

Modeling Value Delivery Architecture for Digital Health Startups: A Strategic Framework for Business Model Innovation

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Abstract—The success of digital health startups in bringing innovative solutions to market depends largely on their ability to navigate complex stakeholder ecosystems and identify appropriate value propositions. This study employs Value Delivery Architecture Modeling (VDAM) to examine stakeholder roles and value creation networks, offering a structured approach to understanding the ecosystem dynamics of digital health startups. Through a systematic literature review, a broad range of actors within the digital health domain were identified. By abstracting these findings, we conceptualized 12 meta-roles and 25 individual roles that these actors can assume. These roles were then mapped into a Value Proposition Exchange Diagram, a hierarchical framework that places the digital health solution provider meta-role at the center. Supporting meta-roles are positioned on the left, foundational providing meta-roles on the right, supervising and competitive meta-roles at the top, and the meta-roles for users, payers, and intermediaries at the bottom. This structured layout enhances clarity in multi-stakeholder environments, particularly for startups. Additionally, the framework highlights that a single actor can take on multiple roles, reflecting the complexity and diversity of the digital health ecosystem. Unlike existing models, which often overlook startup-specific dynamics and restrict actors to a single role, our approach offers deeper insights into the intricate value chains in which digital health startups operate. By clarifying stakeholder relationships and value exchanges, our model enables startups to better understand their position within the ecosystem and the roles of other participants. Moreover, it facilitates the recognition and development of innovative business models.

Keywords—digital health, entrepreneurship, stakeholders, actors, roles, value exchange, ecosystem

I. INTRODUCTION

Digitalization is increasingly impacting the healthcare industry and is promising in many ways. These digital technologies can support various areas of healthcare delivery, for example supporting in administration, communication, diagnosis, treatment, and monitoring [1]. Startups play a unique role in the digitalization. Although they face challenges due to their liability of smallness [2] and newness [3], studies propose that they could utilize their structural

flexibility to explore new market segments and transform established business models [4].

However, the healthcare sector is complex, regulated, and fragmented [5]. Effective coordination and communication among healthcare professionals, patients, informal caregivers, end users, and other stakeholders are essential when introducing eHealth technologies into the healthcare system [6]. Therefore, it is essential for startups in digital health to understand the stakeholders interests and the value proposition exchange with each of them. While previous work has systematically mapped the value exchange within stakeholders of the digital health ecosystem [7], [8], [9], these works include little startup context. Other work focuses on specific small and medium-sized enterprises [10] but includes few individual stakeholders beyond the ones required for market access. Therefore, the central actors of these studies vary depending on the specific focus. As a result, a research gap exists concerning the digital health startup ecosystems, the roles that actors within this ecosystem take, and how digital health startups can be supported to identify important stakeholders and value propositions. This could ultimately lead to improved business models.

To address gaps in current research, our work aims to map actors, the roles they take, and their interactions in the digital health startup ecosystem. The findings are intended to systematically support digital health startups and researchers by offering valuable orientation and actionable insights. To achieve the objectives, this work seeks to address the following research questions (RQs):

- RQ1: Who are the actors within the digital health startup ecosystem, and which roles do they take?
- RQ2: How can the value propositions that these roles exchange be mapped within the digital health startup ecosystem?

The subsequent section describes the relation to existing theories and work, followed by a presentation of the scientific methods used to investigate the research questions. Afterwards, the results obtained through the study are presented. The discussion section follows and provides an in-depth exploration of the results. The work concludes with a summary of the essential findings and their implications.

II. RELATION TO EXISTING THEORIES AND WORK

Digital health generally refers to the use of digital technologies in healthcare. It encompasses a range of related terms, including telehealth, telemedicine and mobile health (mHealth) [11].

Entrepreneurship in healthcare is defined as the process of building, launching, and scaling businesses that develop innovative technologies, products, and services to generate value for patients and other stakeholders, such as healthcare professionals, hospitals, and insurance companies [12]. In the context of value generation, value propositions are the statements of benefits that firms deliver to their external and internal constituencies [13]. For startups, it can be a challenge to identify viable value propositions for specific customer needs while maintaining a competitive edge. One of the most famous tools for determining a value proposition is the Value Proposition Canvas [14]. Several advantages exist of taking a rigid conceptual and formal approach for describing a firm's offer, including better communication, easier understanding, and improved comparison with competitors [15]. Additionally, a value proposition is a critical component of every business model [16], which is the broader “design or architecture of the value creation, delivery, and capture mechanisms employed” by a company [17].

