

Chapter 11

The Case of the Three States in Germany

ABSTRACT

This chapter scrutinizes the cases of building and rebuilding cluster organizations, equivalent to the management body examined in Chapter 10. The cluster organizations subject for this case study are (1) MedEcon Ruhr GmbH/e.V. in North Rhine-Westphalia (NRW), (2) Forum MedTech Pharma e.V. in Bavaria, and (3) Mannheim Medical Technology Cluster in Baden-Württemberg (BW). All cluster organizations facilitate cross-sectoral collaborations toward promoting medical technology industries in their region and provide the relevant services for that goal. In the following, first, the three cluster organizations are outlined. Then, based on the conceptual model, the experiences of these cluster organizations are examined by focusing on the initial, building, and rebuilding phases.

INTRODUCTION

Many regions in Germany tackled the policy to strengthen innovation capability and increase the competitiveness of industries through cluster initiatives after the stagnation in the 1990s. Cluster organizations (equivalent to the management body in this study) are established as promoters of the initiatives through the cooperation between industry, academia, and government in the region. The organizations are an association (e.V.), a limited company (GmbH), or a department of regional government. Toward the advancement of the regional industries, wherein medical technology is one of the fields, the cluster organizations provide services to facilitate cross-sectoral collaborations to accelerate innovation and new business.

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The case study of this chapter focuses on the experiences of building and rebuilding the cluster organizations in the field of medical technology of the three states in Germany: North Rhine-Westphalia (hereafter “NRW”), Bavaria, and Baden-Wuerttemberg (hereafter “BW”).

First, the cluster organizations in the three states are outlined. Then, the antecedents the parties concerned faced in the initial phase of building the cluster organizations are clarified. Moreover, attributing factors for displaying organizational competence, which must be considered in the building phase of the cluster organizations, are examined. Finally, how the cluster organizations are rebuilt is discussed.

OVERVIEW OF THE MANAGEMENT BODIES

In NRW, with the cooperation of industry-academia and support from the public sector (economic development agency of the state government and several cities in the state), MedEcon Ruhr was founded in 2007. Table 1 describes the details of it.

Table 1. The management body: MedEcon Ruhr

MedEcon Ruhr GmbH/e.V. (NRW)	<ul style="list-style-type: none"> • MedEcon Ruhr GmbH: Bochum-based company owned its shares by MedEcon Ruhr GmbH e.V. (staffs belong to the GmbH and members belong to the E.V.). • Founded in 2007. • Number of staff: 18 (15 full-time equivalents). • More than 170 members. • Member structure: Companies (medical technology, ICT, healthcare services, etc.), medical institutions/hospitals, research institutions (including universities), regional/economic development agencies (public sectors and associations). • Budget: Members’ fee, service/project fee, competitive funds for the project, etc. • Service (Activities): Support, coordinate, and lead role in (1) project management, (2) promoting networking, (3) creating business concepts and business models, and (4) organizing event formats.
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Source: Drawn up by the author with reference to MedEcon Ruhr GmbH/e.V. (n.d.)

In Bavaria, Forum MedTech Pharma was founded in 1998 with the support of Bayern Innovativ GmbH, the affiliated organization of the Bavarian state government. Since 2006, under the cluster program, the cluster organization has received financial support from the state government for operating costs (See Table 2 in Chapter 8 of Section 3 for detail about Forum MedTech Pharma).

In BW, based on the economic strategy of the Mannheim city government, Mannheim Medical Technology Cluster was founded as one of the units of the city government of Mannheim in 2011 (See Table 3 in Chapter 8 of Section 3 for the detail about Mannheim Medical Technology Cluster).

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These cluster organizations facilitate cross-sectoral collaborations and provide relevant services to members to promote their region's medical technology industries.

ANTECEDENTS IN THE INITIAL PHASE

The antecedents to be considered in the initial phase of building the management body are examined based on the argument in Chapter 10. The clarified antecedents are as follows.

Political Climate and Existing Bureaucracy

In all cases, it is observed that regional politics recognize the importance of employing cluster programs and promoting industry/innovation through cross-sectoral collaborations (Table 2).

