ID Cover Page

NutriFlow Kids: Accelerating Pediatric Diagnostics through Collaborative Innovation and Iterative Design – Parnerships and Acceleration

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Abstract

NutriFlow Kids is a digital health solution to accelerate the diagnosis of gastrointestinal disorders in children. This thesis uses the Build-Measure-Learn framework with collaborative and individual efforts to address clinical inefficiencies. The group's contribution focuses on determining the app's compliance with regulations and facilitates the Business-Model-Canvas for the underlying business model. Product design, go-to-market, and partnerships are covered in separate individual sections. In collaboration with parents and medical professionals, NutriFlow Kids plans to provide structured data for precise diagnoses and streamline symptom tracking through an intuitive interface. This team effort illustrates how to improve patient outcomes and pediatric care.

Keywords: Digital Healthcare Solutions, Pediatric Diagnostics, Iterative Design, Lean Startup Methodology, Gastrointestinal Issues, Sustainability

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Part I: Group Part

How to read this Document

This document is structured to provide a comprehensive overview of the NutriFlow Kids project and its development journey. It is divided into three main sections, with each part addressing specific aspects of the project.

Part I focuses on the group effort. It begins with an introduction to NutriFlow Kids and its significance in addressing challenges in pediatric diagnostics. This section also outlines the methodologies and frameworks employed during the project, such as the Lean Startup Approach. Furthermore, the entrepreneurial journey of NutriFlow Kids is detailed, highlighting key pivots and iterative development stages. Lastly, the foundational aspects of the German Digital Healthcare Act (DiGA) certification process and its implications for NutriFlow Kids's business model are discussed.

Part II comprises individual contributions from each team member, presenting in-depth analyses of critical areas:

- *Product Design and Development*: Focusing on the technical and functional aspects of NutriFlow Kids.
- *Marketing and Sales Strategy*: Exploring approaches to reach and engage the target audience effectively.
- *Partnerships and Acceleration*: Delving into collaboration strategies and scaling mechanisms.

Each individual section evaluates specific hypotheses and insights derived from the group effort, supporting the overall goals of NutriFlow Kids.

Part III concludes with an impact assessment and a forward-looking perspective. This section also synthesizes the key learnings from the project and provides recommendations for future development and implementation.

This document is designed for diverse audiences, including academic evaluators, potential collaborators, and stakeholders in digital health innovation. Each section builds on the previous one, ensuring a logical flow of information and a clear narrative around NutriFlow Kids' mission to revolutionize pediatric diagnostics.

1 Introduction to NutriFlow Kids

Functional gastrointestinal disorders (FGIDs) impact around 25% of children globally, presenting symptoms including abdominal pain and altered bowel habits (Hyams et al. 2016). These disorders frequently go undiagnosed for extended periods, resulting in families missing answers and children receiving insufficient treatment (Robin S. et al. 2024). NutriFlow Kids was developed to bridge this gap by investigating the potential of digital health innovation to enhance the diagnostic process. Through collaboration with healthcare professionals, conducting research, and implementing iterative design principles, the team seeks to evaluate the feasibility and foundational robustness of NutriFlow Kids as a viable digital health solution.

NutriFlow Kids aims to empower parents by offering systematic tracking, health metrics, ultimately facilitating expedited and precise diagnoses for physicians through a consolidated summary of essential data. This work does not aim to present a market-ready application; rather, it assesses the concept's ability to rectify the inefficiencies of the current diagnostic process and its compatibility with existing healthcare frameworks.

The project complies with the stipulations of Germany's Digital Healthcare Act (DiGA), which establishes a framework for digital health applications to obtain regulatory endorsement and reimbursement from statutory health insurance (BfArM 2023).

2 Methodology and data collection

This work employed a mixed-methods approach, combining primary and secondary research, to explore challenges in managing functional gastrointestinal disorders (FGIDs) in children, gather user feedback on a mobile application, and understand marketing behaviors. Primary data collection included surveys and interviews, while secondary data provided contextual insights.

2.1 Primary Research

Three distinct surveys were conducted as well as interviews with experts to gather comprehensive insights. The surveys targeted different participant groups to address specific research objectives, while the interviews provided qualitative depth to complement the survey data. These methods were designed to ensure a holistic understanding of the challenges, behaviors, and perceptions surrounding FGIDs and digital healthcare tools.

A Patient and Doctor Surveys to identify the challenges faced by doctors and parents in managing FGIDs in children, two separate surveys were conducted. The doctor’s survey focused on clinical challenges and treatment approaches for FGIDs. It was distributed via LinkedIn Sales Navigator and was filled out by 25 individual doctors. The parent survey explored parents' experiences in managing their children’s FGIDs, including daily routines and healthcare interactions. Participants were recruited through personal contacts and the online parenting forum "Urbia", the survey was closed after 50 participants.

A user Feedback Survey to evaluate the usability, design, and engagement features of a mobile application, two identical surveys were conducted after each development cycle. Participants were guided through a demonstration of the app in in-person meetings at events. These guided walkthroughs ensured that respondents had a clear understanding of the app before providing

feedback. During the first cycle, 21 users participated in the survey while the number increased to 24 for the second cycle.

The marketing survey aimed to assess user behavior and willingness to adopt a prescribed medical application when recommended by a doctor. This survey provided insights into marketing behaviors and the potential acceptance of digital healthcare tools among users. To gather in-depth qualitative feedback, open-style interviews were conducted with medical doctors, patients, and industry experts. These discussions, designed as open conversations, allowed participants to share their insights freely. The purpose of these interviews was to explore clinical challenges, user paintpoints, and industry insights, ensuring diverse perspectives informed the study.

2.2 Secondary Research

Secondary research was conducted to contextualize the findings from primary data and provide a comprehensive understanding of FGIDs and digital healthcare trends. This involved analyzing academic literature, clinical guidelines, market reports, and industry white papers. These sources offered valuable background on the prevalence, diagnosis, and management of FGIDs, as well as insights into consumer behavior and adoption patterns for digital health tools.

3 The Entrepreneurial Journey of NutriFlow Kids

NutriFlow Kids began as an entrepreneurial class project, driven by two co-founders' personal experiences with gastrointestinal health challenges. Initially, the team explored the role of nutrition in promoting overall health, aiming to create a tool to track micronutrient intake and educate users about gut health. This initial concept evolved through several developmental cycles, shaped by user insights and expert feedback.

3.1 First Cycle: A Micro-Nutrient Tracking

Initially, the team explored the impact of nutrition on overall health, as two members had personal experiences with gastrointestinal health problems and struggled to find a diagnosis. The initial idea emerged from a shared realization: poor dietary habits and lifestyles were contributing to lifestyleinduced diseases. A problem tree was drafted to identify this further (Appendix 7.1). Additional Interviews and conversations also suggested that there is no general awareness of this topic, and that microbiome balance can be crucial in alleviating gut health issues (Appendix 1). The aim was to create a tool that empowered young adults to track their micronutrient intake and improve their gut health. Secondary research revealed that gastrointestinal disorders affect nearly 40% of the global population, with symptoms often linked to dietary choices (Sperber et al. 2020). Based on this, the team developed the first concept: a nutrition-tracking app. The app was envisioned as a combination of educational content and tools for logging food intake and analyzing the micro-nutrients in meals, providing tips and guidelines on what to eat to improve gut health. It should enable users to make intuitive dietary decisions that benefit their health without focusing on calorie counting, which can lead to unhealthy eating habits, particularly among individuals already struggling with digestive issues (Simpson and Mazzeo 2017; Levinson and Rodebaugh 2012). However, market research back then revealed significant competition, with numerous apps already serving existing (Appendix 7.2). Additionally, concerns were raised, which became a recurring challenge throughout the development process: “How can users be encouraged to use the app consistently?”

3.2 Second Cycle: Gut-Health Tracking

An interview with Dr. Nessel showed that many patients already tried tracking apps but neglected them because of insufficient benefits (Appendix 1). The team decided to pivot for the first time,

moving away from a generalist companion app to a more focused approach aiming at identifying the root cause of a patient's gastrointestinal problem. As a result, the team concentrated exclusively on gut health-related diseases, as these conditions have an average diagnosis time of almost four years (United European Gastroenterology 2014) significantly longer than for other disorders.

3.3 Third Cycle: NutriFlow

During the subsequent weeks, the team focused on the diagnostic process for gut health issues, to understand why most individuals do not receive faster diagnoses and how the process might be accelerated. This revealed that the lengthy diagnostic process is often due to the exclusion-based approach typically employed by doctors (Herder 2012). Diagnoses are made by systematically ruling out potential causes until only irritable bowel syndrome (IBS) remains as a potential cause. Additionally, patients shared experiences of undergoing multiple colonoscopies, often without definitive results (Appendix 1).

Findings were organized using an Affinity Map (Appendix 7.3). Additional interviews with doctors were held to pinpoint deficiencies in the diagnostic process. A pivotal moment came during an interview with Dr. Sittler. He highlighted a key issue contributing to delayed diagnoses: "Most patients come in with either no data or chaotic homemade diaries," he explained. "A standardized system could save much time." (Appendix 1). To bridge this information gap, a solution to collect patient data in a standardized way, and thus, accelerate the diagnosis process is needed.

To overcome the retention problem, Dr. Klepzig suggested that many diabetes patients use tracking tools to monitor blood sugar levels and avoid spikes throughout the day. He explained that for patients to use such tools, they would need a doctor to explain why it is necessary and helpful, as this would build trust in the product and connect it to the patient's treatment (Appendix 1).

3.4 Final Pivot to Focus on Pediatrician

The pivot to parents of children with FGIDs and pediatricians directly addressed the retention issue encountered. Parents are naturally motivated to track their child's symptoms, as Dr. Rösel observed: "Parents would rather track their children, probably a bit too much, than give realistic information about themselves," highlighting both their dedication and the need for structured tools (Appendix 2.2). Tabea D'Heur further emphasized that parents often lack systematic tracking methods and tools that are useful and sufficient. "Structured data that parents can easily share helps us make faster, more precise diagnoses" (Appendix 2.1). By focusing on children and their parents, NutriFlow Kids solves the retention issue by connecting the app to a child's treatment journey, where parents are already deeply engaged.

4 Characteristics of digital health application (DiGA)

Understanding the fundamental structures of digital health applications (DiGAs) is crucial for this project, since it underlies NutriFlow Kids' business model and market approach. The DiGA system facilitates the integration of authorized digital tools into healthcare systems, permitting their prescription by physicians and coverage by statutory health insurance companies. For NutriFlow Kids, this is not only a means to achieve regulatory approval but also a means to reach the children and families who require it the most. DiGAs seek to digitally transform and improve healthcare provision in Germany. They guarantee elevated levels of data security, usability, and medical efficacy. This method enables NutriFlow Kids to position itself as a reliable, reimbursable alternative for the management of FGIDs (BfArM 2023).

4.1 Origin and legal basement

The groundwork for incorporating Digital Health Applications (DiGAs) into the German healthcare system was established with the passage of the Digital Healthcare Act 2019. DiGAs are

distinct because they create a framework that permits their inclusion in statutory health insurance systems (Federal Ministry of Health 2019). DiGAs must exhibit a positive "supply effect", which can be measured as medical advantages or enhancements in healthcare procedures, in accordance with the regulatory framework SGB V. It is a crucial approval criterion that guarantees that only useful and successful applications can be prescribed and reimbursed. The approval process is supervised by the Federal Institute for Drugs and Medical Devices, which assesses applications according to their functioning, clinical evidence, and adherence to safety criteria (BfArM 2023).

4.2 DiGA authorization requirements

Products must fulfill a wide range of requirements set forth by German healthcare regulations to be classified as Digital Health Applications.

Measurable healthcare benefit: This can involve procedural developments like improved processes or direct medicinal advances like better patient outcomes. To ensure that authorized DiGAs deliver measurable benefits to patients and providers, applicants must produce clinical data or solid studies attesting to these effects within the first year of Pilot-Testing (BfArM 2023).

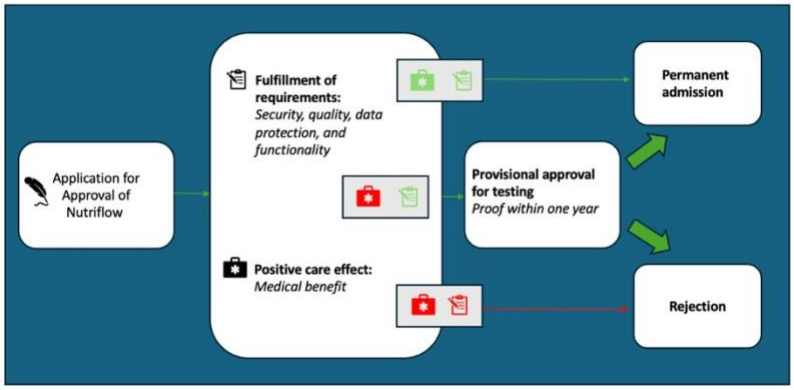
Security and data protection standards: This requires ISO standards for information security management and the General Data Protection Regulation (GDPR). DiGAs are responsible for making sure that private health information is gathered, handled, and kept safe. For apps like NutriFlow Kids, these stringent regulations are essential because they safeguard patient privacy and promote confidence in digital health solutions.

Compliance with interoperability and usability standards: DiGAs must seamlessly integrate with current healthcare IT systems to facilitate cross-platform data interchange. Another key concern is user-friendliness; applications are assessed for usability and accessibility to make sure that patients and healthcare professionals can embrace them without encountering technical difficulties.

4.3 The Authorization process

During the **initial phase,** the BfArM assesses whether the submitted documentation and studies fulfill the criteria. Upon the provision of adequate evidence, **preliminary approval** for testing may be granted. In the one-year testing phase, NutriFlow Kids is required to provide supplementary evidence to validate the efficacy and advantages of the DiGA. Upon successful demonstration of this evidence, **permanent approval** will be granted, facilitating integration into the healthcare system (BfArM, 2024). Should the submitted evidence be inadequate or the positive healthcare impact unverified, an extension of the testing phase may be granted, or the application may be **rejected** altogether. This process guarantees the integration of applications into the healthcare

Figure 1: DiGA Authorization Process



system that are safe, compliant with data protection regulations, and medically effective (European Union, 2016).

4.4 Health insurance companies and cost coverage

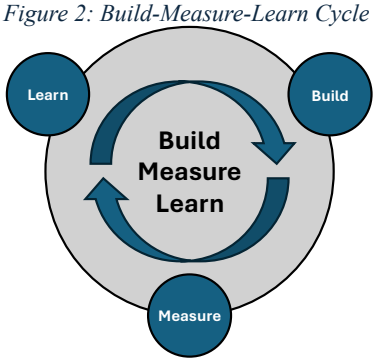
Cost coverage for Digital Health Applications (DiGAs) by statutory health insurance (SHI) is granted once the application is included in the DiGA directory maintained by the BfArM. Physicians and psychotherapists may prescribe a DiGA using a standard prescription form when it is deemed medically necessary and economically viable. Patients present the prescription to their

health insurance provider, which finances the expense and provides an activation code for the application (National Association of Statutory Health Insurance Physicians, 2024).

5 Lean Startup Approach

A major risk for new businesses is launching a product with no demand (Eisenmann 2021). To address this, Eric Ries (2011) introduced the Lean Startup Methodology (LSM), which emphasizes iterative validation of business models and hypotheses. Central to LSM is the Build-Measure-Learn feedback loop, advocating for early-stage testing of hypotheses

Figure 2: Build-Measure-Learn Cycle



to "fail fast, fail cheap" rather than committing significant resources upfront (Blank 2013). In the building stage, a Minimum Viable Product (MVP) with core features is quickly developed using minimal resources. The measuring stage gathers feedback from potential customers, and the learning stage evaluates this feedback to determine if the MVP meets customer needs and achieves product-market fit. This process tests the product's value proposition, guiding refinement or pivoting of the product and business model.

6 Business Model Canvas

6.1 Problem

Functional gastrointestinal disorders (FGIDs) in children present a **threefold challenge**. They impact children and families with recurring pain, stress, and missed school. Physicians face diagnostic difficulties due to imprecise data. These inefficiencies drive high healthcare costs from repeated visits and delayed diagnoses.

First Problem: *Affected people suffer from the effects and inaccurate diagnosis.*

Functional gastrointestinal diseases are a constant source of suffering and are associated with recurring visits to the doctor (Bolten, Légeret and Odenheimer 2024). Children are particularly affected by these conditions, which disrupt their education and social lives. The parent survey conducted indicates that over 80% of children with FGIDs missed school due to their symptoms (Appendix 5.2). Dr. Rösel emphasized that these absences often lead to academic setbacks, as children with recurring symptoms struggle to maintain focus in class (Appendix 2.2). Research also indicates the correlation of FGIDs to a lower quality of life for children (Ortner 2022). Stress plays a pivotal role in FGIDs, a parent interview highlighted that the “constant tummy aches” their children experience create anxiety for the entire family, amplifying stress (Appendix 1). These stressors start a vicious cycle, as ongoing pain and discomfort create more stress, which in turn worsens symptoms. The parent survey supports this, showing that parents rate their children’s stress 33% higher when symptoms occur three or more times a week (6.65/10) compared to children with less frequent symptoms (5/10).

The burden of FGIDs extends to parents as well. As Dr. Rösel noted, "With children, quite often the children don’t really suffer, but the parents do”. Tabea D'Heur addresses this challenge,

explaining that parents often feel unequipped to track symptoms effectively, leading to frustration and delays in diagnosis (Appendix 2.1).

Second Problem: *Difficulty in diagnosing FGIDs due to inaccurate data.*

Diagnosing FGIDs is often hindered by insufficient and inconsistent data. 68% of doctors frequently face challenges due to incomplete information, while parents rate communication with their doctors 4.8/10. For non-German native speakers, this lowers to 3.9/10, highlighting significant language barriers (Appendix 5.1). Tools like abdominal pain calendars are commonly used but often fail to provide actionable insights, with 58% of parents finding it difficult to explain symptom triggers or frequency (Appendix 5.2). Dr. Rösel noted that parents either misinterpret symptoms, such as confusing constipation with diarrhea or fail to maintain consistent records, which delays diagnosis. Tabea D'Heur added that parents are frequently overwhelmed by tracking tasks and struggle to identify meaningful patterns (Appendix 2.1).

Third Problem: *High costs associated with delayed diagnoses and repeated medical visits without efficient solutions.*

Functional gastrointestinal disorders in children place a substantial economic burden on healthcare systems and families, primarily due to delays in diagnosis and repeated medical visits. Our research indicates that the costs of managing FGIDs are disproportionately high compared to other pediatric conditions. As there are no exact figures for Germany, figures from Great Britain and the USA are listed, which nevertheless can give an impression of the high costs.

A study the UK, managing pediatric FGIDs costs the National Health Service (NHS) approximately £49.1 million annually. Families additionally spend £23.2 million per year on over-the-counter medications, highlighting the dual financial strain on public healthcare and households (Mahon et al. 2017).

In the US, delayed diagnosis further increases costs, adding an estimated $2,302 annually per patient due to repeated consultations and unnecessary testing (Tinazzi et al. 2021). Indirect costs also play a substantial role. Additionally, it was found that 58% of parents missed work to care for their child's symptoms, reflecting the socioeconomic ripple effects of these conditions (Appendix 5.2). Research estimates an average annual loss of $1,200 in family income due to caregiving responsibilities and missed work time (EveryLife Foundation, 2023). Interview findings also underscored this burden, with parents citing frustration over repeated, inconclusive visits and the associated financial strain.

6.2 Solution

The concept to alleviate customer troubles involves developing a digital health diary designed to record the specific data required by doctors for improved diagnoses. The app simplifies symptom tracking for parents, enabling systematic documentation. Progress visualizations empower parents to observe patterns and trends, reducing stress during consultations. To support diverse families, NutriFlow Kids offers multilingual functionality. Dr. Amelia Rösel highlighted the importance of multilingual tools to overcome communication barriers, particularly for families where German is not the primary language (Appendix 2.2). NutriFlow Kids provides pediatricians with concise, standardized summaries of patient data, integrating seamlessly into existing workflows. This also reduces the need for repetitive questioning, as highlighted by Tabea D'Heur: "Structured data that parents can easily share helps us make faster, more precise diagnoses" (Appendix 2.1). By improving diagnostic accuracy and reducing redundant visits, NutriFlow Kids addresses cost concerns for insurers.

6.3 Customer Segments

NutriFlow Kids sees three customer segments, each representing specific needs and challenges within the healthcare system: parents of children with gastrointestinal issues, pediatricians, and health insurance providers.

Parents of children aged 0 to 14 years who suffer from recurring symptoms such as abdominal pain, bloating, or irregular bowel movements.

Pediatricians, particularly younger, tech-savvy doctors. who are open to integrating new technologies into their daily practice as over 80% of doctors practicing for less than 6 years state they would feel comfortable using digital health apps compared to only 53% for doctors practicing longer (Appendix 5.1). Additionally, support for multilingual patient groups helps reduce communication barriers between doctors and families. As Dr Rösel stated “A multilingual tool would be immensely helpful, as it would address communication gaps while reducing stress for parents and doctors alike” (Appendix 2.2).

For public and private health insurance companies, the app provides alignment to regulatory frameworks, like the German DiGA system, enable reimbursement, making NutriFlow Kids an appealing proposition for insurers seeking to invest in scalable, cost-saving digital health solutions.

The relationships with these target groups are strengthened through specific strategies. For parents, NutriFlow Kids relies on easy-to-understand tutorials, progress visualizations, and responsive customer support to encourage the continuous use of the app. Pediatricians are involved in the development and optimization of the app through close collaboration, ensuring that the app meets clinical requirements. Health insurance companies benefit from well-founded case studies and cost analyses that highlight the clinical and economic advantages of the app.

6.4 Key Merics

To ensure an efficient and user-centered development process for NutriFlow Kids, the principles of lead and lag KPIs are applied to capture key metrics. **Lead KPIs** act as predictive indicators, guiding proactive adjustments during development, while **Lag KPIs** measure achieved outcomes and validate the app's success. This approach provides a balanced framework for monitoring progress and outcomes. By tracking these KPIs, NutriFlow ensures it remains aligned with clinical standards, stakeholder expectations, and operational goals, paving the way for successful implementation and impact. These metrics were constantly measured and evaluated each week during the development phase.

Key metrics to track for each individual part:

Figure 3: Key metrics for individual parts

Category	Type	KPI	Description
Product Design and Development	Lead	Feature Competition Rate	Percentage of planned features completed on schedule.
	Lag	Stakeholder Approval Rate	Percentage of pediatricians and customers satisfied with prototype iterations.
Marketing and Sales	Lead	Website traffic; Cost-per-Visit, (facebook) post engagement	identifies most effective channels in driving traffic to the site; Efficiency of marketing campaign
	Lag	Number of scanned QR codes	Identification of most effective marketing channel for pediatricians
Partnerships and Acceleration	Lead	Partnership Engagement Rate	Number of potential partners contacted within a defined timeframe
	Lag	Confirmed Strategic Partnerships	Number of finalized partnerships with key stakeholders, such as doctors, institutions, or consultants.