Stakeholders are described as “any group or individual who is affected by or can affect the achievement of an organization's objectives” [18]. Freeman [18] states that the support of all stakeholders is important for a firm's success. Different kinds of stakeholder models exist [18], [19], which can broadly be differentiated through how stakeholders are organized and how connections between them are established. Building on the concept of stakeholders, actors can be defined as agents capable of assuming the roles of complementors and consumers who undertake activities and produce various offerings [20]. Actors in this work are therefore distinguished from stakeholders by their direct involvement in the ecosystem's activities.

Previous work exists that maps the value exchange among the stakeholders of the digital health ecosystem. For instance, Gleiss et al. [7] investigated the influence of digital platforms on value creation in the healthcare market with an emphasis on Google, Apple, Facebook, Amazon, and Microsoft. Giger et al. [9] map the value ecosystem of digital health technologies for diabetes, providing a detailed analysis of the roles of this specific segment. Therefore, these studies do not incorporate the important elements from a digital health startup perspective. Janssen et al. [10] focus more on innovative pathways of small and medium-sized enterprises in digital health but do not incorporate the value exchange perspective. Therefore, little research has combined roles in the digital health startup ecosystem with their value exchange to provide a framework for startups that supports business model innovation.

III. RESEARCH APPROACH

We employ the Value Delivery Architecture Modeling (VDAM) approach [21], [22] as a guiding methodology. This methodology, as shown in Figure 1, establishes a clear comprehension of value creation and business opportunities. VDAM is rooted in the value delivery modeling language (VDML) and semi-formal ontology design [23]. As a first step of the VDAM, we conducted a market analysis through a

systematic literature review. From these insights, we identified roles that various actors can assume and the value propositions that these roles exchange. These are then visualized in a Value Proposition Exchange Diagram (VPED). The VPED diagram, therefore, depicts intricate value-creation processes [21]. By visualizing value creation and delivery between roles, VDAM and the VPED enable analysis, evaluation, and design of business models [21].

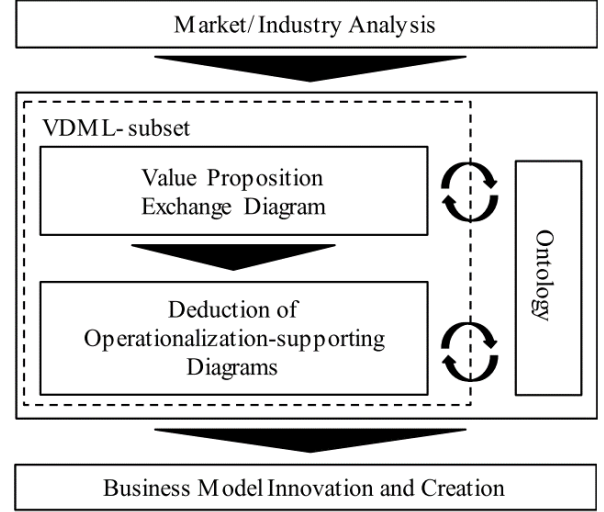


Fig. 1. Value Delivery Architecture Modelling Approach [21].

A. Market Analysis

As a first step of the VDAM process, the market analysis, we conducted a systematic literature review following the steps of Kraus et al. [24] to ensure evidence-based decision-making and transparent results. Initially, we familiarized ourselves with the stakeholder literature of digital health startups. Based on this knowledge, we developed a comprehensive search string using relevant terminology from three concepts: digital health, stakeholders, value exchange, and startups. The search string was then applied to reputable scientific search databases, including Web of Science, Scopus, and PubMed. After removing duplicate papers, our search yielded a total of 2,311 potential papers. To ensure the inclusion of only high-quality literature, we established clear inclusion criteria. For instance, studies must be peer-reviewed, be written in English, and address stakeholders and roles within the digital health startup domain. Following the screening of records, we ultimately included 29 papers in our dataset. Figure 2 visually represents this rigorous selection process. Following the literature selection, we screened the literature to identify actors affiliated with digital health startups. All actors were extracted. In case an actor was not related to digital health startups in any form, it was omitted. Following a thematic analysis [25], similar actors were aggregated into actor groups.

