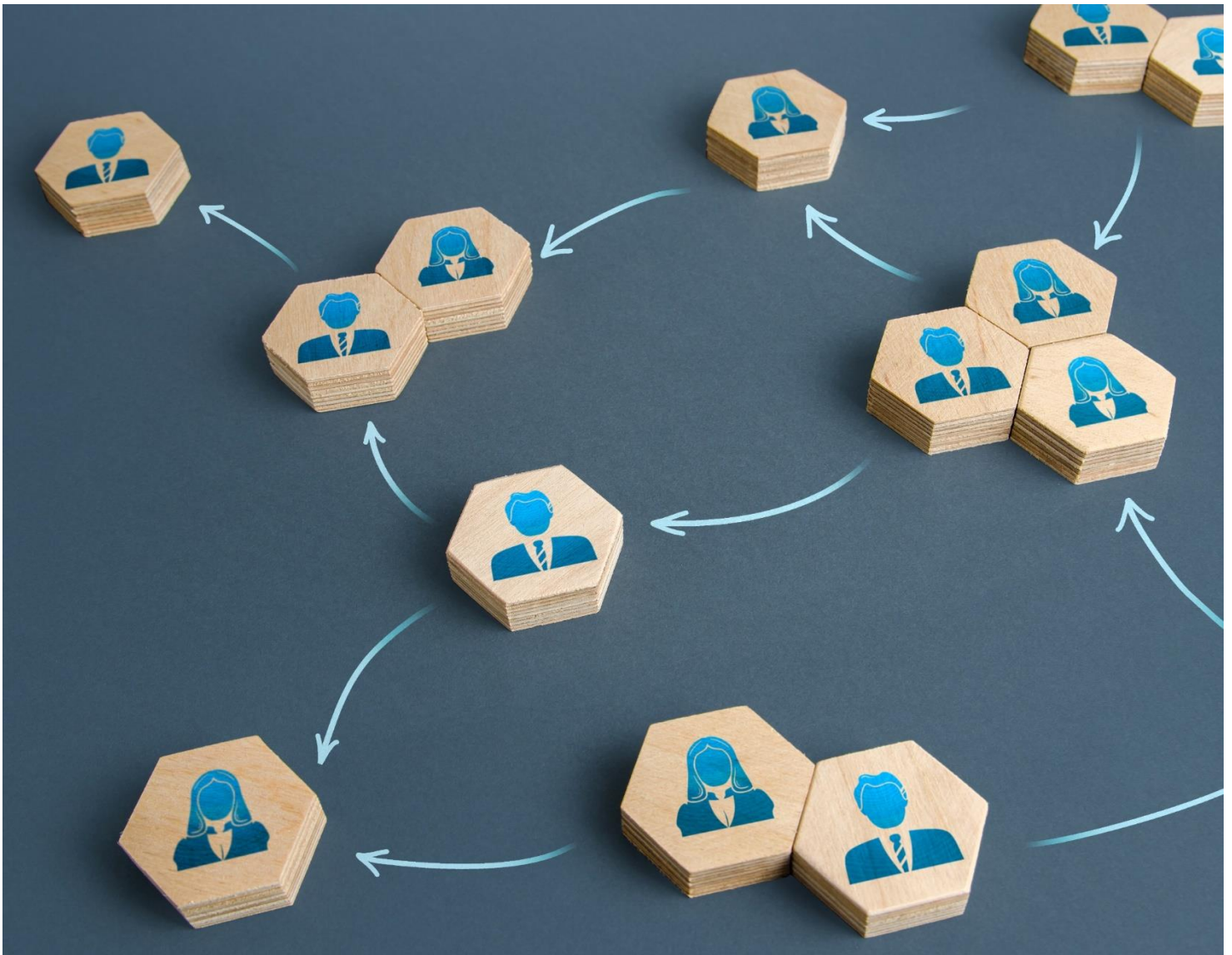


SUMMARY

# CLUSTER MECHANISMS IN THE HEALTH INDUSTRY - ANALYSIS OF STAKEHOLDERS AND INTERACTIONS IN THE ECOSYSTEM

WITH A SPECIFIC FOCUS ON E-HEALTH



## Preface

Menon Economics analyses economic issues and provides advice to businesses, organisations, and public authorities. We are a consulting firm operating at the interface between economics, politics, and markets. Menon combines social and business economics expertise in fields such as social profitability, economic impact, business and competition economics, strategy, finance, and organisational design. We use research-based methods in our analyses and work closely with leading academic environments in most fields.