Table 2. Political climate and existing bureaucracy

MedEcon Ruhr GmbH/e.V. (NRW)	<ul style="list-style-type: none">• Declination of major industries (coal, mining, and steel), political awareness to upgrade industrial structure as a top priority.• A lead market strategy was adopted by the NRW state government, and the healthcare industry was targeted. Then, precursor associations of MedEcon Ruhr (Biometric Ruhr, Life Technologies Ruhr, etc.) were established with support (including finance) from the economic development agency of the state government.• Momentum toward cluster program at regional (city/state) and national level.
Forum MedTech Pharma e.V. (Bavaria)	<ul style="list-style-type: none">• Recognition of the Bavarian state government on the importance of industrial clusters for innovation and growth of new industries in the mid-1990s.• From the mid-1990s, the state government financially supported the industrial network (therefore, industrial cluster).• The state government led the establishment of Bayern Innovativ, through cooperation with industry/academia, to promote innovation and knowledge transfer and support cluster organizations (accelerating the process from science to market).
Mannheim Medical Technology Cluster (BW)	<ul style="list-style-type: none">• Momentum toward cluster program at state and national level.• Interest in the new area of industry to promote in the city and awareness of the growth potentiality of the medical technology industry through the survey conducted by the city government.• Momentum of the city government to support the industry and a unit (team) to support was organized.

Source: Drawn up by the author.

Politics for Supporting the Implementation of New Practices

The public sectors (i.e., the state and city governments) support the management bodies (cluster organizations) for their foundation, finance, and activities (Table 3).

Table 3. Politics for supporting the implementation of new practices

MedEcon Ruhr GmbH/e.V. (NRW)	<ul style="list-style-type: none"> • The precursor associations above received financial support (for three years) from the economic development agency of the NRW state government. Then, the agency led the integration of them: Establishment of MedEcon Ruhr. • Projects financing (funded studies in specific topics) by the state government.
Forum MedTech Pharma e.V. (Bavaria)	<ul style="list-style-type: none"> • Support for founding the cluster organization (Forum MedTech Pharma), financial support (founding period in 1998 and after launching cluster policy from 2006) by the Bavarian state government.
Mannheim Medical Technology Cluster (BW)	<ul style="list-style-type: none"> • Launching the structure (a section) and promotion by the city government (approved by the city assembly). • Support by the BW state government (information, networking, competitive fund).

Source: Drawn up by the author.

History of Success in Implementing New Practices

The previous trials are the basis for implementing the new programs (NRW, Bavaria). In contrast, the survey result can also justify implementing the new practice (BW) (Table 4).

Table 4. History of success in implementing new practices

MedEcon Ruhr GmbH/e.V. (NRW)	<ul style="list-style-type: none"> • Existence of the precursor associations above, their activities/achievements focusing on specific areas of healthcare sectors, and experienced staff and members belonging to the associations. (Although shifting the business was required: From purely focusing on technology issues to healthcare topics for expanding partners such as clinics and healthcare providers, e.g., networking for specific disease programs.)
Forum MedTech Pharma e.V. (Bavaria)	<ul style="list-style-type: none"> • Support by the state government (including finance) to the industrial networks in the state. • Events organized by Bayern Innovativ to get industry and academia together for interacting/communicating to explore how to promote the medical technology industry. • Networking in the medical technology field was promoted through the events above, and the parties concerned got to know each other and sought collaborations.
Mannheim Medical Technology Cluster (BW)	<ul style="list-style-type: none"> • No particular policy/program for medical technology (and related field) before. However, in 2009, the city government recognized through the survey that related sectors of the medical technology industry (e.g., medical institutions, companies, universities, etc.) already had substantial achievement and satisfied the critical mass for further growth through collaborations.

Source: Drawn up by the author.

Institutional, Industry, Market, or Technological Factors

The new programs are encouraged to implement with the institutional capacity to support and with the recognition of the potentiality of industry, market, and technology (Table 5).

Table 5. Institutional, industry, market, or technological factors

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Institutional: Support by the economic development agency of the NRW state government and city governments. Competitive funds for projects by the state and federal governments and E.U. • Industry: Many potential collaborators in the industry (including IT and consulting companies), hospitals, universities, insurance companies, consultants, etc. • Market: Huge market with high growth potential. • Technology: Needs for collaboration to complement industry-engineering-medical, patents and studies in the related field (seeds for R&D and practices), and R&D Institutions (Universities, Fraunhofer, Max Planck, Helmholtz, etc.).
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Institutional: Support by Bayern Innovativ on cluster programs/organizations (including technology and information transfer). Funding and supervision by the Bavarian state government. Competitive funds for projects by the state and federal governments and E.U. • Industry: Mix of big and small companies, hospitals and insurance companies, etc. (and existing network between them as above, became initial members of Forum MedTech Pharma). • Market: High growth potentiality of the market. • Technology: Needs for collaboration to complement industry-engineering-medical, patents, high-class research institutes, universities, and research achievements in the related field.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Institutional: Initiative and structure to promote by the city government. Support by BW state government. Competitive funds for projects by the state and federal governments and E.U. • Industry: Satisfying the critical mass of potential collaborators (number of companies, medical institutions, and research institutions). • Market: High growth potential of the market. • Technology: Needs for collaboration to complement industry-engineering-medical, patents, and research achievement in the related field (e.g., in university hospitals).

