

Startup Idea Evaluator: Supporting and Evaluating Early-Stage Startup Ideas Using ChatGPT

Athanasios Davalas¹ and Anna Angelaki, MSc²

¹Academic Director of AI e-Learning Programs and Researcher, University of the Aegean, Greece

²Researcher , University of the Aegean, Greece

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ABSTRACT

The Startup Idea Evaluator is an innovative AI-powered tool specifically designed to assist early-stage startups in systematically evaluating and refining their business ideas. Leveraging the advanced natural language processing capabilities of ChatGPT, the tool automates critical evaluation processes, offering features such as a Scoring Card for idea viability, automated SWOT Analysis, and tailored Funding Suggestions. Unlike traditional tools, the Startup Idea Evaluator provides real-time insights, integrating structured metrics with conversational adaptability. This unique approach not only reduces the operational burden on founders but also empowers them with actionable, data-driven recommendations. By bridging advanced AI with practical entrepreneurship frameworks, the Startup Idea Evaluator stands out as a transformative resource for fostering informed decision-making and sustainable growth in the startup ecosystem.

Keywords: Startup Idea Evaluator, early-stage startups, ChatGPT, AI tools, business idea evaluation, big data.

Introduction

Early-stage startups face numerous challenges in their efforts to develop and validate business ideas. Operating under high uncertainty, these teams often struggle with bounded rationality—limited information, finite time, and constrained resources—factors that hinder optimal decision-making (Leatherbee & Katila, 2020). Startups in technology-driven sectors, in particular, often lack systematic processes to test the viability of their initial ideas, resulting in increased uncertainty about their long-term sustainability. The Lean Startup Method has emerged as a pivotal approach to address these challenges. By employing a learning-by-doing methodology, it

encourages early-stage teams to iterate on their ideas through hypothesis formulation and testing. Central to this method are two key activities: (a) formulating assumptions about the business model and (b) validating these assumptions through probing techniques such as customer interviews (Blank, 2003; Ries, 2011). This iterative process not only reduces uncertainty but also enables startups to pivot when necessary, ensuring alignment between their ideas and market realities (Leatherbee & Katila, 2020).

Despite its benefits, the Lean Startup Method is labor-intensive and demands substantial expertise, making it inaccessible for many nascent teams. These limitations underscore the need for automated tools to streamline the evaluation process, reduce the cognitive and operational load on founders, and improve decision-making. Automation can augment the hypothesis-based probing process, offering startups actionable insights derived from structured frameworks and real-time data analysis.

This paper introduces the **Startup Idea Evaluator**, an AI-powered tool designed to support early-stage startups by automating critical elements of the Lean Startup Method. The tool incorporates features such as hypothesis scoring, SWOT analysis, and tailored business plan recommendations, providing startups with a structured yet flexible framework to evaluate their ideas. By reducing manual effort and incorporating advanced data-driven techniques, the Startup Idea Evaluator aims to make the principles of the Lean Startup Method accessible to a broader audience.

Research Questions

1. What are the primary challenges faced by early-stage startups in evaluating and refining their business ideas using AI and Big Data?
2. How can automated tools improve decision-making and resource allocation in early-stage startups?
3. What are the opportunities and limitations of integrating AI-powered frameworks into startup evaluation methodologies?
4. How can startups practically implement the recommendations provided by AI tools like the Startup Idea Evaluator?

By addressing these questions, this paper aims to demonstrate the transformative potential of the Startup Idea Evaluator in bridging the gap between theory and practice in entrepreneurship.

Background and Related Work

Overview of Artificial Intelligence and Big Data in Startups

Startups often face challenges in understanding customer needs and maintaining a competitive edge due to limited resources. By leveraging AI-based tools and Big Data analytics, these businesses can automate critical tasks such as data mining and web crawling, reducing human error and bias. Unlike traditional approaches, AI technologies do not rely on predefined selection criteria, enabling systematic analysis of large datasets and supporting data-driven decision-making (Stadlmann & Zehetner, 2022). AI and Big Data also allow startups to gain detailed insights into potential customers and predict behavioral patterns. This capability empowers startups to design tailored products and services to address specific market needs more effectively, enhancing their competitive positioning in dynamic environments (Davalas, 2020). While AI tools offer unparalleled efficiency and scalability in evaluating business ideas, they also come with inherent limitations. These include high implementation costs, which can be prohibitive for early-stage startups. Moreover, despite their advanced capabilities, AI systems cannot fully replicate the nuanced decision-making and communication skills that humans bring to the process. As observed by Davalas et al. (2022), AI tools are inherently constrained by the scope of their programming and cannot match human adaptability and intuition.

