Idea2Startup: Automating Startup Pre-Incubation with Gen AI

[1] Varun D P, MCA Student, PES Institute of Technology & Management, Shivamogga, Karnataka, India.

[2] Ms. Kavya H V, Assistant Professor Dept. of MCA, PES Institute of Technology & Management, Shivamogga. Karnataka, India.

Abstract

The gap between developing an idea and the actual implementation of the idea is in itself a formidable obstacle to start-up entrepreneurs particularly those with less knowledge of the technical and enterprise worlds. Idea2Startup is a new solution offered in this paper and it is based on Generative AI and it can be used to automate the pre-incubation of startup development. The system is set to accept input in a natural language and output includes basic start-up-related assets that include a Business Model Canvas, a landing page, a pitch deck, a logo and domain name, a prototype, and the associated technology stack. It also does automated market research, it checks that the idea is correct and it tests ideas with the use of a launch-roadmap that has real time guidance in an AI assistant. Having been designed to bring the technical and non-technical barrier to founders into a lower degree, the platform has automated the whole process of formation of entrepreneurs making the process both rapid and the experience so is easy. In the discussion below, the specifics of the system architecture, its modular workflow, and intelligence within the context of large language models (LLMs) will be outlined and the end goal will be achieved when deciding how Generative AI, in collaboration with LLC, is able to transform the way in which early-stage startups are constructed.

Keywords: *Generative AI, pre incubation, automation startups, better idea validation, business model generation, large language models, startup pre seed, AI powered entrepreneurship, market research automation, no code startup tools, intelligent prototyping.*

1. Introduction

The desire to pursue an entrepreneurial activity has shown a significant increase in its pursuit in the recent years leading to an unprecedented boom in the number of business enterprises around the globe. This impetus can be explained by the fact that the almost universal idea of startups is the epitome of enhancement and development. However, creating an idea into a functional solution is a very intensive process even to most would-be entrepreneurs within the pre-launch or incubation stage which involves polishing of the concept, testing its feasibility, laying down some groundworks and market research foundations (basic). Achieving these requirements will require a wide range of skills, a significant amount of time and will necessitate the employment of an expert workforce, which will be out of reach of individual founders, students, or nonspecialists with little capital or technical staff available to them. As a result, a huge percentage of the good ideas fail to get off to a fast start before the business takes off, a situation that can best be described as being caught in a bottleneck due to most of these bottlenecks being at the early stages of business.

The latest developments in generative artificial intelligence (GenAI), namely Large Language Models (LLM) and GPTs, e.g., GPT, Gemini, Claude, and LLGo, currently open up new possibilities to automate knowledge-intensive, creative and complex processes. Other solution capabilities can be demonstrated and feature: real-time, natural language promotion of structured business documents, human like

emulation, situation aware and real-time recommendations. Based on these features, it has been envisioned to speed up the early development of a new business, by creating Idea2Startup as a single website with all aspects of a business integrated within it. The technological approach of input in plain English allows the system to provide in real time all the necessary startup collateral material such as a Business Model Canvas, a pitch deck, prototype element mockups, branding materials, and startup roadmap customization. The place also incorporates lots of modules: an automation engine to conduct market researches, suggestions to find technology stacks, AI assistance in real-time, and an engine to verify ideas with an analysis of trends, competition and implicit testing. These modules are commonly used in conventional tools, although the transitioning between these modules is not seamless as they rely mostly on the aspect of extensive manual customization Idea2Startup, however, presenting them together in one unified framework supported by the use of an interface that is virtually in the position of co-founder, will facilitate easier navigation on the part of users.

Off the back of this, the current Research Paper hence endeavors to analyze the system architecture, the modularity, and the real time generative capabilities of the Idea2Startup platform in a detailed manner. It also estimates potential effect of GenAI technologies on future of start up ecosystem, suggesting that they will be able to make the entrepreneurial activity faster, more efficient, and more accessible to people. Lastly, the paper presents an Expandable model that can find application in incubation centers universities, accelerators, and also to individual entrepreneurs thereby plotting an AI-driven future venture scenery development.

