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Empowering First-Time Entrepreneurs with Uddokta AI: A Rule-Based and AI-Enhanced Business Advisory System

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PAPER ID : ICEBTM-25-1262

***Abstract*—UddoktaAI is a AI-driven platform that can assist First time entrepreneurs in Bangladesh in the absence of formal business training or expert mentorship. The platform solves common and key issues that new entrepreneurs have conventionally faced, such as difficulty in determining competitive product prices, planning business expenditure, stocking effectively, and organizing sufficient marketing strategies. UddoktaAI steps in at such points with Bengali step-by-step instructions, simplifying difficult business ideas and making the users equipped with functional tools granting them confidence in making decisions. Its main features are smart price calculators, template business checklists, carefully curated sourcing tips, and an AI module for creating marketing concepts, all tailored to the specific socio-economic environment of Bangladesh.With the inclusion of rule-based reasoning and weak artificial intelligence, UddoktaAI provides personalized advice, which takes into consideration the unique requirements, businesses, and financial means of users. The portal is open to all and is aimed at students, homemakers, and small-town entrepreneurs with minimal digital or financial awareness. Contrary to universal global tools, UddoktaAI incorporates localized information and vernacular help, enabling users to better manage entrepreneurial challenges.**

A virtual mentor and not just a digital platform, UddoktaAI enables users to conceptualize, launch, and develop their businesses in a sustainable manner. It makes it easier for promotion of financial independence and greater access to eco systemic opportunities through the bridging of the knowledge divide between urban startup culture and semi-urban or rural enterprise development. With this initiative, UddoktaAI aims to democratize entrepreneurial access and pursue inclusive economic progress for Bangladesh's budding business ecosystem.

***Index Terms*—UddoktaAI, entrepreneurship, AI platform, Bengali language support, startup guidance, business tools, marketing strategies, pricing calculators, sourcing suggestions, first-time entrepreneurs, Business Assistant.**

I. Introduction

There has been an amazing increase in entrepreneurial businesses in Bangladesh in recent years, primarily due to the abundance of motivated young women and men engaging in entrepreneurial activity to capitalize on the potential investment opportunities. Many budding entrepreneurs face considerable challenges, especially since most do not have formalbusiness education and have to rely on their limited means of resources for support. Opportunities for entrepreneurs exist in Bangladesh on venues such as Facebook Marketplace, or websites to allow businesses to showcase themselves, however, the process of running a business is complicated enough as it is, and navigating those processes is problematic without proper guidance. Now, the challenges include figuring out the best pricing strategy, controlling expenses, where to source product or supplies from, and marketing and promoting their businesses; especially being the fact that most of them do not have the specialized training. In many cases, due to the high costs of consulting services, and the inherent lack of resources that is in their native language, this has created a considerable chasm in support for well-meaning, committed entrepreneurs that have a considerable amount of cognitive or educational support needed. To that end, UddoktaAI has been developed, an AI-powered business advising platform, tools, and resources that are all contextually relevant to Bangladesh. UddoktaAI has been developed to be user-friendly and Bengali-centered, to give business owners the ability to start, run, and grow their businesses successfully. UddoktaAI will be home base for all of Bangladesh in the future, where business knowledge is available to everyone and entrepreneurs can go after their business intended goals without hesitation. UddoktaAI will continue to improve, based on user feedback, adopted by the platform to make it better and stronger assist , to build a community that supports small businesses and create a next generation of entrepreneur that is independent.