Source: Drawn up by the author.

Need for the System, Readiness of the System to Change and Buy-In, Having an Adequate Timeline for Implementation, and Interest in Outcomes/Effectiveness

The public sector, which supports/leads the cluster programs, approaches the stakeholders of industry and academia (including hospitals) or the existing network, then evokes their recognition of the need for the new system for further innovation/growth and makes them ready for the new system (i.e., involvement in the activities of cluster organizations) (Table 6).

Table 6. Need for the system, readiness of the system to change and buy-in, having an adequate timeline for implementation, and interest in outcomes/effectiveness

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Recognition of the parties concerned on the benefit from partnering between the precursor associations above. • Public sectors (cities, especially economic development departments of the region's major cities) were interested in promoting their cities, economy, and R&D through regional cooperation. • No specific timeline (adequate time for preparation).
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • The network between industry-academia-government was already formed through the initiative of Bayern Innovativ. • Being interested in business creation in the medical technology field and understanding the necessity of collaborations for creating the ecosystem between science, industry, and medical institutions (Initially, 55 members joined Form MedTech Pharma with the spirit of creating together). • The need for founding an association (cluster organization) to facilitate collaborations toward promoting the industry. The Bavarian state government and Bayern Innovativ recognized it from the survey result. • No specific timeline (however, it could be ready swiftly because of having the initial members), stressing the performance quality with a long-term view.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Recognition by the city government about the growth potential of the medical technology industry in Mannheim city and the need for organizing structure to promote the industry through facilitating collaborations. • Approach to industry and research institutions by the mayor to join the promotion. Recognition of these stakeholders about the business opportunities with support from the city government. • No specific timeline (adequate time for preparation).

Source: Drawn up by the author.

Strong Leadership or Champions that Support Innovation and the Implementation of New Practices

Based on the recognition of the need for the new system, the industry-academia-government of the region cooperated and displayed their leadership in launching the management body (Table 7).

Other Factors: Resources

It is also observed that prospects for resources, such as physical assets, capital, labor, and alliances, contributed to the smooth launching. The public sector supports some of them (Table 8).

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Table 7. Strong leadership or champions that support innovation and the implementation of new practices

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Led by city governments (especially Essen, Dortmund, and Bochum), companies, universities, and regional health insurance companies with affiliated hospitals. Cooperation between these entities to host healthcare-related events to make the Ruhr area attractive to visit.
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Led by the Bavarian state government and Bayern Innovativ through conducting the survey, justifying the necessity of a cluster organization (Form MedTech Pharma). Then the organization was founded. • Initial 55 members for starting the activities.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Initiative of the city government. Recruiting a new staff, who had links to the industry and industry thinking, and delegating the staff as a managing director to lead the team. • Involvement of medical institutions, universities, and industries as initial members to launch.

Source: Drawn up by the author.

Table 8. Other factors (resources): Physical assets, capital, labor, and alliance functions

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Physical assets: An office space provided in the technology center at the University of Bochum. • Capital: Membership fees from the initial members of the association, the prospect of the revenue from funded projects ordered by the state government and industry, and competitive funds for projects from federal/state governments and E.U.). • Labor: Staff of the precursor associations, additional staff were also recruited. • Alliance functions: Support from city governments, cooperation between city government, companies, universities, regional health insurance companies, etc.
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Physical assets: The office of the Forum MedTech Pharma is provided and run by Bayern Innovativ. • Capital: Financial support from the state government, member fees, and competitive funds for projects from federal/state governments and E.U.). • Labor: Support for launching (including recruitment of talented personnel and administrative support) by Bayern Innovativ. • Alliance functions: Support by Bayern Innovativ (including facilitating knowledge exchange and cooperation through cross-cluster activities).
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Physical assets: Utilizing the city's infrastructure, such as office space and IT system, without initial costs. • Capital: Budget from the city government for operation costs, competitive funds for projects from federal/state governments and E.U.). • Labor: Delegating the city government staff to the team and supporting members from other sections of the city government if necessary. • Alliance functions: Prospects to cooperate with experts (delegating later as practice advisors) and stakeholders from several sectors (delegating later as board members).

Source: Drawn up by the author.

