

# Navigating Germany's Digital Health Ecosystem: Insights from a Health Insurance Industry Expert

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**Abstract:** Non-communicable diseases (NCDs) account for 73% of the global mortality in 2017, with an estimated financial impact of up to US\$ 47 trillion by 2030. This escalating prevalence poses a significant challenge to healthcare systems and insurers, particularly in the context of an aging population with multiple NCDs. Digital health technologies (DHTs) have emerged as a potential solution, offering scalability, accessibility, and cost-effectiveness. However, integrating DHTs into healthcare services remains a complex task. We conducted a semi-structured interview with an industry expert from Germany's largest statutory health insurance group to explore this issue and derive first hypothesis for improvement. Results indicate seven key insights into Germany's dynamic digital health ecosystem and offer critical reflections for all stakeholders, providing a foundation for further discussions and actions in this transformative field.


## 1 INTRODUCTION


As of 2017, non-communicable diseases (NCDs) such as cancer, diabetes, cardiovascular diseases, chronic respiratory diseases, including common mental disorders (CMDs) accounted for a staggering 73% of the global mortality (Roth et al., 2018) with an estimated global financial impact of up to US\$ 47 trillion between 2010 and 2030 (World Health Organization, 2021). As older adults are increasingly affected by multiple NCDs, health expenses can escalate dramatically with each additional condition (Hajat & Stein, 2018). This is due to the growing complexity of management, which demands health resources and expertise from various disciplines (Newman, Tong, Levine, & Kishore, 2020). This poses a significant health and economic challenge for healthcare systems worldwide, particularly for health insurance companies. This is further exacerbated given the aftermath of COVID-19 where health insurers already face tight budgets.

In light of this, the question arises whether digital health technologies (DHTs) are a fitting approach to alleviate the health and economic impact of NCDs. DHTs thereby refer to digital solutions that leverage information and communication technologies, enabling medical professionals and caregivers to customize and extend personalized, long-term treatments to individuals (Kowatsch & Fleisch, 2021). By leveraging technology, DHTs are scalable, constantly accessible, less stigmatizing, cost-effective, and culturally adaptable (Jacobson, Quist, Lee, & Marsch, 2023). As such, they promise to overcome many traditional barriers to healthcare and are poised to transform healthcare delivery substantially (Cummings, Allen, Clennon, Ji, & Druss, 2017; Fleisch, 2021; Jacobson et al., 2023).

To this end, there is an unprecedented surge of interest and activity within the digital health community, and investments in DHTs have risen substantially in recent years (Jacobson et al., 2023). Consequently, the DHT landscape has witnessed remarkable growth in recent years, with a tremendous

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growth of technology start-ups dedicated to this field and a projected global market valuation of US\$ 56 billion in 2025 (Insider Intelligence, 2022). Furthermore, there is a growing spectrum of methods to disseminate DHTs to individuals. These methods span from healthcare provider (HCPs) offering “apps on prescription”, also called digital therapeutics (Fürstenau, Gersch, & Schreiter, 2023), to activation codes from payors, employers, or pharmacies (Jacobson et al., 2023). Additionally, several countries have established comprehensive national coverage frameworks for DHTs (e.g., DVG in Germany) (Essén et al., 2022; Fürstenau et al., 2023).

However, there is currently a lack of established frameworks for integrating DHTs into healthcare delivery and the overall healthcare system (Kay-Lambkin, Heinsch, & Sampson, 2023). Also, studies have shown that HCPs underutilize DHTs in their clinical practice (Batterham et al., 2015). As such, a fundamental paradigm shift in the healthcare system is required to integrate DHTs successfully and sustainably into healthcare delivery and unleash DHTs’ full potential in combatting the rising burden of NCDs.