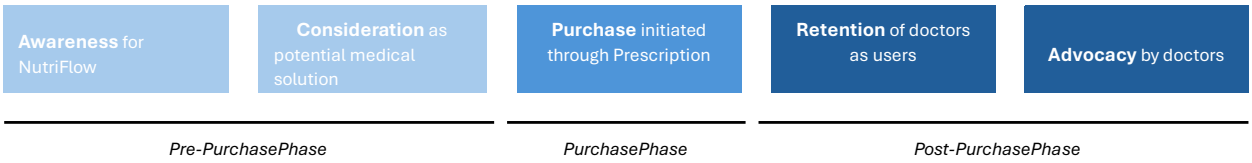
6.5 Channels and Customer Journey

Marketing and Sales channels are the tools needed to engage with target customers over the entire lifecycle of the supplier-customer relationship, in which customers experience various touch points with the brand until the final point of sales and beyond (J. Dent, M. White 2018). The customer journey is typically divided into three distinct phases: pre-purchase, purchase, and post-purchase (Lemon & Verhoef 2016). NutriFlow Kids focuses on pediatricians, as they are the key decisionmakers who ultimately evaluate NutriFlow Kids' usefulness.

The **Pre-Purchase Phase** starts with building **brand awareness**, crucial for enabling customers to recognize NutriFlow as a relevant solution in the digital health applications. Given NutriFlow Kids' B2B2C model, brand awareness is essential for both doctors and parents. Parents act as end users but rely on pediatricians for initial recommendations. Following brand awareness is the **consideration stage**, where pediatricians evaluate NutriFlow Kids' suitability for prescription. According to Lemon and Verhoef, factors influencing this stage include product efficacy, trust in the brand, and testimonials from trusted colleagues. This is particularly relevant in NutriFlow Kids' case, as its credibility heavily depends on advocacy within the medical community and visible proof of positive health outcomes. The **Purchase Phase** encompasses three customer behaviors: choice, ordering and payment. Pediatricians who trust Nutriflow Kids' efficacy decide to implement it in their practices and prescribe it to parents. (Lemon & Verhoef, 2016)

In the **Post-Purchase Phase,** the main purpose is **customer retention**. Providing seamless support and addressing any technical or procedural issues to both patients and pediatricians essential. In the **advocacy stage** customers share their experiences with others by word-of-mouth or writing recommendations (Maxham 2001). In NutriFlow Kids case, advocacy from pediatricians is critical, as their testimonial significantly influences the medical community.

Figure 4: Customer journey of pediatricians



6.6 Unfair Advantage

An unfair advantage is something that can't be readily replicated and bought by competitors (Moshood et al. 2022). NutriFlow Kids unfair advantage lies in its unique positioning and strategic assets, which are difficult for competitors to replicate. At its core, NutriFlow Kids achieves **deep integration with pediatric workflows**, by providing structured symptom data and validated diagnostic algorithms co-developed with pediatricians. This ensures the app addresses the specific needs of pediatric care, unlike general health solutions. As a **first mover in pediatric digital health**, NutriFlow Kids capitalizes on an underserved market, establishing early trust and recognition among parents, pediatricians, and insurers. Its **networks and partnerships** further enhance this edge, with established collaborations across healthcare providers, regulatory bodies, and insurers creating a supportive ecosystem that accelerates adoption and credibility. Additionally, NutriFlow Kids offers a **tailored user experience**, featuring an intuitive design optimized for parents and children, along with multilingual support to ensure accessibility.

6.7 Cost Structure

Typically for SaaS platforms, NutriFlow Kids does not entail any costs related to physical characteristics (Dempsey et al., 2018). The cost structure is primarily divided into five central cost categories. The total estimated costs amount to €386,000, which are broken down into five main categories: product development (€185,000), clinical trials (€80,000), sales and marketing

(€84,500), registration fees (€21,500), and legal costs (€15,000). These cost estimates are **prospective**, representing the anticipated expenditures at the final launch of NutriFlow Kids.

Figure 5: Cost structure NutriFlow Kids

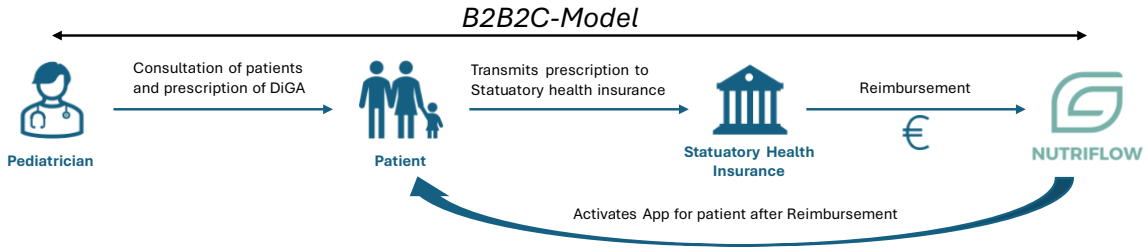
Cost Category	Estimated Costs (€)
Product Development	185,000
Sales and Marketing	84,500
Clinical Trials	80,000
Registration Fees	21,500
Legal Costs	15,000
Total Costs	**386,000**

For **further transparency**, a profit and loss statement with a detailed cost breakdown of *Sales & Marketing* and *Registration Fees*, including all underlying assumptions and verifications, is provided in Appendix 10. A similar breakdown of the 185.000€ *Product Development* costs is available in (9.6 Future Iterations). The cost estimates for *Legal Costs* and *Clinical Trials* are based on information obtained from the interview with Hans-Holger Bleß of fbeta GmbH (Appendix 3.1).

6.8 Revenue Streams

NutriFlow Kids operates under a **B2B2C (Business-to-Business-to-Consumer)** business model, combining both professional partnerships and end-user engagement. On the B2B side, NutriFlow Kids relies on pediatricians to prescribe the app, while health insurance companies reimburse the app's cost. As depicted; after being listed, doctors can prescribe NutriFlow Kids to patients by standard prescription forms (Figure 6). Prescriptions are submitted to health insurance providers, which cover the full cost of the app, ensuring that patients incur no direct expenses. On the B2C side, the app serves parents, who use NutriFlow Kids to manage their children's gastrointestinal health. NutriFlow Kids' revenue model is consistent with the framework of

Figure 6: Business Model NutriFlow Kids



6.9 Unique Value Proposition

What are the defining features of NutriFlow Kids? What are NutriFlow Kids' aspirations? These inquiries motivated the team initially and continue to do so presently. Individual elements, such as the target demographic, the service offered, or the revenue model, can generate distinctive value by being tailored to the specific region or audience (Wirtschaftskammer Österreich 2024). In this section, the direct and indirect competitors within the digital therapeutics (DTx) and a unique value proposition is drafted for each stakeholder. Only a limited number of providers, specifically “Cara Care” and “Bowelle”, are pursuing the DiGa approach. Furthermore, a variety of general health and nutrition trackers constitutes most of the market and can potentially offer documentation and an overview of everyday nutrition. However, they are significantly less customized for FGIS. In addition, these providers do not have a direct interface between patient and doctor, but instead leave the diagnosis to the app.

Figure 7: Competitor benchmarking

Industry Study				
	NutriFlow Kids	**Cara Care**	**Bowelle**	**MyFitness Pal**
Product	Focused on pediatric GI health tracking, integrating real-time data sharing between parents and doctors.	A comprehensive GI health tracker for adults, covering conditions like IBS and GERD.	Simple IBS tracker with symptom logging and dietary monitoring.	General health and nutrition tracker with extensive food and exercise tracking capabilities.
Price	Planned for insurance reimbursement; details under development.	Subscription-based with different pricing tiers for more advanced features and professional support.	Free with basic features; premium tiers for €15.99/year.	Freemium model; premium version available for $9.99/month or $49.99/year, offering ad-free experience and deeper insights.

Target Group	Children and adolescents with severe functional gastrointestinal disorders.	People with serious functional gastrointestinal complaints, but without specific adaptation to age groups.	People with serious functional gastrointestinal complaints, but without specific adaptation to age groups.	People with an awareness of their nutrition or fitness expectations.
Quality	Prioritizes highquality, doctor-verified data and clinical integration. DiGA certificationlevel 1.	Recognized as a DiGA-certified app in Germany, ensuring compliance and medical accuracy.	Simple and userfriendly, but with fewer features than competitors.	Offers a large database and extensive integration with other fitness platforms.
Nutrition Diary	✓	✓	✓	✓
Mental Mood Diary	✓	✓	✗	✓
DiGa Class	1	1	✗	✗
Symptom Tracking	✓	✓	✗	✗
Adaption to Children	✓	✗	✗	✗

6.9.1 Resulting findings and USP opportunity

NutriFlow Kids can have a competitive advantage over competitors such as “Cara Care” and “Bowelle”, although functionality is superficially similar. The key difference is the focus on parents of children as a target group and customize the app for their use case. NutriFlow Kids offers an interface that is supposed to only be used a couple of minutes a day as 68% of parents stated to only being able to track for up to 5 minutes a day (Appendix 5.2). Thanks to an intuitive design and simplified data collection that is easy for parents to understand, incorporating multi-language support should also make tracking easier. The product thus creates a valuable niche and a strong unique selling point in the market for digital health applications.

Furthermore, it does not want to go through its own gastroenterologists and doctors like “CaraCare” but rather **integrate the product into the existing doctor-patient cycle**.

Figure 8: Unique Value Proposition NutriFlow Kids

Unique Value Propositions			
Parents	**Children**	**Doctors**	**Insurers**

Empowering parents by providing structured, easyto-understand tracking solution, helping them manage FGIDs with confidence and clarity.	Improving the quality of life for children with FGIDs by enabling timely interventions through accurate symptom tracking and better-informed treatment plans.	Supporting physicians with standardized and actionable patient data, streamlining the diagnostic process, and enhancing the precision of their treatment.	Helping insurers reduce long-term healthcare costs by minimizing unnecessary medical visits and enabling more effective treatments.

7 Market Sizing

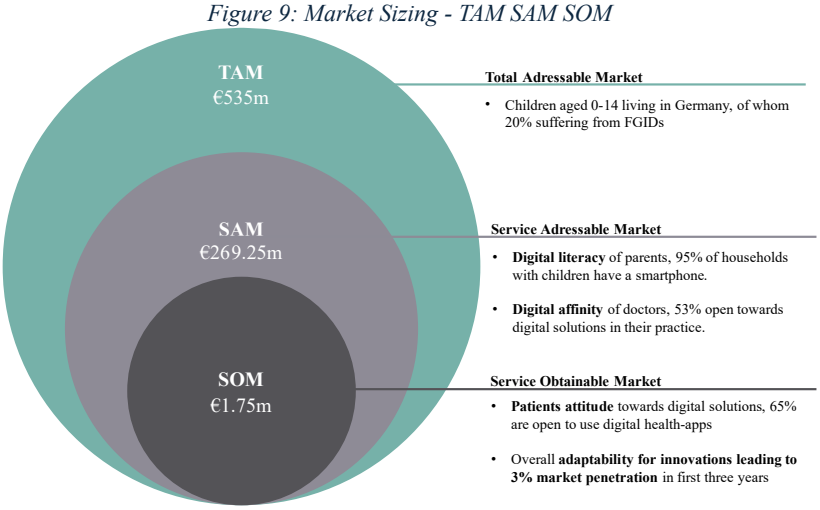
For the revenue calculation of the market sizing, the estimated final price of €250 is used (10. Goto-market). The **Total Addressable Market** (TAM) describes the maximum number of potential customers. Around 10.7 million children aged 0 to 14 live in Germany (Statistisches Bundesamt 2023). Of these children, up to 20% could suffer from functional gastrointestinal disorders (FGIDs) such as irritable bowel syndrome (Bayer AG 2024). This corresponds to around 2.14 million children. With an estimated turnover of €250 per prescription, this results in a TAM of €535 million per year.

The **Serviceable Addressable Market** (SAM) refers to the part of the TAM that is technically accessible. 95% of households with children have a smartphone, making 2.033 million children technically reachable (Statista 2023). Furthermore, considering that approximately 53% of overall doctors are open to digital solutions in their practice, the truly reachable number reduces to 1.077 million children with a SAM of €269.25 million per year (Digital Health Industry 2024). This number is also supported by the team's research showing a general willingness to use digital apps being 56% of all doctors (Appendix 5.1).

The **Serviceable Obtainable Market** (SOM) describes the part of the SAM that NutriFlow Kids can realistically serve. Studies show that 65% of the German population have a positive attitude towards digital health solutions, which underlines the target group's willingness to use NutriFlow Kids (EY 2024). Apps that are prescribed by doctors can achieve acceptance rates of up to 20% (IMS Institute for Healthcare Informatics 2015). Since the success of NutriFlow Kids heavily relies on doctors' adaptability, a conservative assumption of 3% market penetration has been used as the basis. The choice of this estimate is based on the diffusion of innovations theory (Rogers 2003),

according to which innovators (2.5 %) and early adopters (13.5 %) play a significant role in the launch phase of a product and refers to the doctor's willingness to prescribe NutriFlow Kids. This results in around 21,002 children that could be reached during the first three years after the trial period corresponding to a revenue of € 5.250 million. With an estimated turnover of € 250 per year, this results in a SOM of € 1.75 million per year.

Figure 9: Market Sizing - TAM SAM SOM



Part II: Individual Parts

8 Partnerships and Acceleration (Moritz Felbinger)

This section will focus on partnerships and their acceleration potential for NutriFlow Kids. The healthcare and healthtech industries form a complex and competitive ecosystem, requiring partnerships for innovators. Nonetheless, establishing such partnerships is challenging (fastercapital 2024). This section will examine partnerships in three different phases.

Figure 10: Time frame of steps to market entry

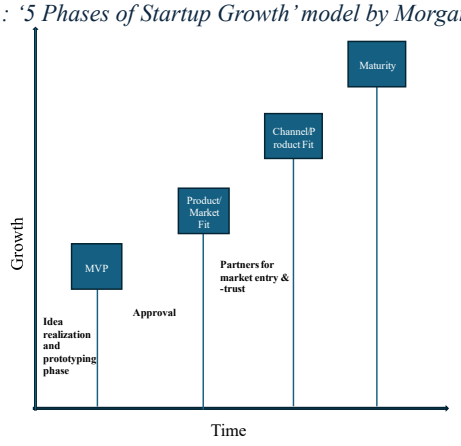
(Appendix 3.1)

In each of these phases, other key partners of ours are essential to take the product and the idea to the next level. The BML model was not applied in this section because the focus is on strategic partnerships and acceleration programs, which require less iterative product development and instead prioritize long-term cooperation and resource building.

8.1 Development of Hypotheses

NutriFlow Kids will be operating within three phases identified by the founding team. These stages are derived from Morgan Brown's '5 Phases of Startup Growth' framework.

Figure 11: '5 Phases of Startup Growth' model by Morgan Brown



8.1.1 Idea realization and prototyping phase

This phase corresponds to the left section of the model: Searching for Problem-Solution Fit and MVP (Minimum Viable Product). During this phase, the team is aiming to understand whether the idea of NutriFlow Kids solves a real problem and how it fulfills the needs of the target group. This served as the basis for the first hypothesis:

> *„ Collaboration with pediatricians contributes to achieving the problem-solution fit by integrating specific medical requirements and user needs into product development."*

To realize this, short interviews with parents of affected children were conducted to evaluate that the problem to tackle is an existing issue. For the solution part Interviews with two doctors have been conducted. This approach is based on the premise that the early engagement of medical professionals is crucial for attaining problem-solution alignment and establishing a foundation for user trust (Bündnis Junge Ärzte 2020).

8.1.2 Approval Phase

The next critical step, once the app is mature and ready, is to obtain DiGA certification for it from the BfArM. The approval phase for NutriFlow Kids can be categorized between the productmarket fit and channel-product fit phases, as DiGA approval is necessary to validate market acceptance and sales opportunities. However, the categorization is difficult as regulatory requirements such as clinical studies and certifications run parallel to product development and require both product and market adjustments, which influences several phases.

This phase is considered particularly critical, as many of the applications are withdrawn during the study phase or are simply not recognized (Schlieter 2023). As the procedure, nature and

requirements for DiGA have already been dealt with in a separate part of the thesis, this will not be discussed in detail. The question relevant to this section is whether and which partners the NutriFlow Kids needs to secure the best chance of being successfully accepted in an authorization procedure. Based on this, our second hypothesis emerged:

„The investment in cooperations with consulting firms specializing in DiGA approvals minimizes regulatory risks and increases the probability of success through targeted adjustments to the requirements of the BfArM. “

8.1.3 Partners for market entry and market trust

The market entry and market trust phase could be categorized as the channel product fit phase and the subsequent growth phase, as these phases aim to establish sales channels and build trust with doctors, health insurance companies and end users. However, categorization can be difficult, as building trust is a long-term process that must be continuously monitored both during market entry and in the growth and maturity phase.

Building trust with healthcare providers in the broader sense is crucial for the acceptance and success of DiGA. Furthermore, cooperation with established players in the healthcare sector can facilitate market entry and promote the dissemination of the product (Schlieter 2023).

8.2 Key Partnerships

As a result, the team began looking for potential future partnerships. Reflecting on this, it was a highly challenging tasks to accomplish. Apart from the ‘Searching for Problem-Solution Fit’ phase, the team had to determine who was needed for each stage and whether potential collaborators could envision working with NutriFlow Kids based on the progress made up to that point.

8.2.1 Key Partnerships - Idea realization and prototyping phase

When the idea of changing the existing concept towards specializing in parents on behalf of their children emerged at the end of the summer, the team quickly realized that a leading medical figure was needed to build the content of the app in such a way that the patient had the right values and parameters required for tracking and diagnosis. The goal was to test and find the problem-solution fit. To achieve this, gastrointestinal associations, organizations, and doctors were contacted (Appendix 6). After repeated enquiries, responses were received from three contacts, of which 2 were willing to engage and provide support. Amelia Rösel is based at the renowned Berlin Charité, Clinic for pediatrics with a focus on pneumology/immunology. Dr.Kerstin Ludwig is general practitioner practicing in Cologne.

8.2.2 Key Partnerships- Approval Phase

Consulting companies offering comprehensive services in the field of digital health were specifically contacted, including those providing support in the DiGA fast-track process, strategic advice on product development and integration into the healthcare market, as well as assistance with interoperability and data protection issues. These companies were selected due to their expertise, which is central to the successful development and market launch of the digital health application. Despite efforts to approach several established companies, only fbeta GmbH responded. They were open to an interview and are therefore currently the only potential partner for the project.

Figure 12: Interview with Holger Bless, fbeta GmBH

Figure 13: Outreach Health-Tech Consultancies

Company	Outreach	Answer	Outcome
Medagent	LinkedIn/Mail	No / No	-
fbeta GmbH	LinkedIn/Mail	Yes	Potential partner
Sinovo	LinkedIn/Mail	No / No	-
Digital Oxygen	LinkedIn/Mail	No / Yes	No interest
DataArt	LinkedIn/Mail	No / No	-

8.2.3 Key Partnerships – market entry and market trust

What kind of partnerships will be important later? How can the industry be entered with confidence? Venture capital companies specializing in 'new tech' companies were considered, leading to the identification of Freigeist Capital, a venture capital company from Germany. An interview was successfully conducted with a partner, Niklas Hebborn.

Regarding this topic, Hebborn emphasized that partnerships can be decisive in various phases of the development and market launch of a DiGA. He highlighted the importance of strategic partnerships to facilitate market entry and confidence building. The partner specifically

recommended collaborating with players who have access to trade fairs or industry events to present the DiGA effectively and build trust in the field.

He underlined that partnerships with experienced players can help better navigate regulatory processes and building network is crucial for long-term success. The idea of finding champions or multipliers who actively support and promote the app was another interesting finding. These could include, for example, doctors or institutions that act as opinion leaders and recommend the DiGA within their network. (Appendix 3.3)

From this the team realized that it is about two points for the future: 1) Confirmation that partnerships are essential for building trust, 2) A need for access to specialist events/associations in the future.

Our plan is therefore:

During the approval process, approach gastroenterology associations and introduce us to them. If we draw the attention of these associations to us, NutriFlow Kids can benefit from the fact that many of the renowned doctors are members of their association and thus become aware of us. As can be seen from the contact list (Appendix 6), several associations and clubs have been contacted, but unfortunately nothing has come of it yet.

The presence and appearance of NutriFlow Kids at trade fairs and specialist events is important. Notable options include the DMEA in Berlin 2025, which specializes in digital healthcare. An interesting opportunity already emerged. Frank Schneider-Wrensch (Ethypharm) presented NutriFlow Kids at ‘DIVI 2024’ and shared the concept with experts (Appendix 21). The team is still waiting for detailed feedback here.

8.3 Evaluating Hypotheses One

Interviews with parents (Appendix 4) indicated persistent difficulties in addressing their children's gastrointestinal symptoms. Primary concerns encompassed challenges in monitoring symptoms like stool consistency, pain intensity, and dietary triggers, alongside an absence of resources to systematically convey these observations to healthcare providers. Parents reported feeling inundated and uncertain regarding the most pertinent data points, resulting in disjointed and subjective symptom documentation. The absence of structured data not only induced stress for parents but also constrained the efficacy of diagnostic procedures.

The discussions with pediatricians affirmed the necessity of tackling these matters through a standardized methodology. Pediatricians highlighted the importance of standardized data formats, including graphical symptom charts and tools like the Boston Stool Scale, to deliver actionable insights during consultations. They emphasized the necessity for user-friendly designs specifically crafted for children and parents, incorporating features such as reminders and multilingual support to guarantee accessibility. These solutions were perceived as directly addressing the deficiencies identified in the parental interviews. (Appendix 2.1 & 2.2)

NutriFlow Kids reconciles the needs articulated by parents with the medical standards established by pediatricians, thereby closing the gap between theory and practice. The structured data collection tools and child-specific features were created utilizing both sets of insights, guaranteeing that the app fulfills clinical requirements while also assisting parents in more effectively managing their children's health. The focus on co-design with pediatricians corresponds with empirical evidence indicating that such collaboration improves the effectiveness and acceptance of health tools (Rusch et al. 2024).

The findings corroborate the hypothesis. The validation of problems via parental interviews and the identification of specific solutions through collaboration with pediatricians indicate that NutriFlow Kids successfully attains the Problem-Solution Fit.

8.4 Evaluating Hypotheses Two

It is indicated that **more than 80%** of successful DiGA manufacturers employ consulting services to effectively navigate regulatory requirements and prevent prevalent errors, including inadequate study designs or misclassifications of their applications (Mäder et al. 2023). These firms offer comprehensive expertise in navigating BfArM requirements and facilitate evidence generation, which is crucial for final inclusion in the DiGA directory. They assist in planning and executing studies that illustrate the beneficial impact of the application within the legal timeframe of 12 months in average. The absence of professional support markedly elevates the risk of noncompliance with regulatory standards (SKC Beratungsgesellschaft 2024). The interview with Holger Bless enhances these findings with pragmatic insights. He underscored that consulting firms such as fbeta GmbH are instrumental in preventing prevalent mistakes during the approval process. Their primary contribution is the prompt recognition of regulatory obstacles and the precise modification of the product to comply with BfArM standards. Moreover, he emphasized that consulting firms not only mitigate errors but also enhance the efficiency of the approval process by utilizing their knowledge of BfArM's requirements and procedures. (Appendix 3.1)

This allows companies to reduce development time and allocate resources more effectively. An additional benefit of partnering with consulting firms is their assistance with market access. In addition to meeting regulatory obligations, these firms counsel on the strategic placement of applications in the marketplace. They promote collaboration with health insurers and physicians,

thereby improving acceptance among essential stakeholders. Holger Bless observed that this is particularly crucial for start-ups creating a digital health application for the first time, as it can significantly influence the outcome between success and failure. (Appendix 3.1) The combination of empirical evidence and experiential data suggests that the hypothesis may be considered validated. Consulting firms minimize regulatory risks while offering strategic advantages, including the optimization of study design, adherence to data protection standards, and enhancement of market acceptance. These findings justify an investment in the partnership in the future.

