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REHABILITATION IN THE WAKE OF DIGITAL TRANSFORMATION IN GERMANY:
A CONSULTING PROJECT

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Abstract

Rehabilitation in Germany contains a large amount of untapped digitalization potential. The purpose of this work was to investigate the extent to which digital transformation is feasible for mental health rehabilitation and how the potential of digital solutions can be realized. A qualitative study was conducted with three expert groups, including physicians, clinical managers, and employees from digital companies, in cooperation with a German clinic group. According to the findings, the key to navigating the path to digitally supported rehabilitation is change management. Recommendations for action are provided on how to successfully manage the change process.

Keywords: Change Management; Costs; Digitalization; Disruption; Efficiency; Healthcare; Innovation; Mental Health; Outcomes; Psychosomatics; Rehabilitation

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1. Introduction

€42 billion – that is the untapped potential digital transformation holds in Germany’s healthcare sector. Given the rising expenditures in healthcare, realizing this potential represents a massive economic opportunity (McKinsey & Company 2022). Spending on rehabilitation alone has increased from €29 billion in 2010 to €37 billion in 2018 (Kassenärztliche Bundesvereinigung N/A). Aside from the rising financial burden, there is a growing demand for rehabilitation services. Whereas 1.4 million patients applied for a rehabilitation placement in 2006, the figure had reached 1.6 million by 2018 (Deutsche Rentenversicherung Bund 2021, 24). Given the demographic change, this trend is expected to intensify as the probability of needing rehabilitation increases with age (Statista 2022). The rising demand is met by a huge labor shortage, leaving the market with an alarming supply-demand gap (Baldauf and Vitols 2019). Current crises are exacerbating challenges as even more employees are missing due to the pandemic (Afemann 2022) and high expenditures continue to grow as a result of skyrocketing energy prices (Haserück and Osterloh 2022). To counteract these developments, change in the form of innovative solutions is required – and as McKinsey & Company (2022) has revealed, one strategy with the disruptive potential to do so is digitalization.

The clinic group Paracelsus Kliniken Deutschland (Paracelsus) is given advice on its digital transformation strategy as part of the consulting project presented in this paper. Emphasis is placed on one of their mental health-focused rehabilitation clinics. The objective is to analyze the feasibility of digital solutions and how digitalization might improve the way care is delivered in rehabilitation in Germany. For this purpose, the perspectives of B2B stakeholders were evaluated by incorporating the opinions of people working in the market. Interviews were conducted with clinical managers, medical professionals, and staff members at businesses involved in digital health. The research question asks:

How can the digitalization potential in mental health rehabilitation be realized from a B2B perspective?

To answer this question, current challenges in rehabilitation, opportunities and limitations for digitalization, and interviewees' future wishes are identified. Recommendations for action are given based on the results.

2. Company overview and market developments

Understanding the advised clinic and the market in which it operates is essential for putting the findings of the interviews into context. To that end, this chapter provides a company overview as well as a deep dive into current market developments in digital rehabilitation in Germany.

2.1 Paracelsus' mental health rehabilitation clinic

Generally, the clinic group advised focuses on six disease categories in rehabilitation: (1) Oncology at four sites, (2) Orthopedics and (3) Psychosomatics at two locations each, (4) Psychosomatics and Addiction at three sites, (5) Cardiology and Diabetology at one site as well as (6) Pneumology at one site. Since this project concentrates exclusively on mental health, the focus was on (3) Psychosomatics including conditions such as depression, anxiety, and burnout. This is justified by the fact that patients suffering from mental illnesses typically do not require physical contact. Instead, the suffering of those affected is caused by their psychological well-being. Thus, digitalization projects related to psychosomatic disorders appear to be highly feasible.

Because the clinics differ in terms of their resources, infrastructure, and digital standing, it is preferable to focus on only one of the two available psychosomatic sites. This approach results in recommendations that are tailored to the unique needs of one clinic and its patients. The so-called Roswithaklinik in Bad Gandersheim was chosen because the clinic exclusively treats psychosomatic disorders. Thus, choosing this location facilitated targeting the specific needs of patients with mental health disorders. Moreover, the clinic was selected because of its high level

of expertise, which is reflected in a multidisciplinary team of 70 full-time equivalents (FTE) including amongst others physicians (10,6 FTE), caregivers and nurses (10,7 FTE), therapists (23,3 FTE) and a writing service (3,8 FTE). These employees have an average age of 58,5 years.

2.2 Status quo of digitalization in rehabilitation in Germany

The current state of digital rehabilitation in Germany is outlined in this section. Furthermore, it will be addressed whether and how these developments affect the Roswithaklinik.

Every rehabilitation facility needs in-house software to record, process, and transfer data. This software is known as a clinical information system (CIS). It serves as a basic system upon which a digital ecosystem can be built by integrating additional modules (Baldauf and Vitols 2019).

As a result, systems can differ significantly between clinics. In Bad Gandersheim, for example, the CIS is primarily used for digital billing and patient data storage. However, it should be mentioned that most patient data is collected on paper before being converted into the CIS.