BUILDING PHASE OF THE MANAGEMENT BODY

Guiding Principles and Activities

In all cases, the essence of the guiding principles is to promote the healthcare industry (mainly medical technology) through networking (therefore, facilitating cross-sectoral collaborations) and are sustained until today. Regarding the activities, it is observed that the scope/topic and the approach are reviewed and revised after a certain period of activities. These are based on, as is discussed in “REBUILDING PHASE OF THE MANAGEMENT BODY” below, the change in the business environment, the intention/situation of members and other stakeholders (such as board, experts, etc.), and the performance indicators. The details about the guiding principles and activities set by the management body are described in Table 9.

Table 9. Guiding principles and activities

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<p>Guiding principles: Promoting the healthcare sector (prevention, hospital care, ambulant care, and rehabilitation of the Ruhr area) by strengthening healthcare structures, improving the services, and upgrading the industry by building the network and facilitating cross-sectoral collaborations.</p> <p>Activities:</p> <ul style="list-style-type: none"> • Early stage: Shift the focus from pure technology issues (e.g., technology transfer) to healthcare topics for more collaborative project opportunities (e.g., with clinics, healthcare providers) in the healthcare sector and society. • Scope and focus are changed/widened: e.g., Teleradiology network (2010–), promoting digitalization such as e-health and system to connect hospitals and local doctors (2012–2016), developing cyber security (2016–). • Today, considering digitalization and change in business models, three main areas are focused (Medical Technology, Managed Care, and Smart Health Data) with additional sub-areas (Children and Youth Care, Health Professions).
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<p>Guiding principles: With members and partners from business, science, and politics, innovative and future-oriented trends are taken up, and cooperations (collaborations) are on an equal footing and promoting knowledge exchange.</p> <p>Activities:</p> <ul style="list-style-type: none"> • Focusing mainly on technology issues (e.g., technology transfer, joint R&D for the new technology) in the past. • Shifting the focus to the hurdles in the innovation process (e.g., regulation for certification of products, change in business model, and market entry to play a part of value chain under digitalization) and stressing more on individual support to members (e.g., consultation).
<p>Mannheim Medical Technology Cluster (BW)</p>	<p>Guiding principles: Facilitating the networking (and cross-sectoral collaborations) of companies, startups, clinics, and research to promote the medical technology industry in Mannheim City by providing relevant services.</p> <p>Activities:</p> <ul style="list-style-type: none"> • Focusing on medical technology issues. • Widening the scope from medical technology to the healthcare industry (from 2019), focusing on elderly care recently. <p>As a strategic roadmap for promoting the collaborations:</p> <ul style="list-style-type: none"> • Focusing on virtual infrastructure in the initial period (e.g., MedTech dialog). • Expanding its focus on physical infrastructure from 2014 (e.g., building the MMT campus as a place to collaborate), it is still ongoing (in 2022). • Trying to synergize between virtual and physical infrastructures.

Source: Drawn up by the author with reference to Clusterportal Baden-Württemberg (n.d.), Forum MedTech Pharma e.V. (n.d.), Mannheim Medical Technology Cluster (n.d.), and MedEcon Ruhr GmbH/e.V. (n.d.).

Attributing Factors

The details about the attributing factors, clarified as the contributor to displaying the organizational competence in Chapter 10, are described in the following tables (from Table 10 to Table 19).

These factors are configured (or reconfigured) under the guiding principles and activities (and their redefinition).

Role

It is commonly observed that the role of the top manager is played by the managing director and the board (composed of stakeholders from industry, universities/research institutions, medical institutions, and public sectors) through setting strategies and defining the scope of activities, etc.

The staff, categorized as experts as introduced in Chapter 10, plays its role mainly as a project manager of collaborative projects based on their expertise.

Regarding recruitment, staff (including the management director) are employed by open recruitment in the case of NRW. In Bavaria, the managing director and a part of the staff belong to Bayern Innovativ and are dispatched to Forum MedTech Pharma, and others are employed by open recruitment. In BW, the officials (including the managing director) of the Mannheim city government are assigned to Mannheim Medical Technology Cluster (See Tables 10 and 11).