8.5 Acceleration of NutriFlow Kids

The development of NutriFlow Kids as a digital health solution is the subject of the second section of this work, which focuses on its fundraising and legal framework. Assessing NutriFlow's current posture as it works to scale and fulfill its objective requires an understanding of these factors. This section will examine the company’s plans navigating regulatory restrictions, obtaining the required funding, and utilizing strategic alliances to promote its expansion. To improve its characteristics and guarantee clinical efficacy, the product is being developed in conjunction with medical experts, academic institutions, and technology partners. As NutriFlow Kids evolves, it requires funding to develop its platform, enhance its functionalities and establish a more prominent presence in the healthcare sector.

8.5.1 NutriFlow Kids plans on its Legal Status

At the beginning of the NutriFlow Kids’ idea, the founders quickly thought about creating fair and clear security even before legal registration. To this end, they drew up a founder’s agreement to clearly define the roles, concerns and entitlements of each of the founders (Appendix 11). In the

process of NutriFlow Kids' development, the idea of a GbR (Gesellschaft bürgerlichen Rechts) emerged, or Partnership under Civil Law, to keep a lean and affordable legal framework. Startups in their first phase match a GbR perfect since it is created when two or more people work together to accomplish a shared business goal without minimum money necessary. This arrangement enables the team to concentrate on improving the product and doing preliminary testing free from the weight of complicated legal or financial obligations (BGB § 705-740).

The founders want to register formally as a GbR in Germany by Q1-Q2 2025. Though the GbR comes with restrictions, it is suitable for the current phase. The main disadvantage is unlimited liability, in which case founders directly answerable for the debts of the company. Given the data sensitivity of the idea, this could become a possible problem. Moreover, the GbR structure restricts the ability to access external funding, which will be required as the business grows. NutriFlow Kids would intend to switch to a GmbH (limited liability corporation) in the future to enable more expansion and draw in capital. With "limited liability" the GmbH structure protects the founders' personal assets and gives easier access to venture money. It would be the logical next step after as it increases its user base and operational capability (BMWi 2019).

8.5.2 Considered funding options for NutriFlow Kids

NutriFlow Kids faces an extensive timeline before market entry and consequently must navigate numerous financial obstacles. These cover a complicated application, which requires comprehensive initial setup, as well as legal counsel, essential research, and additional components. The focus will be deliberately directed towards the following stage in the funding process, specifically the development and maintenance of the Nutriflow Kids app. The team cannot start a study phase that will show if the assumptions about the positive effect are true

without this. The validation of functions and content is currently in progress, with the objective of addressing the fully developed application next. Therefore:

- What are the **funding options**?
- **What amount** do we need to get started?

Venture capital:

For NutriFlow Kids, venture capital is a highly attractive choice since it offers substantial funding in return for company shares. Given their focus on scalable, creative companies, VC companies are a great fit for NutriFlow Kids' digital health goals. Mentoring and networking possibilities given by investors help VC-backed health businesses often succeed in overcoming first obstacles to market entry (EIT Health 2023). NutriFlow Kids is unfortunately not in the right position to be an option of interest for a Venture capital company, as they are looking for companies that are much more mature in their development and therefore scalable (Appendix 3.3).

Angels in Investors:

Angel investors, who are usually business owners or entrepreneurs with a lot of experience, give money and useful advice in the early stages of a business. Though with more flexible conditions, angel investments usually include a smaller amount than VC. Given NutriFlow Kids' present level, this choice could offer a capital increase while still allowing relative decision-making autonomy. Early-stage health firms profited substantially from angel investors who recognized the difficulties of regulatory and technical development in healthcare (Forbes 2023).

Programs for Accelerators:

For NutriFlow Kids particularly accelerator programs are especially important since they offer not only money in some cases, but essential assets such mentoring, workspace, and industry network access. Accelerators have helped many businesses negotiate legal environments and interact with

healthcare players (EIT Health 2023). This method fits well with NutriFlow Kids' need for strategic direction and market access suited for healthcare.

Bank loans:

For NutriFlow Kids at this point, conventional bank loans are not a suitable fit. Usually requiring large collateral, which the corporation cannot supply, banks charge high loan rates. Furthermore, borrowing terms could cause the firm great financial burden during early development stages. These factors have caused the team to eliminate this kind of possible financing for now.

Chosen option:

Based on this information, the team intends to use a combination of accelerator programs and an angel investor. This approach is expected to provide an initial financial injection to support the development of the app and to gain the necessary expertise in the healthtech sector. NutriFlow Kids is planning to sign up for the "Angel Investment Netz" and present the idea soon.

Figure 14: Funding Options for NutriFlow Kids

Name	Description	Amount	Fundraising via
Merck Accelerator	Supports health and life science start-ups with coaching, mentorship, and global networking.	Up to €50,000 seed funding + access to lab spaces.	Application
EIT Health Catapult (accelerator)	Targets innovative healthtech start-ups and provides mentoring, training, and funding opportunities.	Individual awards up to €40,000.	Application
Osnabrück Healthcare Accelerator (OHA)	Offers workshops, mentoring, and network access for healthcare startups. No equity taken.	Infrastructure and monetary support (TBD).	Application
Angel Investment Netz (Germany)	Network of angel investors focused on health and tech start-ups, offering seed funding and strategic advice.	Individual.	Advert / Application

Health Founders	A health-tech-focused angel investment group providing mentorship and funding to early-stage start-ups.	Individual investments vary.	Application/Referral

8.5.3 Targeted amount for the first funding

The creation of an app is a large-scale and complex undertaking that requires significant financial investment. The cost of developing a digital health app can vary widely depending on the desired features, the level of technological complexity, and regulatory requirements. Providing a precise estimate is challenging and involves a degree of uncertainty. Based on our calculations in this work project, the potential costs for development and approval are shown in the following:

Figure 15: Cost Assumption for Funding

Cost Part	Total	Source
App development	€185,000	"8.6 Future Iterations"
Overhead Costs	€201.000	"7.7 Cost Structure"
Total	**€386,000**	

It is important to point out that these estimations are based on average numbers from research on app development and expert assessment. Unexpected technical difficulties and regulatory restrictions may have a big influence on the ultimate costs. However, it wase estimated that in order to build the NutriFlow Kids app and enter the approval phase, an initial investment round of **€400,000** would be required. These number can be used as a base for further steps and conversations with possible financiers and investors.

8.6 Learnings and Future Outlook

To successfully navigate the challenges of launching a digital health application, the NutriFlow

Kids journey has demonstrated the critical role that strategic partnerships and acceleration play. Developing connections with industry players was rewarding and difficult at the same time. Early partnerships with consulting companies like fbeta GmbH highlighted how crucial risk reduction and regulatory compliance are. Their observations regarding DiGA approvals demonstrated how early regulatory framework alignment can greatly increase the likelihood of a product's success and avoid expensive blunders.

Furthermore, collaborations with pediatricians and other medical specialists were crucial in developing the diagnostic framework of the product. Through these partnerships, NutriFlow Kids was made to be both clinically solid and compatible with the real-world workflows of its intended users. The importance of visibility and credibility in the highly competitive healthtech sector was further illustrated by the participation of partners like Etypharm in trade show representation. In the future, NutriFlow Kids wants to strengthen its strategic alliances and use trade shows like DMEA (April 2025) to network with investors and healthcare stakeholders. Forming partnerships with groups such as the German Society for Gastroenterology could improve clinical legitimacy and prepare the way for wider acceptance. Additionally, investigating accelerator programs will yield important assets like funding, industry connections, and mentorship to support expansion and scalability.

In conclusion, the experience so far has demonstrated that collaborations and acceleration are not only helpful components but also the cornerstones of NutriFlow Kids' success. Expanding clinical validation, improving the product for user retention, and gaining the confidence of end users and medical professionals will be the main goals of future initiative

Part III: Group Part

9 Impact Assessment

This section introduces a Theory of Change (ToC) driven Impact Assessment designed to anticipate how NutriFlow Kids' adoption can lead to significant, long-term improvements in pediatric gastrointestinal (GI) healthcare. Rather than centering on the current state of development, the assessment focuses on the broader, sustained effects that may emerge as the solution is scaled, integrated, and continually refined. As NutriFlow Kids is still in the development stage, exact data needs to be captured during the Pilot-Testing-Phase. This section is built on informed assumptions, trying to outline how impact will ultimately be measured and validated.

9.1 Why Use the Theory of Change Framework

The Theory of Change framework is an optimal selection for NutriFlow Kids, as it offers a systematic method for connecting actions with quantifiable results and lasting effects. This approach guarantees comprehension of how the application provides important benefits while synchronizing all stakeholders with its goals. The framework enables ongoing evaluation and enhancement, rendering it adaptable to real-world data and user input, thereby ensuring NutriFlow Kids remains efficient and scalable (Stein and Valters 2012).

9.2 Theory of change: Inputs

By comparing development expenses with the budgeted amount specified in the cost structure, financial resources will be tracked. The number of partnership agreements formed during the pilot phase will be utilized for evaluating the effectiveness of partnerships with pediatricians. In order to maximize spending and determine the best tactics for forming new pediatrician partnerships,

marketing resources will be assessed by examining the results of outreach campaigns. Additionally, usability and performance of the technical infrastructure will be evaluated through usage monitoring, pediatrician feedback and user feedback surveys.

Figure 16: Inputs for Impact Assessment

Input	Measurement Approach	Data Collection Method
Financial resources for development and compliance	Tracking expenditure vs. planned development budgets	Financial Reports, budget tracking tools
Technical infrastructure	Monitor costs to sustain viable data infrastructure	Financial Reports, budget tracking tools, System monitoring Tools
Marketing resources for outreach campaigns	Monitor campaign costs	Cost per pediatrician onboarded
Partnerships with pediatricians	Count the number of partnerships	Number of individual pediatricians prescribing NutriFlow Kids

9.3 Theory of Change: Activities

Doctor's input is incorporated into the NutriFlow Kids app's final development to guarantee usability and diagnostic precision. They receive training sessions that give them the information and abilities they need to navigate the app properly. To ensure alignment with the DiGA law, consultants are hired. Targeted advertising campaigns highlight the advantages of the app and increase awareness among parents and physicians. Testing and validation in real-world settings are made possible by pilot implementations in pediatric practices.

Figure 17: Activities for Impact Assessment

Activity	Measurement Approach	Data Collection Method
Final app development with pediatric feedback	Gather feedback from test group pediatricians and measure feature effectiveness	Surveys, usability testing
Pediatrician training and onboarding	Evaluate the number of doctors onboarded and their understanding of the app's functionality.	Training session attendance logs, posttraining surveys
Collaboration with consultants for DiGA compliance	Monitor the DiGA approval process and monitor costs	Approval documentation
Targeted marketing campaigns	Measure the reach and engagement of campaigns in test regions for pediatricians and parents	Cost per pediatrician reached/onboarded. Website traffic tools
Real-world pilots in pediatric practices	Track user adoption, satisfaction, and retention in pilot areas. Compare diagnosis rates and times in pilot	User analytics, pediatrician surveys, clinical records analysis

9.4 Theory of Change: Outputs

A fully functional app is created, complete with user-friendly interfaces and high parental retention rates. Working with pediatricians, diagnostic algorithms are validated to make sure they conform to clinical standards. Under the DiGA law, insurers start to cover the app, making it more widely available. Partnerships with healthcare providers are established, building trust and enabling the app's adoption in clinical workflows.

Figure 18: Outputs for Impact Assessment

Output	Measurement Approach	Data Collection Method
Fully functional app with high retention	Measure usage patterns (daily log rates, active users) in test groups.	App usage analytics, parental surveys
Validated diagnostic algorithms	Test diagnostic accuracy by comparing algorithm recommendations vs. traditional methods in control groups.	Clinical test results, pediatrician feedback
Insurance coverage under DiGA law	Assess the number of prescriptions written for NutriFlow Kids	Prescription logs, insurer data
Established healthcare partnerships	Evaluate the role of partnerships in achieving app adoption and diagnostic improvements	Partner interviews, adoption rate analysis

9.5 Theory of Change: Outcomes

By collecting organized and accurate symptom data using the app, parents help to minimize anamnesis time and enable pediatricians to concentrate on quicker and more accurate diagnosis. While minimizing repeat visits, this reduces diagnosis times and increases diagnostic accuracy. Additionally, the app enhances parent-doctor collaboration by encouraging clearer communication and trust.

Figure 19: Outcome for Impact Assessment

Outcome	Measurement Approach	Data Collection Method
Structured data collection by parents	Compare the completeness and accuracy of symptom logs between NutriFlow Kids users and control group parents.	Log data, parental surveys
Improved diagnostic accuracy and reduced diagnosis time	Compare time-to-diagnosis and diagnostic accuracy between test and control groups.	Clinical records, patient follow-ups
Reduced repeat visits	Track the frequency of repeat visits in test areas vs. control areas..	Clinic visit logs, patient surveys

Improved parent-doctor collaboration	Conduct surveys to assess satisfaction and collaboration between parents and doctors in test and control groups.	Surveys, focus groups

9.6 Theory of Change: Long-Term Impact

Children's health results are improved; their quality of life will be improved by quicker treatments and less severe symptoms. Reducing repeat visits and diagnostic delays lowers healthcare costs, which benefits families and insurers financially. As a dependable and expandable digital health solution, NutriFlow Kids establishes a standard for comparable instruments in pediatric care. This achievement speeds up the incorporation of technology into diagnostic and therapeutic procedures and contributes in the wider adoption of digital solutions in the healthcare industry.

Figure 20: Impact Assessment

Impact	Measurement Approach	Data Collection Method
Improved health outcomes for children	Compare symptom severity and frequency reductions in test groups vs. control groups over a year.	Patient surveys, clinical records analysis
Reduced healthcare costs	Analyze per-patient healthcare costs in test vs. control groups over a fixed period.	Cost comparison reports, insurer data
Trusted, scalable digital health solution	Monitor app adoption rates and repeat use in test areas. Compare scalability efforts in pilot vs. non-pilot regions.	Adoption rates, regional scalability reports
Broader adoption of pediatric digital tools	Evaluate the spread of similar digital solutions based on test group success stories vs. control group resistance.	Market surveys, industry adoption reports

9.7 Impact Conclusion

The Theory of Change framework presents a robust foundation to evaluate the long-term impact of NutriFlow Kids, ensuring that every stage of its development, implementation, and scaling is aligned with measurable, meaningful outcomes. The model makes it possible to illustrate how NutriFlow Kids is planning to cause change by methodically connecting inputs, activities, outputs,

and outcomes to the end goal of enhancing pediatric GI healthcare. Because of its flexibility, NutriFlow Kids will be able to respond to stakeholder input and real-world data, establishing a feedback loop that encourages ongoing development. Additionally, the focus on cooperation between parents and pediatricians builds trust and improves the app's integration with clinical workflows. By reducing diagnostic delays, improving communication, and lowering healthcare costs, NutriFlow Kids wants to display the value of a structured, evidence-driven approach. As a scalable and innovative digital health tool, it tries to create benchmarks for future solutions in pediatric care, implementing the transformative power of the Theory of Change framework in addressing complex healthcare challenges.

10 Limitations of the work project

To address the diagnostic challenges in pediatric gastrointestinal, some limitations must be considered. First, the testing and validation stages were carried out in a short period (2-3 months) and with a relatively small sample size of 23 due to a required in person walk through before user conducted the test-user-survey. Expanding these efforts to a larger and more diverse population could further improve the findings' robustness, even though the insights obtained from pediatricians, parents, and other healthcare professionals were very valuable.

Second, NutriFlow Kids is still in the prototyping stage, so its full potential in actual clinical settings has not yet been evaluated. Although the iterative Build-Measure-Learn cycles yielded useful feedback and enhancements, a more extensive clinical study will be required to confirm the app's effectiveness.

Although the team has already made progress in compliance, more work and cooperation with specialists in digital health approval procedures will be necessary to reach full certification.

Furthermore, NutriFlow Kids captures data through parental input, which naturally introduces variability in data quality and user engagement. Differences in motivation, digital literacy, and the ability to accurately track symptoms are examples of areas where ongoing enhancements to user experience and assistance could reduce possible biases.

11 Key Learnings from this Workprojekt

The value of stakeholder collaboration is one of the project's most important lessons. The team was able to closely align the product with user needs by involving parents, pediatricians, and other health professionals early in the development process. These observations not only influenced the app's layout but also validated the need to customize solutions for medical issues.

The importance of iterative development is yet another important lesson learned. NutriFlow Kids was progressively improved using the Build-Measure-Learn framework in most parts, demonstrating how minor tweaks made in response to user input can result in significant gains in functionality and usability. The difficulties of striking a balance between technical viability and usability, were also brought to light by this iterative process.

Finally, the study illustrated the importance of regulatory planning. Early awareness of the strict requirements for DiGA certification aided the team in establishing specific goals for data security and clinical validation. As NutriFlow Kids moves closer to being ready for the market, this proactive strategy will be essential. All things considered, the project demonstrated that the process of going from idea to execution demands flexibility, teamwork, and an intense focus on producing measurable results.

12 Future of NutriFlow Kids

NutriFlow Kids' future is as a certified DiGA product that can revolutionize pediatric diagnostics. Further on, the app must undergo the clinical study phase to prove its medical efficacy and meet the German Federal Institute for Drugs and Medical Devices' strict requirements. The study will verify the app's ability to improve diagnostic accuracy, diagnosis time, and parent-pediatrician communication. After clinical validation, DiGA certification applications follow. NutriFlow Kids must show its positive healthcare impact, comply with data protection and security regulations, and meet interoperability standards in this phase. Managing this process will make NutriFlow Kids a reimbursable digital health solution in Germany, allowing doctors to prescribe it and ensuring statutory health insurance coverage. Once certified, market entry and healthcare ecosystem integration are going to be prioritized. To increase awareness and confidence in the app, this involves forming strategic alliances with pediatricians, health insurance providers, and healthcare associations. Within the next 2-3 years, NutriFlow Kids aims to enter the pediatric digital health market. With this roadmap, there is the target to not only overcome market and regulatory obstacles but also revolutionize the diagnosis and treatment of gastrointestinal disorders in children.

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Appendix

Appendix 1: First Inputs Pre-Development

Name	Short Description	Category	Contacted
Clara S.	Nutriotionist Nestel Business Services	Interview 1	2024
Catherine V.	Microbiome Specialist	Interview 2	2024
Jasmin H.	PHD Student Business Informatics/Health sciences	Interview 3	2024
Sofia Almeida S.	Medical Doctor,MSc Medicine, Teaching Assistant @NOVA Medical School	Interview 4	2024
Eva R.	Research Associate & PhD candidate at Institute of Information Management, University of St.Galle	Interview 5	2024
Dr. Peter Nessel	General practitioner	Interview 6	2024
Dr. Christian Klepzig	Diabetologist	Interview 7	2024
Dr. Eric Sittler	General practitioner	Interview 8	2024
Dr. Anjuli S.	General practitioner	Interview 9	2024
Anika B.	Problems losing weight and eating healthy while working and exercising regularly/depression	Interview 10	2024
Vanessa S.	Weight problems since childhood/sometimes severe phobia of healthy or new foods	Interview 11	2024
Matthias J.	Time-limited student/, would like to cook more often and healthier/problems gaining weight	Interview 12	2024
Thomas P.	Fitness enthusiast with a very unbalanced diet (a lot of sugar, milk and other animal products, few vitamins)/little motivation to cook	Interview 13	2024
Eva E.	Student, healthy, "normal" diet, would like to eat even healthier	Interview 14	2024
Arjeta C.	Past with eating disorders, problems gaining weight or finding healthy relationships	Interview 15	2024
Tamara D.	Weight problems in the past, problems to cook healthy besides work, eats once a day, but not very balanced (mostly only pasta)	Interview 16	2024
Djamila S.	Vegan, Student	Interview 17	2024

Ursula S.	Problems with portion control, emotional and stress eating, intestinal problems	Interview 18	2024

Appendix 2: Interviews with doctors

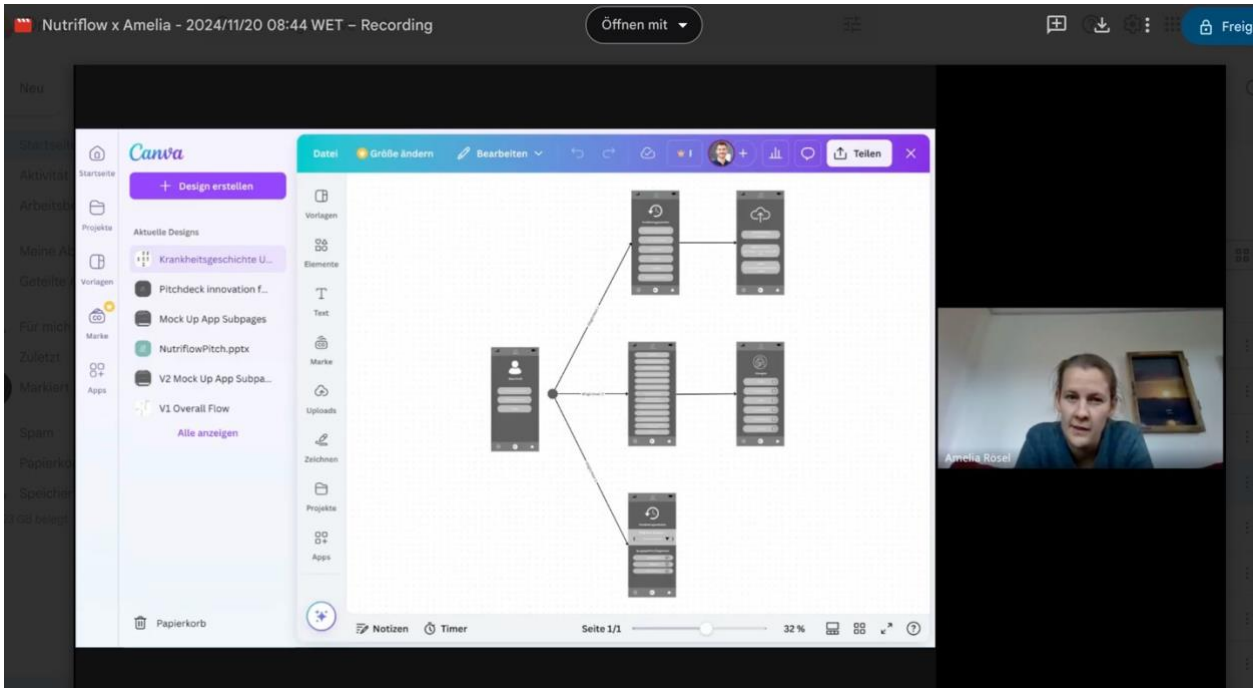
Appendix 2.1: Below is a list of the key findings that the team was able to extract from 2 interviews (30.7. 2024 and 15.8. 2024) and a telephone conversation with Tabea D'Heur, Gladbach Clinic.