In addition to the CIS as an internal system for the rehabilitation center, all stakeholders involved in the care pathway must be linked externally to ensure secure, efficient data transmission and communication. Consider how information must be transferred from prevention to acute care to rehabilitation, and that all stakeholders, including physicians, patients, and payers, need to be connected throughout the care cycle. To provide such interconnectivity among stakeholders, a public institution called the gematik GmbH created the telematics infrastructure (TI) in Germany. The TI provides an electronic patient record (ePR) (Gematik GmbH 2021) through which medical staff and patients can exchange data such as x-rays or other medical findings. It also allows physicians to upload an electronic medication plan (eMP). The eMP contains information about the patient's medication history as well as current medications. Drug allergies and interactions can both be easily checked. Rehabilitation centers can use the ePR and eMP by connecting to the TI since 2021 (Georg Thieme Verlag KG 2021). However, because this is still a voluntary offer, most facilities have not yet taken advantage of

it. The usage is expected to increase by 2025 when rehabilitation clinics will be able to benefit from the fact that the ePR will be automatically set up for each patient. Currently, only 8% are linked to the TI (Gematik GmbH 2022) and the Roswithaklinik is among the remaining 92% of facilities that are not yet connected.

Aside from the TI, reimbursable tele-rehabilitation programs for after-care were introduced in 2017. These programs are either created in a multimodal manner for different conditions or tailored to a specific patient group, such as psychosomatics. Tele-rehabilitation programs for after-care are considered an alternative to traditional rehabilitation. The overarching goal is to improve sustainability and adherence in order to provide the best possible care. They may include therapy sessions, allow for faster intervention in case of adverse events, improve diagnostics through digital assessments, or remind and motivate patients (Krischak et al. N/A). The Roswithaklinik already offers such an after-care program, allowing their patients to continue with their care once they return home. Video-assisted sessions can be conducted, or exercises learned during rehabilitation can be performed.

These developments demonstrate huge opportunities in the market and the willingness of rehabilitation to change. Policymakers and businesses are laying the groundwork for the successful digitalization of rehabilitation, and innovative solutions for process efficiency and treatment optimization are being developed. These solutions already have an impact on relevant workflows and are changing care processes in a variety of ways. This was validated by looking at the Roswithaklinik, which already has digital solutions in place. However, it is important to note that the clinic does not have a department dedicated exclusively to digital projects, nor does it employ any digital transformation experts. Even though patients can fill out a patient satisfaction questionnaire online, which asks about the quality of staff or food, paper is still the common means of communication. Thus, as most care- and process-related services along the patient pathway have not yet been digitized, widespread use of digital applications is lacking.

2.3 The rehabilitation care cycle

A care cycle was developed to better understand the patient journey in the rehabilitation market (Figure 1). It is divided into three phases: (I) acute care, (II) rehabilitation, and (III) aftercare. Generally, after acute care, the average wait time for a rehabilitation placement in Bad Gandersheim consists of 8 to 10 weeks. The following psychosomatic rehabilitation phase is longer than the standard three weeks of rehabilitation as psychosomatic patients' needs are highly complex. In Bad Gandersheim patients stayed on average 37 days in 2021 and the length of stay for depressive patients in Germany ranged from 21 to 63 days in 2019 (Deutsche Rentenversicherung Bund 2021). The core competency of the Roswithaklinik is stationary rehabilitation, which means that their patients stay overnight. First, the patient must be admitted. Following admission, the treatment starts, during which different interventions based on the patient's needs may take place. Finally, the patient will be discharged from the clinic. Quality evaluations reveal that there is still potential for improvement throughout the rehabilitation phase. Goals and outcomes (79%), aftercare (73%), and diagnostics (62%), followed by anamnesis processes (49%), display the greatest deficits. Upon completion of the rehabilitation, the patient may be allocated to a digital aftercare program. (John et al. 2020)

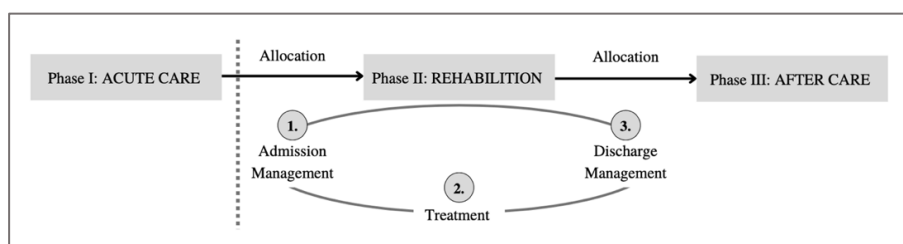


Figure 1: The rehabilitation care cycle

2.4 Digital solutions available on the rehabilitation market in Germany

The care cycle developed serves as a foundation for the following market overview. The objective was to determine whether the German market offers digital solutions for each step of the care cycle (Figure 1) of psychosomatic patients in Germany. Furthermore, the aim is to

provide an overview of the existing market players in digital rehabilitation. Thereby, an understanding of the various digital solutions suitable for use in psychosomatic rehabilitation is provided and digital innovations that are feasible for implementation at the Roswithaklinik are identified. However, the goal is not to present a complete market analysis that includes all market participants. Acute care solutions were excluded from the market overview since the Roswithaklinik solely provides rehabilitation or after-care services (Figure 1).

Appendix 1 depicts the companies identified and evaluated as being of interest for digital transformation projects at the Roswithaklinik. They were classified as either process- or care-oriented solutions. Process-oriented solutions included optimizing organizational and administrative tasks in or between the three phases of the care cycle. This encompassed admission and discharge management; outcome measurement; value-based pricing; documentation as well as patient-, employee-, and visitor-management. Solutions that offer several or all these services are called “Full solutions”. Care-oriented solutions are those that are designed to treat psychosomatic disorders during rehabilitation or aftercare.

