (Brown et al., 2010a) we suggested a conceptualisation of clusters as overlapping VAWs consisting of horizontal, vertical and lateral actors around single firms. This focus on individual firms embedded into a network of relationships provides the point of reference for analysing value creation potential on different levels (i.e., firm level, relationship level, context level) for cluster members. Understanding value creation possibilities in clusters from the perspective of the individual firm provides good reason to co-locate with other organisations beyond getting access to (public) funding. Since clusters are a complex phenomenon with relevant facets in the field of public policy (see e.g., McCann and Folta, 2008) as well as strategy (e.g., Porter, 2000; Martin and Sunley, 2003) it seems fruitful to combine the views of both fields.

Bringing together both arenas by using a common language as well as gathering empirical evidence in different country and industry contexts to advance knowledge is reached by the approach chosen in this book. Thereby the aim is to come closer to “an open analytical framework that can accommodate the full range of forces, actors and spatial scales” as suggested by Sturgeon, van Biesebroeck and Gereffi (2008: 301), while at the same time explore different contexts for and structures of clusters.

References


PART I

CHAPTER 2: EVOLUTION OF CLUSTER POLICIES IN EUROPE AND SOME POSSIBLE NEW SCENARIOS AND STRATEGIES (Ferruccio Bresolin)

CHAPTER 3: CONCEPTUALISATION OF CLUSTERS AS A TOOL IN LOCAL AND REGIONAL BUSINESS DEVELOPMENT (Andreas P. Cornett)

CHAPTER 4: CLUSTER DEVELOPMENT THROUGH PUBLIC SECTOR FACILITATION (Mads Bruun Ingstrup and Torben Damgaard)

CHAPTER 5: A COMPARISON OF TWO AGRICULTURE-BASED TOURISM MICRO-CLUSTERS IN NORWAY AND AUSTRALIA (Sidsel Grimstad and John Burgess)


CHAPTER 7: RESPONDING TO GLOBAL WARMING MITIGATION POLICIES: THE HUNTER VALLEY CONSTRUCTION AND ENGINEERING CLUSTER (David Collins, Mark Bray and John Burgess)