Comparison with Traditional Tools and Methods

In comparing systematic manual web searches, commercial database queries, and AI-based data mining methods, AI tools stand out for their efficiency, significantly reducing the time and resources required. Traditional methods, such as manual web searches, may yield higher-quality leads when expert knowledge is applied, but they are labor-intensive and less scalable. In contrast, AI tools efficiently analyze vast datasets, identifying patterns that traditional methods may miss (Stadlmann & Zehetner, 2022). Traditional market analysis methods often involve limited datasets and are time-consuming, making them less effective for startups with constrained resources. AI and Big Data tools overcome these limitations by processing large amounts of data in real-time, providing startups with precise and timely insights. This capability facilitates informed decision-making and strategic planning, giving startups a distinct edge over competitors relying solely on conventional methods (Davalas, 2020). Also conventional frameworks for assessing businesses and startups frequently fall short when applied to early-stage ventures, as these startups usually operate based only on an idea and lack comprehensive financial information." (Davalas. 2024)

Uniqueness and Advantages of the Startup Idea Evaluator

The **Startup Idea Evaluator** differentiates itself by integrating ChatGPT, an advanced natural language processing model, into the evaluation process. This enables detailed, customized analyses tailored to the unique needs of each startup. Unlike traditional tools, the Startup Idea Evaluator processes large data sets in real time, delivering immediate and accurate recommendations. By automating complex evaluations, the tool minimizes the time and resources required for assessing business ideas, empowering startups to focus on implementation and growth. Overall, the application of AI and big data in startups presents significant advantages. The **Startup Idea Evaluator** stands as an innovative tool that leverages these technologies to provide robust support and evaluation for entrepreneurial ventures.

Concept and Design of the Startup Idea Evaluator

Objectives

The **Startup Idea Evaluator** is a ChatGPT-powered add-on created to address the specific challenges faced by early-stage startups. The primary objective of this tool is to enable a systematic and comprehensive evaluation of business ideas, ensuring that startups can make informed decisions based on reliable data and analysis. Additionally, it aims to provide targeted guidance and actionable recommendations tailored to the unique needs of each startup. By leveraging ChatGPT's natural language processing capabilities, the tool simplifies complex evaluations, making them accessible even to users without technical expertise.

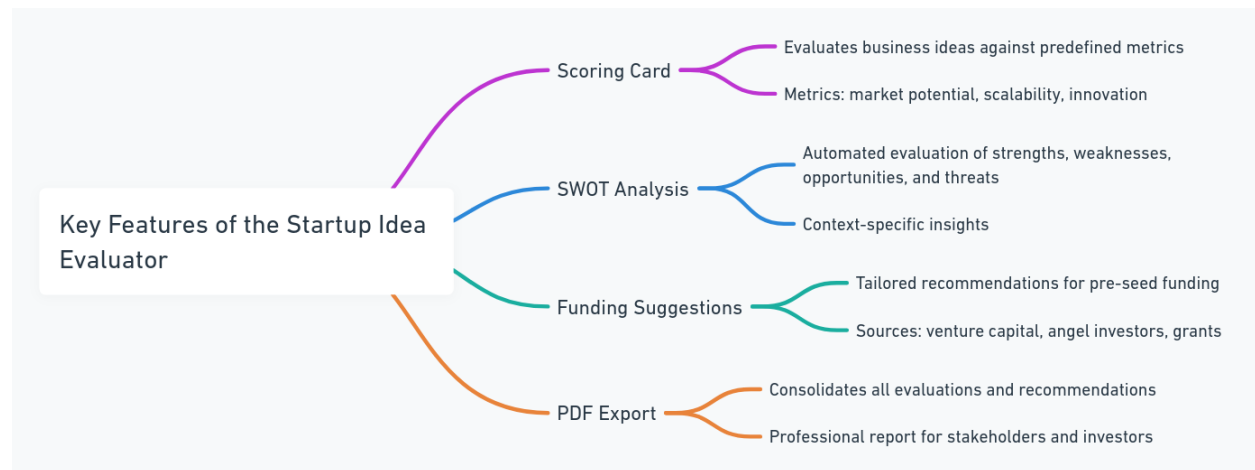
Key Features

The Startup Idea Evaluator incorporates several innovative features designed to support startups at the critical early stages of development. One of the core features is the Scoring Card, which evaluates business ideas against predefined metrics such as market potential, scalability, and innovation. By synthesizing user inputs and additional data sources, the Scoring Card delivers a detailed and intuitive assessment, helping entrepreneurs identify areas of strength and potential improvement. Another essential feature is the SWOT Analysis, which automates the evaluation of strengths, weaknesses, opportunities, and threats for each business idea. This analysis provides startups with a clear understanding of their internal and external environment, enabling them to develop strategies that maximize opportunities while addressing risks.

