

## The Experiential Roadmap to Launching Your Venture

---

Disha S. Wankhede, Parth Beldar, Baswadeep Bembare, Aatish Bagal, Savya Bhamare

*Vishwakarma Institute of Technology, Pune, disha.wankhede@vit.edu, parthbeldar85@gmail.com, brvbaswadeep@gmail.com, aatishbagal135@gmail.com, bhamaresavya609@gmail.com*

### Abstract.

Entrepreneurship is a key driver of innovation and employment, yet conventional education often lacks practical startup experience. This paper presents Scalvia, a simulation-based experiential learning platform that enables students and aspiring entrepreneurs to create and manage virtual startups. Users make strategic decisions involving funding, operations, marketing, competition, and business scaling. Gamification features, including levels, rewards, performance scores, and feedback analytics, promote engagement and continuous learning. By combining realistic simulation with interactive learning, Scalvia bridges the gap between theory and practice while developing entrepreneurial resilience, risk awareness, decision-making skills, and confidence. The platform offers an innovative approach to entrepreneurship education.

**Keywords:** Entrepreneurship Education; Experiential Learning; Startup Simulation; Venture Development; Gamification.

### 1. INTRODUCTION

Entrepreneurship drives global innovation, employment, and sustainable economic development. However, traditional entrepreneurship education often emphasizes theory and provides limited exposure to real startup challenges involving funding, resources, marketing, customer retention, and scaling. This paper presents Scalvia, a simulation-based platform that enables learners to build and manage virtual startups in a risk-free environment. Users make decisions related to funding, marketing, operations, and scaling while experiencing realistic outcomes. Gamification enhances engagement and motivation. Scalvia helps learners develop confidence, critical thinking, problem-solving, decision-making, and practical entrepreneurial skills while safely learning from both success and failure [1-5].

### 2. RELATED WORK

Education is shifting from traditional lectures toward interactive and experiential learning. In entrepreneurship education, simulation-based learning enables students to apply theoretical concepts in realistic environments while developing critical thinking, collaboration, and decision-making skills [3-9]. Gamification further enhances motivation, engagement, creativity, and confidence. Research indicates that combining simulation and game-based learning helps students understand business dynamics, practice decision-making, and develop entrepreneurial competencies through continuous interaction with realistic scenarios [10-17]. These approaches bridge theory and practice by allowing learners to experiment with risks and failures safely. Building on these insights, Scalvia provides an

immersive startup learning experience that integrates simulation-based learning with gamification.

**Table 1. Compares this work with the related work or previous research by other researchers**

| Ref.      | Simulation Based Learning | Gamification | Decision Making Skills | Critical Thinking | Safe Free Environment | Risk-Read World Business Environment |
|-----------|---------------------------|--------------|------------------------|-------------------|-----------------------|--------------------------------------|
| [1]       | Yes                       | No           | Yes                    | Yes               | Yes                   | Yes                                  |
| [2]       | No                        | Yes          | No                     | Yes               | Yes                   | No                                   |
| [3]       | No                        | Yes          | Yes                    | No                | Yes                   | Yes                                  |
| [4]       | Yes                       | No           | Yes                    | No                | No                    | Yes                                  |
| [5]       | No                        | Yes          | Yes                    | No                | Yes                   | No                                   |
| [6]       | Yes                       | No           | Yes                    | No                | No                    | Yes                                  |
| [7]       | Yes                       | No           | Yes                    | No                | No                    | Yes                                  |
| [8]       | Yes                       | No           | Yes                    | No                | No                    | Yes                                  |
| [9]       | Yes                       | No           | Yes                    | No                | No                    | Yes                                  |
| [10]      | No                        | Yes          | Yes                    | No                | Yes                   | No                                   |
| This work | Yes                       | Yes          | Yes                    | Yes               | Yes                   | Yes                                  |

### 3. METHOD, EXPERIMENTS AND RESULTS

Simulation-based learning enables students to apply theoretical knowledge in realistic entrepreneurial settings, while gamification improves motivation, engagement, creativity, and confidence. Scalvia combines both approaches to support startup creation and management. The study defines the scoring models and algorithms used to simulate startup decisions and outcomes using deterministic and probabilistic methods, following established startup ecosystem modeling approaches [17].