Table 10. Role of top manager

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<p>Top manager:</p> <ul style="list-style-type: none"> • Board of directors (including two managing directors): Strategy planning and securing the source of financing and external partners. Composed of diverse facets of industry & science (academia) in the healthcare sector. The board of directors is partly replaced by election, and before the election, persons who are effective for new activities are often approached by the managing director to be candidates. • 2 managing directors: One for the association (e.V.) and the company (GmbH)/one for the association. Strategy planning, human resource management, budget, business administration, and daily business.
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<p>Top manager:</p> <ul style="list-style-type: none"> • Board of directors: Strategy planning. The board members are from medical-related companies, universities, hospitals, insurance companies, and Bayern Innovativ. The board of directors is partly replaced by election. Before the election, managing directors approach members, who are effective for new activities, and ask them to be candidates for the board of directors. • Managing director (belonging to Bayern Innovativ): Strategy planning and implementation, human resource planning/management, business administration.
<p>Mannheim Medical Technology Cluster (BW)</p>	<p>Top manager:</p> <ul style="list-style-type: none"> • Executive Board: Helping to shape the strategic planning and implementation. The board members are from regional medical technology companies, universities, and research institutions. • Managing director: Strategy planning, directing and managing the organization, supervising the operation, networking, and public relations.

Source: Drawn up by the author.

Table 11. Role of staff

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<p>Staff:</p> <ul style="list-style-type: none"> • 18 staff (15 full-time equivalents) (2022). • 16 project managers: Project management based on expertise (medical technology, telemedicine, managed care, etc.), recruiting based on the scope of activities and topics. • 2 secretaries: Administrating projects, staff, and facilities. • (Recently) Strengthened communication team for visibility of MedEcon Ruhr. • Role: Facilitating network, matching, cross-sectoral collaborations, etc.
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<p>Staff:</p> <ul style="list-style-type: none"> • 8 full-time staff (2022): 4 are directly employed by Forum MedTech Pharma, and 4 are from Bayern Innovativ (enabling to constitute the best mix of staff). • Composed of project managers, marketing & event manager etc. • Role: Facilitating cross-sectoral collaborations by displaying each expertise (specific area/technology, marketing & communication, regulatory affairs, approval, etc.) through promoting networking, matching, planning/holding event & workshop for members.
<p>Mannheim Medical Technology Cluster (BW)</p>	<p>Staff:</p> <ul style="list-style-type: none"> • Composed of city government officials: 2 full-time staff (May 2023) and support members from other sections. • Filling up the support members based on the needs for implementing projects. • Role: Facilitating networking (cross-sectoral collaborations), practical support for routine business issues, strategic planning, and implementation.

Source: Drawn up by the author.

Defined Organizational Processes

In all cases, a defined organizational process is not strictly operated but roughly defined for the efficiency and effectiveness of operations (See Table 12).

Organizational Culture

The common features of organizational culture are horizontal and open. These are shared by internal and external parties to promote networking and collaboration (See Table 13).

Managerial Practices

In all cases, sharing information/knowledge between staff for better service provisions is practiced. Moreover, as a service for members, various methods and means (including utilization of IT systems) are taken to provide the field for facilitating learning, interacting, and sharing knowledge/ideas for new opportunities for collaborative businesses (See Table 14).

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Table 12. Defined organizational processes

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • General process composed of 1. project idea by members, 2. looking for partners, 3. structuring project team, 4. looking for financing. • Double checking of written record. • Reporting to the board member by the managing director. <p>(Basically, flexible processes and not strictly defined.)</p>
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Three-step approach for implementing collaborative project: 1. Preparation (workshops, matching partners, identifying new technology branches), 2. Development (project meetings, funding), 3. Market entry (booth on fairs etc.). • Structured approach for forming collaborative project: 1. Stimulating the idea for the project, 2. Bringing the idea with the funding programs, 3. Matching to partners and forming the consortium, 4. Structuring the project. • Application of the quality management process of Bayern Innovativ for structured procedure and creativity/innovation.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Two types of approaches for matching: 1. Demand-oriented approach (responding to the request from members and matching the partners), 2. Project-oriented approach (forming research consortia by developing an R&D project plan with core members and making it visible to others for matching partners). • Approaching to new partners: Defined process to contact (email), set events (workshops, etc.), and organize meetings to seek collaboration opportunities.

Source: Drawn up by the author.

Table 13. Organizational culture

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Horizontal and open between staff or between staff and CEOs. • Flexible (including work-life balance) to implement the operations. • Unification and team building.
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Valuing the bottom-up idea from staff (project managers) for the topics and collaborative projects to work on. • Horizontal and open-minded in search of new inter-sectoral fields of interest (e.g., other cluster organizations, human resources) through networking.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Stressing to display leadership (e.g., for rallying support from collaborators), valuing horizontal/open relationships between staff.

Source: Drawn up by the author.