Problem	**Key Finding**
Patients fail to provide structured or complete health data, making the diagnostic process more difficult and time-consuming	A standardized tracking tool like NutriFlow Kids could significantly enhance diagnostic efficiency and accuracy
Parents find it challenging to provide precise information about symptoms and triggers due to limited understanding or observation skills	An app that helps parents systematically track symptoms and diet would be a valuable support tool
Doctors often lack sufficient time to conduct detailed anamneses or ask comprehensive questions	Pre-structured data could save time and allow doctors to focus on the diagnosis itself
Patient-provided health diaries are often inconsistent, irrelevant, or not diagnostically actionable	Offer clear input formats tailored to medical requirements
Parents are often overwhelmed by their children's symptoms, which can impede effective communication with doctors	An app that guides parents systematically and reduces stress could indirectly improve diagnostic outcomes
Doctors reported that current digital health solutions are rarely tailored to children and often overlook their unique requirements	Feature a design and functionality specifically addressing the needs of children and their parents
Repeated consultations without diagnostic progress are both costly and frustrating for patients	Improved data collection could reduce unnecessary tests and visits, saving time and costs
In multicultural areas, language barriers often prevent parents from effectively communicating symptoms to doctors.	Multilingual functionality could address this gap and improve data quality
Parents often don't understand which foods might trigger specific symptoms	App should provide simple, user-friendly tips and guidance to help parents identify critical patterns

Appendix 2.2: Interview with Dr. Amelia Rösel, pneumology, immunology (Berlin Charite)

Question	Key Finding
How do you approach diagnosing abdominal pain in children?	The most common cause of abdominal pain in children is constipation, often triggered by diet or stress. Diagnoses like IBS are less frequent and require excluding other conditions.

What data would be helpful for an app to support diagnostics?	Concise data collection is key. Relevant factors include stool consistency pain (e.g., Boston Stool Scale), levels (e.g., smiley-based pain scales), and triggers like stress factors. Overloading with data should be avoided.
Are symptoms of functional gastrointestinal disorders different in children compared to adults?	Children tend to report symptoms more directly, while adults and adolescents might be more reserved. Psychosomatic factors are less prominent in children.
Would it make sense to differentiate the app by age groups?	Yes, the age needs vary significantly by parents group. For younger children, adolescents would input data, while app could use the independently.
How could parents be motivated to enter children data regularly?	Gamification elements, like reward systems (e.g., collecting stars), could increase motivation. The app should be simple to use and visually appealing.
Should nutrition, stress, and other factors be combined for tracking?	Nutrition is the primary factor, but stress should also be considered as it often triggers symptoms. Recording like schoolwork or birthday parties is important.
Would a reminder function in the app be useful?	Yes, reminders like those used in Duolingo could encourage regular data entry. Push notifications should be customizable to balance and burden.
What challenges do you foresee in data collection by parents?	Parents might unintentionally influence the child's perception by actively asking about symptoms. Only voluntarily reported complaints should be recorded.
How do acute and chronic abdominal pain in children differ?	Acute pain is often infectious or organic, while chronic or psychosomatic. usually functional
Would a multilingual app be beneficial?	A multilingual app would be particularly helpful as many parents (e.g., multicultural families) may speak the primary language not fluently, reducing barriers to use.
How could a digital tool like NutriFlow Kids support parents in managing their emotional burden ?	Parents often bear a significant emotional burden when managing their mental burden when especially the child's child's FGIDs, not severe but the symptoms are and lack of uncertainty for the solutions create stress parents.
How to convince pediatricians to engage with NutriFlow Kids?	Testimonials from fellow pediatricians are essential, as medical professionals place the greatest trust in their colleagues. Then organize roundtables and webinars with testimonial and leads with a group of doctors.



Appendix 2.3: Interview with Dr. Kerstin Ludwig (General practitioner), 21.11.2024

1. What are the biggest diagnostic challenges?
    - Diagnosing irritable bowel syndrome (IBS) in children is complex and timeintensive due to the need to exclude other conditions like Crohn's disease or lactose intolerance.
    - Tracking dietary intake, emotional state, and gastrointestinal symptoms over time can aid in faster and more accurate diagnosis.

2. What is the role of stress and antibiotics?
    - Stress significantly impacts gastrointestinal health, often originating from earlylife factors such as instrumental births or highstress levels in children.
    - Overuse of antibiotics disrupts gut microbiota, leading to longterm digestive issues.

3. What should be proposed App Features?
    - Comprehensive tracking tools for diet, emotional wellbeing, stool consistency, and frequency.
    - Inclusion of visual symptom tracking, e.g., skin conditions related to gut health (e.g., leaky gut syndrome).
    - Tools for recording medical history, including antibiotic usage.

4. Any recommendations for App Improvement?
    - Include features for tracking food intolerances (e.g., lactose or fructose) and their relation to symptoms.
    - Develop multilanguage support and use visual aids to increase accessibility for nonnative speakers and less healthliterate users.
    - Introduce functions for differential diagnosis to help physicians distinguish between IBS and other conditions.

5. Possible engagement with Healthcare Professionals?
    - Physicians value tools that save time and reduce unnecessary followup appointments by providing preconsultation data.
    - Effective marketing to doctors requires testimonials, clinical study evidence, and collaboration with medical associations and conferences.

6. What are recommended marketing strategies?
    - Focus on specialist conferences (e.g., gastroenterology refresher events) to showcase the app.
    - Leverage articles in medical journals and partnerships with professional associations for credibility.

- Utilize expert endorsements to build trust among physicians.

7. Possible challenges in adoption of the product?
   - Resistance to innovation due to lack of awareness about the importance of gut health and microbiota in mainstream medical practice.
   - Addressing diversity in users' language and educational backgrounds to ensure effective data collection.

Appendix 3: Industry expert interviews

Appendix 3.1: Holger Bless, fbeta GmbH (digital health consulting) 22.11.2024

Questions	**Key Findings**
What partnerships are critical during the DiGA approval process?	Regulatory consultants, clinical trial organizations (CAOs), and IT providers for GDPR compliance and essential. These interoperability are help meet DiGA partnerships and navigate approval requirements. stages.
How does fbeta support startups in the DiGA approval phase?	fbeta provides a network of specialized partners, including legal advisors, developers, and clinical trial experts, to ensure startups meet DiGA requirements. They offer tailored support across all phases of the approval process.
Can startups succeed in the DiGA process without consulting firms like fbeta?	It is extremely difficult to succeed without expert guidance. Few startups manage to complete the process alone, as it requires navigating complex regulatory requirements. BFAM consultations are critical, and mistakes in preparation can result in wasted time and resources. Even if not using fbeta, startups should seek experienced support.
How is pricing for DiGA products determined?	In the first year, pricing is flexible but retroactively based on health insurance starting in the 13th Study quality and results influence the price final price. typical range is for 90 days of Startups must account for reimbursements phases or price trial extend.
What challenges arise in executing clinical studies for DiGA approval?	Recruitment and onboarding delays are common and often underestimated. A three-month observation period usually requires one year due to preparation, patient inclusion, and analysis.
What is the importance of BFAM approval consultations in the process?	BFAM consultations are essential for validating study designs, benefit and regulatory compliance. Lack of preparation can lead to rejection, wasting time and resources.
How do partnerships with health insurers contribute to success?	Early engagement with health insurers helps develop pricing strategies and demonstrate economic viability, making reimbursement negotiations smoother.

What	role	do	doctors	play	in	Doctors	are	critical	as	prescribers,	but				
	ensuring	DiGA	success?				many	lack	familiarity	with	digital				
							health	apps.	Non-budgeted		prescribing				
							freedoms	and	tailored	billing	codes	can			
							incentivize	them.	Awareness	campaigns	are				
							necessary	to	build	trust.					
How	does	study	quality	impact	DiGA	High-quality		studies	with	clear,	positive				
	success	and	pricing?				results	increase	the	likelihood	of				
							regulatory	approval	and	allow	for				
							higher	pricing	during	negotiations					
							with	health	insurers.	Poor	study				
							designs	reduce	both	success	rates				
							and	pricing	potential.						
How	long	could	the	DiGA	approval	The	DiGA	approval	process	consists	of				
	process	take,	and	what	are	the	three	main	phases:	product	development,				
	key	steps	involved?				certification,		and	market	entry.				
						The	total	duration	is	approximately					
							24–36	months,	depending	on	product				
							complexity	and	the	availability	of				
							clinical	evidence.	The	clinical	study				
							phase	alone	typically	takes	12				
							months,	but	preparation,	data	patient				
							recruitment,		and	time.	analysis				
							often	require	additional						
Can	you	give	us	an	estimate	Legal	costs:	(€10,000-€20,000)	;	clinical					
	based	on	your	experience,				trials:	(€50,000-€100,000)						
	what	amount	could	be	needed	for									
	legal	advisory	and	clinical	trials	?									

Appendix 3.2: Interview Tina Sadarangani, Care Mobi (caregiver app) 29.11.2024

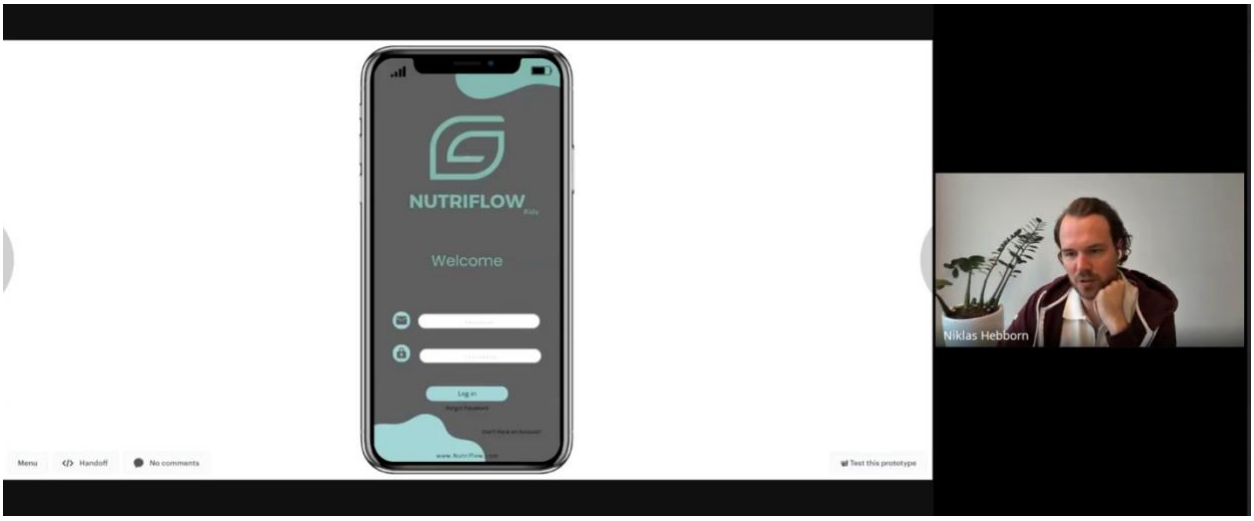
Questions						**Key Findings**									
What	challenges	arise	in	retaining	app	Retention	is	improved	by	focusing	on				
	users,	especially	in	high-stress	caregiving		short,	frequent	interactions.		Caregivers				
	situations?						prefer	apps	that	don't	consume				
							much	time	but	provide	high				
							utility	for	caregiving	tasks.					
How	does	the	app	address	caregiver	Transparency		and	user	education	are	key.			
	mistrust	of	healthcare	systems?			Building	trust	involves	ensuring	the	app			
							is	seen	as	a	supportive	tool			
							rather	than	a	datagrabbing					
							system.								
How	did	you	ensure	simplicity	and	Feedback	from	caregivers,	doctors,	and	designers				
	usability	in	app	design?			emphasized		simplicity.	The	app				
							avoids	overly	clinical	interfaces	and	is			
							designed	to	feel	familiar,	like				
							Facebook	or	Uber.						
How	does	the	B2B	monetization		The	app	is	free	for	individual				
	model	work?					caregivers.	Revenue	comes	from	charging				
							agencies	(e.g.,	home	healthcare	or				
							adult	daycare	centers)	a	per-user	fee			
							for	a	web-based	platform.					
What	marketing	strategies	have	been	most	Direct	engagement		at	industry	conferences				
	effective?						and	social	media	campaigns	targeting				
							caregivers	have	been	the	most				
							effective	channels	for	promoting	the				
							app.								

How	is	the	app	positioned	as	a	Agencies	save	significant	time	on				
	time-saving		tool	for	caregiving			communication	and	by	reducing	unnecessary			
	agencies?							calls	has	paperwork.		This			
								efficiency	the	convinced	centers	to			
								adopt	for	app	as	standard			
								practice		new	users.				
What	considerations		influenced	the	inclusion	of	Research	identified	nutrition,	medication		tracking,	and		
	specific	app	features?					behavioral	changes	as	the	most			
								critical	metrics	for	caregivers	and			
								doctors,	driving	the	app's	feature	set.		
How	do	warning	signs	tracked	in	the	While	large-scale	AI	implementation		is			
	app	improve	care?					pending,	the	app	identifies	patterns			
								(e.g.,	reduced	food	intake,	confusion)			
								that	help	caregivers	detect	health			
								issues	early,	reducing	hospitalizations.				

Appendix 3.3 Interview Niklas Hebborn, Freigeist capital (Venture Capital) 12.11.2024

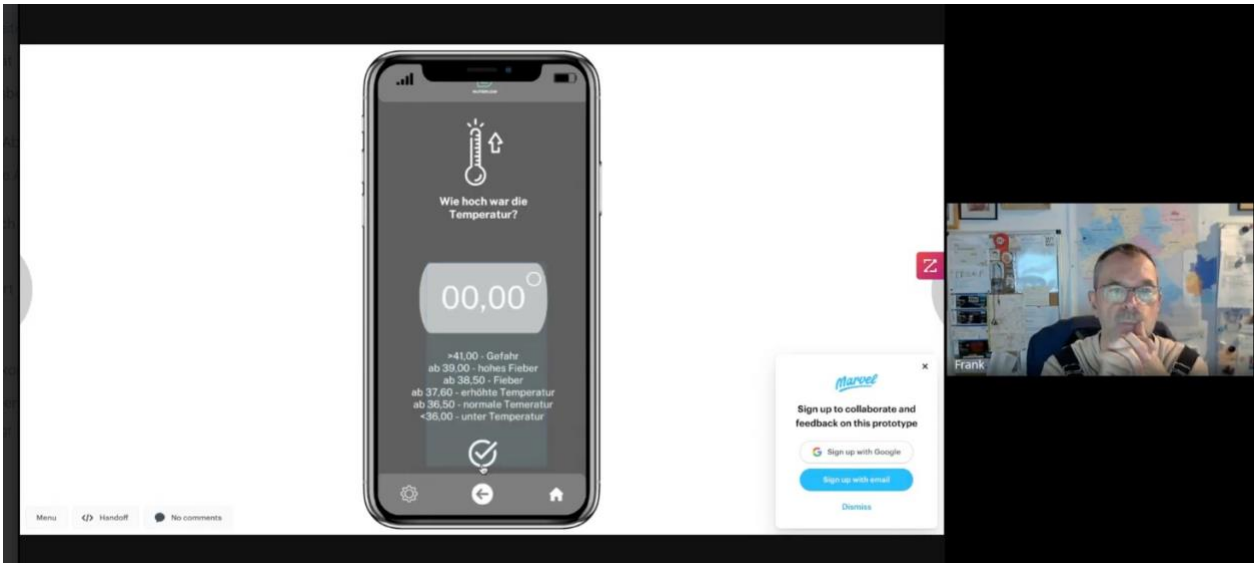
Questions							**Key Findings**								
What	is	the	role	of	doctors	in	Doctors	act	as	the	primary	sales			
	marketing	and	distributing		DiGA			channel.	Convincing		a	core			
	apps	like	NutriFlow	Kids?				group	of	10-15	"champions"				
								(trusted	doctors)	to	promote	the	app		
								can	create	a	multiplier	effect	in		
								prescriptions.							
Does	targeting	parents	directly	through	marketing		While	targeting	parents	can	help	build			
	make	sense?						awareness,	it	requires	significant	budget	and		
								time	for	conversions.		Focusing	on		
								doctors	is	more	cost-effective,		as		
								they	directly	influence	prescriptions.				
What	marketing	strategies	work	best	for		Direct	engagement		at	conferences		and		
	targeting	doctors?						trade	fairs	is	crucial.	Building			
								trust	with	digitally	savvy	doctors			
								under	50,	who	are	more			
								open	to	adopting	tech	solutions,	is		
								recommended.							
							Build	testimonials,		whose	opinion	is			
								highly	influential.	For	pediatricians,				
								those		testimonials					
								medical							
							professionals		of	high	status.	This	is		
								especially	important,	because	NutriFlow's				
								team	lacks	credibility	due	to	not		
								existing	medical	background.					
How	should	pricing	for	a	DiGA	app	Pricing	starts	flexibly	during	the	first			
	like	NutriFlow	Kids	be	approached?			year	but	is	reassessed	based	on		
								production		costs	and	study			
								results.	Typical	prices	range	between			
								€200-€400		per	prescription.				
Can	NutriFlow	Kids	influence	its	pricing?		Pricing	is	largely	out	of	the			
								developer's		control,	as	health			
								insurance	systems	set	prices	after	the		
								trial	year.	Competitive		pricing			
								with	existing	apps	like	CaraCare	is		
								advisable.							
What	partnerships		are	critical	for		Partnering	with	specialized		doctors	or			
	success	in	the	approval	and			clinics	(e.g.,	Charité)	who	can			
	market	phases?						endorse	the	app	and	act	as		
								ambassadors		is	crucial	for			
								credibility	and	adoption.					
How	should	NutriFlow	Kids	approach	its	go-	Focus	regionally	(e.g.,	a	specific	city	or		
to-market	strategy	for	doctors?					area)	and	build	relationships				
								with	doctors	specialized		in			
								gastrointestinal		conditions,	using	a			
								trustbased	approach.						

How does the regulatory process influence funding and partnerships?	The three-phase certification, process—product development, requires 24-36 months. and market entry—with investors Strategic partnerships essential for and healthcare experts are effectively. navigating these stages
What funding considerations are important for startups in the DiGA space?	Startups need sufficient capital to sustain the 24-36 month approval process. A mix of grants (e.g., EXIST), business angels, and VCs is critical. Investors often prefer funding startups that are already in certification phase or have proven retention and prescription metrics. -> Focus on Investors Angel
What role do SEO and social media play in Kids' marketing strategy?	SEO can be valuable for creating advisory content and building awareness among parents searching for solutions. Focus on landing content on your popular page and watch out for media key words. However, social is marketing (e.g., Instagram ads) seen as less effective for early-stage growth due high costs and low ROI. stronger focus on organic search recommended.



Appendix 3.4: Interview Frank Schneider-Wrensch, Etypharm (Key Account Manager) 19.11.2024

How can NutriFlow Kids approach pediatricians most effectively and efficiently?	Trade fairs work best to achieve a high conversion, especially when the company is an unknown player. Moreover, trade fairs offer a high concentration of doctors actively seeking innovative solutions. They provide an opportunity to build trust through personal interaction and to demonstrate the practical benefits of the app in real time. At the same time, the success of such efforts can be clearly measured, for example, by the number of qualified leads generated.
What's the price for a sales representative on a fair?	Between 500-1500€ a day depending on years of experience.



Appendix 4: Parent Interviews (with children having FGID symptoms)

Questions:

1 Age and Gender
2 Diagnosis and Daily Life
- How has FGID affected the daily life of your child + yourself?

3 Symptoms and Challenges
- Which symptoms cause the most difficulties for your child?
- How often do these symptoms occur, and how much do they impact your child's daily life?

4 Communication with Doctors
- How would you rate the communication with doctors or healthcare professionals regarding your child's symptoms?
- Do you sometimes feel a need for a structured way to document your child's symptoms or progress?

5 Self-Management
- Do you currently use any methods or tools to track your child's diet, symptoms, or well-being? If yes, which ones?
- Would an app that tracks nutrition, stress, pain, and stool patterns be helpful to you?

6 Treatment Challenges
- What are the biggest challenges you face in managing your child's symptoms or treatment?

7 Knowledge and Access to Information
- Do you feel adequately informed about FGIDs and the available treatment options? - Would you like to receive more personalized advice tailored to your child's needs?

8 Solution Features
- What features should an app or tool have to be genuinely helpful for you? - How important is it to you to share data directly with your child's doctor?

9 Open-Ended Question
- Is there anything you feel is missing in the current support available for managing your child's FGID?

Answers:

Parent	Date
Silke F.	06.10.24
Carla M.	06.10.24
Tabea R.	18.10.24
Michael F.	29.09.24
Niklas F.	28.10.24
Sebastian R.	03.11.24

Demographics of the child
6 yo, male
10 yo, male
5 yo, female
9 yo, male
11 yo, female
9 yo, male

Q1
Diagnosed 2 years ago; impacts meal planning, frequent bathroom visits
daily routine affected, difficulty attending school
changes to eating habits, hard to plan trips.
affects sleep schedules and family activities.
changes eating habbits, frequent bathroom visits
life disrupted by constant symptom monitoring.