The Minimum Viable Product (MVP) viability score evaluates the initial quality of a startup by considering founder capabilities, team effectiveness, financial conditions, and operational risks. The final score is constrained to a practical range to avoid extreme values:

$$S_{mvp} = \text{clamp}(S_{raw}, 6, 15) \quad (1)$$

where the raw score combines founder skills, team performance, financial support, team synergy, and risk penalties. Founder competency is calculated from technical and business skills, with greater emphasis on coding and design:

$$S_{founder} = 0.3 \cdot k_{code} + 0.25 \cdot k_{design} + 0.15 \cdot k_{strat} + 0.1 \cdot (k_{data} + k_{fin} + k_{ops}) \quad (2)$$

Team effectiveness considers employee skills, experience, and morale while accounting for diminishing returns as team size increases:

$$S_{team} = \sqrt{10 \cdot \sum_{i=1}^n \left( \underline{s}_i \cdot (0.6 + 0.04 \cdot e_i) \cdot \frac{m_i}{10} \right)} \quad (3)$$

After launch, product quality, team performance, marketing, and market uncertainty influence startup growth. User growth is modeled using the existing user base, marketing effort, and product quality:

$$\Delta U_{growth} = (0.1 \cdot U_t, 100) \cdot M(S_{strat}) \cdot \frac{Q}{10} \cdot (0.8 + \epsilon) \quad (4)$$

Other simulation components, including product iteration, retention, technical debt, investment pitching, and crowdfunding success, are modeled using weighted factors, diminishing-return functions, penalties, and stochastic adjustments. These mechanisms allow Scalvia to represent realistic startup uncertainty without requiring numerous separate equations. Initial testing indicated that the simulation and gamification features improved engagement, motivation, decision-making, and confidence. Participants experienced funding, resource management, competition, and scaling scenarios while learning from simulated outcomes. However, further evaluation is required to assess scalability, realism, and long-term educational effectiveness. Overall, Scalvia provides a safe and interactive environment for developing entrepreneurial decision-making, critical thinking, risk awareness, resilience, and confidence.

#### 4. PHOTOGRAPHS AND FIGURES

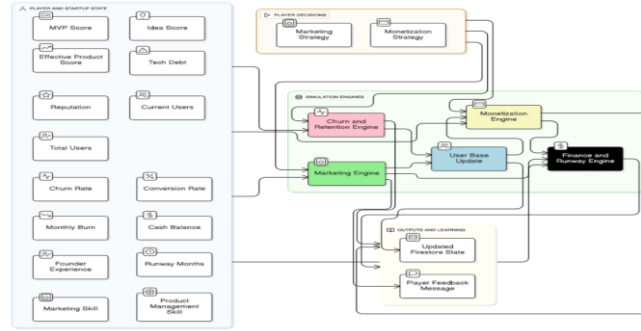


Figure 4.1. Startup Simulation Engine Architecture: Player Decisions, Metrics, and System Flow.

#### 5. CONCLUSIONS

Scalvia provides an immersive and practical platform for entrepreneurship education by simulating the complete startup journey. It bridges theoretical learning with real-world decision-making while developing critical thinking, problem-solving, resilience, and leadership skills. Although scalability, regular updates, and gamification remain challenges, future work will focus on empirical validation, larger user groups, and improved realism. Overall, Scalvia offers an effective experiential learning environment for developing next-generation entrepreneurs.

#### 6. REFERENCES

- [1]. A. T. Rosário and R. A. Raimundo, "Enhancing business higher education through simulation-based learning, problem-based learning and challenge-based learning: A systematic bibliographic literature review," Preprints, 2024. [Online]. Available: <https://doi.org/10.20944/preprints202407.0747.v1>
- [2]. F. Keshmiri, N. Zeraati, S. Jalali, and M. Zeraati, "The effect of gamification in entrepreneurship and business education," Frontiers in Education, vol. 10, art. 144, 2025. [Online]. Available: <https://doi.org/10.3389/feduc.2025.11974179>