2. Literature Survey

The gradual involvement of artificial intelligence in entrepreneurial activities has led to significant changes related to the process of establishing the venture, running it, and growing it. In that vein, generative AI has proven to be especially effective in automating the initial steps of different procedural workloads, including ideation, content generation, prototyping, and decision support. Empirical research suggests that AI-based tools significantly shortened both time- and costs-related perspectives of business planning through completion of time-constrained and knowledge-intensive task [1]. Such dynamics are particularly relevant at the pre-incubation phase, where founders in the early stages have to work with resource constraints, short domain knowledge, and curtailed timeframes to verify hypotheses, working under extreme stress [2].

The current research by Kusetogullari et al. [3] explains the working mechanism of large language models (LLMs) in the role of intelligent advisors which transform abstract, conceptual antecedents into real business artefacts. In alignment, Singh and Sharma [4] identify the following areas of pre-incubation obstacles, which the instruments in the form of Idea2Startup address: poor market assessment, no adequate value propositions, and scanty technical validation. At the same time, the digital ecosystem developed to simulate the functions of co-founders and demonstrated abilities to create business models, prepare a pitch deck, and design a logo, which is presented on multiple platforms of various industries [5][6].

Generative paradigms, such as GPT-4 and Claude demonstrated above, are proving to offer high levels of model accuracy and contextual integrity in response to creative tasks, and the use of AI in market research and competitor analysis has been found interested in its use in distilling information in otherwise huge volumes of unstructured corpora [8]. The websites like Idea2Startup represent this path and use real-time web sources, proactive engineering, and bespoke APIs to individualize the

entrepreneurial process. Also, there are demonstrated cases where AI training on healthy data can produce roadmap strategies of strategic depth and even better than human-devised [9].

The ethical implications of integrating AI were highlighted by Ali and Al-Azzawi et al. [10][11] in regard to decision-making areas like idea validation and investor recommendation. This must never be ignored in the design of systems that require sensitive operations. What is more, the existence of instruments by means of which non-technical founders are enabled is crucial; as B-Works and Sakrat claim, AI democratizes business of an entrepreneur, since it does not require one to hire the CTO and consultants anymore [12][13]. Frameworks with an early foundation like the Business Model Canvas by Osterwalder are continuing to have impact, appearing in the organization of business logic on the AI-driven platforms [14].

At the engineering level, automation architecture developing algorithms have increased in the other disciplines like education, healthcare, and finance and this reflects on their relevance in various sections [15]. As a result of the scoring-engine included in Idea2Startup, Kusetogullari et al. have promoted predictive multi-agent paradigm of building start-up-success predictions; an invention equivalent to that of Idea2Startup [16]. The reality of the existence of the whole infrastructure of startups that require the minimum attention of the human being is also backed by the development of the modern prototyping of no-code [17], AI-aided UX design [18], and the UI generated by the languages [19]. Finally, the global research groups have presented ethical management models concerning trust worthiness of AI systems in the entrepreneurial instruments [20].

The literature sets a high level of theoretical and practical background to the Idea2Startup system being not only an integrative platform, but also the system that is based on and infused with the recent developments of Generative AI, no-code automation, and start out sciences to simplify the process of pre-incubation.

3. Methodology

Context-Aware Scalable Modular Architecture and Generative Artificial Intelligence The Idea2Startup platform is not only designed with a validated modular architecture for context-sensitive environments but also with Generative AI and orchestrated real-time simulating and depicting a pre-incubation process of a startup. Denotation of a startup idea as a text in a natural language and decomposition into its element by a Large Language Model (LLM) make up the beginning. This kind of thought process is then fed into a set of functional modules that come up with low level startup products business models, pitch decks, landing pages and prototypes etc.

The modules are grounded on immediate engineering and subject-specific reasoning to achieve a continuity of the context with the one of the initial input. To illustrate, the idea that those were a college student-based sustainable clothing rental app would result in the following outputs- business canvas, the logo of the market analysis, and the technology recommendation which will be summed up and comprise the original context. Compared to other approaches, modules are both parallel and event-driven due to statelessness, which enables them to provide assets in real-time fashion.