Q2
Severe abdominal pain, occurs 3-4 times/week
Bloating and diarrhea after meals, especially in the evening
Constipation and abdominal pain, happens 2-3 times/week, disrupts
Nausea and diarrhea,
cramps during meals
Bloating and stomach pain, 2-3 times/week

Q3
doctors sometimes dismiss concerns
communication good but needs structured reporting system
hard to get appointments, not enough time for detailed discussions
better symptom documentation would help
good communication
doctors helpful but feel rushed during appointments

Q4
Food diary, symptom tracker in notes app
Would use an app; critical to track symptoms and nutrition
physical journal to track meals and symptoms.
No tracking
Occasionally uses a meal app but too complicated for daily use
Writes down symptoms occasionally, no consistent tool used

Q5
Difficulty finding effective medication and managing school absences
Lack of consistency in symptoms makes treatment hard
No clear diet guidance
Overwhelmed in general
Finding time for consistent symptom tracking
Not enough information on what foods to avoid or include

Q6
No, not enough information about FGIDs; overwhelming internet advice
Yes, needs tailored information and advice
lost navigating information online without professional guidance
general knowledge, but need more about specific triggers
would prefer simplified advice for a child-friendly approach
need more specific advice on long-term management

Q7
Symptom history, diet recommendations, stool pattern tracking
Direct sharing with doctors, alerts for critical changes
Food intolerance tracking
Clear symptom trends
Food intolerance tracking, doctor communication
Integrated symptom tracker with alerts for critical changes

Q8
psychological support and peer support groups
X
Missing structured guidance on long-term treatment plans
Lack of community where parents can share experiences
Not sure
better tools for managing symptoms during school hours

Appendix 5: Patient and Doctor Surveys

Appendix 5.1: Survey with doctors for product development

What is your medical specialization?	How many years have you been practicing medicine?	How comfortable are you with using digital tools in your practice?	How often do you receive insufficient data from parents/patients to make a diagnosis?	Do language barriers affect your ability to diagnose and treat patients effectively?	Would standardized digital tracking data be helpful in diagnosing gastrointestinal issues?	How important is it for a digital health application to provide multilingual support?	On a scale of 1–10, how often do you feel that patients/parents struggle to explain their (child's) symptoms clearly? *(1 = Never, 10 = Always)*
General Pediatrics	16+ years	Somewhat comfortable	Occasionally	No	Yes	Somewhat important	7
General Pediatrics	6–15 years	Very comfortable	Frequently	Yes	Yes	Very important	6
Pediatric	0–5 years	Very comfortable	Frequently	Yes	Yes	Very important	9
Other	16+ years	Neutral	Rarely	No	No opinion	Neutral	5
Other	0–5 years	Somewhat comfortable	Very frequently	Sometimes	Yes	Very important	7
Pediatric	16+ years	Neutral	Frequently	Sometimes	Yes	Neutral	5
Other	6–15 years	Somewhat uncomfortable	Occasionally	No	No	Neutral	3
Pediatric	6–15 years	Somewhat comfortable	Frequently	Sometimes	Yes	Somewhat important	8
General Pediatrics	6–15 years	Neutral	Occasionally	Sometimes	No opinion	Somewhat important	6
Pediatric	0–5 years	Somewhat comfortable	Frequently	Yes	Yes	Very important	7
Other	6–15 years	Somewhat uncomfortable	Occasionally	No	No opinion	Neutral	4
Pediatric	6–15 years	Somewhat comfortable	Very frequently	Yes	Yes	Very important	8
Other	0–5 years	Somewhat comfortable	Occasionally	Sometimes	No opinion	Somewhat important	6
Pediatric	6–15 years	Very comfortable	Occasionally	Sometimes	No opinion	Somewhat important	7
Pediatric	0–5 years	Very comfortable	Occasionally	Sometimes	Yes	Very important	6
Pediatric	16+ years	Somewhat uncomfortable	Rarely	Sometimes	No opinion	Neutral	5
Other	0–5 years	Neutral	Rarely	No	No opinion	Neutral	4
General Pediatrics	6–15 years	Very comfortable	Occasionally	Sometimes	No opinion	Neutral	6
Other	6–15 years	Somewhat comfortable	Frequently	Yes	Yes	Somewhat important	6
Pediatric	0–5 years	Very comfortable	Frequently	Yes	Yes	Very important	7
Other	16+ years	Somewhat uncomfortable	Rarely	No	No	Neutral	5
General Pediatrics	6–15 years	Somewhat comfortable	Frequently	Sometimes	No opinion	Neutral	7

Appendix 5.2: Survey with parents of Kids suffering under FGID symptoms

What is your child's age?	What is your primary language ?	How often does your child experience symptoms like abdominal pain, bloating, or irregular bowel movements?	On a scale of 1–10, how stressful do you find managing your child's symptoms?	On a scale of 1–10, how stressed do you think your child feels because of their condition?	Has your child missed school due to these symptoms ?	Have you missed work due to managing your child's condition?	How easy is it for you to explain your child's symptoms to their doctor?	Do language barriers make it harder to communica te with the doctor?	How much time would you be able to dedicate to tracking your child's health metrics daily?	When would be the best time for you to input tracking data?	How comfortable would you feel using a prescribed health app to track your child's symptoms?	How would you feel about sharing this data directly with your child's doctor?	On a scale of 1–10, how satisfied are you with the communication between you and your child's doctor?
3–5 years	German	antly (3+ times per	8	8	Yes	Yes	Somewhat difficul	No	ess than 5 minute:	Evening	8	Somewhat comfortable	4
6–10 years	German	antly (3+ times per	7	7	Yes	No	Somewhat difficul	Sometimes	ess than 5 minute:	Evening	10	Very comfortable	5
6–10 years	German	onally (1–2 times p	7	5	Yes	Yes	Somewhat difficul	No	ess than 5 minute:	Morning	7	Somewhat comfortable	3
11–14 years	German	antly (3+ times per	6	7	Yes	Yes	Somewhat difficul	Sometimes	5-10 minutes	Evening	8	Very comfortable	4
6–10 years	Turkish	y (1–2 times per m	6	5	Yes	Yes	Very difficult	Yes	5-10 minutes	Evening	8	Very comfortable	3
6–10 years	German	y (1–2 times per m	5	3	Yes	Yes	Neutral	No	ess than 5 minute:	Evening	8	Very comfortable	5
6–10 years	German	antly (3+ times per	7	6	Yes	Yes	Somewhat difficul	No	ess than 5 minute:	Morning	6	Somewhat comfortable	4
6–10 years	Arameic	onally (1–2 times p	6	7	Yes	No	Somewhat difficul	Sometimes	5-10 minutes	Evening	6	Very comfortable	4
6–10 years	German	antly (3+ times per	6	8	Yes	Yes	Somewhat difficul	No	5-10 minutes	Afternoon	6	Neutral	6
11–14 years	German	onally (1–2 times p	6	7	Yes	No	Very difficult	No	ess than 5 minute:	Evening	9	Very comfortable	3
6–10 years	German	y (1–2 times per m	5	5	Yes	No	Somewhat difficul	No	5-10 minutes	Evening	9	Very comfortable	5
11–14 years	Turkish	onally (1–2 times p	9	9	Yes	Yes	Very difficult	Yes	5-10 minutes	Morning	7	Very comfortable	1
6–10 years	German	y (1–2 times per m	7	9	Yes	No	Neutral	No	ess than 5 minute:	Evening	9	Somewhat comfortable	4
0–2 years	English	antly (3+ times per	5	7	Yes	Yes	Somewhat difficul	Sometimes	ess than 5 minute:	Evening	7	Neutral	3
11–14 years	German	antly (3+ times per	5	3	Yes	Yes	Somewhat difficul	No	ess than 5 minute:	Afternoon	6	Neutral	5
3–5 years	German	onally (1–2 times p	6	6	Yes	No	Neutral	No	ess than 5 minute:	Evening	5	Somewhat uncomfortabl	5
3–5 years	German	y (1–2 times per m	4	4	Yes	No	Neutral	No	ess than 5 minute:	Evening	7	Very comfortable	6
6–10 years	German	antly (3+ times per	8	8	Yes	Yes	Somewhat difficul	Sometimes	ess than 5 minute:	Evening	8	Very comfortable	3
0–2 years	German	onally (1–2 times p	6	6	Yes	Yes	Somewhat difficul	No	10-15 minutes	Afternoon	7	Somewhat comfortable	4
3–5 years	Turkish	onally (1–2 times p	8	8	Yes	No	Neutral	No	ess than 5 minute:	Evening	9	Very comfortable	5
11–14 years	German	antly (3+ times per	6	5	Yes	Yes	Somewhat difficul	No	5-10 minutes	Evening	7	Somewhat comfortable	5
0–2 years	German	y (1–2 times per m	5	3	No	No	Neutral	No	ess than 5 minute:	Evening	9	Very comfortable	7
6–10 years	German	onally (1–2 times p	2	2	Yes	No	Very easy	No	ess than 5 minute:	Morning	3	Neutral	8
3–5 years	German	antly (3+ times per	5	7	Yes	No	Very difficult	No	ess than 5 minute:	Afternoon	6	Somewhat comfortable	1
11–14 years	German	antly (3+ times per	8	9	Yes	Yes	Somewhat difficul	No	ess than 5 minute:	Evening	9	Very comfortable	2
6–10 years	Arabic	antly (3+ times per	6	7	Yes	Yes	Very difficult	Yes	5-10 minutes	Evening	5	Somewhat uncomfortabl	3
11–14 years	Croation	antly (3+ times per	9	9	Yes	Yes	Very difficult	Yes	ess than 5 minute:	Afternoon	8	Very comfortable	4
0–2 years	German	onally (1–2 times p	3	1	No	No	Very easy	No	ess than 5 minute:	Evening	3	Somewhat uncomfortabl	10
3–5 years	German	antly (3+ times per	6	8	Yes	Yes	Neutral	Sometimes	10-15 minutes	Evening	1	Neutral	6
11–14 years	German	y (1–2 times per m	4	2	Yes	No	Neutral	No	5-10 minutes	Afternoon	8	Very comfortable	5
11–14 years	German	y (1–2 times per m	1	1	Yes	No	Very easy	No	ess than 5 minute:	Evening	9	Very comfortable	9
11–14 years	German	onally (1–2 times p	10	10	Yes	Yes	Very difficult	Sometimes	5-10 minutes	Evening	7	Very comfortable	2
3–5 years	Bosnian	antly (3+ times per	5	5	Yes	Yes	Somewhat difficul	Sometimes	ess than 5 minute:	Evening	8	Very comfortable	2
6–10 years	German	onally (1–2 times p	6	7	Yes	No	Neutral	No	ess than 5 minute:	Evening	6	Very comfortable	6
6–10 years	German	y (1–2 times per m	3	2	Yes	No	Neutral	No	ess than 5 minute:	Evening	8	Somewhat comfortable	6
6–10 years	German	antly (3+ times per	8	6	Yes	Yes	Somewhat difficul	No	ess than 5 minute:	Morning	7	Somewhat comfortable	4
11–14 years	German	onally (1–2 times p	6	3	Yes	No	Neutral	No	ess than 5 minute:	Evening	9	Very comfortable	5
3–5 years	German	antly (3+ times per	7	8	Yes	Yes	Somewhat difficul	No	ess than 5 minute:	Evening	7	Somewhat comfortable	4
6–10 years	German	antly (3+ times per	6	6	Yes	No	Neutral	No	5-10 minutes	Evening	6	Neutral	5
6–10 years	German	onally (1–2 times p	6	4	Yes	Yes	Neutral	No	ess than 5 minute:	Evening	7	Very comfortable	6
11–14 years	German	y (1–2 times per m	4	2	Yes	No	Neutral	No	ore than 15 minute	Evening	9	Neutral	5
11–14 years	German	onally (1–2 times p	5	3	Yes	No	Neutral	Sometimes	ess than 5 minute:	Evening	6	Somewhat uncomfortabl	4

Appendix 5.3: Marketing Survey (trust in pediatricians' recommendations, the impact of advertisements,)

Survey on App Adoption Among Parents (NutriFlow Kids)

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1. Demographic Information

1. **Gender** ○ ○ Woman ○ ○ Man ○ ○ Other
2. **Age** ○ ○ 18-24 ○ ○ 25-34 ○ ○ 35-44 ○ ○ 45-54
3. **Exact Age**
   ○ Open text field
4. **Do you have at least one child?**
   ○ ○ Yes ○
   ○ No
5. **How old are your children?** ○ Open text field
6. **Are you currently using health-tracking apps?**
   ○ ○ Yes ○
   ○ No

---

2. Trust in Healthcare Professionals

7. **How much do you trust your pediatrician's advice when it comes to your child's health?**
   (Scale: 1-5, with 5 being the highest score)
   ○ 1 ○ 2 ○ 3 ○ 4 ○ 5

3. Likelihood of Adoption

8. **If your pediatrician recommended NutriFlow Kids for tracking your child's health, how likely would you be to download it?** *(Scale: 1-5, with 5 being the highest score)*
   ○ 1 ○ 2 ○ 3 ○ 4 ○ 5
9. **Based on your pediatrician's advice: why would you or wouldn't you download it?** ○ Open text field
10. **If you saw NutriFlow Kids recommended by an online advertisement, how likely would you be to download it?** *(Scale: 1-5, with 5 being the highest score)*
    ○ 1 ○ 2 ○ 3 ○ 4 ○ 5
11. **Based on the online advertisement: why would you or wouldn't you download it?** ○ Open text field
12. **How would a pediatrician's recommendation compare to other sources (e.g., social media, advertisements) in influencing your decision?**
    ○ Open text field

4. Experience with Recommendations

13. **Have you ever downloaded a health app based on a doctor's recommendation?**

- ○ Yes
- ○ No

14. **If yes, what influenced your decision the most?** *(e.g., trust in the doctor, features of the app, other factors)* ○ Open text field

5. Concerns and Considerations

15. **What additional information would you need to feel confident in using NutriFlow Kids?** *(e.g., testimonials, studies, demo videos, other)* ○ Open text field

Group Part

Id	E-Mail	Gender	How old are you?	Exact Age	Do you have at least one child?	How old are your children?	Are you currently using health-tracking apps? (Yes/No)	How much do you trust your pediatrician's advice when it comes to your child's health? .	If your pediatrician recommended NutriFlow for tracking your child's health, how likely would you be to download it? .	Based on the pediatrician's advice: why would you/ why wouldn't you download it?
1	anonymous	Man	18-24		20	No	Yes	4	3	
2	anonymous	Man	35-44		39	Yes	5,7	Yes	5	5	trust in expertise
3	anonymous	Man	35-44		36	Yes	4	Yes	4	3	Easy
4	anonymous	Man	25-34		25	No		No	5	5	Because I trust my pediatrician
5	anonymous	Man	35-44		37	Yes	7 and 8	Yes	4	2	
6	anonymous	Other	18-24		97			No	3	3	I don't know yet
7	anonymous	Man	18-24		22	No		No	4	3	When its against common sense
8	anonymous	Man	18-24		23	No		Yes	5	5	
9	anonymous	Woman	25-34		28	Yes		Yes	3	3	personal interest and connection
10	anonymous	Woman	25-34		25	No		No	3	4	
11	anonymous	Man	25-34		32	Yes	1	No	3	3	
12	anonymous	Woman	18-24		24	No		No	4	4	I would download it to have a digital overview of my child's vitals, I guess
13	anonymous	Man	18-24		24	No		Yes		4	
14	anonymous	Man			62	Yes	24	No	5	5	It us easier to contact my doc
15	anonymous	Man	25-34		25	Yes	1	Yes	3	3	I trust in the expertise
16	anonymous	Man	25-34		28	Yes	0	Yes	3	4	If he can explain the benefits and how it can help I would likely download and use it
17	anonymous	Man			64	Yes	26 and 30	No	4	5	Structured medical records that can be presented for a second opinion or hospital
18	anonymous	Woman	45-54		54	Yes	20 und 16	No	4	5	Um sich einen besseren Überblick bzw Kontrolle über die Ernährungssituation zu verschaffen bekommen
19	anonymous	Man	18-24		23	No		No	5	4	He's an expert
20	anonymous	Man	25-34		26	Yes	0	No	4	4	If the reviews are bad
21	anonymous	Man	25-34		33	Yes	2	Yes	3	3	i don't know why
22	anonymous	Man			23	Yes	0	No	1	1	I dont trust
23	anonymous	Man	25-34		33	Yes	5	Yes	3	4	
24	anonymous	Man			32	Yes	2	No	3	3	I would download it because of the trust on the pediatrician. The recommendation is from the trusted source
25	anonymous	Man	25-34		24	Yes	0	No	3	4	It could be effective for tracking the health
26	anonymous	Woman	25-34		26	Yes	0	Yes	3	4	I Trust the pediatrician and want the best for my child
27	anonymous	Man	25-34		30	Yes	3	No	4	4	
28	anonymous	Woman	25-34		25	No		Yes	3	4	Because why not just try
29	anonymous	Woman			25	No		No	4	4	
30	anonymous	Man	18-24		24	No		No	4	4	I would download it to keep track of my childrens chealth und improve it as good as possible
31	anonymous	Woman	25-34		25	Yes		Yes	3	4	i would expect him to having made positive experience with other patients before
32	anonymous	Man	25-34		26	Yes	1	No	5	3	I do not want my child's health data to be processed
33	anonymous	Man	25-34		25	No		No	4	4	Because i trust my pediatrician and i only want the best for my child.
34	anonymous	Man	25-34		25			Yes	4	5	I trust a doctor of medicine
35	anonymous	Woman			23	No		Yes	5	5	Because i trust the pediatricians advice ans i want the best for my children
36	anonymous	Man	25-34		30	Yes	3	No	3	3	n.a.
37	anonymous	Woman	25-34		32	Yes	3	Yes	5	5	I trust the german medical system and the expertise of pediatricians in germany
38	anonymous	Woman	45-54		48	Yes	12 and 8	Yes	4	5	because pediatricians have to stick to the law and for its risky to prescribe something which does not improve medical conditions
39	anonymous	Man	45-54		54	Yes	23 and 16	No	3	3	Pediatricians are also money focused and earn with prescriptions
40	anonymous	Man	35-44		36	Yes	7	Yes	5	5	pediatricians must study medicins to execute their profession, so we can trust their opinion
41	anonymous	Woman	25-34		29	Yes	1	Yes	5	5	It's the job and in the interest of the pediatrician to cure my child if he is suffering from an illness
42	anonymous	Man	45-54		46	Yes	8 and 13	Yes	4	4	yes but i would confirm my decision with another pediatrician
43	anonymous	Man	18-24		24	Yes	1	Yes	3	3	my pediatrician does not speak well portuguese, which is why i dont feel safe being consulted by him
44	anonymous	Woman	25-34		30	Yes	2	Yes	4	5	its his profession to find improve health of children. So he knows what to do
45	anonymous	Woman	18-24		21	No	-	Yes	5	5	Trust in doctor
46	anonymous	Man	35-44		35	Yes	5	Yes	5	5	always had very good experience with our pediatrician
47	anonymous	Woman	25-34		33	Yes	2 and 1	Yes	5	5	it is his official profession, examined by federal organs
48	anonymous	Woman	35-44		42	Yes	8 and 12	Yes	5	5	Doctors have a better understanding of medical tools
49	anonymous	Woman	25-34		29	Yes	0	Yes	5	5	doctor knows what will help him to provide a diagnosis
50	anonymous	Woman	45-54		50	Yes	13 and 20	No	4	5	Recommendations from pediatricians feel more credible
51	anonymous	Woman	45-54		47	Yes	15 and 17	No	5	5	he is a specialist, this job is highly regulated
52	anonymous	Woman	35-44		37	Yes	4	Yes	5	5	yes, because based on evidence i always had a good experience with my pediatrician
53	anonymous	Woman	25-34		31	Yes	3	Yes	5	5	because I want to provide the best possible treatment
54	anonymous	Woman	35-44		39	Yes	9 and 4	Yes	5	5	i want my child to get well as soon as possible
55	anonymous	Woman	18-24		24	No		Yes	5	5	
56	anonymous	Woman			26	Yes	2	No	5	5	
57	anonymous	Woman	35-44		37	Yes	4	No	5	5	trust in medical system
58	anonymous	Woman	45-54		48	Yes	8, 15, 13	Yes	5	5	I trust his qualification
59	anonymous	Woman	35-44		39	Yes		No	3	3	
60	anonymous	Man	18-24		23	No		Yes	5	4	
61	anonymous	Woman	25-34		34	Yes	3 & 2	Yes	4	5	His recommendation assures me that the app is medically reliable and beneficial
62	anonymous	Woman	35-44		42	Yes	10	Yes	5	5	i trust his expertise
63	anonymous	Woman	18-24		18	No		Yes	5	5	trust in doctor
64	anonymous	Woman	18-24		22	No		Yes	5	5	because i think i can trust his qualification
65	anonymous	Woman	35-44		36	Yes	5	Yes	5	5	qualification, medicals usually know what they prescribe for which purpose
66	anonymous	Woman	25-34		25	No		Yes	5	5	
67	anonymous	Man	35-44		35	Yes	3	Yes	5	4	trust in qualification
68	anonymous	Man	25-34		27	Yes	1	No	4	4	
69	anonymous	Man	18-24		24	No		No	5	4	
70	anonymous	Man	45-54		50	Yes	9	Yes	5	5	because he is an expert and i want to help him to improve health of my child as fast as possible
71	anonymous	Man	25-34		31	Yes	3	No	5	4	because he knows better

Ifou saw NutriFlow recommended by an how likely would you be	Based on the online advertisement: why would you/ why wouldn't you download it? based on a doctor's to download it? . downloaded a health online advertisement, recommendation?	How would a pediatrician's recommendation compare to other sources (social media, advertisements) in influencing your decision? app	Have you ever	If yes, what influenced your decision most? (Trust in the doctor, features of the app, other)	What additional information would you need to feel confident in using NutriFlow? (Testimonials, studies, demo videos, other)
1	Es wird alles beworben		No	Trust in the doctor, easy to handle, fast improvements	Testimonials with faces shown, scientific studies.
3		Would for sure download if recommended by pediatritian, otherwise be way more sceptic.	Yes		
5	Looks good	more trust	No		doctor is enough

Group Part

2	I would not download it because I'd like to have a doctors advice before	My doctor is an expert on the field of pediatristic, which is the reason why I trust him compared to an online ad	No	Trust in the doctor	studies and a freemium model
1			No		Testimonials, studies and recommendations of friends
3	Need a demo or see the benefits	Don't know yet	No		Demo
2	Same answer as abow		Yes	To make an appointment more easily	Benefits
3			No		Statistics and recommendations
2	marketing gimmic	child's health is more likely in the interest of a pediatrician	Yes	No diagnosis by doctor and need for self-diagnosis with app	service
2			No		
			No		
2	I'd download it only if it's really needed, since I keep getting ads for things that don't actually seem necessary.	The pediatrician has the patient's complete health history and understands the child's tendencies	No		Results that show this app has improved a patient's well-being
3			No		
4	I just need detailed informations	Feedbacks from other parents	No		Open feedbacks and informations
1	I probably wouldn't even recognize it	Significantly	No		Studies and Demo Videos
2	Depends on the kind of add. If it brings across the benefits I might would download it but mostly I don't download apps just off of	I value the recommendation of my pediatrician way more and also the fact that he can verbally explain the benefits and how it works. Generally, there is a much higher	No		Demo video. I need to see what it does. It needs to be simple, easy to use and bring a actual benefit
4	The quality and seriousness of online advertising is important	The decision with a good, trustworthy doctor would be high.	Yes	Trust in the doctor and handling of the app	demo videos
3	Generelles Misstrauen gegenüber der Werbung	Es muss ein Arzt des Vertrauens sein.	No		Datensicherheit und wissenschaftliche Studien
2	It's not an expert and might be just for commercial reasons	Would be more valued	No		Studies
2	I dont react to ads too much	Personal recommendation > media or ads	No		Demos (text or video), real evidence that it's helping, not just testimonials
2	i don't know why	i trust more the Doktor	No	no	Videos
1	I am Not an npc	It Would not	No		
1	Without a doctor's advice I would not like to track my childrens' poop	Not at all	No		
2	I wouldn't download if advertised online since it could be a spam. The recommendation is not from a trusted source.	Recommendation directly from a pediatrician has an high influence for me since I develop a trust with him	Yes	Trust	
2	Too much ads so I don't look to closely to them	Most authority, so it has high influence	No		Testimonial, studies
2	I dont know if it's the best for my Child	More credibility, better Expertise	Yes	In the beginning I didnt trust the data but I Trust my doctor and if he says	Studies, testimonials, quality Tests
3			Yes	Doctors advice and expertise in helping me	Explanation and advice on how to use by either doctor or educational video
2	Because it lacks credibility	Its based on expertise and experience	No		
2			No		Demo Videos, studies
2	Too much online advertisements nowadays/ No trust in online advertisements	1. Personal contact 2. More transparency in competence	No		Recommendations
3	because I don't see the medical evidence as present as during a doctors visit	posititively strengthen	No		if not adviised by my own doctor, a short consultancy/call online with a personal from medical background
1	It seems even less trustworthy for an app that processes highly sensitive data	It is more trustworthy	No		The highest security and compliance standards must apply
2	Because I get too many Ads every day, for me to trust them	His expertise would give me more trust into the product. Also he is probably less interested in revenue maximization, than the actual provider of the Ad.	Yes	Trust in the doctor and convenience	Demo Videos and Testimonials
2	bad products can easily be advertised online	Much stronger	No		studies
2	If it is a serious online ad on a good website, i would consider downloading it, if not then i would not download it	More influencing as he has the expertise	No		Studies, demo videos
4			No		
2	There are too many health care apps and I don't trust reviews in the appstore for such a serious topic	pediatricians are experts on their field whereas on social media everything can be promoted	No	-	testimonials and studies regarding the effectivity of Nutriflow
2	how do I know based on an ad that Nutriflow is a serious app?	pediatricians are doctors and thus there task is to cure patients instead of making money	No	-	Tutorials, webinars, official governmental recommendations