To this end, we conducted a semi-structured expert interview to gain insights into navigating Germany’s digital health ecosystem. With “digital health ecosystem” we hereby refer to the complex and multifaceted interplay of the health industry, regulations, and technology (e.g., infrastructure, components, devices) to enable the delivery of (digital) health services. The interview was conducted online and lasted approximately 90 minutes. We interviewed the CEO of a digital hub (set up as a corporate startup) of Germany’s largest health insurance group. The insurers cover approximately 27 million individuals, nearly one-third of the population and over 45% of care-dependent individuals in Germany. With a market share of 37 percent, they spend roughly 271 million euros every day for the healthcare of all insured individuals. The interview was structured along the three dimensions *status quo*, *business models and ecosystems*, and *required (regulatory) changes* to get a holistic perspective on navigating the German digital health ecosystem both today and in the future. The interview reflects the expert’s opinion based on his extensive experience in the healthcare industry. The views expressed are his and do not speak for the health insurance group he is currently employed at.

The themes explored during the interview were synthesized into seven key insights, which are elaborated in Chapter 2. It is important to note that all content in Chapter 2 is derived directly from the

original interview data and thus reflect the interviewee’s perspective. Lastly, we discuss and contextualize the insights generated from the interview within the broader context of relevant research to draw our conclusions.

## 2 SEVEN KEY INSIGHTS FOR NAVIGATING GERMANY’S DIGITAL HEALTH ECOSYSTEM

The expert interview resulted in seven key insights that will be elaborated in the following. The insights derived represent the expert’s opinion based on his substantial experience in the health care industry and do not represent the opinion of the health insurance group.

### 2.1 For a Payor, It Is not Enough to Know a DHT Is Overall Effective

While the Digital Care Act of 2019 introduced the “app on prescription”, also known as DiGA (“*Digitale Gesundheitsanwendung*”) and has spurred innovation and dissemination of DHTs, their integration into Germany’s healthcare system still faces challenges.

Direct-to-patient solutions manifest notable activity, particularly in female health, diabetes, and overall well-being. However, from a statutory health insurance (SHI) standpoint, DHTs are yet to take centre stage, both in availability and adoption. Furthermore, current solutions are too often in their infancy for a systematic application.

While some within the SHI community see DHTs as transformative and a vital part of the future healthcare system, initiating flagship projects and supporting the dissemination, others still strongly question the overall effectiveness and, more importantly, the cost efficiency of DHTs. The divide widens regarding prevention versus treatment, where the potential user base expands significantly.

In a post-COVID-19 landscape where insurers face tight budgets, critics emphasize short-term cost increases associated with DHTs. Within DiGA guidelines, a clinical trial must be conducted to prove that a DiGA is better than not using it, referring to a positive supply effect. However, from a SHI cost perspective, DHTs must surpass mere effectiveness and provide a comparative advantage over conventional approaches.

Since health service expenditures are a multitude of administrative costs, even a marginal cost lever could have tremendous positive and negative impacts. As such, DHTs could play a significant part for SHI in the future if they effectively succeed in proving such comparative advantage over traditional approaches. Until then, DHTs are likely to continue to divide the SHI community into enthusiasts and critics.

## **2.2 A Battle for Attention Will Limit Successful Standalone B2C Solutions**

Clear strategic approaches are essential for effective DHT customer outreach, characterized by two primary dissemination channels: direct-to-customer (B2C) and healthcare provider-to-customer (B2B2C).

Direct-to-customer solutions are directly sold to consumers who pay out of pocket for the respective service (e.g., cycle trackers within the context of female health). Although lucrative, this approach can be extremely difficult, as the willingness to pay additional health-related services beyond existing health insurance coverage is extremely low. More importantly, with increasing number of DHTs entering the market, attention among potential users saturates quickly. Consequently, the pressure for individual DHTs to deliver distinct and substantial benefits is extremely high to facilitate successful scalability. Thus, there is expected to be a finite window for additional successful standalone solutions before attention competition hampers further growth.

With B2B2C approaches, HCPs such as physicians are key actors, as they prescribe or recommend a digital therapeutic or preventive care intervention, ideally paid for by the patients' health insurance. With HCPs as gatekeepers, it is pivotal to gain their trust and incentivize the prescription and recommendations of DHTs. Furthermore, seamless integration within the healthcare provision process is critical. As this facet is often underemphasized, collected DHT data runs the risk of remaining underutilized and falling short of its full potential.