Iterative user interaction is one of the design objectives. Once one gets the first output, some form of AI assistant allows one to revise the respective pieces, stretch the thoughts, or re-create the same, hence constituting a manner in which the founders are refining their idea by receiving the feedback iteratively.

The performance of the users and the level of scalability of the design are promoted by the functionality processes such as caching, queueing, and adaptive response.

In general, by combining LLMs, prompt workflows and smart automation, the methodology offers a clear, smart and effective pre-incubation experience to, in particular, the solo founder or non-technologist entrepreneur.

3.1 System Architecture

The system architecture of Idea2Startup is set up such that it enables the raw idea of a startup to be transformed into concrete steps of actionable business assets via a multilayered structure. The architecture is divided into 4 free-standing layers namely: Input Layer, Processing Layer, Module Layer and Output and Interaction Layer. The layers serve various purposes, including the ability to interpret input translated into a natural language, as well as to produce the content using AI models and give real-time feedback to a user. This stratified nesting enables flexibility, modularity, and responsiveness which consequently enable the platform to enable the platform to support technical and non-technical founders effectively.

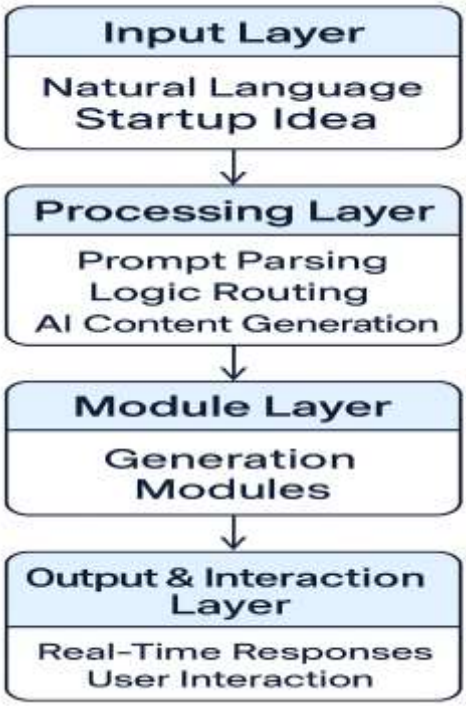

Figure 3.1.1: Four-Layered System Architecture of Idea2Startup

As the Idea2Startup platform will be set up to run in real time and produce modules and startup materials via Generative AI and logic-flow tailored to any given context. The system operates on a four-layered architecture and each layer is charged with responsibility of dealing with a specific part of the continuum of knowledge to action.

- **Input Layer**: The point where the users get to express their startup ideas in plain English or plain words. It makes it available to all sorts of people because there is no technical syntax needed or structured formatting needed, the system will guarantee this.

- **Processing Layer**: The processing layer goes ahead to begin, a timely parsing of the received idea, determining the semantic and contextual factors and directing them into the logical blocks of interest. It serves as a brain of the platform including the interpretation of the idea, prompts formatting and selection of the appropriate AI-models.

- **Module Layer**: This layer also consists of core generation modules that will each have the ability of generating a specific start up asset. These are the Business Model Canvas, the Landing Page, the Pitch Deck, the Logo and Domain recommendations, Prototype Developing Tool, Technology Stack Recommendations, and the Market Research. The modules are modular-other than stateless which causes them to be efficiently processed in parallel.

- **Output & Interaction Layer**: This layer is used to compile the responses made and re-present them to the user in some structured form, that the user can make i.e. edits. It also accommodates the Interactive AI Assistant, providing instant clarification, refinements, and customizations on outputs according to the feedback of the users.

Not only does this layered architecture give this system scalability and performance, it also makes it easy to understand (both technically and not-so-technically) by its founders. The layers are loosely coupled with each other and the system can be developed as time goes by to add new AI modules or to update an individual logic.