This is the summary from a longer Norwegian report. The entire report is available in Norwegian on our website [www.menon.no](http://www.menon.no)

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Erik Jakobsen

Project leader  
Menon Economics

## Summary

Systemic innovation is an inherent characteristic of parts of the e-health industry. Experiences from the last 10-15 years have shown that major centralised decisions (Akson, Helseanalyseplattformen etc.) have not been successful, whilst small local initiatives lead to uneven supply and fragmented solutions. The development of large e-health projects is today largely characterised by ecosystem/platform thinking with a close interaction between stakeholders and authorities. Such a market structure raises questions about the necessary connections and roles and how the orchestration of the ecosystem should take place.

On behalf of the Directorate for e-Health, Menon Economics has mapped and described the cluster characteristics of the health industry in Norway, with specific focus on e-health. The purpose is to identify how the authorities can establish, or adapt existing, structural framework conditions and other measures to enhance the health industry's innovation and competitiveness. The report is structured into the following four main parts:

- Stakeholder landscape in the health sector
- The connections between the stakeholders and the relational conditions for cooperation
- Coordination mechanisms for collaboration
- Mechanisms for building a well-functioning health industry in Norway.

Below we summarise the key insights from each chapter.

### Stakeholder landscape in the health sector

In Norway, nearly half a million people are employed in the health sector, primarily in public and private health services, while only a small percentage of 2-3 percent work in the private health industry. The industry is dominated by small businesses, with the majority being micro-businesses with up to five employees, only 19 companies have more than 100 employees. Nevertheless, the health industry experiences high growth and is minimally affected by economic fluctuations, in contrast to other Norwegian export industries which are more sensitive to economic cycles. Exports from the health industry amounted to NOK 27 billion in 2021, but little of this was related to digital health. The majority of export revenues come from sales of pharmaceuticals and ingredients, while medical equipment also makes up a significant portion. Digital health accounts for less than 1 percent of export revenues.

Compared to other Nordic countries, Norway has a relatively small healthcare industry in relation to the large public healthcare- and research sector. The reasons why the Norwegian health industry is small are complex. At an overall level, the main explanation is that there is a high degree of path dependency in the industry, especially related to fixed costs and economies of scale. To succeed internationally, one must have a volume that is large enough to afford investments in the development of innovative products and a sales and distribution channel to bring the products into international markets. It is therefore very demanding to *build* companies that succeed internationally, while it is much easier to *maintain* a strong international position once it is already established. These connections apply not only between countries but also within the Norwegian industry itself. The largest companies in the Norwegian health industry are very export-intensive and have a value creation per employee that is 5-6 times higher than the median company.

Another possible cause for Norway's underdeveloped health industry is that it has only been in the last ten years that there has been an industrial policy focus on the sector, which has led to a high density of small growth

businesses and few large international operators.<sup>1</sup> In contrast, countries such as Denmark and Sweden have developed national strategies for life sciences, which has contributed to a stronger international position in the health industry.

## Connections and relational prerequisites

The stakeholders in the health sector are closely linked through shared knowledge and competence needs, customer and supplier chains, and complementarity in products and services. This creates a strong cluster dynamic where interactions between stakeholders in the ecosystem contributes to synergies in the industry. The supply system in the health sector can be described as a sequential value chain, where the various links in the chain are mutually dependent on each other. A close coupling of the value chain in the health industry will have positive effects for all parts of the value chain; hospitals will gain better insight into which technologies and innovative solutions can help them to streamline and improve the quality of healthcare provision. Simultaneously, producers will gain a better understanding of the most relevant challenges. We consider this particularly important within e-health, where innovations are largely demand-driven and occur in relation between customers and suppliers. However, we find that there is more friction in the collaboration between the industry and the healthcare service providers than optimal. There may be several reasons for this, but particularly, we highlight the lack of openness to adopting to new technology and lack of trust between the stakeholders. It is important to emphasize that resistance to new technology is primarily due to a lack of ability - for example complex organizations, incompatible systems or a lack of resources - and not a lack of willingness.