## **2.3 Digital Ecosystems Are Pivotal for Scaling DHTs Effectively**

There currently exists a well-functioning health ecosystem in Germany – the main challenge is that it is predominantly analogue. This analogue ecosystem systematically hinders successful scaling of DHTs as standalone solutions coexist in silos but are not

sufficiently integrated with each other and the existing ecosystem. As such, a digital health ecosystem is instrumental for effective DHT scaling. A well-functioning digital ecosystem that rivals or surpasses the incumbent analogue structure could potentially replace the HCPs' role as a gatekeeper and allow for new protagonists to take the stage: If the first point of contact for consumers is no longer the HCP but, for example, a DHT that manages the patient journey end to end, that could expedite dissemination of DHTs substantially.

However, while the goal of a fully digital health ecosystem is admirable, to build and establish a successful digital health ecosystem is incredibly difficult and, as of today, yet to be seen successfully in action.

## **2.4 Shis in Prime Position to Take Centre Stage in a Digital Health Ecosystem as Policyholder Advocates**

As with all ecosystems, only a few providers will prevail, resulting in extremely high-risk capital for everyone attempting.

Looking at the current landscape, there are three broad alternatives. A seasoned external player (e.g., Apple, Google) enters the healthcare arena, leveraging technological prowess and potential interoperability with existing devices such as wearables that will generate sufficient pull for other digital health players. Alternatively, a highly successful digital health use case exerts a significant pull, propelling ecosystem participation. For example, a successful digital symptom checker or appointment management system may represent an entry point for an end-to-end digital health journey. Finally, established entities like SHIs or hospitals could leverage their significant industry expertise and established position in the analogue ecosystem.

While SHI are unlikely to be successful in independently building and orchestrating a complex digital health ecosystem due to insufficient capabilities and resources, they are in a prime position. SHIs have a unique monetary incentive to keep policyholders healthy and ensure efficient treatment. In the broadest sense, SHI can be seen as non-profit organizations. As such, they are ideally situated to orchestrate a digital health ecosystem with policyholders' best interests at heart. Even though policyholders might not always realize it, SHI's role as advocates for them is paramount.

In the end, however, having a well-functioning digital ecosystem by any participant is preferable to having nothing at all.

## 2.5 Data Protection Needs a More Balanced Risk Approach

An important task in implementing a digital health ecosystem in Germany lies in the stringent protection of health-related data. However, risk evaluation approaches that focus mostly, if not solely, on data protection dominate presently in Germany. This often neglects or at least underemphasises other potential risks. To setup a successful digital health ecosystem a more balanced approach is essential. This includes considering other risks such as falling behind in digitalization efforts and not being able to afford the current healthcare system in future as well as considering benefits like enhanced medication cross-effect analysis. Striking a comprehensive risk assessment is crucial, yet there is currently no well-functioning system in place for weighing risks adequately and holistically.

## 2.6 Enabling Genuine MVPs Rather than Fixating on Every Detail Is Crucial

Presently, digital solutions on an institutional level are designed as convoluted minimum viable products (MVPs), intended for a broad audience but offering minimal value (see, for example, the German electronic health record). Regulatory specifications and requirements are often delayed or unaddressed due to the urgency of accommodating all exceptions. A shift towards authentic MVPs, initially benefiting a smaller demographic but exhibiting significant utility, can expedite innovation and digital progress. This approach fosters rapid iteration, learning, and evolution, with broader applicability and exception inclusion following organically. Furthermore, sustainability in digital strategies and regulations demands increased predictability. While periodic introspection is imperative, pre-empting new regulations before comprehensively assessing prior ones risks stifling progress. Augmented predictability empowers players, whether established entities or startups, to innovate, design, and develop solutions with confidence in their long-term viability. This stability is needed in Germany to build an attractive digital health ecosystem.