1	advertising is not serious because it is a serious topic concerning the health of my children	it seems to be more official and thus more serious	No		Proofs that Nutriflow improved life of patients in the past
2	No control over quality of the app,everyone can launch a health app	Pediatricians positive recommendation of Nutriflow is a testimonial for the effectiveness of Nutriflow	No		studies about health improvement aea result of using Nutriflow, tutorials, available customer support
1	ass Ad for medical solutions does not seem to be serious if it can be easily downloaded	it is an official way, i am consulted by someone who knows what is god and what is bad for my child as the pediatrician is a medical	No		Demo videos, tutorials, third-party opinions (Verbraucherschutz)
1	medications should not be promoted but prescribed	pediatrician is specialized, why I trust him more	No		Our current pediatrician is very good, but i also had bad experiences in the past. Therefore, i would always confirm my decision with other pediatricia
2	i would give it a chance, but it seems to me more like a lifestyle app, if everyone can download it in the app-store	if I have a trustworthy pediatrician and he recommends nutriflow, I trust the functionality of the app	No	The doctor who recommends me the app everything depends on his visible expertise	
3	i would give it a try as i am curious	pediatrists is regulated by the government as compared to the app store	No		testimonials
3	good recensions	pediatrician is expert	No		empirical studies regarding health improvement, FAQs, patient support
2	does not appear to be a serious medical tool if it is promoted on the internet	its his job	No		evidense that it really work.and cured children faster
3	just out of curiosity	his expertise, he has a official/education	No		testimonials
2	I'm skeptical of ads in general	I prefer medical advice over advertisements	No		stories of success, tutorials how to use the app
1	its not serious and very specific target group for an ad	I trust it because it's endorsed by a professional	No		testimonials showing that it is really curing children faster
2	medical tools should not be promoted, in germany its forbidden for everything what is prescribed	I believe my pediatrician knows what's best for my child's health	No		tutorials
3	not so serious, but i am interested	he should onboard me properly	No		studies on positive effect
2	there are too many health apps promoted online	he is a medical.and so from him i get an expert advice	No		tutorials, customer chat
2	its highly suspicious as there are plenty of "health-cure" apps	he is an expert on his field	No		good onboarding
1	ads are more for lifestyle products not for medical programs	its his profession, he is a proved doctor	No		demo video, tutorial, testimonials from other patients
3			No		
2			No		
2	not very serious	its a professional, thus his advice has to be taken seriously	No		testimonials regarding effectiveness
1	unseriös medizinische produkte online zu bewarben	he is qualified to medicate children	No		Nachweis über positiven Effekt bei Kindern
3			No		
3			No		
1	I might not download it if the ad feels overly promotional or lacks credible endorsements	its more trustworthy	No		testimonials regarding usefulness
3	i would be curious, but i would not feel comfortable in using it for the sake of my child	pediatrician is an official way and serves as a testimonial	No		demo videos, testimonials
3		its his job, he is a professional	No		onboarding
2	too many health apps on the market	he is qualified for advising medical tools			demo videos, studies, testimonials
1 4	no trust in commercials, they want to make profit	it is more serious if prescribed by doctors			studies related to nutriflows effectivity

1 2	plenty of healthcare apps out there, dont know which is good	he is a professional		testimonials
1 2	rant			

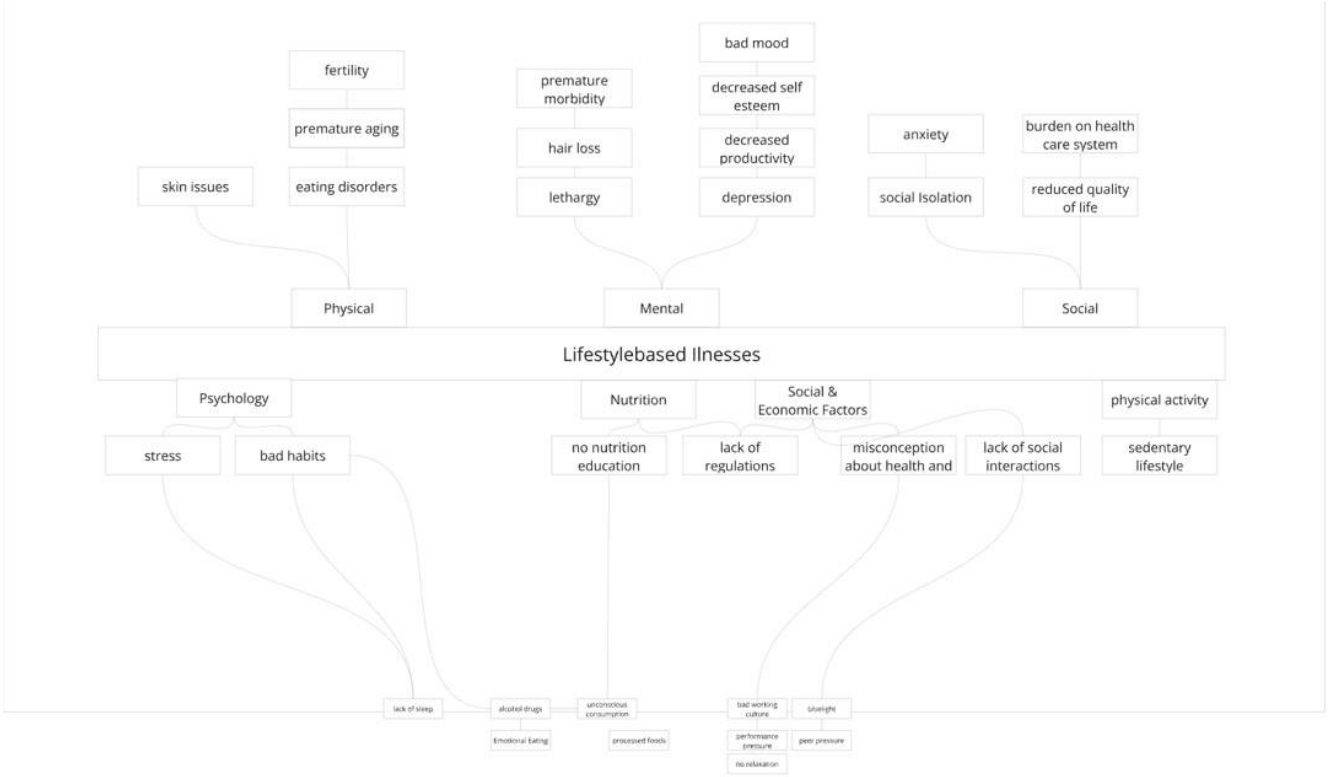
3 No Trust in the doctor demos

Appendix 6: Potential-Partnership Reach out

Name	Information	Answer	Contact
GPGE	Society for Pediatric Gastroenterology and Nutrition	No	No
Prof. Dr. Jan de Laffolie	Center for Pediatrics and Adolescent Medicine	No	No
Prof. Dr. Jan Däbritz	University Medicine Greifswald	No	No
Prof. Dr. med. Heiner Wedemeyer	Clinic for Gastroenterology, Hepatology, Infectious Diseases and Endocrinology	No	No
DGVS	German Society for Gastroenterology, Digestive and Metabolic Diseases	**Yes**	No
ÖGGH	Austrian Society for Gastroenterology and Hepatology	No	No
Harald Hofer	Klinikum Wels-Grieskirchen Department of Internal Medicine	No	No
Daniel Pohl, Prof. Dr. med.	Chief Physician, Clinic for Gastroenterology and Hepatology (Zurich)	No	No
Dr. med. Ulrich Gabel	Specialist in pediatrics, pediatric gastroenterology, neonatology	No	No
Dr. med. Annette Kriechling	Specialist in pediatrics and adolescent medicine Additional qualification: pediatric gastroenterology	No	No
Alice Ferchland	Product Manager TeleClinic	No	No
Christoph Birk	Business Development TeleClinic	No	No
Dr. Amelia Rösel	Clinic for Pediatrics with a focus on Pneumology, Immunology and Intensive Care Medicine	**Yes**	**Yes**
Erkin Kula	Product Manager/Computer Engineer TeleClinic	No	No
Dr. med. Anja-Natascha Straube	Teledermatologist at TeleClinic	No	No
Sabrina B.	Telemedicine project employee at the German Society for Telemedicine (DGTelemed)	No	No
Marc Beckers	Consultant for Digital Products/ Speaker for Telemedicine at ZTG Center for Telematics and Telemedicine	No	No
Christina Buth	Currently on parental leave - Deputy Head MFA Telemedicine at Doktor.de	No	No
Dr. Susanne Springborn	Cross-sectoral care CURANDUM, telemedicine, family doctor	No	No
Julia Backhaus	Telemedicine I Telecare I Digitalization Expert	No	No
Christoph Schöbel	Professor of Sleep Medicine with a focus on telemedicine, Ruhrlandklinik, University Medicine Essen	No	No
Dr. Serhat Ucarer	Occupational medicine (on-site) and telemedicine for internal medicine (remote) · Self-employed	No	No
Dr. Christine Nees	Veterinarian in telemedicine (maybe also interesting if children don't work out)	No	No
Dr. med. Johannes Schenkel	Digitalization in medical medicine, quality management, knowledge management, health literacy	No	No
Lena Burg	Translation, Implementation and Digital Competence at the Telemedicine Coordination Office Baden-Württemberg	No	No
Mario Reinholdt	Head of Information Security @ Gesundheitswesen	No	No
Dr. Kerstin Ludwig	General practitioner	**Yes**	**Yes**

Appendix 7: Models and graphics

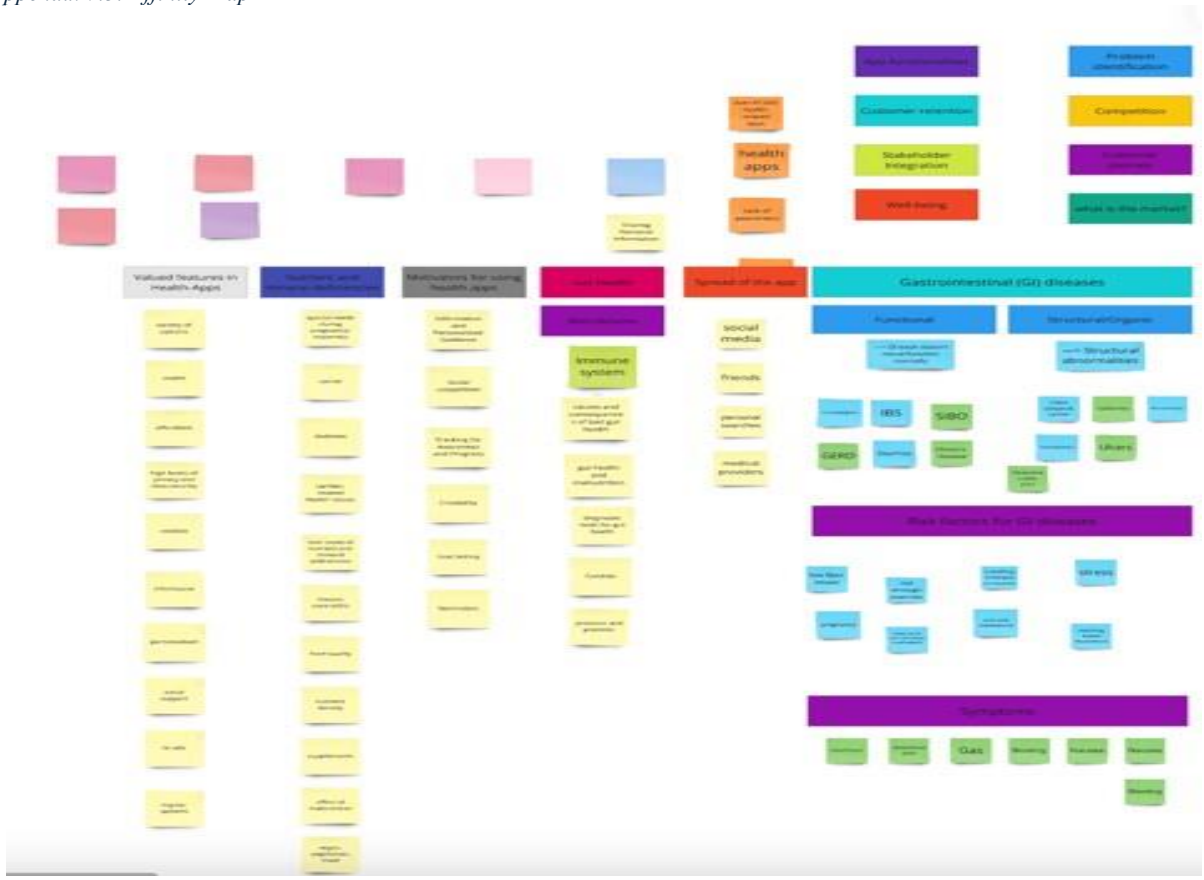
Appendix 7.1: Problem Tree



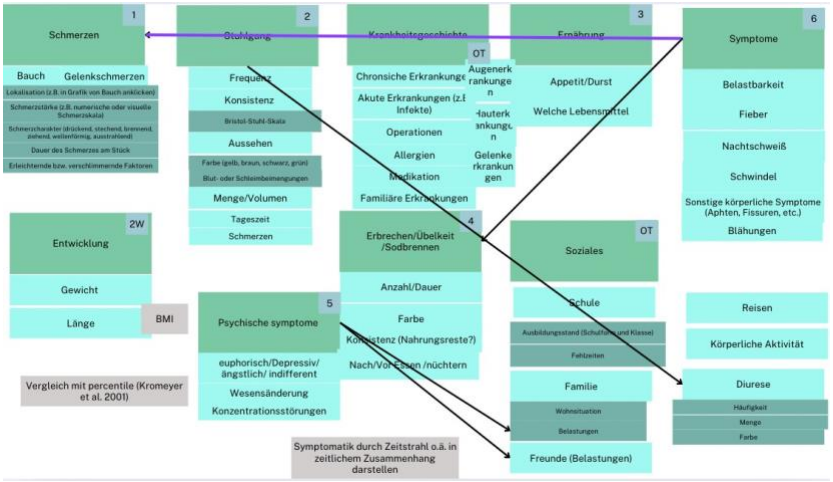
Appendix 7.2: First market analysis

Solution	Causes Tackled	+	-
FatSecret	- Calorie tracking - Food database - Blog and community chat	- Synchronisation with other apps like google fit etc. - Food and sport diary - Code-scanner - Statistics - Camera-based food recognition	- Calorie focused - Not enough education - Bad recipes - Insufficient food representation - No saving of reoccurring meals
MyPlate	- Calorie Tracking - Analysis and personalised recommendations on diet	- Tips for parents - Owned by US Authorities Big - Blog on dietary information	- Divides food in only 5 categories - Will be discontinued 2023. - No in-depth information on nutrients
Fooducate	- Rating of food based on nutritional facts while recommending alternatives	- Ranks quality of food intake - Barcode Scanner - Macronutrient tracking - Big Food Database - Recipe database	- No tracking of micronutrients - No community section
Cronometer	- Calorie - Nutrient and intermitted fasting - tracking Diet Support - Progress tracking	- Highlights nutrient-dense foods - Integration of wearables - Customisation - Information on macro-, micronutrients, vitamins and minerals	- Calorie focused. - Extensive data can be overwhelming
Lose It!	- Dieting - Caloric tracking - Micro and Macronutrients	- Simple - Big Database - App based program for weight loss. - Barcode Scanner - Integration with scanners	- Owned by No EU country. - No Focus on Nutrients
MyFitness Pal	- Overeating - Dieting - Caloric Tracking	- Tracking of micro- and macronutrients Big database - Barcode scanning - Link to other health apps - Fotoscan	- Calorie focused - Owned by non-EU country. - No personalisation in food tracking
Food Print	- Caloric Tracking - Dieting - Nutrient Tracking	- Integration with other apps - Recipes - Barcode scanner - Events for medication or insulin - Summary as meal	- Not working on Germany - Not a big user group
Yazio	- Nutrient Tracking Caloric - intake	- Nice user interface - Integratable with other apps	- Calorie focused. - Owned by non-EU country. - No personalisation in food tracking

Appendix 7.3: Affinity Map



Appendix 7.4: Diagnostic Flow



Appendix 8: Cost breakdown Marketing

Appendix 8.1: Cost Breakdown of Sales and Marketing

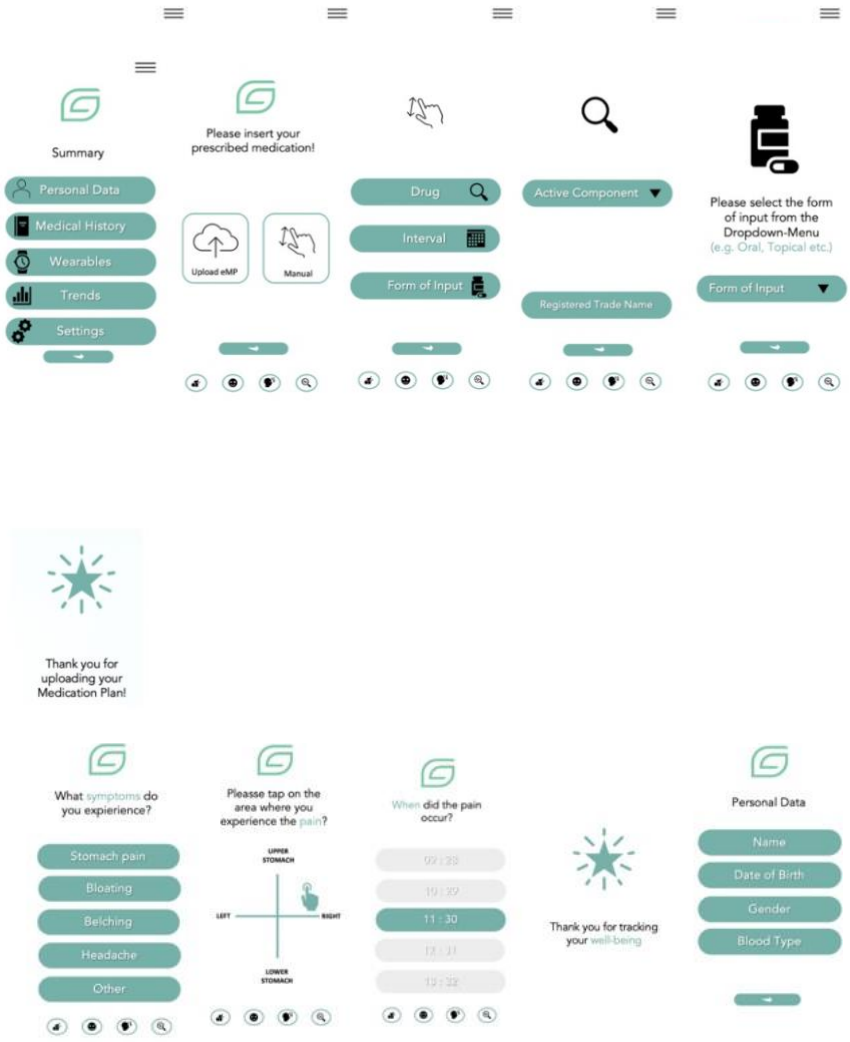
Cost Category	Annual Cost (€)	References	Justification
Dr. med. Amelia Rösel (KOL)	€25,000	(Umbach 2019)	Amelia's role involves promoting NutriFlow Kids to build trust and visibility while also contributing to product development. This fee aligns with typical KOL consulting rates in the medical technology sector (€20,000–€50,000 annually).
Event Marketing (Frank Schneider-Wrensch)	€11,000	Appendix 3.4	Frank's expertise as an industry multiplier ensures NutriFlow Kids' presence at high-profile events. Estimated based on daily rates for consultants (€500–€1,500) and attendance at 10 conference days annually.
Conferences/fairs	€22,500	(Medica 2025), (Author's own estimate)	Three conferences planned: Covers booth fees for stand (€4,000–€6,000 per event), travel costs (€1,200–€1,800 per event), and promotional materials (€800–€1,200 per event). Essential to promote NutriFlow Kids to a professional medical audience. In total €7,500 per congress
SEO and Website	€18,000	(SEO.com 2024), (Talo 2024)	SEO (€12,000 annually) ensures NutriFlow Kids ranks for relevant search terms like "pediatric GI health," while website development (€6,000 annually) supports user education and engagement.

LinkedIn Sales Navigator	€3,000	(LinkedIn Sales Solutions 2024)	Two licenses (€1,500 each) allow NutriFlow Kids to efficiently identify and engage healthcare professionals such as pediatricians and KOLs.
Advertising in Medical Journals	€5,000	(Deutsches Ärzteblatt 2024)	Advertising in five journal editions, estimated at €1,000 per edition, directly targets the medical community to establish credibility and promote NutriFlow Kids.
Total Annual Cost	**€84,500**		Represents a comprehensive multichannel strategy leveraging trusted multipliers, SEO, event participation, and journal advertisements for professional visibility.

Appendix 8.2: Cost breakdown of Registration Fees for DiGA Source: Bundesministerium für Gesundheit. 2024. Aufnahme einer digitalen Gesundheitsanwendung (DiGA) in das DiGAVerzeichnis beantragen. Verwaltung Digital. https://verwaltung.bund.de/leistungsverzeichnis/de/leistung/99005058019000

Cost Category	Cost (€)
Application Processing	€9,900
Consultation on DiGA-specific requirements	€5,000
Submission of evidence of a positive healthcare effect for final listing in DiGA index	€6,600
Total Cost	**€21,500**

Appendix 9: First non-clickable Mock-Up



Appendix 10: Profit and Loss statement

DiGA Profit & Loss

Total revenue	EUR		32.167	32.167	32.167	32.167	32.167	32.167	32.167	32.167	32.167	32.167	32.167	32.167	**386.000**
#Patients/Dr.	#		1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100
%Potential Patients eligble	%		10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
%As of Potential Patients realistically eligble	%		25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%

Price DIGA	EUR		345	345	345	345	345	345	345	345	345	345	345	345	**345**
Total Prescriptions Required	EUR		93	93	93	93	93	93	93	93	93	93	93	93	**1.120**

Product Development	EUR		157.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	185.000
Sales and Marketing	EUR		7.042	7.042	7.042	7.042	7.042	7.042	7.042	7.042	7.042	7.042	7.042	7.042	84.500
Clinical Trials	EUR		6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	80.000
Registration Fees	EUR		1.792	1.792	1.792	1.792	1.792	1.792	1.792	1.792	1.792	1.792	1.792	1.792	21.500
Legal Costs	EUR		1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	15.000
Total expenses	**EUR**		174.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	**386.000**
as % of Total revenue	EUR		542%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	**100%**

GTM	EUR		8.833	8.833	8.833	8.833	8.833	8.833	8.833	8.833	8.833	8.833	8.833	8.833	**106.000**
as % of Total revenue	EUR		27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	**27%**
DEV	EUR		164.167	9.167	9.167	9.167	9.167	9.167	9.167	9.167	9.167	9.167	9.167	9.167	**265.000**
as % of Total revenue	EUR		510%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	**69%**
GENERAL	EUR		1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	**15.000**
as % of Total revenue	EUR		4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	**4%**
Total expenses	EUR		174.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	19.250	**386.000**
as % of Total revenue	EUR		542%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	**100%**

EBITDA	EUR	**0**	-142.083	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	**0**
Depreciation & Amortization	EUR		0	0	0	0	0	0	0	0	0	0	0	0	**0**
EBIT	EUR	**0**	-142.083	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	**0**
Interest	EUR		0	0	0	0	0	0	0	0	0	0	0	0	**0**
EBT	EUR	**0**	-142.083	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	12.917	**0**

Product Dev & Clinical Trials

			2026												2027
			Full year	Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez	Full year
Development	EUR		100.000	0	0	0	0	0	0	0	0	0	0	0	0	**100.000**
UI/UX Design	EUR		25.000	0	0	0	0	0	0	0	0	0	0	0	0	**25.000**
Backend-Development & Database Integration	EUR		30.000	0	0	0	0	0	0	0	0	0	0	0	0	**30.000**
Maintenance and Updates	EUR		2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	**30.000**
Total Product Development	EUR		157.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	**185.000**
Clinical Trials	EUR		6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	6.667	**80.000**
TOTAL	EUR		**321.667**	**11.667**	**11.667**	**11.667**	**11.667**	**11.667**	**11.667**	**11.667**	**11.667**	**11.667**	**11.667**	**11.667**	**11.667**	**450.000**

Explanation P&L:

The P&L statement presents our financial plan for the first year, with a detailed cost breakdown available in the appendix. Our revenue target is €386,000, based on 93 prescriptions per month, starting in January 2026. Expenses include a one-time upfront investment of €157,500 in January 2025 for product development, followed by monthly recurring costs of €19,250. These recurring expenses, covering maintenance, sales and marketing, clinical trials, and legal fees, are evenly distributed over 12 months due to the difficulty in precisely predicting their timing. Since

NutriFlow Kids has no physical assets, there are no Depreciation & Amortization expenses. Additionally, as NutriFlow Kids aims to avoid debt financing and rely on angel investors, there are no interest costs. Equity funding values are not yet included, as funding discussions are ongoing. For further details on the breakdown of costs and assumptions (Appendix 8.1 & 8.2).