- [3]. A. Isabelle, "Gamification of entrepreneurship education," *Decision Sciences Journal of Innovative Education*, vol. 18, no. 2, pp. 203–223, 2020. [Online]. Available: <https://doi.org/10.1111/dsji.12207>
- [4]. I. Lee and T. K. Yu, "Game-based learning enhances business decision-making learning for on-the-job MBA students: A case study of dynamic systems-thinking course," *The International Journal of Management Education*, vol. 23, art. 101140, 2025. [Online]. Available: <https://doi.org/10.1016/j.ijme.2025.101140>
- [5]. M. Lynch, E. Kubberød, N. Sanne, and A. H. F. Josendal, "Deliberate Practice Through the Gamification of Entrepreneurship Education," *Entrepreneurship Education and Pedagogy*, vol. 8, no. 3, pp. 485–510, 2025. [Online]. Available: <https://doi.org/10.1177/25151274241309940>
- [6]. S. A. M. Gilani, N. Yasin, and H. Hafeez, "Simulation-based learning in business and entrepreneurship in higher education: A review of the games available," *Education and Information Technologies*, vol. 27, no. 4, pp. 4899–4921, 2022. [Online]. Available: <https://doi.org/10.1007/s10639-021-10713-5>
- [7]. C. Chatpinyakoo, P. Hallinger, and P. Showanasai, "Assessing the effects of online simulation-based learning on skills in managing change for corporate sustainability," *The International Journal of Management Education*, vol. 22, art. 100960, 2024. [Online]. Available: <https://doi.org/10.1016/j.ijme.2024.100960>
- [8]. T. Takemoto and H. Oe, "Entrepreneurship education at universities: Challenges and future perspectives on online game implementation," *Entrepreneurship Education*, vol. 4, pp. 149–167, 2021. [Online]. Available: <https://doi.org/10.1007/s41959-021-00054-9>
- [9]. H. Sziegat, "Virtual simulation games in entrepreneurship education: Status quo and prospects," in *Proc. 18th European Conf. Games Based Learning (ECGBL 2024)*, 2024, pp. 642–650. [Online]. Available: <https://doi.org/10.34190/ecgbl.18.1.2581>
- [10]. D. Seguí-Mas, E. Seguí-Mas, and G. Tormo-Carbó, "Gamification in entrepreneurship education: A systematic literature review and research agenda," *SSRN Electronic Journal*, 2024. [Online]. Available: <https://doi.org/10.2139/ssrn.4776641>
- [11]. L. Neriz, "Simulation-based training as a teaching and learning tool for management education," *Innovations in Education and Teaching International*, vol. 57, no. 4, pp. 432–443, 2020. [Online]. Available: <https://doi.org/10.1080/14703297.2019.1631874>
- [12]. A. Kara and L. M. Russell, "How to embed gamification into entrepreneurship courses to enhance student engagement," *Small Business Institute Journal*, vol. 20, no. 2, pp. 28–31, 2024. [Online]. Available: <https://sbij.org/index.php/SBIJ/article/view/427>
- [13]. AACSB Insights, "Simulations spark engagement and real learning," *AACSB International*, Sep. 2022. [Online]. Available: <https://www.aacsb.edu/insights/articles/2022/09/simulations-spark-engagement-and-real-learning>
- [14]. L. Chen, D. Ifenthaler, J. Y. Yau, and W. Sun, "Artificial intelligence in entrepreneurship education: a scoping review," *Education + Training*, vol. 66, no. 6, pp. 589–608, 2024. [Online]. Available: <https://doi.org/10.1108/ET-05-2023-0169>
- [15]. C. Moldez, M. A. Crisanto, G. R. Cerdeña, S. Maranan, and R. Figueroa, "Innovation in education: Developing and assessing gamification in massive open online courses," *arXiv:2409.03309 [cs.CY]*, 2024. [Online]. Available: <https://arxiv.org/abs/2409.03309>
- [16]. J. Hamari and B. K. Daneva, "Game design patterns for learning: A review of how gamification elements influence user behavior," *Computers in Human Behavior*, vol. 141, art. 107628, 2023. [Online]. Available: <https://doi.org/10.1016/j.chb.2022.107628>

- [17]. A. Silva and T. B. Murthy, "Mathematical modeling of startup ecosystems for digital twins and simulations," Journal of Business Venturing Insights, vol. 21, art. e00452, 2024. [Online]. Available: <https://doi.org/10.1016/j.jbvi.2023.e00452>

### Biographies



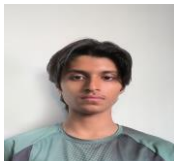
**Dr. Disha Sushant Wankhede** is a Postdoctoral Fellow at Universiti Putra Malaysia, specializing in Artificial Intelligence, Deep Learning, Image Processing, and Healthcare. She has published 50+ Scopus-indexed papers, holds 20+ patents, and has contributed to numerous research and industry projects. She also serves as a reviewer, session chair, expert speaker, and professional member of ACM, ISTE, and CSI.



Savya Bhamare, Computer Engineering Student at Vishwakarma Institute of Technology, Pune



Baswadeep Bembare, Computer Engineering Student at Vishwakarma Institute of Technology, Pune



Aatish Bagal, Computer Engineering Student at Vishwakarma Institute of Technology, Pune



Parth Beldar, Computer Engineering Student at Vishwakarma Institute of Technology, Pune