II. Literature Review

Artificial Intelligence (AI) is beginning to change the speed of decision-making in business and will do so in scenarios of time frames of use, easily less than one hour. More importantly, I believe AI will definitively improve the decision-making processes of many users in environments where business education and consultancy are neither widely available nor commonly used. For example, AI-enabled decision support systems have been demonstrably effective for individuals lacking business expertise or business fundamentals to be able to complete complex business processes - especially in developing countries like Bangladesh.Rather, they inves- tigate the potential of digital entrepreneurship platforms in emerging economies. Findings, highlighted local language support, contextualization, and design for a low digital literacy audience. UddoktaAI incorporates all three types while using a 100% Bengali-language interface, provides localized startup

ISBN 978-984-35-5270-9

checklists, and tools of interest for the Bangladeshi market [1].The report by McKinsey details what AI is strong at and less strong at (classification; optimization; prediction) and areas where it still struggles (abstract reasoning; moral reasoning). UddoktaAI addresses those issues by providing rule based logic in combination with lightweight AI modules for decision recommendations and context and practical action [2].Farayola et al [3]demonstrate how AI can change the way businesses made strategic decisions by allowing for more agile, datadriven decision-making, and similarly, Jo¨hnk et al. show how AI transformation is actioned in enterprise systems. UddoktaAI offers a multi-functional experience for pricing, sourcing, and marketing within one system [4]. The MDPI paper articulates a similar message about responsible AI development including key elements of inclusion, trans- parency, and accessibility [5]. UddoktaAI embodies those principles, as we have purposefully designed UddoktaAI to be user-friendly, low-threshold, and free for marginalized, under- represented, and under-resourced segments of business owners[6] . The Rise of AI in Business report is also valuable in assessing how AI can be influential in reducing inequity via democratization of decision support, and automation.This IBM case study on AI in HR illustrated how AI could offer accelerated, [7]repeatable workflows and personalized support by intelligent recommendations. UddoktaAI has a parallel design for business onboarding that enables agents or users to see recommended options based on the category of business and financial inputs. Additionally, in a study from the IEEE that compares AI chatbots [8] demonstrated how well chatbots could work when aligned to the intent of the user, which is the design we have considered for UddoktaAI's Bengali module chatbot.The literature review highlighted that AI-based platforms will be able to best succeed when... They are designed with a local language/cultural context. AI systems will most likely only be successful when... they combine rule-based logic with AI-based intelligence. AI platforms should presumably provide a complete, end-to-end infrastructure for businesses. AI platforms must ensure their online systems are inclusive, free from barriers and useable for users who vary in levels of systems knowledge and expertise. UddoktaAI represents a blending of these principles by offering a hybrid, user-centric platform that provides first-time entrepreneurs in Bangladesh with accessible, intelligent, localised business support.

III.METHODOLOGY

The UddoktaAI methodology came out of an iterative process of secondary research, system design, and prototyping in stages to address the needs of Bangladeshi business owners. The research component drove evidence through thematic analysis of literature from existing literature such as academic journals and industry reports of competitors like McKinsey and IEEE that established a shared need to support local languages, localize, and produce for low digital literacy. This literature guided the system's architecture, architected as a hybrid that utilized a client-side interface with HTML, JavaScript, and Vanilla CSS for current functionality with a suggested, extensible backend on Node.js and Firebase services (Firestore for data storage and Authentication for user management) to facilitate future growth and low-latency function. As the process went on, a modular methodology seemed to be at the forefront of creating such things as an intelligent price calculator, business-checklist-structured checklists, and a marketing-idea-generating AI tool; all specifically designed to actually build into the local socio-economic environment from ground-up, and facilitated with a 100%, Bengali Language interface.A key part of the approach was the construction of a "Rich Picture" in order to visually bring together the end- to-end socio-technical system, in which stakeholders, external systems like the OpenAI API, and context issues like language constraints were stack mapped to ensure that the platform was designed from a systems approach, not a digital product mindset. While the prototype itself was being used as the main test artifact, internal testing by the development team both validated that it worked as expected and served as a benchmark for performance and navigating improving visuals and flow. This. This methodology, providing rule-based reasoning with light artificial intelligence, guarantees that the site not only will be rooted in tested research, but will be constructed for future development such as customized real-time recommendations and enabled access, as important as it needs to be an inclusive economic growth virtual mentor.