B. Value Proposition Exchange Diagram

Among the various tools in the VDML subset, the VPED has a central role in illustrating value exchanges between roles and can, therefore, support the design, analysis, and evaluation of business models [21].

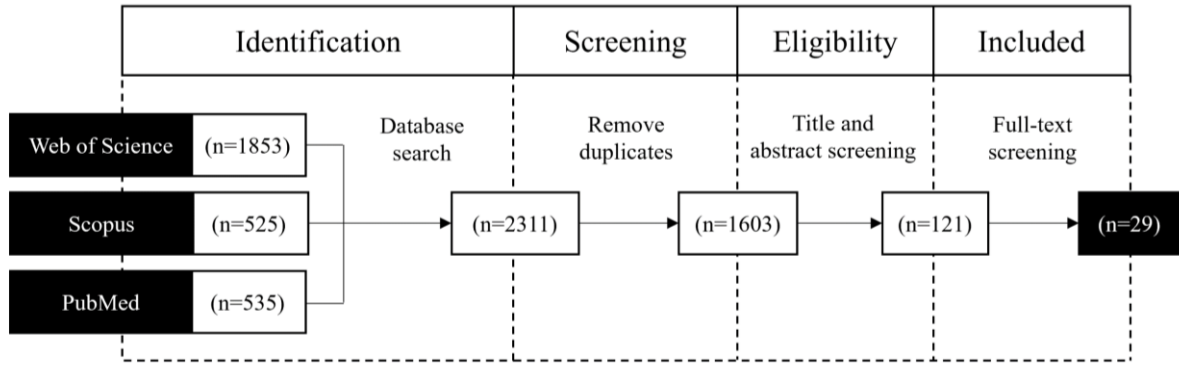


Fig. 2. Literature selection process with the steps of identification, screening, eligibility and inclusion, visualization adapted from [1].

The VPED proposed by Metzger et al. [21] consists of three primary components: roles (R), value propositions (VP), and connectors (C). In this framework, roles are defined as “abstract elements describing patterns of behavior or capabilities” [21]. Value propositions describe both tangible and intangible values, while connectors serve as associations that connect roles with a value proposition or vice versa [21]. As a result, Metzger et al. [21] state that the diagram can be conceptualized as a 3-tuple (R, VP, C). Expanding on these concepts, we modified the VPED design of Metzger et al. [21] by integrating design elements of the e3-value, a structured modeling approach that illustrates and evaluates value exchanges within business models [26] and complex multi-actor value networks [27]. The extended version of the e3-value [28] allows for integrating roles similar to VDAM. Similar roles can be aggregated into meta-roles [6], which represent higher-level abstractions encompassing multiple roles that share common functions or behaviors. This abstraction allows for better generalizability as recurring patterns across different roles are summarized. It also enhances visual clarity as it can reduce the number of exchanged value propositions and reduce cognitive complexity, as not all individual roles must be assessed at once, but rather can be assessed through the meta-roles. For this reason, the VPED elements of Metzger et al. [21] were enhanced with the extended e3-value [7], [28], resulting in the conceptual elements of the VPED shown in Figure 3.

Based on the identified actors in the first step, the subsequent step involved abstracting actors into roles and meta-roles to construct a VPED. This process involved analyzing the actors

and the value propositions they exchanged with one another. To facilitate this analysis, we systematically assessed the stakeholders and considered potential roles they might fulfill. An initial list of roles was created, which was further expanded to include meta-roles. These meta-roles group similar roles, enabling a higher level of generalization and specification. Following the compilation of the initial list of roles and meta-roles, the findings were reviewed and discussed with the research team. Through multiple iterations, a finalized set of roles and meta-roles was established. This iterative process ensured that the roles were not solely theoretical but were also informed by practical insights, applying the researcher’s insights into the current practices of digital health startups and their ecosystem.

Using the roles, meta-roles, and the value propositions exchanged, a VPED was developed. In this diagram, roles and meta-roles are connected based on the value propositions they provide. This concluded the VDAM approach in the scope of this work. The potential for business model innovation and creation is discussed through a use case for a digital therapeutic startup.