3.2. Functional Module Architecture

The functional module architecture that it implements is based on the principle according to which a user enters the system to create an input in the natural language form. Having received an abstract, the system starts the contextual infection and justification process and thus rates on clarity and feasibility level. The output that is received at the end is a very detailed input which is then channelled to the many generative modules that constitute a professional team that is involved in providing you with a bare minimum of initial start up materials including the Business Model Canvas, a Landing Page, a Pitch Deck, a Domain and Logo, a Prototype, a suggestion regarding a Technology Stack, and an advise on Market Trends. Those modules advance along with an Interactive AI Assistant that allows working in real-time and iteratively.

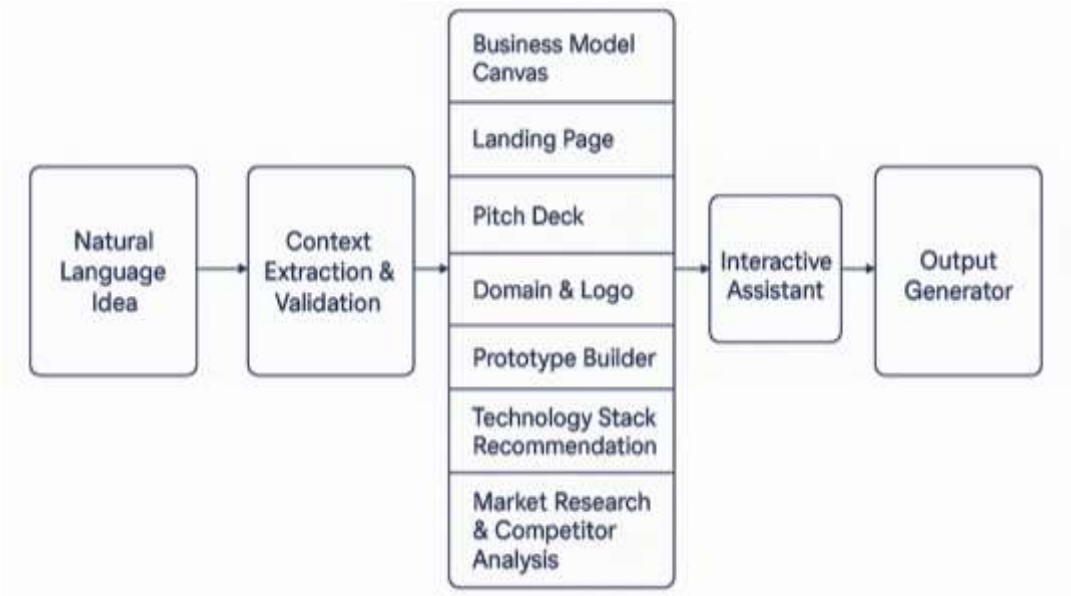

Fig 3.2.1: Functional Module Architecture of Idea2Startup

Idea2Startup functions within the architecture that focuses on the modular functional organization. When a submission is received, the idea of the user is brought into the platform as only another block in the system. First, the offer is posted in an understandable form, which, at the initial stages, gives a brief idea about the business idea prior to the user completing it. It is an initial piece of text and first data point of the system. It then passes the data to the Context Extraction and Validation module where an AI facilitated system reads the input and infers intent and purpose along with identifying the ambiguities and concludes on feasibility using a set of pre-defined business-logic rules and heuristics. The output received generates a signal that is then transmitted to the remaining modules informing them that the contributor is interested in starting up a venture and this allows subsequent processing to be effective. After the validation has been passed, the concept undergoes some revolutionizing in the Composite Generation Layer. It is a set of modules that interact with one another to create a family of business artifacts. These comprise a Business Model Canvas fitted to the original idea, automatically prepared Landing page, a dedicated Pitch Deck, individual Domain suggestion and Logo, Prototype structure, an all-inclusive Market Research along with a Codeless Technology Stack (intended to suit the original idea). During generation, there is an Interactive AI Assistant that allows one to make real-time queries, refinements and feedback. The product of such interaction is thus dynamic and at personal level because it is two way interaction. The Output Generator then pulls all these diversified elements together so that they are put together into one unified platform-type deliverable which means that entrepreneurs do not have to wade through tons of files but all the stuff they need to create a startup is provided to them in a unified way through one clean and ready-to-go presentation.