According to the market overview, the rehabilitation market already offers a wide range of solutions for the patient journey. Both process- and care-oriented solutions were discovered, with process-oriented solutions ($n = 16$) outnumbering care-oriented solutions for psychosomatic rehabilitation ($n = 3$). This is because process-oriented solutions are usually non-disease specific, while care-oriented solutions are typically disease-specific and intended to improve the patient's state of health. There is a market gap for digital solutions solely aimed at improving care delivery during psychosomatic rehabilitation. However, three ($n = 3$) tele-rehabilitation programs for after-care are available.

3. Methodology

A qualitative approach was applied as the project's aim is to collect and evaluate the individual perspectives of different stakeholders. The method used is the semi-structured expert interview.

Appendix 2 contains the final interview guide. Experts were invited via mail or LinkedIn. Interviews were scheduled for 30 minutes and took place in October and November of 2022. They were conducted online using Teams.

Due to the project scope, the focus was made on the B2B sector. Three stakeholder groups with a total of 14 interviewees ($n = 14$) were interviewed. The first expert group includes employees from digital companies ($n = 5$) that may contribute to improved practices in psychosomatic rehabilitation. They were identified through the market overview (Appendix 1). The remaining two expert groups were clinical stakeholders working in rehabilitation: Physicians ($n = 4$) were interviewed to understand the perspective of medical professionals and end-consumers who may use digital solutions and have to put them into practice. Managers of rehabilitation clinics ($n = 5$) were consulted to assess the decision-maker dimension as they choose whether to invest in change processes such as digital transformation. As rehabilitation is a very specialized market, the focus was laid on interviewees from Germany. In one case ($n = 1$), an exception was made and an employee from a Swiss company was included. The rationale behind this was that the company pursued a highly unique and innovative approach. The age of the interviewees ranged from 20 to 65. An overview of the interviewees is given in Appendix 3.

4. Results

Results are organized into four categories: (1) current challenges in rehabilitation, (2) opportunities and (3) limitations of digitalization, and (4) future wishes. Each category refers to the stakeholder groups that mentioned the respective category to highlight differences or similarities in their perspectives.

4.1 Current Challenges in rehabilitation

Market and patient characteristics

Market restrictions were agreed to be a challenge for clinics. Resources such as money, for example, are scarce due to price restrictions and a limited bed number. Besides, to save beds in

acute care, patients are increasingly being sent to rehabilitation at an earlier stage.

“Hospitals with per-case rates are under pressure to discharge patients because they have to keep filling beds to be profitable.”

Furthermore, new healthcare technologies are introduced and as both physicians and clinical managers said, the number of multimorbidities is on the rise making the care cycle highly complex. Through these developments, patients develop fairly high expectations of recovery.

“The heterogeneity of psychosomatic patients, for example, becomes evident when looking at their age range. It basically can affect everyone.”

Communication channels

All stakeholders agreed that communication channels in rehabilitation are inefficient and time-consuming. In general, paper is still the most commonly used medium for data exchange. When a care plan, for example, needs to be changed, patients must wait for the updated printed version. As a result, paper usage causes time delays because real-time information is unavailable. Furthermore, information on paper is easily lost, which can lead to errors in therapeutic settings or compromise patient safety when handwritten files cannot be read.

“The lack of digital documentation and communication tools is not only unsustainable but increases the likelihood of failure. Information can easily be lost when it is distributed across different departments within and outside the rehabilitation clinic throughout the care cycle.”

If digital tools are in use, they frequently exist independently of one another, with no interface available. As a result, the same information is recorded multiple times during the care process.

Data Privacy and Security

When health-related information is exchanged on paper, data privacy issues arise. The expert groups agreed that this could become a major security issue.

"It's absurd that we're talking about whether end-to-end encrypted data is secure while we're faxing around millions of sensitive healthcare files that anyone can access."

Supply-demand gap

All stakeholders consented that a supply-demand gap is straining rehabilitation centers. There are labor shortages on the supply side and long wait times on the demand side. A manager explained that many young physicians prefer to work part-time and attracting young staff is

"especially hard, as rehabilitation centers are mostly located in peripheral areas, but young people with innovative mindsets want to live and work in the city."

The general mindset of society about rehabilitation adds to the supply-demand gap.

"Rehabilitation is seen as a bit old-fashioned and dusty. That is why still predominantly old doctors who are about to retire and want a relaxed workload go there."

The new coronavirus exacerbates the supply shortage by tying up additional manpower as a result of a decrease in group participants and highly complex patients. In addition, staff was absent due to infections.

4.2 Opportunities for digital transformation

Accompaniment

All stakeholders expressed positive attitudes towards digitalization, believing that digital solutions can help staff in their daily work and patients along their care pathway.

"I consider digitalization a helpful tool, a support like a pencil or a ballpoint pen."

Cost reduction

All expert groups agreed that digitalization can save money by increasing efficiency and reducing administrative work hours. Furthermore, treatment costs can be reduced because educational sessions can be recorded and viewed online at any time and from any location.

"(One can) convert seminars and educational units into a digital format."

Communication facilitation

According to physicians and managers, digitalization provides an opportunity to improve communication. Changing communication methods from paper to digital tools across the entire patient pathway results in efficiencies because information is easily accessible and available in a clustered and real-time manner. As a result, the risk of medical errors decreases as digital communication improves data quality.

Cross-linking stakeholders and geographies

A benefit of digitalization is the ability to connect stakeholders across the entire care cycle, from acute therapy to after-care. All stakeholders involved can be kept up to date on the patient's progress because the data only needs to be collected once and can be stored in an overarching platform. Thus, digital data sharing and communication may improve treatment safety and convenience. This is especially important given the growing number of multimorbidities and the fact that patient data is gathered from various stakeholders. Clinical managers added the benefit of increased geographic reach, which allows for the scaling of rehabilitation services.