IV. FINDINGS

The findings present the actors and actor groups that have been identified, followed by the resulting VPED and an exemplary use case. For each actor group, the number of actors across the selected papers was counted. Actor groups are reported starting with those that have the most actors and ending with the least.

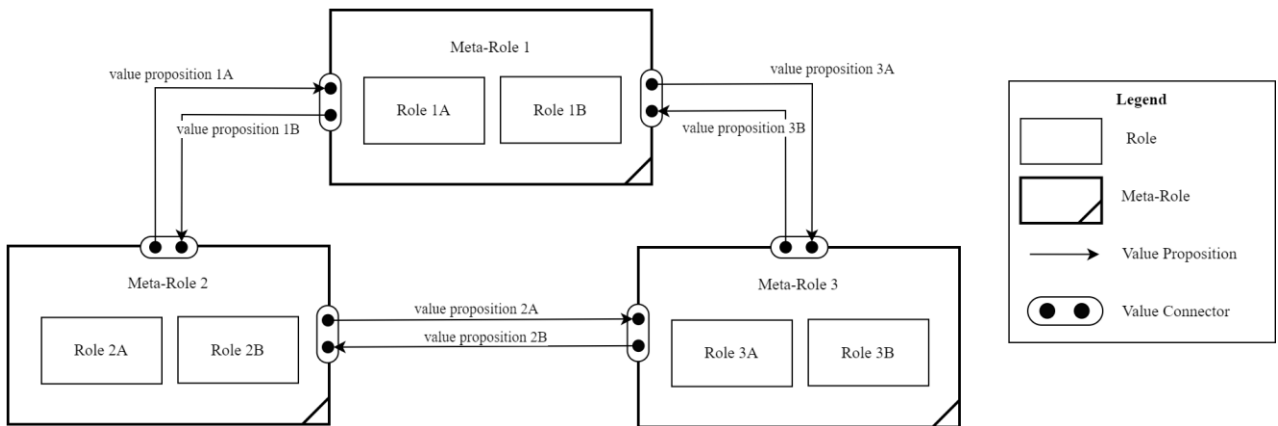


Fig. 3. Conceptual elements of the Value Proposition Exchange Diagram based on [21] extended with elements from [7], [28].

A. Actors in the Digital Health Startup Ecosystem

The most commonly referenced actor group consists of **healthcare providers** [29], [30], [31], highlighting their central role in the ecosystem. Within this category, healthcare professionals are cited [6], [29], which include physicians [32], [33], [34], such as dentists [35] and neurologists [30]. Other professionals include nurses, physiotherapists [30], and caregivers [36]. Beyond individual professionals, institutions such as hospitals [37], [38], university hospitals [34], clinics [8], and laboratories [35] are also discussed in the literature. Within these facilities, healthcare managers [39] and non-clinical staff [40] play an indirect but essential role in delivering healthcare. In addition to inpatient care, outpatient medical service providers are also noted [7].

Technology companies are another frequently mentioned group [33], [38]. These include medical device manufacturers [7], cloud service providers [8], platform ecosystem providers [30], and sensor device manufacturers [30]. Some studies mention specific technology companies as examples [7]. Additionally, employees within these companies, such as developers [36] and computer scientists [41], are mentioned.

Patients and private individuals form another key actor group. Patients are most prominently mentioned within this group [6], [42], [43], but other individuals, such as aging persons and those with complex needs, are also included [29]. In the scope of this group, family members [30] and citizens in general [36] are actors that are also mentioned.

Research institutions [8] represent another important group, encompassing universities [36] and medical institutes [34]. Within these institutions, academics [33], researchers [39], and trial managers [41] are mentioned.

Governments and their institutions [31], [44] play a significant role in overseeing and regulating healthcare markets. Notable mentions include the Federal Ministry of Health [45] and the Federal Institute of Drugs and Medical Devices [45] as examples from the German ecosystem. Additionally, the European Commission is mentioned [46].

Startups are another frequently discussed group, comprising digital health startups [33] and, more broadly, entrepreneurs, inventors [29], and innovators [39].