## 2.7 Overall Success Hinges from Equal Participation from all

The strength of an ecosystem relies on every participant's equitable contribution. Ideally, each entity is intrinsically or extrinsically motivated to fulfil its role. When intrinsic motivation falters, impartial sanctions must be enforced consistently, even if not politically expedient. While successful precedent exists in industries such as finance and banking, HCPs' influential role has historically led to reluctance to impose sanctions. This imbalance needs to be addressed to establish a successful digital health ecosystem in Germany.

## 3 CONCLUSIONS

The escalating prevalence of NCDs poses a significant challenge to healthcare systems globally and health insurers particularly. As such, innovative approaches to rethink current healthcare delivery are imperative. DHTs have emerged as a potential solution, promising scalability, accessibility, and cost-effectiveness. However, integrating DHTs successfully and sustainably into healthcare services remains complex, and their true potential is yet to be uncovered. While further interviews would be helpful to get a more robust perspective, the expert's insights already offer invaluable perspectives on navigating Germany's digital health ecosystem and provide a foundation for further discussions and actions in this transformative field.

The divide within the SHI community regarding the effectiveness and cost efficiency of DHTs mirrors the need for further research and evidence to demonstrate their comparative advantage over conventional approaches. While numerous studies have proven the overall effectiveness of DHTs, both in practice (Krämer, Köhne-Volland, Schumacher, & Köhler, 2022; Pöttgen et al., 2018; Twomey, O'Reilly, Bültmann, & Meyer, 2020) and in research (e.g., Deady et al., 2017), the short-term cost concerns, especially in the wake of COVID-19, highlight the importance of proving the economic benefits of DHTs.

The necessity of a well-functioning digital ecosystem is pivotal for effective DHT scaling, surpassing the limitations of the current analogue system. Until then, successful standalone solutions will not only be rare but due to their siloed nature will fall short of their full potential. Similarly, B2B2C solutions will continue to be sporadically integrated into healthcare delivery, underutilizing the collected

data, and failing to unlock all the potential cost efficiencies and healthcare delivery effectiveness. This is in line with previous work that has highlighted the limited impact of sophisticated DHTs in a fragmented healthcare ecosystem (Abernethy et al., 2022). The untapped potential of DHTs could impact patient outcomes even further: in a well-designed digital health ecosystem, DHTs have the potential to prevent, mitigate and reduce disparities in access and care delivery (e.g., Craig et al., 2020). As such, the need for a well-functioning digital health ecosystem is further highlighted. However, building and establishing such an ecosystem is a formidable challenge that requires collective efforts from various stakeholders. This goes hand in hand with achieving equilibrium among all participants in the digital health ecosystem as a crucial success factor. Addressing the historic imbalance in the influence of healthcare providers is imperative, as impartial sanctions and consistent enforcement are necessary for the ecosystem's sustainable growth. Future work should focus on outlining and evaluating concrete steps on how to promote participation from all stakeholders and motivate shared incentives to build this integrated system. This could include, but is not limited to, exploring the implications and benefits of blended care (e.g., Keller et al., 2023; Kowatsch et al., 2021).

Finally, the significance of balanced data protection measures is underscored, necessitating a comprehensive risk assessment framework that considers both privacy concerns and the benefits of enhanced data analysis. This is in line with previous works recommending to balance protecting privacy and realizing the benefits from access to health data (Borgesius, Gray, & van Eechoud, 2016; Lane & Schur, 2010; Wan et al., 2022). Finding this balance is crucial if Germany is serious about establishing a well-functioning digital health ecosystem.

In conclusion, navigating Germany's digital health ecosystem requires a multifaceted approach that considers the perspectives of SHIs, healthcare providers, regulators, and patients. Balancing cost concerns, data protection, and innovation will be pivotal in realizing the full potential of digital health technologies in combatting the rising burden of non-communicable diseases. As the healthcare ecosystem continues to evolve, embracing digital solutions will be paramount in shaping a more efficient, accessible, and effective healthcare system for the future.

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## CONFLICT OF INTERESTS

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