“We can, of course, target many more patients in a far greater radius than we can locally, in a clinic with a specific scope and reach.”

Care improvements

As digital solutions can relieve clinical staff from administrative tasks such as therapy documentation, more time can be spent on patients.

“It is not the core services that will be handled digitally, but rather the processes. However, we must never forget that there is always time hanging behind process management, which is released for work vital to patient care.”

This can increase the quality of care and reduce the risk of medical errors.

“Digitalization means that I can truly provide every patient with the number and duration of the therapy that is intended for them.”

Staying in touch with patients and increasing their self-engagement and self-management skills are made possible by digitalization. Thus, in addition to administrative benefits, all stakeholders cited sustainable lifestyle changes as a benefit of digitalization.

"(Through digitalization physicians may be able to) engage patients and follow them step by step. Digitalization becomes a life partner, evolving along with the patient. That's where I see the huge potential."

According to an interviewee, when data becomes available in digital format, the quality of care improves. When patients are referred from acute care to rehabilitation, they have the right to select from the market's available options. Currently, the clinical staff searches for places by calling various facilities. In most cases, not every clinic is called. This could be optimized by implementing digital solutions that automatically display all available rehabilitation facilities. As a result, not only will employees be relieved, but transparency will accelerate, providing patients with quick and easy access to care. Thus, patients could truly utilize their right to choose their preferred clinic. Additionally, clinical managers and digital company interviewees described the ability to easily evaluate digital data as advantageous.

"When the patient comes back, let's say after three years, it becomes possible to track why. In other words, a statistical evaluation of the patients who return (can be performed). This will help clinics in learning what they must do to prevent such a recurrence - and reduce costs for society as a whole."

Safety of care and security of data

Managers mentioned that digitalization may improve the safety of care. All pertinent data about the patient's history is available. Drug interactions or incompatibilities are easily detected, and treatment adherence can be improved.

"It simply helps that the cell phone reminds you regularly about treatment or training, for example, or that you can digitally ask therapists questions from home."

Data security is enhanced by reducing paper usage, as data cannot be lost as easily.

“In emergencies (when using paper files) I do not know, what medication has the patient received. What happened in the pretreatment? Where is the file? And so on...”

4.3 Limitations for digital transformation

Stakeholder characteristics

Some physicians fear that digital products will replace their jobs or are concerned about the product's security. Others, for personal reasons, simply do not want to use digital solutions.

“Physicians simply say this is not how I want to do it because I don't think it's good. (...) Patients say they don't want to do digital training as they value analog alternatives.”

There was a common sense that some stakeholders lack digital affinity and thus cannot or do not want to use digital products. According to an interviewee from a digital startup:

“You run into hard opposition, prejudice, and truly dangerous half-knowledge with really secure, helpful, and innovative solutions.”

There were controversial opinions about whether age is associated with a lack of digital affinity.

“The hurdles are lower than we tend to believe. We always think that anyone older than 20-30 does not know digital media. But that's far from the truth. Our society is much more developed than we think.”

Indications and needs

Stakeholders agreed that a solely digital care cycle cannot exist, nor can a rehabilitation market be based solely on digital solutions.

“Humans are social creatures and not made to work only with IT. Thus, there are reasons to say: Digital products are a nice add-on, but they can't stand alone.”

The doctor-patient relationship was regarded as highly important in rehabilitation.

“After all, we're dealing with humans. And in our work as physicians, the great value comes through humans in their interaction with humans.”

The extent to which rehabilitation facilities are digitalized is determined by individual needs and indications. According to one interviewee, psychosomatic patients are mentally unstable, often feel alone, and are not resilient. The use of unfamiliar digital tools can be overwhelming, and digital products may even be linked to the disease. Patients may have also injured themselves, and accurate wound healing can only be achieved in collaboration with a physician.

“Nothing digital can replace the complexity of interpersonal relationships between the doctor and the patient, so there will always be a need for people in healthcare.”

Cost reduction

Digitalization, according to physicians, shifts resources from administration to care rather than reducing staff and thus costs. A clinical manager stated that because patient care is labor intensive, efficiencies and cost reduction cannot be achieved as:

“You have to perform a certain amount of therapy on the patient. Whether you do it online or face to face is almost the same.”

Usability of IT

The lack of interconnectivity between IT systems has been identified as a limitation by all stakeholders. Furthermore, all expert groups stated that rehabilitation's digitalization status is low and that basic requirements for the implementation of digital solutions are lacking. The Wi-Fi is not working properly, and IT systems often do not function. Thus, some physicians felt that digital products were another burden adding to their workload.

“IT sometimes does not work, or programs crash forcing employees to resort to analog. For example, when a dictation program is not working and recording is lost after 15 minutes, physicians have to do it manually which not only lowers acceptance but costs resources.”

4.4 Stakeholder's wishes

Wishes expressed by all expert groups are classified as product- or frame-related solutions.

Product-related solutions are those that are associated with particular products or services.

Framework-related solutions represent the general conditions that should exist.

Product-related wishes

Digital documentation systems: Huge potential is seen in the launch of digital documentation systems. It was indicated that an electronic platform through which various stakeholders, including physicians and patients, could communicate, upload data, and exchange patient information would be beneficial. Additionally, an electronic file containing information about the patient's current medication, drug history, allergies, and medication interactions is desired.

Frame-related wishes

Ecosystem: All expert groups desire an easy-to-use platform that serves as a connecting ecosystem between stakeholders. This interface enables fast and efficient communication as well as connected care throughout the patients' pathway. It is important to remember, that digital solutions in rehabilitation facilities must be interoperable.