Table 14. Managerial practices

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Utilizing knowledge portal (e.g., the database of past practices such as project reports, member information, materials such as research reports, etc.), workshops, visiting member’s company for knowledge transfer, sharing/exchanging knowledge, and grasping new trends. • Periodical communications between managing directors and staff to share the progress of the project management (including size and amount of revenue earned etc.) and consider how to improve if necessary. • Creating new event (including workshop) formats/setups based on the change/expansion of the scope of activities (e.g., Radiology Congress Ruhr). • (Recently) “Digital Health Academy Ruhr”: E-learning platform for members and staff concerning the challenge of digitalization in the healthcare field (planning to provide non-members in the future).
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Sharing knowledge, experience, and ideas between staff of different expertise and considering the best proposition for the collaborative projects, then proposing it to members toward forming the consortium. • Setting coffee breaks in the event/workshop to promote the interaction between various fields of expertise for creating a room of unfettered idea generations. • Grasping a gap of perspectives between different parties (e.g., different time scales) and setting a place to fill it. • Grasping the needs for support through visiting members and communicating in workshops, then improving the service or providing new ones. • The subjects of interest for members are brought as topics, then holding workshops or events (e.g., expert circles) where 15 to 20 persons are invited to discuss to develop joint projects. • Using digital platforms to enhance communication, transfer of knowledge, and matchmaking.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • MedTech dialog: Inviting members and discussing/learning a certain line of topics and providing a networking opportunity. • Events targeting CEO of industries, workshops for learning/sharing solutions (e.g., supply chain problem). • Database to share ideas/activities for developing collaborative projects. • Visiting members to find the solution for overcoming the cross-sectoral issue, supporting matching, and making the common goal/approach visible. • Constant communications between staff and members for sharing trends/ideas (recently utilizing LinkedIn). • Constant learning/reflection from activities (e.g., learning from failure). • Building physical places to interact and to share/exchange knowledge and idea toward the collaborations. • (After COVID-19) Switching to utilize a digital platform for knowledge transfer.

Source: Drawn up by the author.

IT Systems

IT systems are utilized for daily operations. Moreover, the system is utilized for training, knowledge sharing, matching, and enabling to form collaborations more smoothly (See Table 15).

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Table 15. IT systems

MedEcon Ruhr GmbH/e.V. (NRW)	<ul style="list-style-type: none"> • Usual IT System (including IT system for remote work for the staff), videoconferencing within the team and the members, shared documents (e.g., Microsoft Teams). • Internal database: Member information, project report. • Own and new Platform, “Digital Health Academy Ruhr,” for sharing digital health educational content (e-learning).
Forum MedTech Pharma e.V. (Bavaria)	<ul style="list-style-type: none"> • IT infrastructure provided by Bayern Innovativ. • Introduction of a digital platform showing clear pictures of technology and roadmap for specific subjects (stakeholders and members can view). Helping them identify the paths to work on and their part transparently and efficiently. • (Recently) digital platform for interactive Q&A and digital matchmaking.
Mannheim Medical Technology Cluster (BW)	<ul style="list-style-type: none"> • Utilizing IT infrastructure of the city government. • Usual IT system, database, video conference system (e.g., webinar).

Source: Drawn up by the author.

Cash

All the cases have access to the competitive fund for the collaborative project provided by the federal/state governments and E.U. In contrast, the budget for the operations is earned by the cluster organization by itself in the case of NRW, partially supported by the state government in the case of Bavaria, and totally provided by the city government in the case of BW (See Table 16).

Table 16. Cash

MedEcon Ruhr GmbH/e.V. (NRW)	<p>Source of finance: (1) Member fee, (2) event fee, (3) project fee, (4) competitive funds from the federal/state governments and E.U. (for the project), (5) fee for services/assignments, (6) others.</p> <p>(Recently) New root for the competitive fund: e.g., Research development fund by the federal government for the healthcare issue of the whole of Germany.</p>
Forum MedTech Pharma e.V. (Bavaria)	<p>Source of finance: (1) Member fee, (2) competitive fund for projects from the federal/state governments and E.U., (3) fee of event/workshop and project management, (4) venture capital for particular projects.</p> <p>In addition, since 2006, financial support has been provided by the state government under the cluster program.</p>
Mannheim Medical Technology Cluster (BW)	<p>Source of finance: (1) Budget from the city government for operation cost, (2) finance for particular purposes (e.g., construction of MMT) from the city & state governments, E.U., private investors, (3) competitive funds for projects (50% from the federal/state governments and E.U., 50% from the city government).</p>

Source: Drawn up by the author.