Professional and patient associations, though mentioned less frequently, are important in the healthcare system. These include patient organizations and advocate groups [29] as well as professional associations of medical specialties [10], such as pharmacist societies [34]. Additionally, associations related to technology, such as health informatics communities, are recognized [35].

Health insurers form another significant actor group [33], [7]. Here different kinds of health insurers exist, including public and private ones.

Experts from various domains also appear in discussions, including lawyers [6], consulting firms [46], technology experts, and health economists [41]. Additionally, incubators [36] and similar entities play essential roles within the startup ecosystem.

Beyond technology companies that provide medical technologies, **pharmaceutical product providers** are key players. This group includes pharmaceutical companies [37], pharmacies [35], and pharmacists [47].

Legal authorities, distinct from government institutions, ensure compliance with laws. These include certifying authorities [48]. Ethic committees, particularly relevant in digital health study execution, are also mentioned [30], though less prominently.

Investors form another crucial group, frequently mentioned in several studies [42], [39]. Specific investor types include business angels and venture capitalists among others.

Intergovernmental and non-governmental organizations were identified as an additional actor group. Examples include the World Health Organization [6] and voluntary organizations, but also foundations [49].

Finally, less frequently mentioned actor groups include municipalities [50], suppliers [7], and distributors [48]. Lastly, the media is noted in a few studies [50], [29].

B. Value Proposition Exchange Diagram

Based on the previously identified actors, 12 meta-roles were conceptualized, consisting of 25 specific roles. Within the scope of the VDAM approach, actors can assume one or multiple roles. These roles, along with their respective value propositions, were then integrated into the resulting VPED, which is shown in Figure 4. In the diagram, the focus on exchanged value propositions is from the perspective of the digital health solution provider, omitting those that do not directly align with the operational and strategic priorities of startups.

The **digital health solution provider** is central in the VPED and coordinates value creation among various roles. This is also reflected in the highest number of value connectors for this meta-role. If effectively managed, **digital health solution providers** can consolidate value-creation efforts to ultimately improve efficiency for healthcare providers, patients, and the broader healthcare system. For many roles, the **digital health solution provider** offers monetary value in order to benefit from resources and partnerships with other stakeholders, with the ultimate goal of bundling its resources to deliver digital health technology to **users** and **payers**, thereby improving healthcare delivery. Within this meta-role, two roles were identified: medical device provider and non-medical device provider. For a medical device provider, the value proposition often focuses on specific medical conditions and clinical applications, while for non-medical devices, it is primarily about administrative support, general well-being and non-clinical applications. Examples of actors that can take on the **digital health solution provider** meta-role include startups that build wellness and lifestyle apps, telemedicine applications (as non-medical device provider) or digital therapeutics, disease monitoring software, and radiological imaging software (as medical device provider).

At the bottom, **users** (professional or nonprofessional users), **payers** (direct or reimbursement-oriented payer), and **intermediaries** (educator and advocate or distributor) are positioned as fundamental meta-roles.

Potential **users** of digital health technology can include healthcare professionals, patients, caregivers, research institutions, health insurers, or pharmaceutical companies. Understanding their needs, values, and concerns is crucial for adoption, requiring a user-centric design approach. While non-professional **users** often prioritize health improvements and affordability, professional **users** might seek workflow integration and efficiency.