The tool also offers Funding Suggestions, which analyze the startup's specific context to provide customized recommendations for pre-seed funding. These suggestions include identifying suitable sources such as venture capital, angel investors, or grants, helping startups navigate the often complex funding landscape. To enhance communication and documentation, the PDF Export feature consolidates all results, including Scoring Cards, SWOT Analysis, and Funding Suggestions, into a professional report. This capability ensures that startups can effectively

present their findings to stakeholders, investors, or advisors, with ChatGPT’s natural language generation producing concise and coherent summaries.

Hack's (2024) I.D.E.As framework provides a structured approach to integrating AI tools, emphasizing not only their use for development and empowerment but also for critical evaluation. The Startup Idea Evaluator incorporates similar principles by guiding startups through iterative assessments and actionable recommendations.



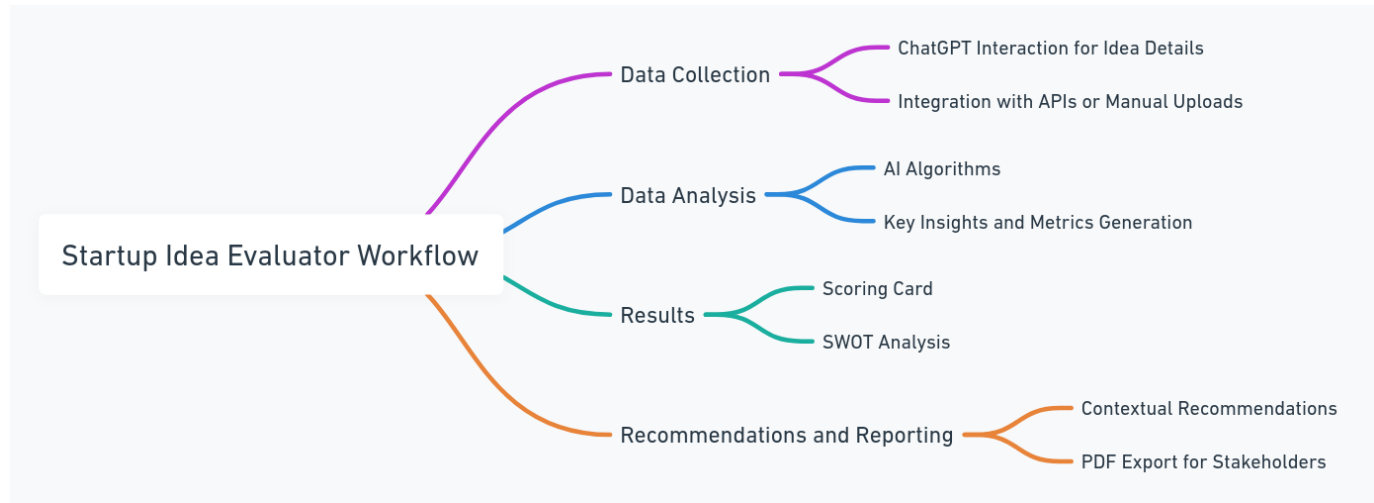
Workflow

The Startup Idea Evaluator employs a streamlined and intuitive workflow that integrates the conversational and analytical capabilities of ChatGPT to guide users through the evaluation process. The process begins with Data Collection, where users interact with ChatGPT to provide detailed information about their business idea. The conversational interface allows for iterative refinement of inputs, ensuring that all relevant data is captured. In cases where external data is needed, the tool supports integration with APIs or manual data uploads to enhance analysis.

Next, the tool performs Data Analysis, leveraging AI algorithms and ChatGPT’s advanced language understanding to process the collected information. This step includes identifying patterns, extracting key insights, and generating metrics for evaluation. The results are then presented through Evaluation and Visualization, where outputs such as the Scoring Card and SWOT Analysis are displayed in an interactive and visually engaging format. ChatGPT provides contextual explanations for the results, ensuring users understand the implications of the analysis.

Finally, the tool delivers Recommendations and Reporting, offering startups actionable insights and the ability to generate a consolidated PDF report. This comprehensive report combines all

outputs into a single document, making it easy to share with investors or other stakeholders, while maintaining a high level of clarity and professionalism. By integrating ChatGPT's capabilities into the evaluation process, the Startup Idea Evaluator provides a dynamic and scalable solution that empowers startups to focus on implementing their ideas and achieving their goals.



Implementation Details

Technical Infrastructure

The **Startup Idea Evaluator** is built on a robust technical foundation, with the **ChatGPT API** serving as the core engine for interactive and analytical processes. The API facilitates real-time, natural language conversations, enabling users to input data, clarify objectives, and receive tailored feedback on their business ideas. This conversational framework makes complex analyses accessible and engaging, especially for non-technical users.

