

# ASCENDING Academic Startups: A Structured Approach to Maturity Assessment

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## The Need for a Standardized Assessment

Monitoring and supporting university-affiliated startups require **systematic evaluation** to understand their development stage and growth potential. Despite the critical role of incubators and startup centers in fostering entrepreneurship, many institutions lack a **standardized assessment framework**. A survey of 32 German university of applied sciences startup centers revealed inconsistencies in evaluation practices, underscoring the need for a comprehensive assessment tool [1]. This research presents the development of a **web-based maturity assessment tool** that synthesizes academic theory with practical applications to support startup growth.

## The Role of Academic Entrepreneurship

Academic entrepreneurship plays a pivotal role in economic development, particularly within knowledge-driven economies. Academic institutions are increasingly recognized not only as knowledge creators but also as **catalysts for innovation and commercialization** [2, 3, 4]. Government initiatives like Germany's EXIST program and StartupLab@FH reinforce this strategic focus by providing funding and support mechanisms. However, universities often struggle to systematically **assess and track startup progress** due to resource limitations and a lack of structured evaluation methodologies. The absence of a unified assessment approach may lead to inconsistent support, which could hinder startups and founders from reaching their full potential.

## Development of the ASCEND Model

The ASCEND (Academic Startups Comprehensive Evaluation and Development) Model is designed as a comprehensive, five-phase framework to guide startups originating from academic institutions through their developmental journey. The ASCEND Model is not merely a collection of concepts from existing models drawn from the previous literature review but a tailored approach that addresses the unique challenges and opportunities faced by startups within an academic setting. The development was guided by the need to create a framework that could accommodate the unique characteristics of academic startups.