"We have to ensure that when we build digital solutions, they are integrated into a unified vision and that we don't continue to create stand-alone solutions that only work in isolation."

Individualization: To provide the best care possible, digital products should be individually tailored to the needs of patients and clinical staff. They must be both practical for everyday use and affordable.

Transformation of the system: Today, digital care services in rehabilitation are limited, with most of them focusing on aftercare. The vision is to extend solutions to support all stakeholders throughout the care cycle. To that end, there was consensus that the healthcare system must shift, and that incentives from the government and a willingness to invest effort, money, and time in digitalization are needed.

“What we need is a change of mindset among the players in the healthcare system: the willingness to spend some money on it. (...) Then we have the chance to expand our (digital) footprint and go beyond digitalization of aftercare.”

While talking about the mindset of the different stakeholders involved in healthcare, it was mentioned that it is critical to

“...think about care pathways holistically, from their beginning to their end – (...) when the patient is admitted to acute care, you have to think about discharge.”

Cooperation and Co-Creation: Cooperations with digital companies were seen as absolutely important for future digital projects. They relieve rehabilitation centers of superfluous work and allow staff to devote more time to patient care.

“Cooperations are important because they relieve us in areas that we do not see as our main task.”

The CEO of a rehabilitation clinic mentioned the joint development of digital products and services with medical staff and patients as one strategy. Taking this approach enables the genuine needs of consumers to be identified. Thereby, the solution's benefits can be utilized.

Hybrid Models: To improve efficiencies and care, all stakeholders agreed that the focus should be on the successful implementation of hybrid models. This method ensures that no information is lost when, for example, patients decide not to use them. Additionally, some patients need to step free from their daily habits and routines.

"It's very important for the patient to escape from the daily routine at home. He can concentrate on rehabilitation and get out of his family and busy life. And I believe that whenever rehabilitation takes place digitally, it only runs alongside things. Patients can't concentrate on rehabilitation, which is such an important factor for its success.”

Support systems: All stakeholders agreed that successful digital transformation requires both internal and external support systems. Change management practices, according to

interviewees, are required for this purpose. Internally, there are no digital departments or contacts for digital projects. Managers and leaders frequently do not act as process guides. Continuous education programs about new technologies are evaluated as needed. Externally, project partners should assist clinics with their digital skills.

“The clinic needs a holistic digitalization strategy that picks up the people, a top-down organizational structure in which management is responsible for communicating internally and establishing a culture where people are open to change and innovation.”

5. Discussion

5.1 Potential of digitalization in psychosomatic rehab and paradoxes in opinions

All stakeholders agreed that digitalization has great potential, but clinics must spend more resources on it. Investments appear difficult due to limited financial reserves, as clinics are price restricted, have a limited number of beds, face high costs, and are affected by the energy crisis. However, facilities should be aware that, in the long run, digitalization has the potential to cut costs and enable the scaling of rehabilitation services. Government subsidies could be beneficial in creating incentives for clinics' willingness to invest in that potential.

Converting administrative processes to digital alternatives has the greatest potential for promising investments because it increases efficiency and allows for cost savings as time can be saved. Clinical personnel, in particular, emphasized that digitalization is focused on improving administrative processes rather than the traditional core task of physicians, which is to care for patients. However, this argumentation neglects that efficiency improvements lead to improved care. When physicians take less time on administrative tasks because digital solutions have taken over, they have more time to spend on patients. Economically speaking, this is also advantageous because using digital tools for administration rather than paying physicians for their expensive labor results in cost savings. Despite what respondents claimed, it does not seem that mental illnesses are among those for which the patient's indication limits the feasibility of

digital solutions. This is because patients with psychological disorders do not need to be physically touched while receiving treatment. Therefore, it appears that digital therapy for mental health rehabilitation is generally feasible.

When discussing the feasibility of digital mental health rehabilitation, it should be noted that the characteristics of patients and physicians must be considered. Their characteristics are highly heterogeneous and complex. For instance, mental health issues can affect anyone, regardless of age. However, the impact of age on the feasibility of digital solutions was viewed as controversial. Some saw it as a limitation as older people may be less digitally savvy. This is particularly intriguing considering the relatively high age (on average 58.5 years) of medical staff and writers at the Roswithaklinik. Others argue that this statement is outdated because older persons nowadays are already using digital solutions, and demographic change will increase digital affinity even more. The respondents' own low acceptance of or affinity for technology may be a reason why age is still cited as a limitation.

A fear of the unknown develops as a result of the lack of literacy, information, and knowledge about digital technologies. This fear may explain why some respondents see data security as a threat, including data theft and hacker attacks. However, given the current massive paper usage and widespread adoption of insecure communication channels, digitalization is far more likely to have the opposite effect and result in increased data security. Furthermore, communication will be facilitated as information is easily accessible and available in real time. On the supply side, the fear of the unknown can cause physicians to worry about losing their jobs because they believe digital solutions will replace them. This fear however is unjustified in mental health, where labor and direct contact between patients and physicians are of utmost importance. A certain amount of treatment must be conducted, whether digitally or in person. Yet, the huge advantage of in-person rehabilitation programs where patients stay overnight is that they can step out of their familiar surroundings and concentrate entirely on their treatment. This seems

to be central for mental health disorders where work, family, friends, or other burdens of everyday life often cause the diseases.