The **Scoring Card** feature integrates seamlessly with ChatGPT to evaluate startup ideas against predefined metrics such as innovation, market potential, and scalability. By analyzing user inputs in real-time, ChatGPT provides a detailed scoring breakdown, offering insights into the strengths and weaknesses of the business idea. The conversational interface allows users to refine their inputs iteratively, ensuring accurate and meaningful results.

In addition, the tool incorporates **Chart.js**, a powerful visualization library, to generate interactive graphical outputs. These visualizations present Scoring Card results and other analyses in an intuitive and user-friendly format, making it easier for startups to interpret and act on the findings.

Input-Output Examples

The **Startup Idea Evaluator** demonstrates its functionality through practical use cases tailored to startup founders. For example, a founder might input details about their target market, business model, and value proposition via a guided ChatGPT conversation. The tool processes this information to generate outputs such as:

- A **Scoring Card** with detailed metrics and graphical representations of the startup's viability.
- A **SWOT Analysis**, highlighting strengths, weaknesses, opportunities, and threats specific to the business idea.
- **Funding Recommendations**, offering personalized guidance on sourcing pre-seed funding from venture capitalists or other channels.

These results are consolidated into a comprehensive PDF report, making it easy for founders to share their evaluations with stakeholders or use them for internal strategy development. By leveraging the advanced capabilities of the ChatGPT API and supporting tools like Chart.js, the **Startup Idea Evaluator** simplifies the complex process of startup idea evaluation, empowering founders with actionable insights and professional-grade outputs.

Advantages and Innovation

The Startup Idea Evaluator offers a range of advantages that make it a transformative tool for early-stage startups. Its intuitive interface, powered by ChatGPT, ensures ease of use for non-specialists, enabling entrepreneurs without technical expertise to perform comprehensive evaluations of their business ideas. Furthermore, the tool is highly adaptable, catering to startups at various stages of development—from initial idea validation to advanced business model optimization.

A key strength of the tool lies in its compliance with GDPR regulations, ensuring secure and transparent handling of user data. This feature is particularly crucial for startups, as they often rely on sensitive data for market analysis and strategic decision-making. Adhering to GDPR not only protects user data but also fosters trust with stakeholders, a critical factor for sustainable growth. As highlighted by Beretas and Davalas (2024), integrating AI with robust cybersecurity measures enhances compliance with regulatory frameworks such as GDPR and NIS2, providing both ethical and practical benefits for AI-driven tools. From a technological standpoint, the Startup Idea Evaluator exemplifies innovation through its integration of ChatGPT's advanced natural language processing capabilities with structured data analysis tools. This synergy allows for the automation of complex evaluations, delivering real-time, dynamic feedback. On the entrepreneurial side, the tool empowers startups to make informed decisions early in their

lifecycle, minimizing risks and enhancing scalability. Its ability to adapt across different stages of idea development ensures that it remains a valuable resource as startups grow, bridging the gap between cutting-edge AI technology and practical business applications.

Challenges and Limitations

The Startup Idea Evaluator faces certain challenges inherent in working with large datasets. Ensuring compliance with GDPR and maintaining the security and privacy of sensitive user data requires robust safeguards and continuous monitoring. Additionally, the effectiveness of automated tools is sometimes constrained by the quality of the input data and the limitations of their algorithms, which may struggle to capture nuanced or highly context-specific aspects of a startup's business model.

Future Work

AI and Big Data have proven instrumental in helping startups gain a deeper understanding of their market and refine their strategies. For instance, Davalas (2023) demonstrates how the TAM, SAM, and SOM models, when integrated with AI, enable precise market estimations and support scalability through data-driven decision-making. Future developments aim to enhance the Startup Idea Evaluator by incorporating predictive analytics, enabling startups to forecast market trends and outcomes more effectively. Expanding the tool's applicability to other sectors beyond early-stage startups, such as established businesses or non-profit organizations, represents another promising direction. These advancements will increase the tool's versatility and value for a broader range of users. In the future, innovations such as the Digital Euro may further enhance startup ecosystems by enabling secure, efficient cross-border transactions and integrating programmable financial mechanisms to support real-time payments. Such technologies could be integrated into tools like the Startup Idea Evaluator, allowing startups to optimize financial operations and explore blockchain-enabled funding options (Davalas & Charalabidis, 2023)."

Conclusion

The Startup Idea Evaluator significantly contributes to the success of early-stage startups by offering a structured, AI-powered approach to evaluating and refining business ideas. Its ability to combine advanced analytics with an intuitive, user-friendly interface ensures its practicality and effectiveness. The tool's unique integration of ChatGPT and real-time data analysis not only supports entrepreneurs but also democratizes access to sophisticated evaluation methods, making it an indispensable resource in the entrepreneurial ecosystem.

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