With regards to the horizontal market linkages, we place particular emphasis on the complementarity between the stakeholders. The complementarity is manageable when the products and services are known and relatively standardised but becomes more challenging when different types of agents must come together in new constellations to serve a customer. This is particularly relevant within e-health and digitalisation projects. Based on this complementarity between the stakeholders, we discuss various organisational models used in the health sector. We particularly discuss how the development of in-house e-health solutions (internally at hospitals and other agents in the health sector) can be understood as a result of highly complex complementarity. With *systemic innovation*, there are many systems, perspectives, and processes that must be integrated into a cohesive system, which can be challenging to realise in a market. This may suggest that development in-house is appropriate. On the other hand, we see that a lot of in-house development can lead to less transparency, hinder competitive dynamics, and weaken the e-health players' ability to scale their solutions. If the suppliers do not receive sufficient contracts, it becomes challenging to capitalise on specialisation and economies of scale, and consequently challenging to become internationally competitive. Essentially, this means that in-house development can be individually rational (for the individual customer), but collectively disadvantageous, as the market does not develop.

## Coordination mechanisms for collaboration

Coordination mechanisms refer to the various methods and measures used to achieve cooperation and coordination between different agents or units. We especially focus on relational contracts and interaction instruments, both of which are considered effective coordination mechanisms for trust-based interaction. Relational contracts can be very useful when it is necessary for partners to make relation-specific investments and there is significant uncertainty associated with the delivery. For instance, this can be in cases where it is

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<sup>1</sup> Menon report 45/2021: Strategier for økt produksjon og eksport av norsk helseindustri (Norwegian report)

difficult or impossible to predict all possible events that may arise, and therefore also impossible to draft contracts that regulate these possible situations. We also find that relational contracts could potentially reduce the extent of in-house projects in the e-health sector because relational contracts are better to handle deliveries with mutual dependence and uncertainty. However, not all parts of the e-health market can be coordinated through contracts. When complexity and complementarity become very high, it is challenging to cover all relevant areas and stakeholders through a contract. For instance, stakeholders that are not part of the contract may be affected by or must contribute to the coordination of the delivery.

The Norwegian public funding system has many different programs designed to stimulate innovation, competence development and internationalization through collaboration. Innovation Norway's cluster program is the best example of such collaboration-based instruments. Our analysis indicates that the cluster organisations in the healthcare sector both contribute to realising synergies between stakeholders through collaboration-based activities and simultaneously enhance the interaction by increasing mutual trust between the players.

### **Mechanisms for building a well-functioning health cluster**

We summarise the insights from the report and present three mutually reinforcing mechanisms that can enhance the competitiveness of the health industry - and thereby its ability to address challenges in the healthcare system. These are:

***Strengthen the resources – stimulate the industry's overall capabilities and capacity.*** By stimulating the resources, one can increase the industry's attractiveness for industrial establishments, entrepreneurship, investors, and talent, which will contribute to a dynamic upgrading of the capabilities and capacity in the healthcare industry.