IV.SYSTEM ARCHITECTURE

UddoktaAI system architecture is a modular system de- signed to the first-time entrepreneurs of Bangladesh, with the frontend prototype augmented by scheduled backend ad- ditions. Its core is an HTML, JavaScript, and Vanilla CSS client-side interface providing an interactive mockup of core features like the Dashboard, Pricing Calculator, and Marketing Idea Generator. The frontend provides user interaction in the form of a responsive layout accommodating low-digital- literacy users across different devices.Underneath this level, a Node.js backend is envisioned to perform business logic, rule processing, and API integration, all in scalability and low-latency. Firebase services are central to the architecture, with Firestore serving a secure database for user profiles, business plans, and activity logs and Authentica- tion and Hosting controlling user access and deployment. Light AI components, expected through OpenAI API integration, provide personalized recommendations and Bengali-language support, dynamics sensitive to individual user profiles and local market dynamics.Data flows go both ways across the structure since user inputs on the frontend initiate backend computation, which invokes the database or external APIs and gets back tailored outputs. The structure of modularity offers easy updatability and multilinguality since it sets the system for decentralized deployment in rural and semi-urban areas. With the use of rule-based engines and AI functionalities, the structure adapts to entrepreneurial issues adequately, making UddoktaAI an efficient scalable solution for economic growth under an inclusive economy.

Rich Picture

ISBN 978-984-35-5270-9 https://icebtm.iub.edu.bd

The rich picture of UddoktaAI summarizes the complex ecosystem facilitating first-time entrepreneurs in Bangladesh in a visual description of stakeholders, processes, and dynamics of context. It is based on the UddoktaAI platform, represented by a hub that includes a prototype developed with HTML, JavaScript, and Vanilla CSS, with arrows pointing towards fu- ture development using Node.js and OpenAI API integration. Around this hub are the core users-potential entrepreneurs, such as students, homemakers, and vendors—represented by considerate bubbles of thought embodying their issues, from price issues and sourcing challenges. These buyers are in- volved in a two-way communication with the platform, submit- ting business information in exchange for personalized advice in Bengali, a value highlighted by a script localized symbol. Peripheral placement is allocated to external systems, such as Firebase for data and authentication storage and OpenAI for AI functionality, with arrows representing API calls and data transfer adding the functionality. The market and economy of Bangladesh is a background environment influencing tool customization by local fashion with the economic benefit of the platform, represented by dashed arrows. Problems of busi-

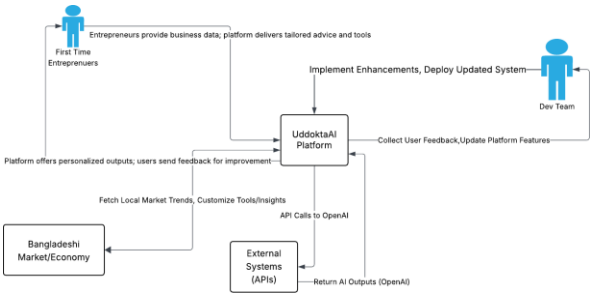
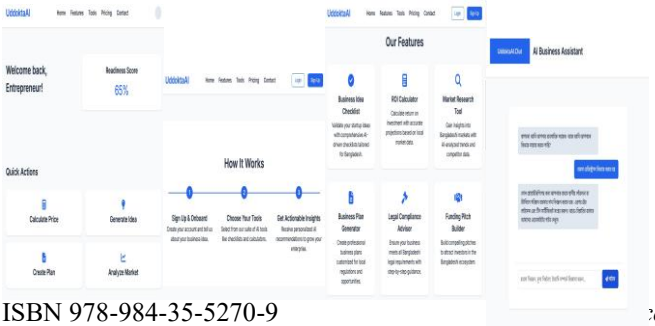