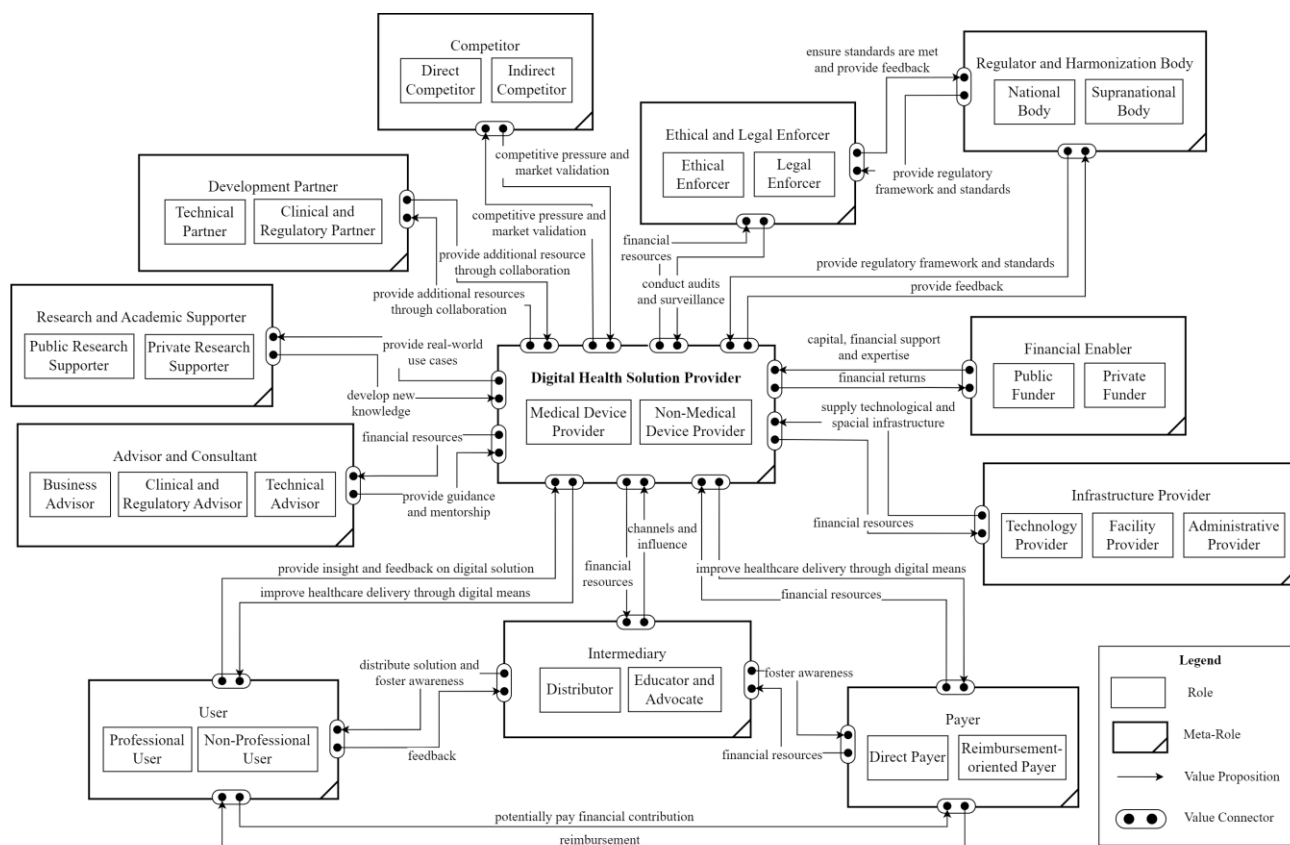


Fig. 4. Value Proposition Exchange Diagram for the digital health startup ecosystem.

Payers may or may not be distinct from **users**. The two roles within this meta-role underline the potential for self-payment or reimbursement through a health insurer. Actors within this meta-role can include healthcare professionals, pharmaceutical companies, patients, hospitals, private companies in the scope of occupational health and health insurers, each with different priorities. **Digital health solution providers** must balance financial feasibility with user adoption, often needing to align payer incentives with user needs.

Intermediaries play a facilitative meta-role, with roles that include educator and advocate, and distributor. Educator and advocate enhance public awareness and policy support, while distributors help with market access and supply chain integration. Examples of actors within the intermediaries include digital platform providers, social media platforms, physicians, patient advocacy groups, pharmaceutical companies, and health insurers.

To the left of the diagram are the meta-roles of **advisor and consultant** (business, clinical and regulatory, or technical advisors), **research and academic support** (public or private supporters), and **development partner** (technical or clinical and regulatory partner). Clinical, technical, and business advisors under the meta-role of **advisors and consultants** offer expertise to startups. Examples include consultants from various areas, incubators, accelerators, and physicians. **Research and academic supporters** drive innovation and create new knowledge that **digital health solution providers** can potentially leverage. Examples include universities and research institutions. **Development partners** can contribute market insights, technical experience, or regulatory

knowledge. Partnering can take various forms, such as integrating an existing solution into the product or conducting clinical trials. Examples of actors within this role include pharmaceutical companies, technology companies, and university hospitals.