**Recommendations – increase the overall capabilities and capacity of the health industry:**

1. *Increase the **attractiveness** of the health industry:* The first type of recommendations concerns increasing the attractiveness of the health industry by facilitating conditions to attract industrial investments, especially international players and new business establishments, as well as competent capital and specialized expertise. Norway competes with other countries for capital, competence, and industrial investments. Several competitor countries have a significantly larger health industry, and the larger countries also have a substantially bigger domestic market. It is hard for Norway to appear attractive in all areas within the health industry, but within niches, it is possible to achieve a critical mass of companies and specialized expertise. It will likely require a much more concentrated and powerful effort to gain sufficient visibility and knowledge to attract talents and competent capital from other countries. Many *measures are relevant to stimulate the attractiveness of the health industry, for example*
  - strengthen the "Invest in Norway"-function; ensure that this unit has sufficient knowledge about the health industry and the ability to assemble a "package of measures" tailored to the needs of the specific stakeholders considering establishing themselves in Norway.
  - simplify the possibility of bringing in individuals with relevant competent expertise from countries outside the EEA to Norway.
2. *Strengthen **the dynamics** between stakeholders in the health sector:* The structure, capabilities, and capacity of the Norwegian health industry today are the result of a dynamic process that has been ongoing for many decades. The goal should be to facilitate the best possible conditions for (self-reinforcing) upgrading of the resource base in the health industry. Examples of measures that can strengthen the dynamics include:
  - Innovation measures that are designed and sized to assist entrepreneurs and established businesses through the stages of the innovation process (from research/idea to commercial success), in line with the intention behind Health Pilot.
  - Invest in new, and make available existing, testing and piloting facilities, not only for clinical testing but also for medical equipment and digital processes and products.
  - Coordinate and target export measures towards markets where several Norwegian stakeholders are well-positioned to succeed.
  - Facilitation of meeting places for interaction, knowledge dissemination, and competence transfer, for example, under the direction of cluster organizations (see recommendations under 5.3).

**Reduce market complexity through simplification.** Clear requirements, regulations, and the use of standards can simplify the market and reduce complexity. Standards contribute to compatibility, competition, trust, innovation, and trade, and are linked to a significant part of export growth. Internationally and within the EU, much of the standardisation work occurs in health, and the EU has been a driving force for standards that facilitate information exchange within digital health.