Fig. 1: Rich Picture of the UddoktaAI

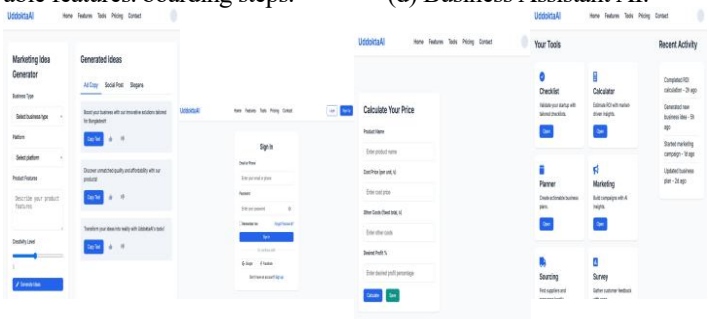
ness inexperience and language limitations become ominous red clouds on the horizon that challenge entrepreneurs, while the system is a counterbalance. Green stars embody dreams of economic self-sufficiency and mutual progress, emanating from the system to indicate its utopian results. A handshake symbol between the system and users emphasizes community empowerment, anchors the diagram to the existing level of development. With a legend that explains symbols, this packed picture is an strict visual tool, complementing the written description of architecture and shedding light on the socio- technical interaction in UddoktaAI design.

B. Proposed System

Fig. 2: Screenshots of different sections of the UddoktaAI application.



(a) Dashboard with Readiness-able features. (b) Your Tools section with avail-boarding steps. (c) How It Works section with on-Score and Quick Actions.



(d) Business Assistant AI. (e) Marketing Idea Generator inter face. (f) Sign In pop-up with email and password fields (g) Pricing Calculator interface (h) Your Tools section with feature options.

UddoktaAI development was based on a user-centered de- sign methodology built upon a modified waterfall software development model to support orderly deployment and iterated testing. It commenced with an PRISMA-catalogued review of the literature to investigate first-time entrepreneurs' needs in Bangladesh. Secondary research provided insights based on knowledge of typical problems that entrepreneurs who have received no business education or resources are likely to experience. Particular pain areas that were identified were difficulties in setting competitive prices, managing cost, ob- taining inventory, and creating marketing initiatives.

Based on these findings, the key system components were identified, such as a Bengali chatbot, startup checklists, a price and sourcing calculator, and rudimentary learning modules on marketing and finance literacy. The user flow and system architecture were demonstrated through rich pictures, sequence diagrams, and subsystem models, with modularity, accessi- bility, and usability in mind. The prototype was constructed using Vanilla CSS, JavaScript, and HTML on the client- side to offer a working mockup to showcase the features planned. The backend infrastructure is to be built with Node.js, with Firebase Firestore as the main database and Firebase Authentication and Hosting for user management and hosting. Light-weight AI functionality, e.g., GPT-boosted responses and rule-based inference, is to be incorporated to offer context-sensitive and personalized suggestions. UddoktaAI employs a modular architecture consisting of an HTML/CSS/JS frontend prototype, with a planned Node.js backend, and Firebase services for authentication, hosting, and Firestore database storage. This ensures scalability and low-latency access across devices. AI features are planned to be embedded through lightweight rule-based engines and prompt-based interactions integrated with OpenAI's API, offering personalized assistance tailored to user profile data. It supports seamless upgrades, multi-language support, and low server overhead and hence should be deployed in a decentralized fashion.

III. Results

Internal testing within the development team was performed for functional and user interface assessment of the UddoktaAI

ISBN 978-984-35-5270-9

prototype. The testing confirmed that fundamental functions such as the Dashboard and Pricing Calculator were functional as intended within the HTML, JavaScript, and Vanilla CSS environment. The performance scores obtained via the Google Lighthouse tests averaged 87 out of 100, indicating an acceptable load and response times with potential for advancement. Team observations confirmed strengths of feature accessibility and set out guidelines for more effective navigation flow and visual consistency. Prototype confirmed the viability of the system proposed and acted as a basis for future enhancement. User feedback will be integrated into future iterations to further enhance design aspects and add functionality, especially with future backend and AI integrations.