Appendix 11: Founders agreement

Founders Agreement
This Founders' Agreement ("Agreement") is made on [10.10.2024] by and between the founding members of [NutriFlow]: Founder 1, Lilly Watschina
Founder 2, Joanne

Founder 3, Tabea
Founder 4, Max Founder
5, Paul
Co-Founder 1, Yago
Co-Founder 2, Moritz
(Collectively referred to as the “Founders”)

1. Purpose of the Agreement

The purpose of this agreement is to outline the respective roles, responsibilities, and ownership of intellectual property (IP) among the Founders, and to define how the workload and deliverables will be managed in the interest of growing and developing [Startup Name].

---

2. Intellectual Property (IP) Rights

2.1 Pre-existing Intellectual Property

All IP, including but not limited to designs, algorithms, concepts, trademarks, patents, trade secrets, and other intellectual contributions made before this Agreement by each Founder (hereafter referred to as “Pre-existing IP”), shall remain the property of the individual(s) who created it. All IP that was previously created should stay IP of the initial Founding Team (referred to as Founder instead of Co-Founder in the paragraph above.)

Founder Team Pre-existing IP: [Pre-Existing IP can be observed through the initial Report that also was part of the entrepreneurial Project at Nova Business School, including IP in the form of Data saved on the initial Teams Channel “Entrepreneurship with Impact”, and Miro Board “NutriFlow”]

2.2 Joint Intellectual Property

Any IP developed collaboratively by the Founders during their work on the Company shall be considered the joint property of all Founders unless otherwise stated in this Agreement.

2.3 IP Assignment to the Company

Any IP created or contributed by any Founder after the formation of the Company that is directly related to the business of the Company shall be assigned to the Company. The Founders hereby agree to assign any such IP created during their involvement with the Company to the Company. This applies to any IP that is developed after the day, this Agreement is signed.

2.4 Protection of IP

The Founders agree to take all necessary steps to protect the Company’s IP, including filing patents, trademarks, or copyrights as necessary. All Founders will actively support the protection and defense of IP rights and will ensure that the Company’s IP is not shared outside the Company without prior approval from all Founders.

---

3. Work Division and Responsibilities

3.1 Equal Division of Work

The Founders agree that the workload will be divided equally, and each Founder will contribute to the Company according to their skill sets and areas of expertise. Founders will be assigned specific tasks and responsibilities, ensuring the work distribution is fair and equal.

3.2 Roles and Responsibilities

Co-Founders, Founder (Paul Sittler): Responsible for the Project and Development of the Application during the process of their Master Thesis.

3.3 Expectations for Deliverables

Each Founder agrees to complete assigned deliverables by the agreed-upon deadlines. These Tasks can vary and will be decided during working sessions. Due to the nature of the master's thesis, the Co-Founders as well as Paul Sittler will be responsible for most of the project during the duration of the thesis. After the thesis, the Agreement can be negotiated again.

3.4 Accountability

If a Founder fails to meet their deliverables or responsibilities, a written notification will be sent to the non-compliant Founder, and a meeting will be scheduled to discuss corrective actions. Persistent failure to meet deliverables may result in reconsideration of equity shares (outlined in section 5) or removal from the founding team (subject to a majority vote).

---

4. Decision-Making Process

4.1 Consensus-Based Decisions

Decisions related to major business directions, including but not limited to IP management, new product lines, partnerships, or equity allocation, shall be made by consensus, with all Founders having equal input. Only a majority 0f 51% can have deciding power.

4.2 Tie-Breaking Mechanism

In cases where consensus cannot be reached, a majority vote will determine the outcome. In cases where there are only two Founders or a deadlock occurs, the Founders will appoint a neutral third party (such as a trusted advisor or board member) to act as an arbitrator.

---

5. Equity and Ownership

5.1 Initial Equity Split

The Founders agree that ownership in the Company will be divided as follows:

Founder 1: [Percentage]%

Founder 2: [Percentage]%

Founder 3: [Percentage]%

5.2 Vesting Schedule

Equity shares will be subject to a vesting schedule to ensure long-term commitment. Each Founder's equity will vest over a period of [X] years, with a [Y] month cliff. If a Founder leaves before [Y] months, they will forfeit all equity.

5.3 Departure of Founders

If a Founder chooses to leave the Company or is removed under Section 3.4 for not fulfilling obligations, their unvested equity shall be forfeited. Vesting schedules for any vested shares shall remain in effect unless a different agreement is reached.

---

6. Confidentiality and Non-Disclosure

6.1 Confidential Information

The Founders agree not to disclose any confidential information related to the business, IP, strategies, or other sensitive material without the prior written consent of the other Founders.

6.2 Non-Compete Clause

During their involvement with the Company, and for a period of [X] years after leaving the Company, Founders agree not to directly compete with the business or solicit clients or employees away from the Company.

---

7. Dispute Resolution

7.1 Internal Disputes

In the event of disputes among the Founders that cannot be resolved through good faith negotiation, the Founders agree to first attempt mediation through a neutral third party before taking legal action.

7.2 Governing Law

This Agreement shall be governed by and construed under the laws of [State/Country].

---

8. General Provisions

8.1 Amendments

This Agreement may be amended only with the written consent of all Founders.

8.2 Termination of Agreement

This Agreement will remain in effect for the duration of the Company's operations or until all Founders agree in writing to its termination.

Signatures of Founders:

Founder 1: _____

Date: _____

Founder 2: _____

Date: _____

Founder 3: _____

Date: _____

Founder 4: _____

Date: _____

Founder 5: _____

Date: _____

Co-Founder 1: _____

Date: _____

Co-Founder 2: _____

Date: _____

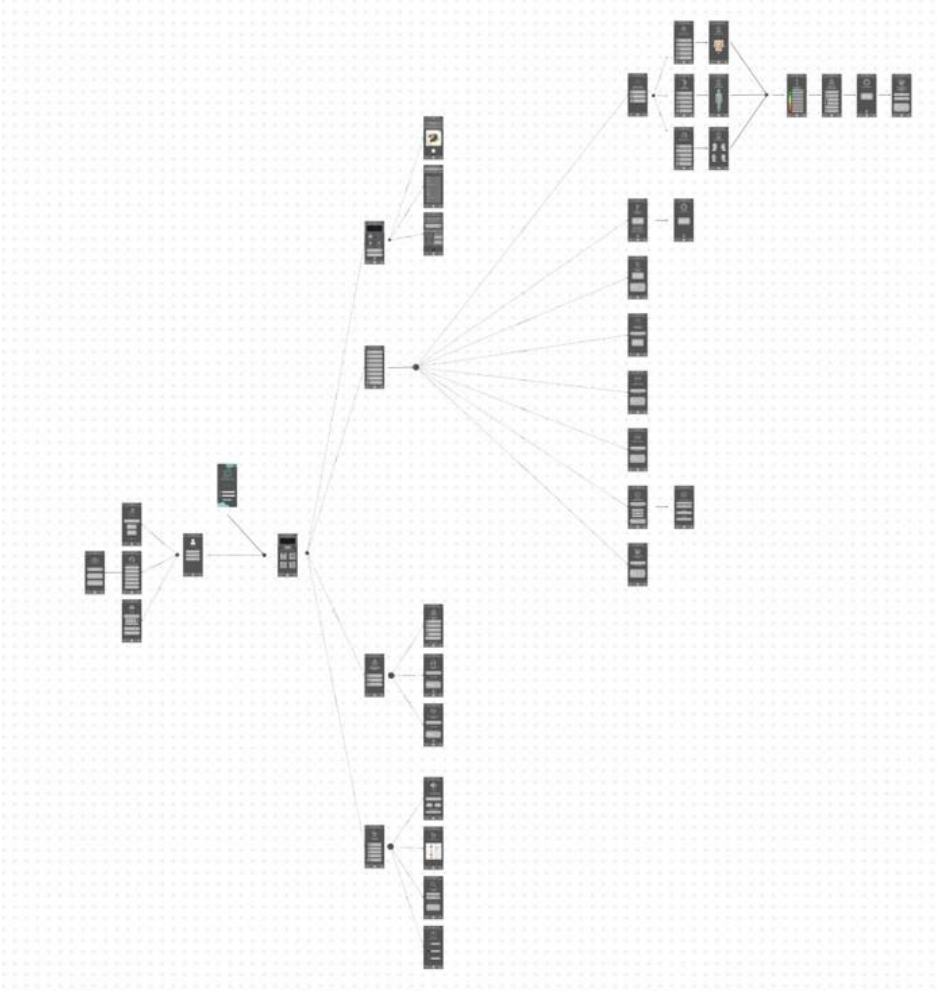
Appendix 12.1 : Test-User Survey 1

How would you rate the overall visual appeal of the app?	Is the app layout clear and easy to understand?	How do you feel about the color scheme and icons used in the app?	How intuitive is the navigation between screens?	Did you feel guided through the app, or were there moments you weren't sure what to do next?	How easy is it to find specific features or sections (e.g., adding a meal, viewing recent foods)?	Do you find the use of icons (e.g., camera, search, calendar) helpful in understanding what each feature does?	Does the text size and placement (e.g., labels, instructions) make it easy to read and understand?	Would you be more likely to use this App if its recommended by your doctor?	Based on this design, how likely are you to recommend this app to others?
Good	Neutral	They're okay	Slightly Confusing	Sometimes unsure	Neutral	Somewhat Helpful	Easy to Read	More Likely	6
Poor	Somewhat Confusing	They don't stand out	Neutral	Often unsure	Neutral	Neutral	Neutral	More Likely	4
Good	Somewhat Clear	They're okay	Fairly Intuitive	Sometimes unsure	Easy	Somewhat Helpful	Easy to Read	More Likely	7
Average	Neutral	They're okay	Slightly Confusing	Sometimes unsure	Neutral	Somewhat Helpful	Easy to Read	Unsure	6
Average	Neutral	They're okay	Very Confusing	Often unsure	Neutral	Somewhat Helpful	Neutral	Unsure	3
Very Poor	Very Confusing	I don't like them	Very Confusing	Often unsure	Difficult	Not Helpful	Somewhat Difficult to Read	Unsure	2
Good	Somewhat Confusing	They're okay	Slightly Confusing	Sometimes unsure	Difficult	Not Helpful	Somewhat Difficult to Read	Unsure	4
Good	Somewhat Clear	They're okay	Fairly Intuitive	Mostly understood what to do	Easy	Neutral	Very Easy to Read	Yes	5
Average	Somewhat Confusing	They're okay	Neutral	Very lost	Very Difficult	Neutral	Neutral	Less Likely	5
Average	Somewhat Confusing	They don't stand out	Slightly Confusing	Often unsure	Neutral	Somewhat Helpful	Neutral	More Likely	5
Average	Neutral	They're okay	Neutral	Sometimes unsure	Neutral	Somewhat Helpful	Easy to Read	Unsure	5
Good	Somewhat Clear	I really like them	Fairly Intuitive	Sometimes unsure	Difficult	Very Helpful	Very Easy to Read	Yes	8
Poor	Very Confusing	They're okay	Slightly Confusing	Often unsure	Neutral	Neutral	Easy to Read	Less Likely	4
Poor	Neutral	They're okay	Slightly Confusing	Sometimes unsure	Difficult	Neutral	Easy to Read	More Likely	7
Good	Somewhat Clear	They're okay	Fairly Intuitive	Mostly understood what to do	Easy	Very Helpful	Very Easy to Read	Yes	7
Average	Neutral	They're okay	Neutral	Sometimes unsure	Easy	Somewhat Helpful	Easy to Read	Unsure	5
Average	Somewhat Confusing	They don't stand out	Slightly Confusing	Often unsure	Neutral	Somewhat Helpful	Neutral	Unsure	4
Average	Somewhat Clear	They're okay	Slightly Confusing	Sometimes unsure	Difficult	Somewhat Helpful	Easy to Read	Unsure	6
Average	Neutral	They don't stand out	Slightly Confusing	Sometimes unsure	Difficult	Neutral	Neutral	Unsure	5
Good	Somewhat Clear	I really like them	Fairly Intuitive	Sometimes unsure	Easy	Very Helpful	Very Easy to Read	Yes	9
Average	Neutral	They're okay	Neutral	Mostly understood what to do	Easy	Somewhat Helpful	Easy to Read	More Likely	6

Appendix 12.2: Test-User Survey 2

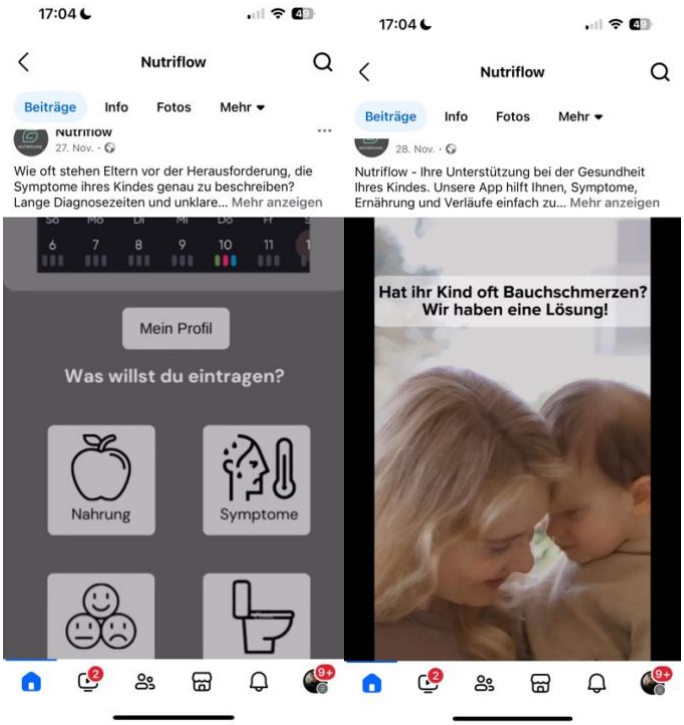
How would you rate the overall visual appeal of the app?	Is the app layout clear and easy to understand?	How do you feel about the color scheme and icons used in the app?	How intuitive is the navigation between screens?	Did you feel guided through the app, or were there moments you weren't sure what to do next?	How easy is it to find specific features or sections (e.g., adding a meal, viewing recent foods)?	Do you find the use of icons (e.g., camera, search, calendar) helpful in understanding what each feature does?	Does the text size and placement (e.g., labels, instructions) make it easy to read and understand?	Would you be more likely to use this App if its recommended by your doctor?	Based on this design, how likely are you to recommend this app to others?
Excellent	Somewhat Clear	They're okay	Fairly Intuitive	Mostly understood what to do	Easy	Very Helpful	Easy to Read		8
Good	Somewhat Clear	They're okay	Very Intuitive	Sometimes unsure	Very easy	Somewhat Helpful	Very Easy to Read	Yes	7
Good	Neutral	They're okay	Fairly Intuitive	Mostly understood what to do	Easy	Very Helpful	Very Easy to Read	Yes	10
Good	Somewhat Clear	They're okay	Slightly Confusing	Sometimes unsure	Easy	Very Helpful	Easy to Read	Yes	7
Excellent	Somewhat Clear	I really like them	Fairly Intuitive	Mostly understood what to do	Easy	Very Helpful	Easy to Read	Yes	9
Good	Somewhat Clear	They're okay	Fairly Intuitive	Sometimes unsure	Easy	Somewhat Helpful	Very Easy to Read	More Likely	8
Excellent	Very Clear	They're okay	Fairly Intuitive	Mostly understood what to do	Very easy	Very Helpful	Very Easy to Read	Yes	10
Good	Neutral	They're okay	Fairly Intuitive	Sometimes unsure	Easy	Very Helpful	Very Easy to Read	Yes	9
Good	Very Clear	I really like them	Fairly Intuitive	Mostly understood what to do	Neutral	Very Helpful	Very Easy to Read	Yes	9
Average	Neutral	They're okay	Neutral	Mostly understood what to do	Neutral	Somewhat Helpful	Very Easy to Read	More Likely	7
Good	Neutral	They're okay	Neutral	Sometimes unsure	Easy	Very Helpful	Easy to Read	Yes	9
Good	Very Clear	I really like them	Fairly Intuitive	Mostly understood what to do	Neutral	Somewhat Helpful	Very Easy to Read	Yes	8
Good	Somewhat Clear	I really like them	Fairly Intuitive	Sometimes unsure	Neutral	Very Helpful	Easy to Read	Yes	7
Excellent	Somewhat Clear	I really like them	Fairly Intuitive	Mostly understood what to do	Neutral	Neutral	Easy to Read	Unsure	6
Poor	Somewhat Clear	They don't stand out	Neutral	Mostly understood what to do	Easy	Somewhat Helpful	Neutral	Yes	3
Good	Very Clear	They don't stand out	Very Intuitive	Mostly understood what to do	Very easy	Very Helpful	Very Easy to Read	Yes	9
Good	Somewhat Clear	I really like them	Fairly Intuitive	Mostly understood what to do	Easy	Very Helpful	Easy to Read	More Likely	7
Average	Neutral	They're okay	Fairly Intuitive	Sometimes unsure	Easy	Neutral	Easy to Read	Unsure	6
Average	Somewhat Confusing	They're okay	Fairly Intuitive	Mostly understood what to do	Easy	Somewhat Helpful	Easy to Read	More Likely	8
Average	Somewhat Confusing	They don't stand out	Slightly Confusing	Sometimes unsure	Easy	Neutral	Neutral	Unsure	5
Excellent	Somewhat Clear	I really like them	Fairly Intuitive	Felt completely guided	Very easy	Very Helpful	Very Easy to Read	Yes	8
Very Poor	Very Confusing	They don't stand out	Very Confusing	Often unsure	Difficult	Somewhat Helpful	Easy to Read	More Likely	6
Good	Very Clear	I really like them	Fairly Intuitive	Sometimes unsure	Neutral	Somewhat Helpful	Easy to Read	Unsure	7

Appendix 13: Second Mock-Up Wireframe

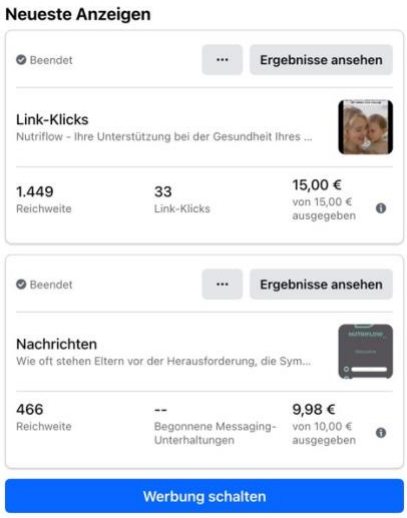


Appendix 14: NutriFlow Kids Facebook page

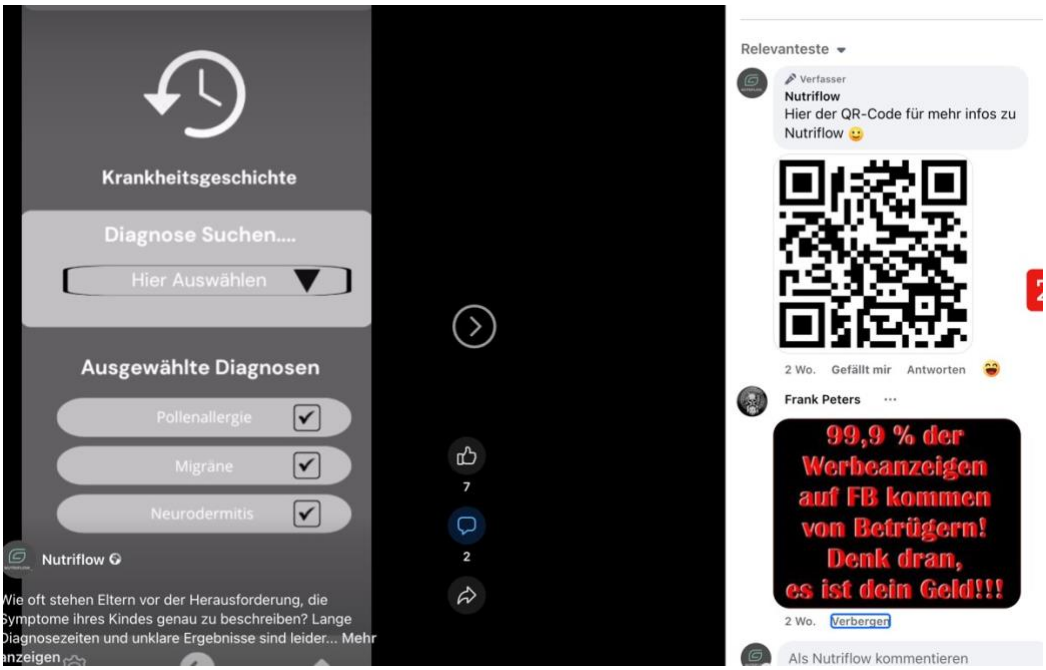
Appendix 15: NutriFlow Kids Facebook Reels



Appendix 16: Budget for advertising Facebook reels



Appendix 17: Negative facebook comment on posted reel accusation of being a scammer



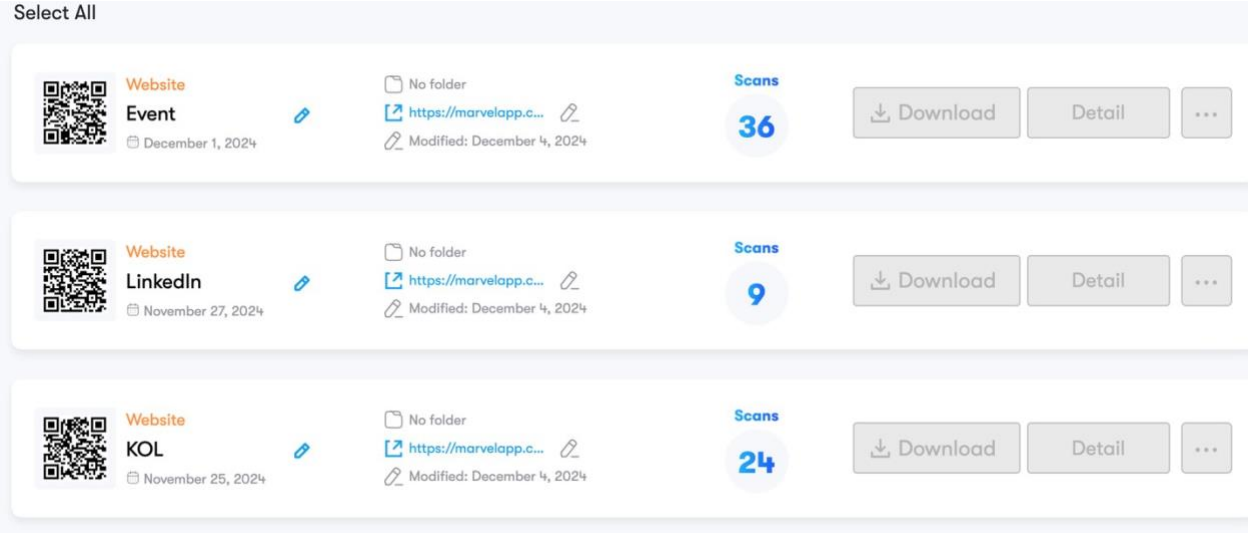
Translation of comment [Frank Peters]: "99.9% of ads on FB come from scammers! Remember, it's your money!!!"