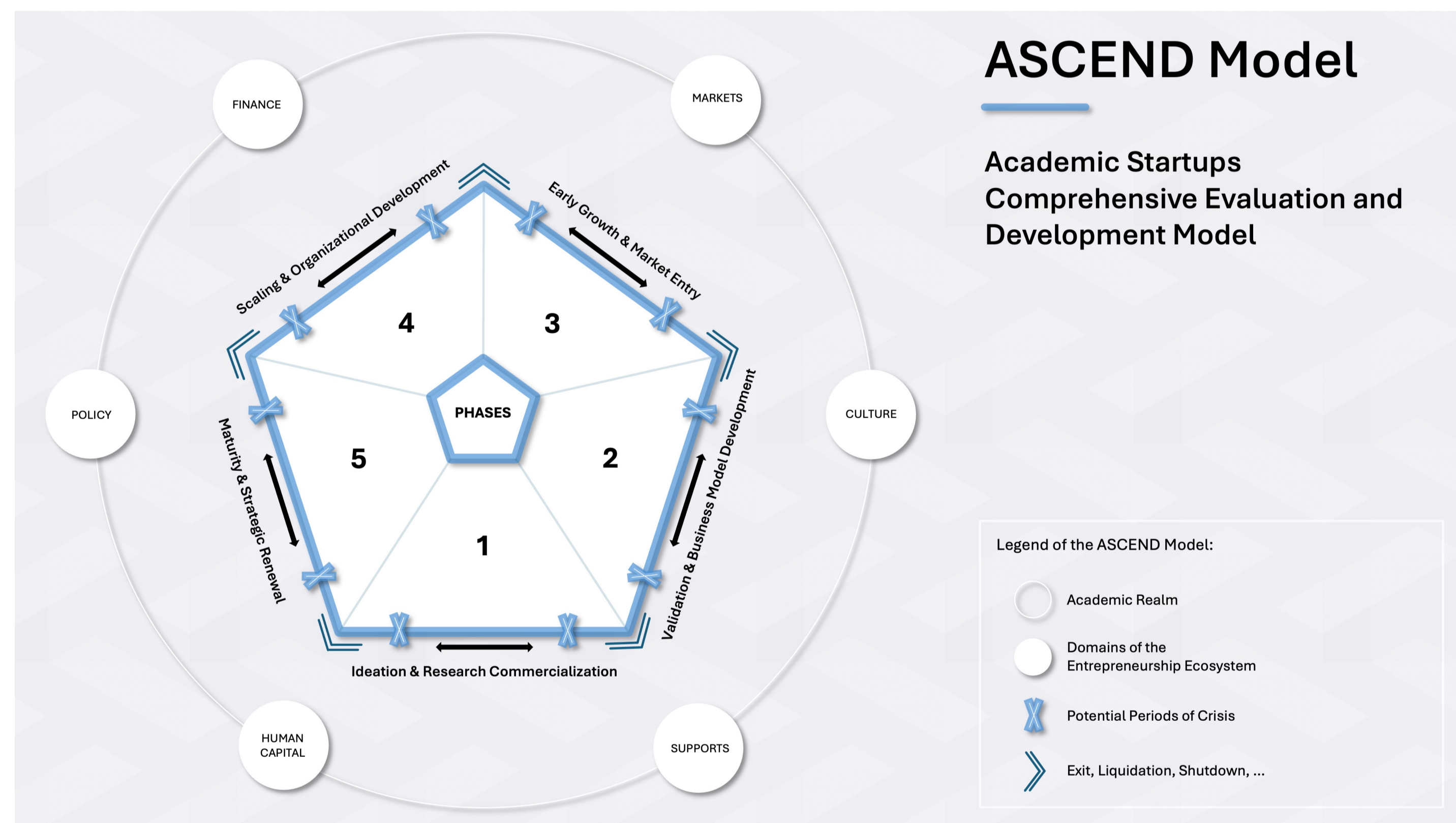


Figure 1: The ASCEND Model

## The Five Phases of the ASCEND Model

The five-phase structure was inspired by Scott and Bruce's Five Stages of Growth [5], providing a granular approach to the **typical lifecycle small businesses**. However, the ASCEND Model goes beyond a simple linear progression, drawing on the iterative processes from the **Lean Startup Methodology** [6], which ensures that startups can continuously refine their strategies and operations based on real-world feedback. Greiner's Growth Model [7] influenced the incorporation of **potential crisis points** within the ASCEND Model, highlighting the critical junctures where startups may need to redefine their strategies or restructure operations to continue their growth. Furthermore, Isenberg's Ecosystem Model [8] was integrated to emphasize the importance of **external factors**, such as finance, markets, policy, and culture, which play significant roles in the success or failure of academic startups. Finally, Teece's Dynamic Capabilities Framework [9] underpins the ASCEND Model's emphasis on adaptability, recognizing the need for startups to be **agile in reconfiguring their resources and strategies** in response to a **dynamic and often unpredictable environment**.

## Design and Functionality of the Assessment Tool

To operationalize this model, a **web-based assessment tool** was designed, incorporating a weighted scoring system based on eight key success factors:

Entrepreneurial Competence and Team Dynamics, Financial Health and Funding, Business Development and Market Strategy, Market Timing and Adaptability, Product Development and Customer Focus, Innovation and Resource Alignment, Ecosystem and Institutional Support, and Strategic Alliances and Scalability. These factors were weighted according to their significance, derived from an **synthesis of empirical studies on startup success** [10, 11, 12, 13]. The tool functions through a dynamic, user-friendly interface that allows startup teams and incubators to assess their venture's maturity level by inputting **self-evaluated scores on the eight success factors**. The system calculates a maturity score and assigns the startup to one of the ASCEND phases. This classification enables targeted support, aligning mentorship and resources with the startup's specific needs. The tool also facilitates **longitudinal tracking**, allowing startups and academic institutions to **monitor their progress over time and adjust their strategies accordingly**.