The complex stakeholder characteristics may have led to the argument that digitalization can only be successful by developing hybrid models to supplement on-site care in rehabilitation. However, especially with the increase in digital affinity, this approach should not be the only strategic focus. It is preferable to pursue the following two paths: (1) On-site solutions should still be available for patients who lack the necessary digital affinity, have multimorbidities that require physical contact, or need to step out of their daily lives; (2) For patients who do not require on-site care, completely or partially digital care pathways should be developed. Thus, it is crucial to take on a patient-centered approach and individualize the delivery of care. If and to what extent a digital care pathway is practical should be assessed on a case-by-case basis because it might not be feasible for all patients depending on their individual characteristics.

It became evident that digitalization in mental health rehabilitation holds a lot of potential for the Roswithaklinik. More patients may be reached by connecting stakeholders across geographies, such as patients and physicians, as care can become time- and place-independent through digital solutions. For instance, educational sessions can be recorded and uploaded online. This might also affect the supply-demand gap, which stakeholders identified as a challenge. The supply side, including physicians, saves time when seminars and other in-person educational events are recorded. On the demand side, digitalization presents an opportunity because, for instance, treatment offers can be made during the waiting period, which at the Roswithaklinik currently consists of 8 to 10 weeks.

Thus, digitalization can lead to improvements by introducing new ways of delivering care at stages of the patient pathway where previously no care at all existed. Additionally, digital care solutions may enhance outcomes by serving as a supportive tool during care. Long-term treatment adherence and care sustainability after rehabilitation are major advantages of digital

solutions. For example, as patient self-management and advocacy improve, continuing digital care at home may reduce relapses. However, when discussing the future vision of rehabilitation, a wide disparity in expectations became apparent. While one company representative described rehabilitation as a virtual space for care similar to Meta's metaverse, clinical staff preferred basic but fundamental changes such as the installation of appropriate Wi-Fi connections.

Overall, divergent opinions among and between stakeholders showed the huge disruptive potential of digitalization. It became clear that rehabilitation currently undergoes a major transitional phase as patients and clinical staff become more digitally savvy and hence, demand for modern technologies will increase. Not only will digital literacy be required for a successful transformation, but the mindset of stakeholders and the system itself must shift to encourage digitalization investments. Everyone involved in the change process, from digital company employees to physicians and clinical managers, must collaborate with and learn from one another.

5.2 Recommendations for the clinics' digital transformation

The results indicate that given digitalization's disruptive potential, the clinic group must develop an overarching digitalization strategy to guide the upcoming transformation. Within the process, change management is required to fully realize the potential digitalization incorporates. The clinic group, according to Kotter and Seidenschwarz (2013), should pursue the eight steps listed below to adapt to organizational change and allow for large-scale transformations.

1. Create a sense of urgency: The rehabilitation market, according to the results, is confronted with a variety of challenges, including a supply-demand gap and obsolete communication methods. Digitalization holds enormous potential as one possible solution, which stakeholders should be aware of. Hence, the clinic should communicate why digital changes are being implemented and how they will benefit the different stakeholders in rehabilitation. Thereby, a sense of urgency will emerge. Thus, as it is vital to understand the heterogenous stakeholder

characteristics, a need assessment should be performed. The needs can be leveraged as the strategy's foundation, leading to feasible project ideas for mental health rehabilitation. To that end, so-called empathy maps may be created to depict the various user types and their characteristics. For their development, Gray (2017) suggests asking the following questions: "Whom are we emphasizing with? What do they need to do? What do they see? What do they say? What do they do? What do they hear? What do they think and feel?"

2. Build a guiding coalition: It is vital to create a sense of urgency since change can only occur when an organization's members work together toward a common goal. A single person cannot grasp digital transformation alone. Combined forces and numerous leaders are essential, especially considering the range of stakeholders engaged in the patient pathway in rehabilitation. Hence, the clinic should form a guiding coalition of leaders from various levels of the organization. They should not only accept the change but serve as representatives in driving acceptance and use of digital solutions. Because digitalization will only be accepted holistically if leaders demonstrate enthusiasm, and the change is anchored at upper levels.

3. Form a strategic vision and initiatives: The clinic group should form a vision based on the need assessment, resulting in a viable picture of what their clinics will look like in the future. This vision should be communicable, desirable, flexible, feasible, imaginable, and simple. Given the demographic shift, it is critical to consider how rehabilitation can be designed to appeal to people who were raised in a digital, modern society. Clinics should invest in initiatives to make that vision a reality. To identify initiatives, the status quo of the clinics should be considered. For this project, a process-, care- and frame-oriented initiative was derived from the results that appeared to be applicable to the Roswithaklinik.

The process-oriented initiative should prioritize the launch of digital documentation systems, which will create efficiencies and reduce costs during the care cycle. It is recommended to concentrate on the implementation of an ePR where patient data is documented and exchanged

between stakeholders. Furthermore, an eMP should be implemented to digitally document the patient's medication-related information.

The Roswithaklinik already has a digital after-care program in place, which could be expanded to the care process before and during rehabilitation, thereby serving as a care-oriented initiative. Throughout the waiting period, tele-rehabilitation programs may be offered, or patients could choose between video-based and analog therapy during rehabilitation. Hence, outcomes may accelerate as patient empowerment and self-management improve. Given that outcomes are the area with the highest level of deficiencies during rehabilitation, this is a great opportunity to focus on. To improve outcomes in a patient-centered manner, the clinic can integrate patient-reported outcome measurements (PROMs) in addition to the patient satisfaction questionnaire already in use. Standardized sets of PROMs are available for psychosomatic disorders such as depression, anxiety, and psychotic disorders. The International Consortium for Health Outcomes Measurement (ICHOM), a non-profit organization, provides them to make outcomes that really matter to patients measurable and comparable. (Obbarius et al. 2017)

A framework-oriented initiative should prioritize the creation of a digital ecosystem. Only IT systems that are designed for interoperability should be implemented. Six elements are essential to build such as platform (Porter and Lee 2013): (1) It should be patient-centered connecting all steps of the care cycle. (2) To improve usability and information exchange, data and definitions should be standardized. (3) All data should be stored in a central location. (4) Everyone involved in the patient's journey should have access to the platform and be able to communicate with one another. (5) Data templates for each medical condition should be used for improved clarity, consistency, and usability. (6) Data entry and extraction should be simple.