Table 17. Fixed assets

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Neutral location of the office for members to come, join, and meet together. • Locational proximity to universities for easy access to R&D opportunities. • Moving several times for better conditions. Most recently, moving the office to the biomedical park, best suited to interact with actors from different sectors.
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Office/conference (including events) space, IT infrastructure, and other facilities such as O.A. equipment are provided by Bayern Innovativ, which enables Forum MedTech Pharma to realize “lean” operations.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Office: Provided by the city government. Recently, moving the office to the technology park of Mannheim city and being closer to industry and academia. • Physical space for collaborative R&D and startup (e.g., MMT campus, CUBEX ONE). Expanding and establishing the spaces/buildings for collaborative R&D and startup in the technology park (in 2022).

Source: Drawn up by the author.

Fixed Assets

Physical assets such as offices and other facilities are prepared by the cluster organization itself in the case of NRW. Conversely, these are supported or provided by the public sector (or its affiliation) in the case of Bavaria and BW (See Table 17).

External Partners

External partners are composed of organizations/institutions of various sectors. They are often utilized for providing services, and new partners are invited based on the scope of the activities (See Table 18).

Others

The additional attributing factors, which contribute to the organizational competence of the cluster organizations, are observed. First, in all cases, the composition of the members is considered, and, if necessary, the potential members are selectively approached by the cluster organizations with consideration of the balance of the composition and introduction of the new scope of activities. Moreover, the attributing factors of individual cases are also observed, such as the influence of the types of organization (the case of NRW), the access to the external partners facilitated by supporting institutions (the case of Bavaria), the introduction of the accreditation (the case of BW), and the authorization of the activities (the case of BW) (See Table 19).

The Case of the Three States in Germany

Table 18. External partners

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Insurance companies and patient organizations for grasping market trends, needs, and reimbursement requirements. • Communicating with the state government to get MedEcon Ruhr's business-related information and convey its intention through board members. • Consulting companies and marketing agents for activities and events promotion. • Communal sectors (e.g., the health department of city governments), which has people's healthcare data, are utilized for medical development. • ICT and cybersecurity companies (for promoting digitalization and communication between local doctors and hospitals, etc.). • Radiology providers and artificial intelligence (AI) companies (for promoting teleradiology networks). • Research Institutions (including universities).
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Collaborations with other cluster organizations (facilitated by Bayern Innovativ). • Research institutions (e.g., Fraunhofer Institutes). • Startup centers of universities. • Patient organizations. • Industry associations such as the medical industry. • Close and continuous communication with the state government. • Approaching and scouting new partners based on needs to complement the weak points identified through feedback from members and periodic surveys.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Practice Advisor (composed of clinicians, engineers, etc.): Contract with the city government to provide advice based on its expertise and can be the partner for collaborative projects. • Cluster Agency BW: Affiliated organization of the state government to support the cluster organizations through advising management methods (e.g., the conceptualization of activities/services, providing knowledge and technical assistance, and providing funding information, etc.). • Consulting companies, universities, etc. (some of them are members).

Source: Drawn up by the author.

Table 19. Others

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Selective approach to the potential members (e.g., inviting firms and research institutions in the field of IT and cybersecurity in order to cope with the new scope of activities). • Balancing composition of members: Including healthcare providers (e.g., clinics that bring more project opportunities to members from the industry). • Type of organization: GmbH (not only e.V.) to smoothly develop profitable businesses.
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Selective approach to the potential members to maintain the balance of industry and academia and to reflect the new scope of activities/topics. • Partnering with other cluster organizations of different fields of industries (e.g., Sensor Technology Cluster that Bayern Innovativ also supports).
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Selective approach of members: Considering the whole value chain impact (also reflecting the scope of activities). • Quality Label (accreditation by the BW state government): Increasing popularity and trust, which contributes to gaining good partners and members, harmonizing strategy/activities with the policy of the state government, then increasing the quality of work. • Authority/credibility of the city government that contributes to involving industry and academia smoothly.

Source: Drawn up by the author.

REBUILDING PHASE OF THE MANAGEMENT BODY

The efforts to rebuild the management body (cluster organizations) in the dynamic environment are observed in all cases.

Approach for Investigating and Learning the Necessity for Rebuilding

In addition to the survey on the change in the business environment by the staff of the cluster organizations themselves, they receive feedback from the stakeholders (e.g., members, board, experts, etc.) through communications. Moreover, each case has its approach, as described in Table 20.