The **competitor** meta-role (direct or indirect competitor) creates competitive pressure and potentially provides some market validation with their solution. For a **digital health solution provider**, it is essential to position themselves against **competitors**.

At the top, the **regulator and harmonization body** (national or supranational body) and **ethical and legal enforcer** (ethical or legal enforcer) meta-roles exert authority and oversight. Regulators establish policies that impact digital health technologies at national and supranational levels or create standards that influence various business activities, while legal enforcers check adherence to regulations. Examples of **regulator and harmonization bodies** include governments, standard organizations, and physician associations. Examples of **ethical and legal enforcers** include ethical committees for clinical studies, notified bodies for the approval of medical devices, local authorities for compliance checks, or potentially even courts.

On the right **financial enablers** are positioned that support **digital health solution provider** with capital and financial resources, with roles including public funders and private funders. Examples of actors include public banks, angel investors, venture capital firms, or the government.

Finally, also to the right, **infrastructure providers** offer support by providing technological, facility or administrative

external sales teams, to raise awareness among physicians and health insurers. Physicians who prescribe the solution could be categorized within the distributor role. App stores may serve as a key distribution channel, ensuring accessibility for users.

The startup seeks to establish partnerships with product development and technical experts. A critical collaboration would involve working with a university hospital to facilitate patient access, enabling the execution of clinical studies. The solution is expected to build on prior research focused on addressing dementia risk factors to support prevention and delay disease onset.

To achieve regulatory approval as a medical device, the venture must engage with ethical and legal enforcers to ensure compliance and adherence to ethical standards. Early consultation with a notified body would be necessary, as the medical device's risk class is projected to exceed class I, requiring CE-marking with a notified body. Collaboration with German authorities, such as the Federal Institute for Drugs and Medical Devices, will also be crucial to securing reimbursement as a digital health application (DiGA), which requires meeting clinical efficacy, data protection, and interoperability standards. Ongoing compliance with German and European Union regulations would be essential.

For financial sustainability, the startup plans to seek initial funding through the German government's EXIST grant and other public funding opportunities, potentially securing office space at the university during its early stages. In later phases, venture capital investment could be pursued to support further growth.

By leveraging the VPED, the digital health startup aims to strategically identify key collaborations, funding sources, and other actors, allowing it to position itself effectively within the digital health ecosystem.

V. DISCUSSION

This study examines the broad range of actors within the ecosystem of digital health startups, which led to the identification of 25 roles and 12 meta-roles to describe the value exchange within the ecosystem of digital health startups. Thereby, we could answer the first research question and show that a multitude of actors exist, which were generalized into 25 roles that these actors can take. A VPED has been developed to map the value proposition exchange among meta-roles and roles. The VPED was derived from understanding actor groups, which were then abstracted into roles and meta-roles. This framework enables startups to position themselves strategically and identify relevant stakeholders. At the center of the diagram is the digital health solution provider, reflecting the primary focus of this study on digital health startups. Positioning the solution provider at the center is logical, as it illustrates how inputs from various roles converge and are transformed into comprehensive healthcare solutions. By incorporating inputs such as feedback, advice, guidelines, and compliance with laws and regulations, engaging in partnerships, and acquiring necessary resources, the digital health solution provider can develop solutions that meet the needs of both professional and non-professional users. Through this, we answered the second research question.

A strength of the diagram developed is its flexibility. The developed VPED highlights the possibility that different

actors can be associated with multiple roles. Depending on the role taken by a digital health startup, a unique set of other roles and actors is relevant. In the case of developed medical devices, ethical and legal enforcers are much more relevant than in other contexts. Additionally, the right configuration of the triangle between the digital health solution provider, user, and payer is of key importance.

Startups should be aware of potential bottlenecks in their stakeholder engagement. While infrastructure providers offer opportunities for collaboration, they may also introduce risks such as technical failures or resource constraints. Regulators and policymakers indirectly impact startups by complicating their go-to-market strategy, for example, under medical device regulations. Furthermore, legal enforcers have the final say on market entry for many digital medical devices, which can lead to delays and increased costs. Finally, while collaborative relationships are essential, they also require effective management to prevent inefficiencies, misalignment, and conflicting priorities.