4. Enlist a volunteer army: To make the change happen, a significant number of stakeholders must be convinced of the potential of digitalization. For that purpose, internal as well as external support systems should be established. Internal support entails the clinic building a digital

department and hiring employees in charge of digital transformation to ensure implementation success at lower corporate levels. Managers' and physicians' opinions should be included in the change process because having a say fosters shared responsibility for projects and intrinsic motivation for their success. Externally, the clinic should engage in co-creation and collaboration projects with digital companies. This approach will benefit both the clinic and the digital company, as the company will gain real-world knowledge about rehabilitation and the clinic will broaden its digital affinity through the insights and expertise gained from the cooperation partner. As a result, feasible digital solutions for rehabilitation will be designed.

5. Enabling action by removing barriers: To overcome resistance to change and adapt to the transformation, the clinic should remove impediments and lay the groundwork for the process. First and foremost, the clinic should operate in a flexible and agile manner, empowering employees to take action. Second, educational sessions for digital solutions and data security should be offered because the fear of the unknown in relation to digitalization, as well as a lack of digital acceptance and affinity, continue to limit digitalization's potential. Additionally, a strong level of expertise and flexibility in coping with digital change is required to provide the highest quality of care. Finally, IT usability should be improved by ensuring that technology works properly. To that end, the fundamental infrastructure for digitalization should be established, including the improvement of poor internet connections that are currently limiting the use of digital products in some facilities. Making it easier to work with digital solutions will increase user acceptance and hence, hasten the clinic's adaptation. Prior to project initiation, the Technology Acceptance Model (TAM) can be applied to determine whether users will accept and adopt the new technologies. According to the model, perceived usefulness and ease of use should be evaluated to ensure technology adoption. This is consistent with the findings, as stakeholders identified IT usability as relevant. (Davis and Venkatesh 1996)

6. Generate short-term wins: Rehabilitation will undergo significant change in the future. However, digitalization is a resource-intensive process that requires both money and time. Thus, change will only occur gradually over time. To keep stakeholders motivated, a roadmap with small steps to put the clinic's digital vision into action is required. To track progress, the roadmap should include projects with timelines and key performance indicators. The roadmap can then be leveraged to communicate successes and short-term wins. As a result, the workforce's attitude toward change will improve, as will its willingness to adapt to and embrace the impending radical transformation.

7. Sustain acceleration: The Roswithaklinik may serve as a pilot area for the clinic group's digital transformation. Projects that began there may be scaled and geographically extended to other clinics after successful implementation to put the established vision into practice. To ensure the successful digital transformation of the entire clinic group, it will be critical to identify commonalities and differences between clinics and determine the applicability of certain digital solutions. As results indicated, the feasibility of digital solutions may vary depending on indications. Thus, particularly care-related projects may differ between clinics.

8. Institute change: Change management and restructuring processes are crucial because they not only provide competence and orientation to the stakeholders during the transformation but also contribute to establishing a culture of innovation. To reinforce this culture throughout the clinic, it should be communicated how employees' new behaviors as well as the innovative digital solutions are tied to the organization's overall performance. As a result, institute change in terms of increasing the likelihood of long-term changes will be promoted.

5.3 Limitations

The number of interviewees reflects a limitation. Even if stakeholders from all expert groups were interviewed, the saturation point may not have been reached. This is due to the paper's scope and the limited feedback from potential interviewees.

5.4 Future research

Other perspectives, aside from the B2B sector, may be of interest. Patients' and payers', including employees of health or pension insurers, should be considered as part of future research. In terms of the system shift, the government's viewpoint, along with potential initiatives to support digital investments, should be evaluated. Besides, whether low acceptance or digital affinity is related to labeling age as a barrier to digitalization should be analyzed.

6. Conclusion

The rehabilitation market in Germany has already made progress toward going digital. However, facilities like the Roswithaklinik have not yet realized much of the market's potential. A total of 14 interviews were conducted to investigate how the potential can be exploited and how feasible digital innovations are for psychosomatic rehabilitation. Participating expert groups represented the B2B market, with interviewees including physicians, clinical managers, and employees from digital companies. The results indicated that the potential digitalization incorporates can be realized in a variety of ways. Care delivery processes can be improved as tele-rehabilitation programs can supplement or replace traditional care, and digital documentation systems can boost efficiency. Consequently, not only can costs be reduced, but medical outcomes enhanced. Thus, digitalization holds enormous potential for addressing current and future challenges such as labor shortages, an aging but digitally savvy society, and upcoming pandemics. However, change management is critical to realize digitalization's full potential and to ensure a future of digitally assisted rehabilitation. To successfully manage the impending disruptive transformation processes, it is prudent for the advised clinic to develop a future vision and put it into practice through investments, a solid digitalization strategy, and needs-driven initiatives, because, as Walt Disney has correctly observed:

"Times and conditions change so rapidly that we must keep our aim constantly focused on the future." – Walt Disney