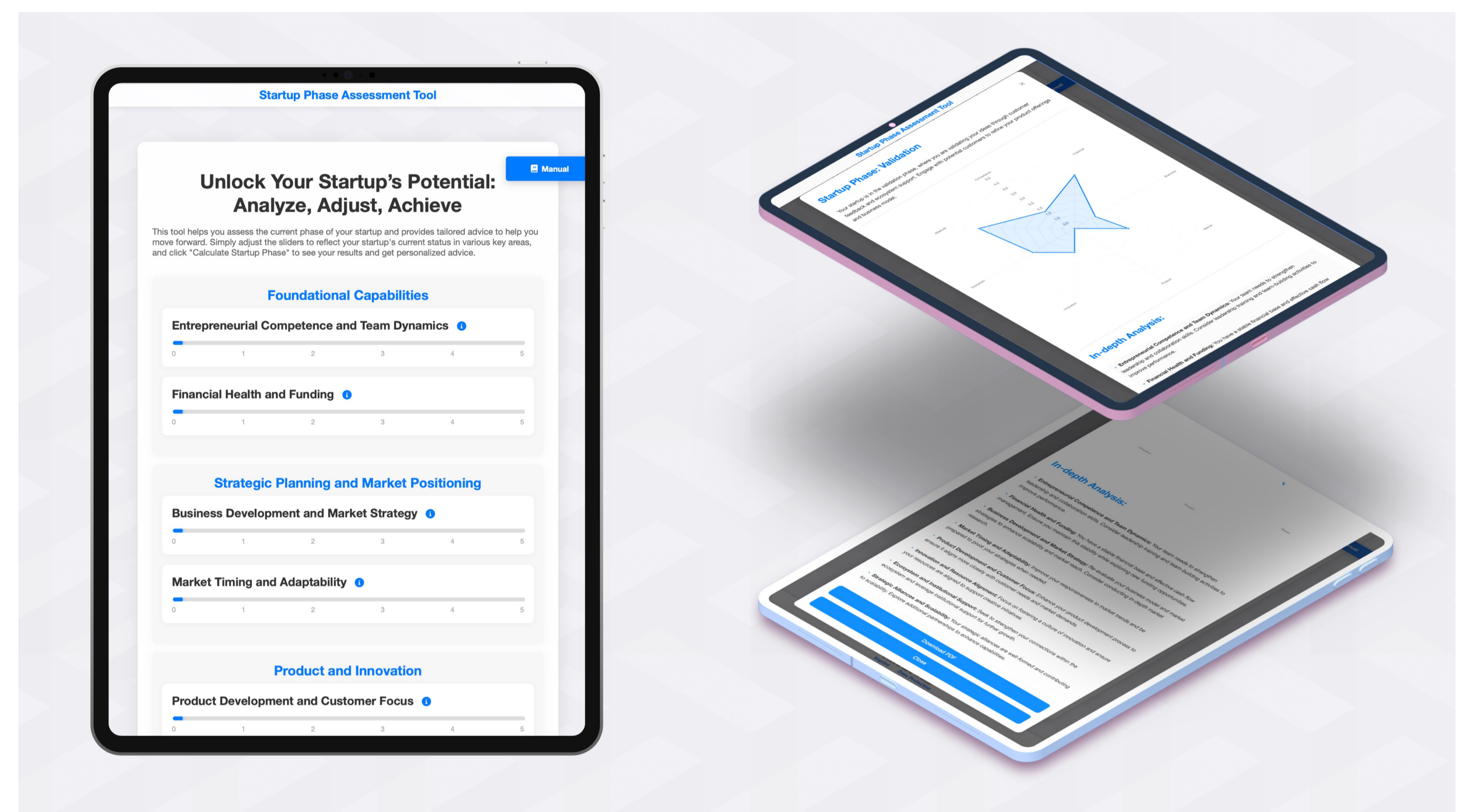


Figure 2: Prototype of the Web-Application

## Implementation and Practical Applications

Implementation of the assessment tool within university incubators can enhance the **effectiveness of startup support programs**. It can be integrated into onboarding processes, regular progress evaluations, and cohort-based accelerator initiatives. The structured assessment fosters **data-driven decision-making, improving transparency and communication between startup teams, advisors, and investors**. Moreover, the tool's customizable framework allows institutions to adapt it to different industry sectors and regional startup ecosystems, ensuring **broader applicability**.

## Evaluation and Future Research

While the maturity assessment tool offers a **structured approach to evaluating startup development**, several limitations remain. The weighting of success factors is based on literature synthesis and may not fully capture the **dynamic nature of startup ecosystems**. Additionally, **subjective biases in self-assessments** can impact the accuracy of evaluations. **Sector-specific adaptations** may be necessary to ensure applicability across different industries and also regulatory environments.

To enhance its robustness, future research should focus on **empirical validation through longitudinal studies**, refining weightings based on **real-world data**, and integrating adaptive mechanisms such as machine learning. Exploring the tool's effectiveness in various **cultural and economic contexts** will further ensure its scalability and relevance in diverse startup ecosystems.

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