4. Results

Fig: Idea2Startup User Interface

Fig: Business Model Canvas UI

Fig: AI-Generated Pitch Deck

Fig: AI-Generated Prototype Screen

Fig: Food Delivery App Stack

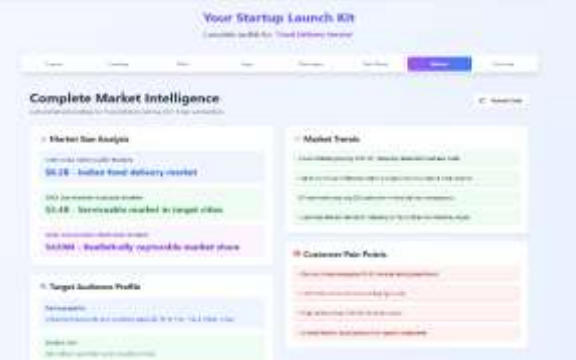

Fig: Food Delivery Market Insights

Fig: Competitive Analysis UI

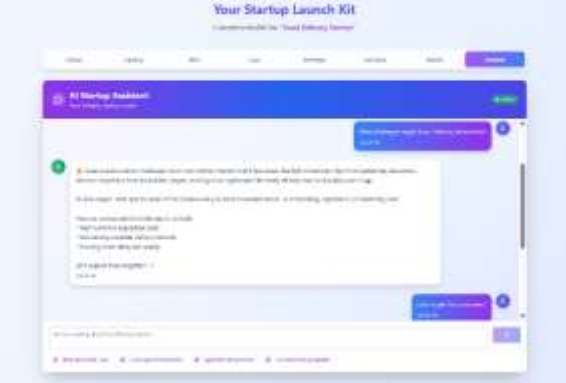

Fig: AI Startup Assistant Chat UI

5. Conclusion

Idea2Startup is actually a new approach to the startup incubation process and automates the pre-incubation part that involves fleetingly transforming the natural-language representation of a startup idea into a logical, plan-ready form, namely as business model canvases, his pitch decks, landing pages and prototypes within a seamlessly integrated process. The use of modular architecture that cannot lose the notion of context over time when generated automatically, and the implementation of the system with feedback loop cycles that change over time, make the platform highly consistent, customizable, ready to investor use. AI assistance in real-time also makes it even more user-friendly, as the interface gives directions at each step and decreases the gap between the ideation and launch processes as is the case with traditional systems.

Further functions of Idea2Startup include validation of the ideation, the pooling of market intelligence and can suggest suitable technology stack that makes Idea2Startup a more versatile pre-incubation toolkit, which simulates what a full-scale startup team does. The potential to eliminate technical, financial, and procedural constraints on the platform, as well as the inclusivity that innovation achieves on the platform increases the rate of innovation drastically. Due to the fact that it is dynamic and it can work in real time, Idea2Startup is set to become a driver of growth in the global academic incubators, innovation hubs and entrepreneurial ecosystems. The fact that the system has been launched successfully and has been successfully tested indicates its feasibility and indicates major real world implications in the immediate future.

6. Future Enhancement

The literature on the topic has shown that Idea2Startup opens up the process in the pre-incubation phase however, there are still significant potentials to work out the system further and promote its use. The central priority is calibration of large language models with respect to the demands of specific domains of interest in and through this process use the system to produce outputs that are highly specialized and directly applicable to, and relevant to, specific sectors: in the case, such discrete sectors as healthcare, education, agriculture, and, clean energy. Such advancements would then allow practitioners in these fields to get both feedback and advice that is sensitive to the circumstances and able to lead to action.