Appendix 18: Analysis of engagement with reels posted on facebook

Reel type displayed	Impressions	Reach	Engagement
Mother and child (emotional)	1.589	1.485	3
Nutriflow interface (technical)	714	476	9

Comparison of different reels in terms of impressions, reach & Engagement as of Dec 2nd 2024

Appendix 19: Results of QR-Code frequency scanning for measurement of channel effectiveness (done with qr-code.io)



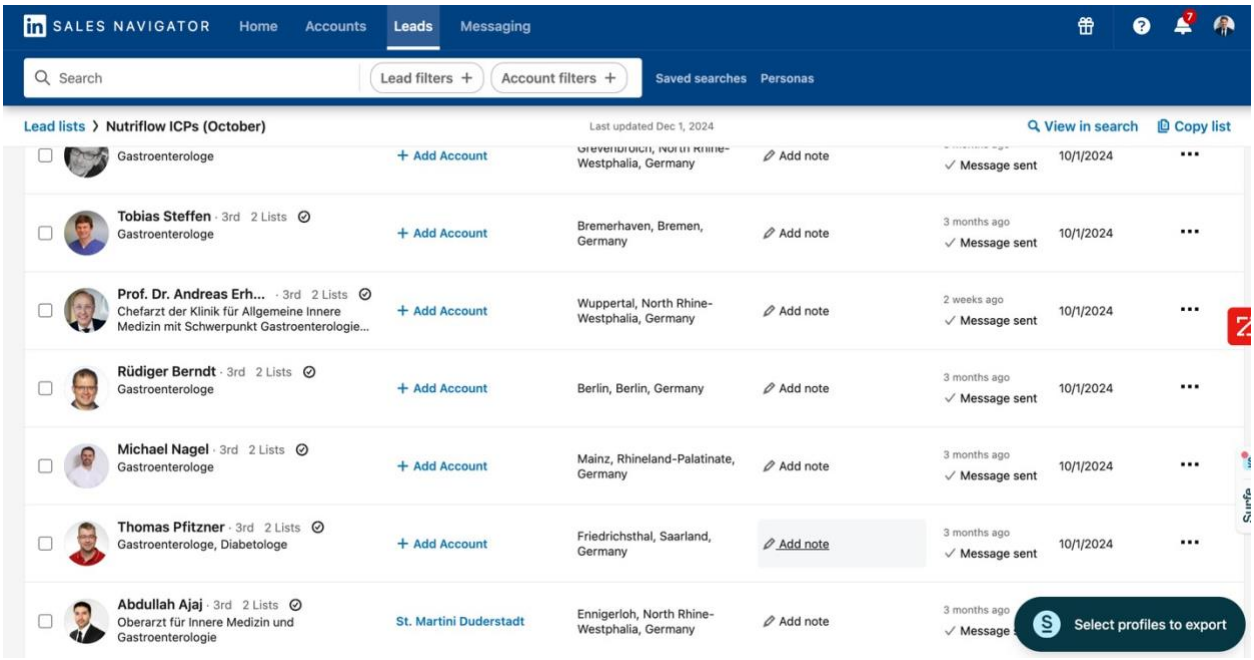
Appendix 20: Chat with Frank-Schneider Wrensch proving amount of visitors during DIVI congress

Translation: "I would also like to inform you that during the three congress days, 67 people visited my booth. Best regards, Frank"

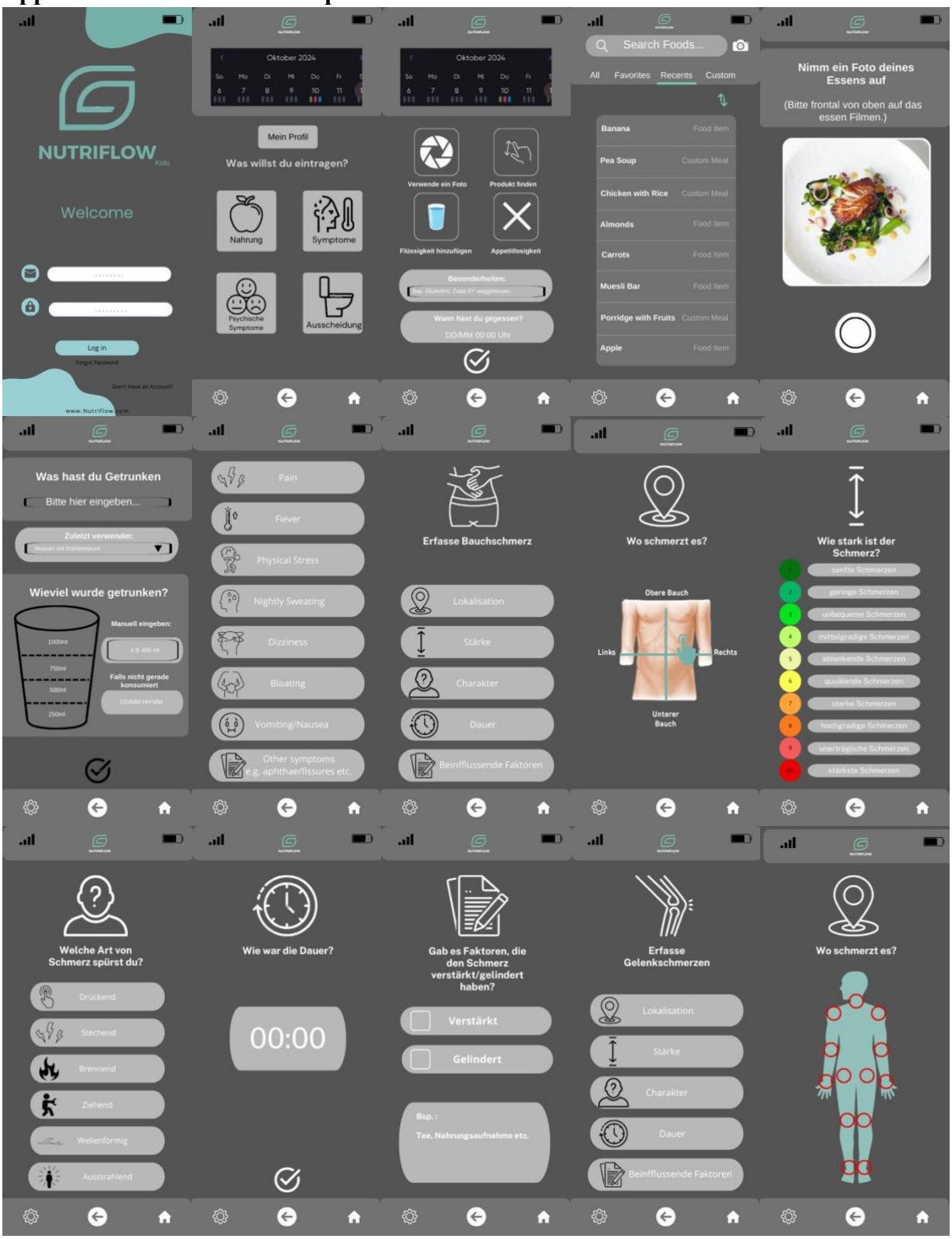
Appendix 21: Frank Schneider-Wrensch introducing NutriFlow Kids on DIVI medical congress

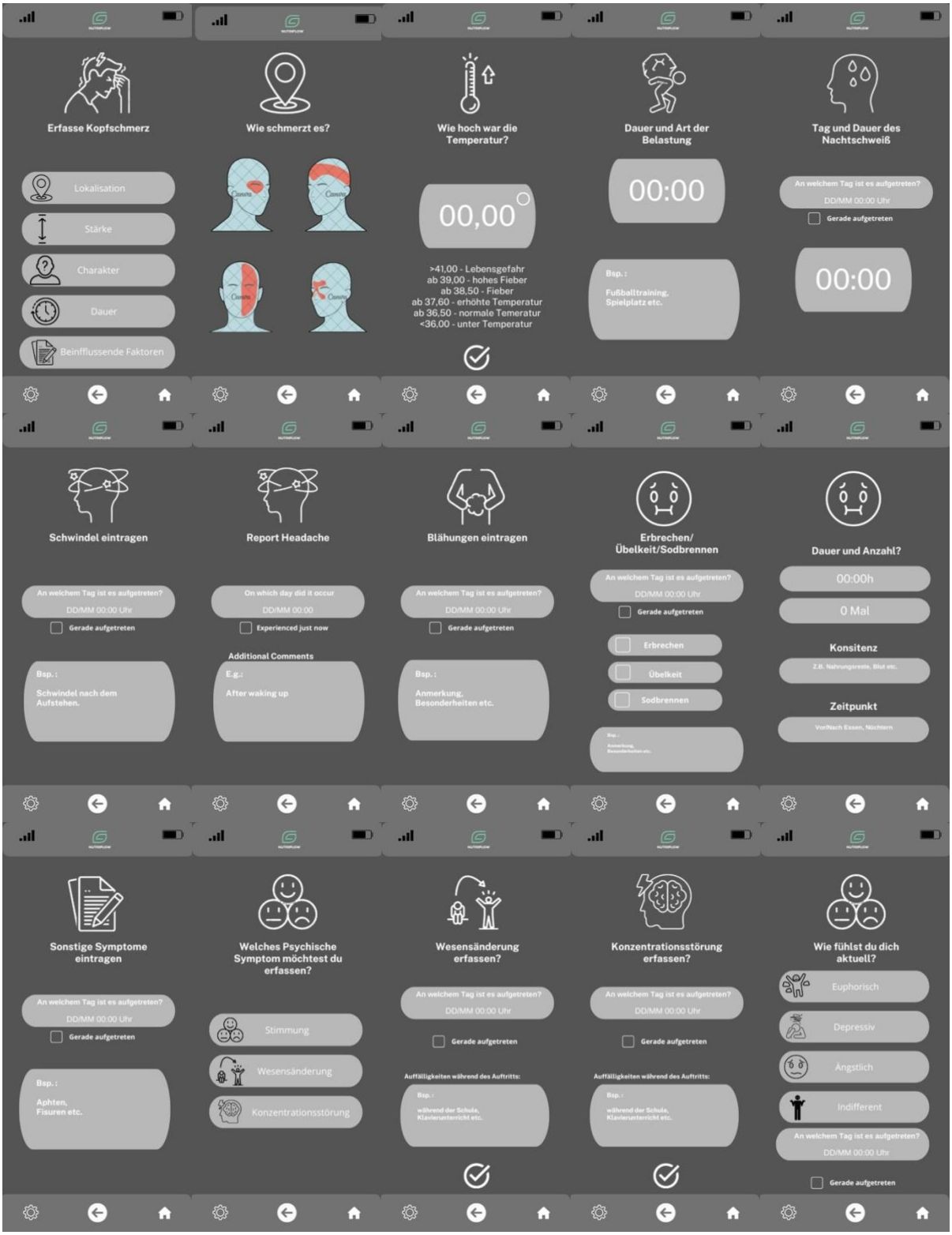
Appendix 22: Business cards with QR for Dr. Amelia Rösel

Appendix 23: LinkedIn Sales Navigator for outreaching medical professionals and industry experts



Appendix 24: Second Mock-Up NuriFlow Kids

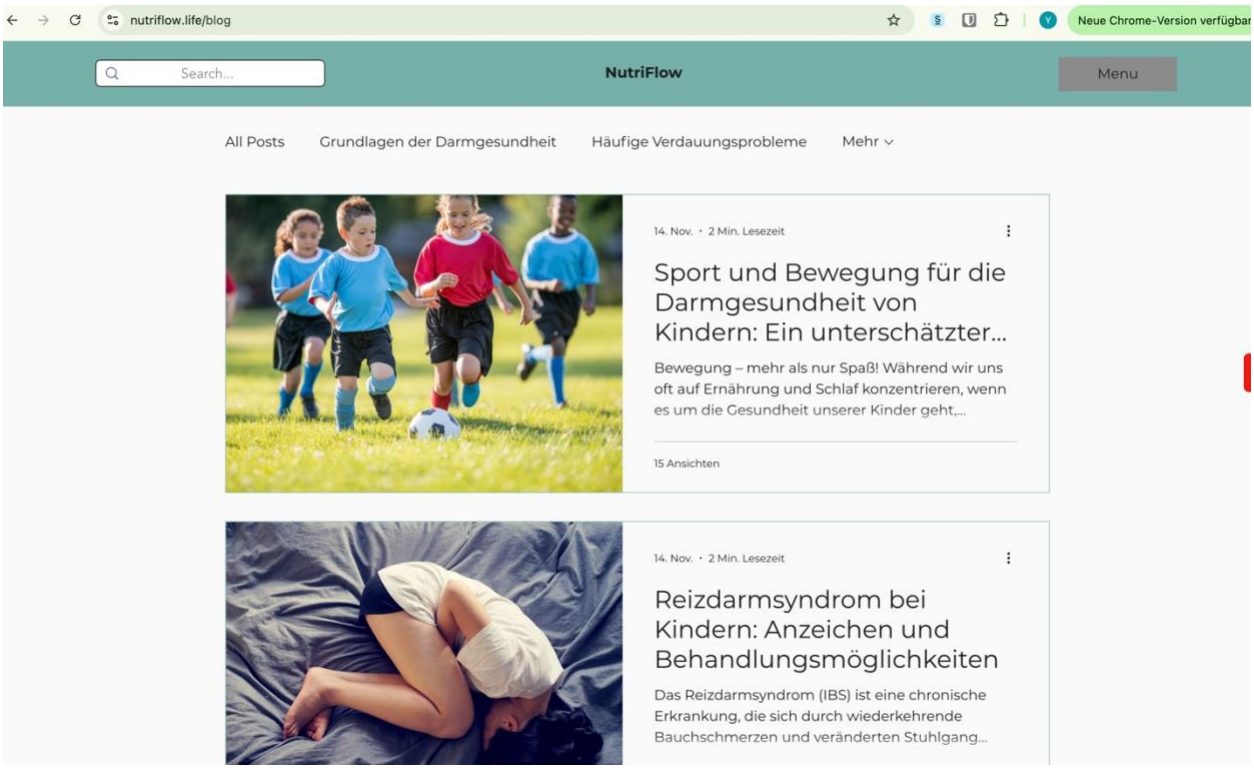



Erfasse Kopfschmerz
Lokalisation
Stärke
Charakter
Dauer
Beeinflussende Faktoren
Wie schmerzt es?
Wie hoch war die Temperatur?
00,00
>41,00 - Lebensgefahr
ab 39,00 - hohes Fieber
ab 38,50 - Fieber
ab 37,60 - erhöhte Temperatur
ab 36,50 - normale Temeratur
<36,00 - unter Temperatur
Dauer und Art der Belastung
00:00
Bsp.:
Fußballtraining,
Spielplatz etc.
Tag und Dauer des Nachtschweiß
An welchem Tag ist es aufgetreten?
DD/MM 00:00 Uhr
Gerade aufgetreten
00:00
Schwindel eintragen
An welchem Tag ist es aufgetreten?
DD/MM 00:00 Uhr
Gerade aufgetreten
Bsp.:
Schwindel nach dem Aufstehen.
Report Headache
On which day did it occur
DD/MM 00:00
Experienced just now
Additional Comments
E.g.:
After waking up
Blähungen eintragen
An welchem Tag ist es aufgetreten?
DD/MM 00:00 Uhr
Gerade aufgetreten
Bsp.:
Anmerkung,
Besonderheiten etc.
Erbrechen/
Übelkeit/Sodbrennen
An welchem Tag ist es aufgetreten?
DD/MM 00:00 Uhr
Gerade aufgetreten
Erbrechen
Übelkeit
Sodbrennen
Dauer und Anzahl?
00:00h
0 Mal
Konsitenz
Z.B. Nahrungsreste, Blut etc.
Zeitpunkt
Vor/Nach Essen, Nüchtern
Sonstige Symptome eintragen
An welchem Tag ist es aufgetreten?
DD/MM 00:00 Uhr
Gerade aufgetreten
Bsp.:
Aphten,
Fisuren etc.
Welches Psychische Symptom möchtest du erfassen?
Stimmung
Wesensänderung
Konzentrationsstörung
Wesensänderung erfassen?
An welchem Tag ist es aufgetreten?
DD/MM 00:00 Uhr
Gerade aufgetreten
Auffälligkeiten während des Auftritts:
Bsp.:
während der Schule,
Klavierunterricht etc.
Konzentrationsstörung erfassen?
An welchem Tag ist es aufgetreten?
DD/MM 00:00 Uhr
Gerade aufgetreten
Auffälligkeiten während des Auftritts:
Bsp.:
während der Schule,
Klavierunterricht etc.
Wie fühlst du dich aktuell?
Euphorisch
Depressiv
Ängstlich
Indifferent
An welchem Tag ist es aufgetreten?
DD/MM 00:00 Uhr
Gerade aufgetreten

Appendix 25: Benchmarking for final negotiated Price of DiGA after 12 months trial-phase

Holger Bless, fbeta GmbH	Niklas Hebborn, Freigeist Capital	GKV-Spitzenverband	Cara Care
200-250€	200-400€	221€	248€
Estimate based on personal experience from interview partner (Appendix 3.1)	Estimate based on personal experience from interview partner (Appendix 3.3)	Average final negotiated price (GKV-Spitzenverband 2023)	Final negotiated price (Quickbird Medical 2024)
Estimated expected final price for NutriFlow Kids per prescription: <u>250€</u>			

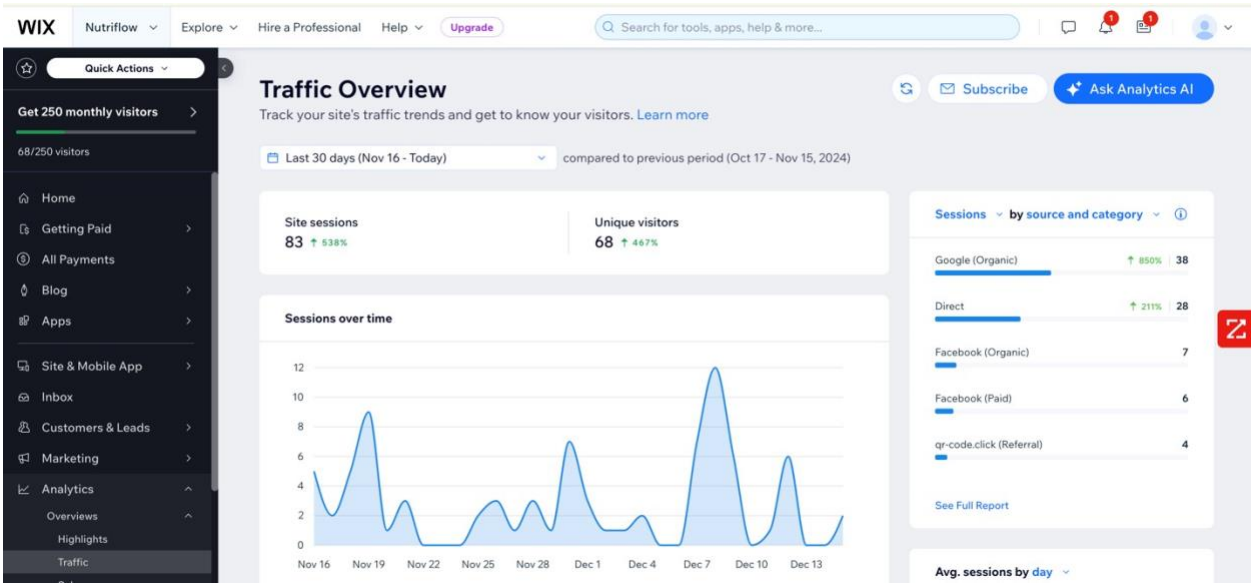
Appendix 26: NutriFlow Kids' website with blogs posted

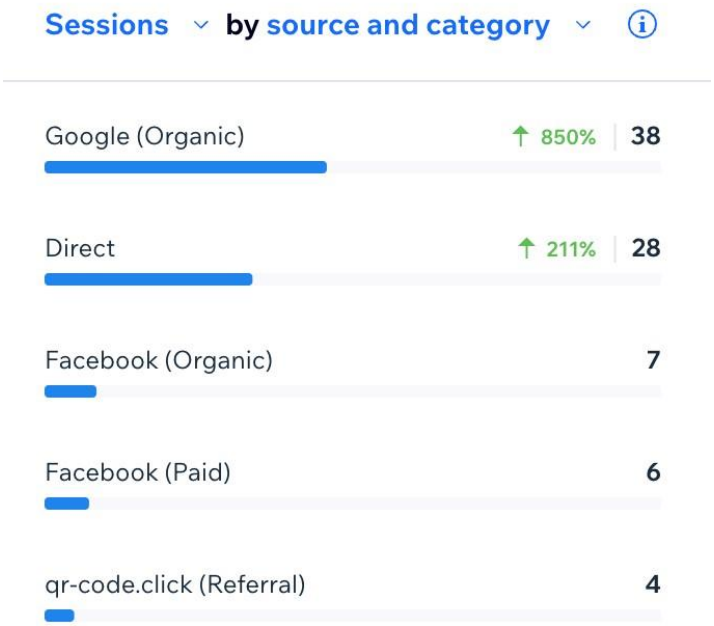


https://www.nutriflow.life/blog

Appendix 27: Website analytics showing ranking source of website traffic according to number of visits

83 site sessions in total





Appendix 28: Formula for Cost-per-Visit

$$\text{Cost per Visit (CPV)} = \frac{\text{Total Ad-campaign Cost}}{\text{Number of Website Visits}} = \frac{€25}{6}$$