A. LIMITATIONS

The concept proof of UddoktaAI is dependent only on frontend tools like HTML, JavaScript, and Vanilla CSS, which stands the test of adding backend features and AI-powered features that are required for complete functionality. Internal user testing within the development community provides initial usability feedback but does not incorporate multi-dimensioned user insights and can neglect intuitive problems experienced by target markets such as housewives or rural business owners. Even though the platform is focused on support for the Bengali language, the existing architecture fails to incorporate voice interaction, hence limiting the access of low-literacy groups or those with low exposure to technology. Research methodology borrows from secondary sources through PRISMA-guided literature review but can be lacking in context-specifically generated insights within the entrepreneurial ecosystem of Bangladesh as could be presented by primary collection of data. Google Lighthouse performance metrics dictate adequate responsiveness but exclude test cases to reflect high traffic or mixed-device scenarios that would reveal scalability issues. Live economic data integrations are excluded from this release, so pricing calculators and marketing recommendations rely on static rule-based logic instead of dynamic response to economic changes. In addition to that, non-cooperation with financial agencies or government institutions does not provide direct funding channels or compliance support for the users, lessening the functionality of the platform as a one-stop entrepreneurial ecosystem.

CONCLUSION & FUTURE WORK

UddoktaAI presents a new innovative solution to the challenges of the Bangladesh new entrepreneurs through the offer- ing of an end-to-end user interface that makes venture creation and management easier. It offers potential entrepreneurs step- by-step Bengali guidance so that they can prepare to make informed decisions even without any formal business profes- sional training. UddoktaAI's tools powered by AI, ranging from business checklists and business calculators to pro- curement suggestions, provide end-to-end visibility, which achieves the inclusivity in a non-English language so that accessibility as well as manageability are better facilitated in a very diverse set of end-users, becoming increasingly confident and overcoming uncertainty which would normally be applicable to startups for new businesses.

UddoktaAI is not only a business planning tool but also an entire support mechanism for aspiring entrepreneurs who would be interested in turning their thoughts into thriving businesses. By making knowledge and resources accessible in business, UddoktaAI is eagerly anticipating business to become inclusive where it can thrive and help drive economic growth as well as innovation in the worldwide business community of Bangladesh.

Future development to UddoktaAI will also include sophisticated AI features for customized business advice, based on real-time market information and personalized user pat- ter behavior. Developers intend to build a separate mobile app for increasing the reach of the platform to low-density and rural areas, further broadening inclusivity across many socioeconomic classes. More templates for adaptable busi- ness types will be offered with user analytics dashboards, providing detailed reports on performance metrics for users and businesses. Collaborations with government and finan- cial institutions under consideration would offer access to resources for financing options, legal registration procedures, and regulation. Bengali voice interaction is a major addition with the goal of offering support for users who have basic literacy or technology exposure. Large-scale user testing will measure the effectiveness of these features in real life, guiding successive refinements based on empirical input. Integration with machine learning systems can enhance pricing algorithms and marketing recommendations as well, adapting dynamically to changing economic conditions in Bangladesh.

REFERENCES

[1] S. e. a. Pather, "Artificial intelligence in entrepreneurship in developing economies," Journal of Innovation and Entrepreneurship, vol. 10, no. 1, 2021.

[2] M. Chui and E. Harry, "What ai can and can't do yet for your business," https://www.mckinsey.com, 2020, accessed 15 July 2025.

[3] O. Farayola et al., "Ai in decision making: Transforming business strategies," ResearchGate, 2024. [Online]. Available: https://www.researchgate.net/publication/377345979

[4] J. Jo¨hnk, M. Weißert, and K. Wyrtki, "How enterprises implement ai: Strategies, structures and success factors," Expert Systems with Applica- tions, vol. 162, p. 113738, 2020.

[5] Anonymous, "Responsible ai: Opportunities and challenges," AI, vol. 3, no. 1, pp. 1–15, 2023

[6] "Rise of artificial intelligence in business," https://d1wqtxts1xzle7.cloudfront.net/103844778/1776-libre.pdf, 2023, accessed 15 July 2025.

[7] IBM, "Ibm business case: Ai in hr," https://forms.workday.com/.../ibm- business-case-ai-in-hr.pdf, 2022, accessed 15 July 2025.

[8] Anonymous, "Ai-driven chatbots for business services," Procedia Com- puter Science, vol. 176, pp. 101–110, 2020.

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