Table 20. Approach for investigating and learning the necessity for rebuilding

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • Investigating or conducting surveys on the trend by the staff itself. • Learning intention/situation of members, stakeholders (e.g., external partners, the state government), and business environment. • Learning (and benchmarking) the practices of other healthcare cluster organizations in other regions through monthly video meetings. (A continuous process of investigating/learning for strategic change.)
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Technology scouting by the staff to identify trends and challenges in the medical technology industry. • Communication and feedback from members, the board of directors, and the state government through activity and daily interactions to gain ideas about the change required (such as contents of workshops/events and services, the scope of activities, and strategy): Based on the principle of (1) observe and listen, (2) define and structure, (3) act, change and modify. • Total evaluation by the state government at the end of each stage of the cluster program (every four years) stimulates the evolution of strategy and activities.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Tracing the change in the business environment. • Feedback (through communication) from opinions by practice advisors, board, and members to gain ideas and visions on the change. • Intention of the city government (including the decision by the congress). • Re-examination by the state government to determine whether the cluster organization is continually listed in the Cluster Portal BW or not (every two years). • Referring to the indicator and result of the application of Quality Label (Accreditation program of the BW state government) for reviewing organizational structure and management etc.

Source: Drawn up by the author.

Performance Indicators to Be Focused on for Rebuilding

Second, performance indicators are also referred to in all cases (Table 21). However, the feedback through communicating with stakeholders (including members) is stressed more than the indicators for considering rebuilding the management bodies in all cases.

Table 21. Performance indicators to be focused on for rebuilding

MedEcon Ruhr GmbH/e.V. (NRW)	<ul style="list-style-type: none"> • Revenue from events and projects is monitored. However, growth is a natural process (adaptive to changing situations).
Forum MedTech Pharma e.V. (Bavaria)	<ul style="list-style-type: none"> • Composition and scale of the network (external partners), composition and number of members, number of funded projects, revenue from service (event, workshop, etc.).
Mannheim Medical Technology Cluster (BW)	<ul style="list-style-type: none"> • Measuring three performance parameters every year: Number of new companies, startups, and conducted events and workshops.

Source: Drawn up by the author.

The Process to Reflect the Evaluation for Rebuilding

Finally, regarding the process to reflect the evaluation for rebuilding, the results of the investigation/learning and the performance indicators are reviewed by the top manager and also discussed as an agenda in the general meeting (e.g., annual conference) in which the board of directors, staffs, members, and other stakeholders get together. Then, based on the review and the discussion, the results are utilized for redefining guiding principles and activities. As far as being observed in the case study, up to today, redefinition has not been implemented in guiding principles but in the scope of activities. The redefinition enables the parties to identify the new organizational competence to be displayed. For example, it is observed in the case study that to implement the new scope of activities and promote/expand cross-sectoral interactions and collaborations; the management bodies identify the newly required competence to provide more appropriate fields. In accordance with the newly required competence, the attributing factors are reconfigured, e.g., introducing new managerial practices and building/expanding the physical place, etc. The process to reflect the evaluation for rebuilding the management body of each case is described in Table 22.

Table 22. The process to reflect the evaluation for rebuilding

<p>MedEcon Ruhr GmbH/e.V. (NRW)</p>	<ul style="list-style-type: none"> • The result of the investigation/learning is discussed in the annual strategy meetings. Then, the activities are defined: e.g., Changed/widened scope/focus of activities (e.g., healthcare topics). • Identifying new organizational competence to realize the activities: e.g., Continually operating for further development of the organization with new scope/focus of activities through providing the refined field. • Reconfiguring the attributing factors for rebuilding: e.g., New managerial practices (creating new event formats/setups), expanding/moving the office, new partnership, etc.
<p>Forum MedTech Pharma e.V. (Bavaria)</p>	<ul style="list-style-type: none"> • Based on the investigation, learning, and the result of the performance indicators, new activities are discussed in the general conference and defined: e.g., Digital health, regulation, business model, and new topic. • Identifying new organizational competence to realize the new activities: e.g., Providing the refined field to pursue the new topic (such as individual consulting, coping with regulation, supporting new business models, etc.). • Reconfiguring the attributing factors for rebuilding: e.g., New managerial practice (new events/workshops), recruitment of new staff, approaching new external partners, introducing a digital platform, etc.
<p>Mannheim Medical Technology Cluster (BW)</p>	<ul style="list-style-type: none"> • Based on the investigation/learning and the result of the performance indicators, new activities are discussed in the general conference and defined: e.g., A new strategy roadmap to develop the physical infrastructure and increase the synergy between the virtual and physical infrastructure. A new topic to focus on (e.g., elderly care). • Identifying new organizational competence to realize the new activities: e.g., Providing the refined field (i.e., physical place, workshops/events) to promote/expand cross-sectoral interactions and collaborations. • Reconfiguring the attributing factors for rebuilding: e.g., Building/expanding physical assets (spaces) such as MMT campus, approaching new partners (practice advisors), etc.

Source: Drawn up by the author.

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