**Recommendations: Reduce market complexity through simplification:**

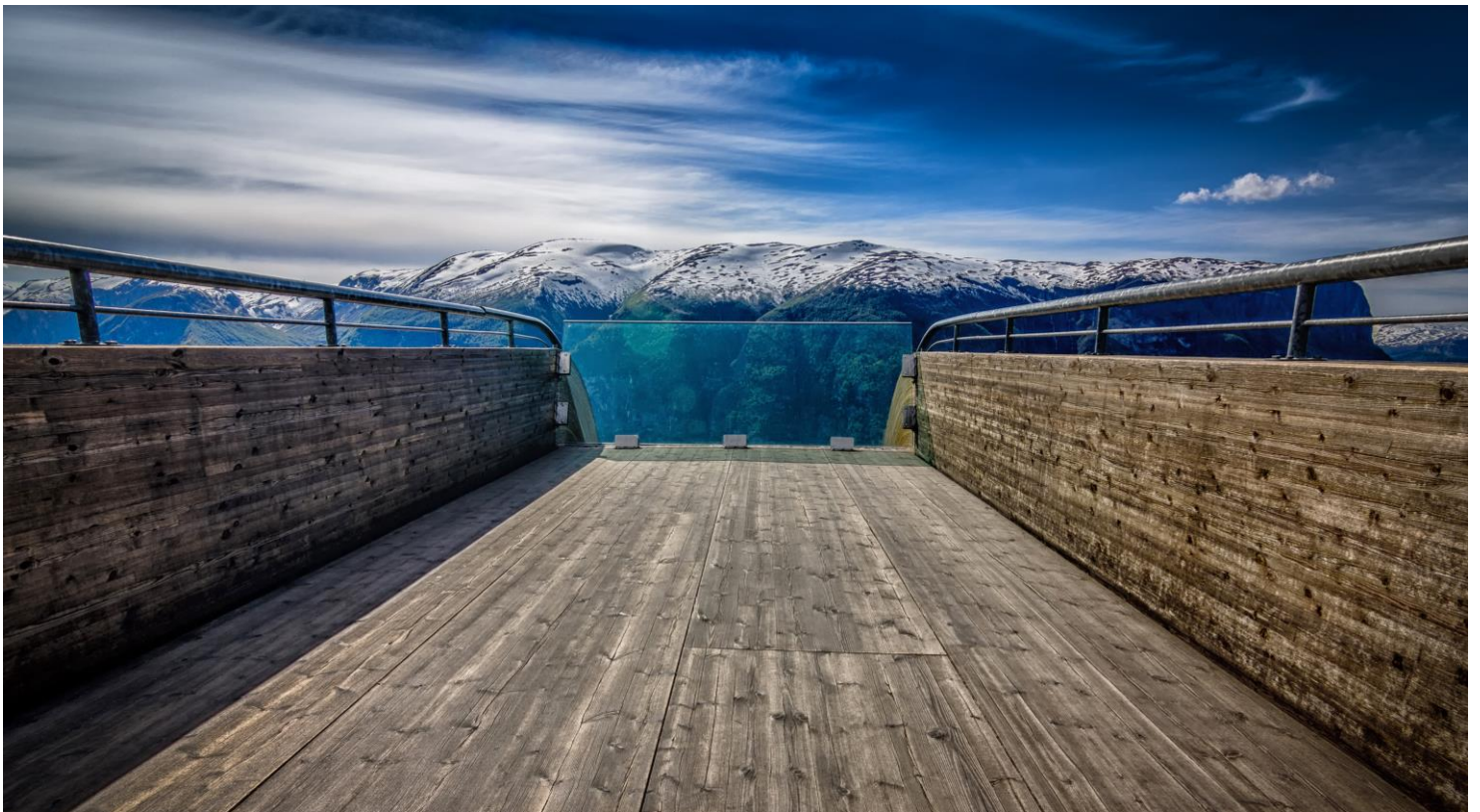
3. *Efforts should be made to follow the EU's work on standardization rather than developing unique Norwegian standards.* Specific Norwegian requirements and standards will limit the industry's export potential.
4. *Ensure that standardization work is carried out in collaboration with industry stakeholders.* It is important to consider various perspectives, especially those of the many small e-health providers who may incur significant costs with the introduction of new requirements. Industry and cluster organizations can play an important role here.
5. *Contribute to more uniform procurement processes across municipalities.* The supplier market within e-health reports challenges with lacking procurement expertise and small volumes. Our impression is that there would be a significant efficiency gain by being able to share experiences on a common platform and have an overview of both what is available in the market and others' experiences with the products.
6. *Consider approval schemes or quality labeling schemes for product/service areas where it is appropriate.*

**Handling complexity** can be achieved through coordination mechanisms to strengthen the links between stakeholders. While relational contracts largely coordinate the vertical linkages (the relationship between customers and suppliers), cluster organisations can realise both horizontal and vertical synergies. At the meeting places of cluster organisations, different suppliers can become acquainted with other complementary suppliers, and enter into collaborations that contribute to better products and services. These venues also contribute to the realisation of vertical synergies, as both industry and health services are represented in the cluster membership. Cluster organisations also initiate and facilitate a variety of projects, where both industry and various suppliers collaborate on common issues.

**Recommendations – managing complexity:**

7. *The work on developing relational contracts should be strengthened.* E-health projects are complex and involve many stakeholders, and relational contracts offer the necessary flexibility to adapt to changes and handle unforeseen events for continuous improvement.
8. *Resource efforts towards cluster organizations should be increased.* Significant potential synergies have been identified in the e-health market, but low trust and lack of transparency prevent the realization of these. Empirical data shows that cluster organizations are effective in improving relational conditions.
9. *The work with relational contracts and the efforts of cluster organizations should be viewed in conjunction.* Relational contracts and cluster organizations are not two different alternatives, but rather complementary.
10. *Cluster-to-cluster collaboration on specific e-health projects should be strengthened.* We question whether the high complexity in the e-health area means that e-health projects require more coordination and collaboration on the customer-supplier side (ecosystem). If this is the case, coordinated efforts from all four cluster organizations within this area may be appropriate.





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