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APPENDIXES

Appendix 1: Market Overview

Focus	Indication	Company (and product)	Country
Process-oriented			
Allocation	/	nubedian GmbH	Germany
Allocation; Discharge	/	recare Deutschland GmbH	Germany
Admission; Discharge	/	Pflegeplatzmanager GmbH	Germany
Patient management	/	m.Doc GmbH	Germany
Documentation	/	apenio GmbH & Co. KG	Germany
Documentation	/	cognote GmbH	Germany
Documentation	/	voize GmbH	Germany
Value-based Pricing	/	Lyfegen Inc.	Switzerland
Full solution	/	Meditec GmbH	Germany
Full solution	/	T-systems International GmbH (REHA.complete)	Germany
Patient management	/	Hospichief UG	Germany
Patient management	/	Menutech GmbH	Germany
Visitor management	/	SWCode UG (Healthident)	Germany
Employee Management	/	Hotelkit GmbH (medikit)	Germany
Employee Management	/	Cliniserve GmbH	Germany
Outcome Measurement	/	HRTBT Medical Solutions GmbH (Heartbeat medical)	Germany
Care-Oriented			
After-Care Tele-Reha	Psychosomatics	Dr. Becker eHealth GmbH (livi-rena)	Germany
After-Care Tele-Reha	Psychosomatics	BINACON GmbH (de-rena)	Germany
After-Care Tele-Reha	Multimodal therapy	GOREHA GmbH (Caspar Health)	Germany

Appendix 2: Interview Guide

Question Type	German	English	Nr.
Introduction			
Narrative question	Bitte stellen Sie sich kurz vor und beschreiben Sie, wo Sie während Ihrer täglichen Arbeit in Kontakt mit Digitalisierung kommen.	Please introduce yourself and describe where you get in touch with digitalization during your work.	1
Narrative question	Wie würden Sie den Versorgungszyklus für Patienten in der	How would you describe the care cycle for patients in	2

	(psychosomatischen) Rehabilitation beschreiben?	(psychosomatic) rehabilitation?	
Narrative question	Bitte beschreiben Sie die größten Herausforderungen, die Sie derzeit in der Reha und Patientenversorgung wahrnehmen.	What are the biggest issues you see when it comes to digitalization?	3
General: Chances and limitations of Digitalization in psychosomatic rehabilitation			
Evaluation question	Bitte beschreiben Sie die Potentiale der Digitalisierung in der psychosomatischen Reha.	Please describe the potentials of digitalization in rehabilitation.	4
Evaluation question	Bitte beschreiben Sie die Limitationen der Digitalisierung in der psychosomatischen Reha.	Please describe the limitations of digital transformation in rehabilitation.	5
Follow-Up Question	Gibt es Unterschiede im Nutzen von Digitalisierung bei den verschiedenen Stufen des Versorgungszyklus (in der psychosomatischen Reha)?	How does digitalization differ across the steps of a psychosomatic rehabilitation patient's care cycle?	5b
Specific: Value-Creation through digital services in psychosomatic rehabilitation			
Evaluation question	Wie kann Digitalisierung die Effizienz in Arbeitsprozessen der Reha beeinflussen?	How can digitalization influence the efficiency in clinical work processes?	6
Evaluation question	Wie kann Digitalisierung Kosten in der Reha beeinflussen?	How can digitalization influence costs in clinical work processes?	7
Evaluation question	Bitte beschreiben Sie den Nutzen von Digitalisierung auf die Behandlungsergebnisse (Patientennutzen).	Please describe what influence digitalization has on the value for patients.	8
Follow-Up Question	Wie unterscheidet sich der Nutzen von Digitalisierung bei verschiedenen Patientengruppen oder Indikationen?	How does the value of digitalization differ between indications?	8a
Evaluation question	Welche Rolle spielen Kooperationen Ihrer Meinung bei der Digitalisierung von Reha-Kliniken?	What role do partnerships play when it comes to digitalization?	9
Outlook of digital psychosomatic rehabilitation			
Evaluation question	Bitte beschreiben Sie die nächsten Schritte im Digitalisierungsprozess, die Sie sich in der psychosomatischen Rehabilitation wünschen.	Please describe the next steps you wish for when it comes to digitalization of psychosomatic rehabilitation.	10
Closing			
Closing Question	Gibt es sonst noch etwas, das Sie zu den angesprochenen Themen sagen möchten?	Is there anything else you want to say regarding the topics discussed?	11

Personal Facts			
Facts	Wie alt sind Sie?	How old are you?	12

Appendix 3: Interviewees

Nr.	Job Position	Company Category	Country	Age
Employees from digital companies				
1	Customer Success Manager	Aftercare-Tele-Rehabilitation	Germany	29
2	CPO & Medical Affairs	Patient Portal	Germany	61
3	CFO & Co-Founder	Value-based pricing	Switzerland	37
4	CEO	Ressource Management	Germany	65
5	CoS & CEO Assistant	Admission and discharge management	Germany	30
Physicians				
6	Physician & Head of Therapeutic Services	Rehabilitation Center	Germany	41
7	Physician & Head of Therapeutic Services	Rehabilitation Center	Germany	39
8	Chief Physician	Rehabilitation Center	Germany	56
9	Physician & Chief Medical Officer	Aftercare-Tele-Rehabilitation	Germany	50
Managers of rehabilitation clinics				
10	CEO	Rehabilitation Centers	Germany	54
11	Clinical Manager	Rehabilitation Center	Germany	30
12	Clinical Manager	Rehabilitation Center	Germany	57
13	Care Department Manager	Rehabilitation Center	Germany	50
14	Investment Director	Rehabilitation Centers	Germany	34