Several pathways of value exchange can be identified. Direct pathways exist between financial enablers and digital health solution providers, as capital flows directly. Similarly, advisors, consultants, and users maintain direct pathways to digital health solution providers. An example of indirect value exchange involves intermediaries such as distributors. Here, the value offered by the digital health solution provider flows through the intermediary before reaching the user. Once the solution is implemented, users can provide feedback, which is then relayed to digital health solution providers, establishing a circular pathway. A similar dynamic occurs between digital health solution providers, ethical and compliance insurers, and regulatory and harmonization bodies. As new standards and laws are developed, digital health solution providers must incorporate them into their solutions. Ethical and legal enforcers then verify proper implementation before market entry. Thus, direct and indirect pathways coexist, creating a web of interdependence among various roles. While direct pathways ensure immediate value exchange, indirect pathways foster collaboration across the ecosystem.

VI. CONCLUSION

This study applied the VDAM framework to analyze stakeholder roles and value creation networks surrounding digital health startups. A systematic literature review of 29 publications led to the identification of a broad range of actors, for whom 25 roles and 12 meta-roles were developed, ultimately resulting in the creation of a VPED. Unlike existing models, which often fail to map value proposition exchanges for digital health startups and consider only a limited number of actors, this study provides a structured approach that defines actor positions within specific roles. By abstracting actors into broader roles, it effectively maps value creation networks, positioning the digital health startup as the central element. The resulting framework offers valuable insights into the intricate value chains of the digital health sector and serves as a strategic guide for startups. It enables them to navigate the ecosystem effectively, identify key stakeholders, and shape their business models to optimize value proposition delivery.

A. Contribution

This study enhances the understanding of stakeholders in digital health startup ecosystems and their value exchange. Existing literature often discusses the entire ecosystem [7], [8] and, therefore, does not emphasize startup specifics or has

limited consideration of the value exchange among the stakeholders [10]. By employing value delivery architecture modeling based on a systematic literature review, this study provides a structured and comprehensive framework. The VPED simplifies the multi-stakeholder landscape and explicitly illustrates value exchange. Unlike broad stakeholder models, this work focuses on entrepreneurial activities in digital health, positioning startups centrally within the ecosystem and strategically organizing surrounding roles based on their interactions. Practically, the diagram can assist digital health startups in positioning themselves within the ecosystem. Established tools, such as the business model canvas, are limited regarding the mapping of specific roles and their value exchange, although these configurations play an important role in the business model. As healthcare systems are highly complex, it can be a challenge to identify all actors and understand the roles they play. Therefore, the VPED developed in this work structures and simplifies the process of identifying actors and their roles. Startups can also manage how they want to exchange value with other actors by getting a simplified but more transparent picture through the VPED. Furthermore, it helps to reduce complexity by abstracting the individual complexity into higher roles. The diagram could potentially also be applied beyond the digital health domain by all types of healthcare and medical device startups that need to position themselves within the ecosystem.

B. Limitations

Despite its contributions, this study has limitations. First, the market analysis was based on a systematic literature review, which may have overlooked certain actors. Second, the study focuses on digital health startups in Western countries, meaning additional actors may be relevant in developing markets. Additionally, some value propositions are omitted to maintain clarity, making the framework most suitable for startups rather than larger healthcare organizations. Finally, while the VPED provides a strong foundation for identifying essential roles, actors, and the value exchange relevant to digital health startups, it does not cover other important business model components. Therefore, it does not replace other business model frameworks but rather serves as a complement.

C. Future Research

In the scope of this work, we did not make use of all possible elements within the VDAM approach but rather focused on the most important ones. Future work could explore the ontological elements in greater depth and incorporate additional diagrams to enhance the understanding of the digital health startup ecosystem. Additionally, future work could investigate patterns observed in specific types of digital health startups concerning the roles and actors most relevant to them. Furthermore, the VDAM approach could be applied to other domains characterized by high stakeholder complexity.

MATCH & CONTRIBUTION

This study aligns closely with the IEEE TEMS research objectives by addressing the management of emerging technologies in the context of digital health technologies. Using VDAM, the research provides a practical and

structured framework for business model innovation in multi-stakeholder ecosystems. The VPED offers actionable insights that enable startups to understand and navigate the value creation network. Thereby, this work provides a practical framework that can enable entrepreneurial success in technologically driven industries.

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