Another strategic plan is to put in place a secure-intellectual- property system which will be embedded in a blockchain. In this kind of arrangement, the stakeholders can copyright their startup idea by presenting it which in turn will provide them with further protection against the dilution of the intellectual property which often happens in an online entrepreneurship. At the same time, incorporating the multimodal artificial-intelligence features like converting speech into ideas, generating explainer videos in real time, and supporting no code, intuitive prototyping would make the system be achievable and beneficial to the participants who have a visual and language-based focus.

The next phase of development, Idea2Startup may be transformed into an independent AI-based venture studio that would not only generate the starting point of new ventures but also test the minimum viable product piloting collecting customer feedback and growth rates, and determining the worthiness of further investment. This platform has the potential to get access to resources democratized and having connections to academic incubators, accelerators, and entrepreneurial hubs. Researchers would receive continuous feedback on both succeeded and failed ventures to enable provision of viability prognoses as a means of promoting the rate of reduction in the failure rate as well as promotion of innovation across the ecosystems.

References

[1] J. Smith, “AI-Powered Entrepreneurship: The Tools That Will Shape Tomorrow’s Startups,” ResearchGate, ID: 385787052, 2024.

[2] D. Singh and M. Sharma, “Challenges Faced by Early-Stage Startups in the Pre-Incubation Phase,” PMC, Article ID: 11301167, 2024.

[3] A. Kusetogullari, H. Kusetogullari, M. Andersson, and T. Gorschek, “GenAI in Entrepreneurship: A Systematic Review of Generative Artificial Intelligence in Entrepreneurship Research,” arXiv preprint, arXiv:2505.05523, 2025.

[4] D. Singh and M. Sharma, “Challenges Faced by Early-Stage Startups in the Pre-Incubation Phase,” PMC, Article ID: 11301167, 2024.

[5] Team-GPT, “AI Landing Page Generators,” 2025.

[6] SlidesAI, “Free AI Pitch Deck Generators,” SlidesAI Blog, June 2025.

[7] M. Schulhoff et al., “The Prompt Canvas: A Practitioner Guide for Effective Prompts in LLMs,” arXiv preprint, arXiv:2412.05127v1, 2024.

[8] Quantilope, “Best AI Market Research Tools,” Quantilope Resources, 2025.

[9] S. Martin and A. Sumithra, “Personalized AI-Driven Roadmap Generation,” International Journal of Research in Technology and Innovation (IJRTI), vol. 9, no. 1, pp. 88–94, Jan. 2025.

[10] S. Ali, “Ethical Considerations Associated with the Use of AI in Decision-Making,” FEPBL, no. 773, 2024.

[11] A. Al-Azzawi and M. Al-Taee, “Ethical Implications and Governance of AI in Business Decisions,” ResearchGate, ID: 378685874, 2024.

[12] B-Works, “Empowering Non-Technical Founders: Building AI Startups Without a CTO,” B-Works Insights, Apr. 2025.

[13] Sakrat, “AI Integration for Non-Tech Founders: A Practical Guide for Business Impact,” 2025.

[14] A. Osterwalder, “Tools for Business Model Generation,” Stanford eCorner, YouTube Video, Feb. 2012.

[15] A. Kusetogullari et al., “Artificial Intelligence and Automation for the Future of Startups,” ResearchGate, ID: 376596644, 2023.

[16] A. Kusetogullari et al., “SSFF: Investigating LLM Predictive Capabilities for Startup Success,” arXiv preprint, arXiv:2405.19456v2, 2024.

[17] S. Tripathi, “How I Built a Full-Stack App Without Writing Code — Lovable.dev,” Medium, Jun. 2025.

[18] Eleken, “Generative AI in UX Design: Revolutionizing SaaS Products,” 2025.

[19] Brainquest, “AI-Powered UX Design: How Generative AI is Shaping User Interfaces,” 2025.

[20] A. Kusetogullari, H. Kusetogullari, M. Andersson, and T. Gorschek, “Artificial Intelligence for Software Architecture: Literature Review and the Road Ahead,” arXiv preprint, arXiv:2504.04334v1, 2025.