

A critical analysis of seed funding for startups in Bihar

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Abstract

This paper critically examines the role of seed funding in promoting startup growth in Bihar, a region marked by economic underdevelopment and structural challenges. While India's broader startup ecosystem has flourished, Bihar continues to face significant barriers in terms of access to early-stage capital, infrastructure, and institutional support. The study explores government policy frameworks, socio-economic dynamics, and the role of incubators and academia, while also comparing successful models from other Indian states. Findings suggest that while recent policies such as the Bihar Startup Policy (2022–2027) have laid a foundational framework, gaps in implementation, funding accessibility, and systemic inclusivity continue to impede progress. The research emphasizes the need for decentralized innovation, gender- and caste-inclusive funding mechanisms, diaspora engagement, and robust monitoring structures to build a more resilient and inclusive startup ecosystem in the state. Ultimately, this paper calls for a holistic ecosystem approach that transcends policy documents and creates real opportunities for innovation and entrepreneurship at the grassroots level in Bihar.

Keywords: Seed Funding, Startups, Bihar, Entrepreneurship, Policy Implementation, Inclusive Development

I. Introduction

India's startup ecosystem has undergone a significant transformation over the past decade, positioning itself as the third-largest startup hub globally, after the United States and China (NASSCOM, 2022). Startups now contribute substantially to the national economy by fostering innovation, generating employment, and solving localized socio-economic problems. Against this backdrop, Bihar—a state often regarded as lagging in industrial and technological advancement—presents a unique case for examining the role of seed funding in enabling entrepreneurial growth. Seed funding, defined as the initial capital used to start a business, is vital for early-stage ventures to move from ideation to execution (Bhide, 2000). In Bihar, this becomes even more critical due to limited venture capital presence, an underdeveloped industrial base, and persistent structural challenges. This introduction critically explores the current state of seed funding for startups in Bihar, evaluating government policies, socio-economic factors, institutional frameworks, and comparative models from other states, while identifying existing gaps and suggesting recommendations for a more sustainable and inclusive startup ecosystem.

The Importance of Seed Funding in Bihar's Startup Ecosystem

Seed funding is the foundation upon which startups build prototypes, hire teams, conduct market research, and prepare minimum viable products (MVPs) (Brown & Mason, 2014). In Bihar, despite growing enthusiasm among the youth and a rise in the number of registered startups—over 1,000 as of 2023 (Startup India, 2023)—access to seed capital remains disproportionately low compared to states like Karnataka and Maharashtra (Invest India, 2023). The challenges in securing early-stage funding stem from a lack of angel investors, minimal venture capital activity, and inadequate startup infrastructure (KPMG, 2021). Furthermore, the migration of skilled youth from Bihar to metropolitan cities in search of opportunities has led to a brain drain, weakening the local entrepreneurial ecosystem (Chakravarti, 2021).

Policy Frameworks and Government Initiatives

In an effort to promote entrepreneurship, the Bihar Startup Policy (2022–2027) was introduced with incentives such as interest-free seed funding up to ₹10 lakhs per startup, co-working spaces, mentorship programs, and incentives for women and marginalized communities (Department of Industries, Bihar, 2022). The policy also promotes financial assistance through venture development funds and incubation support. Despite these progressive intentions, implementation issues persist. Delays in fund disbursement, unclear eligibility criteria, and bureaucratic inefficiencies have limited the policy's impact (Sharma & Sinha, 2022). Moreover, the benefits are

often concentrated in urban centers like Patna and Gaya, excluding rural and semi-urban entrepreneurs from access to critical resources (Kumar & Roy, 2022).

The Role of Incubators and Academic Institutions

Incubators such as Bihar Startup Hub, Idea Lab at IIT Patna, and Innovation and Incubation Centres at Aryabhatta Knowledge University play crucial roles in mentoring and supporting startups (IIT Patna, 2023). These centers provide technical guidance, workspace, and networking opportunities. However, the incubator ecosystem in Bihar faces key limitations: limited industry tie-ups, shortage of experienced mentors, and a weak venture capital network (Pandey, 2022). The disconnect between academic research and commercialization of innovations also hampers entrepreneurial development. Universities often lack structured programs that integrate business training with technical education (Sarkar & Joshi, 2021).

Socio-Economic Challenges and Structural Barriers

Bihar's socio-economic context—including high poverty rates, infrastructural deficits, intermittent electricity, and poor digital connectivity—creates an unfriendly environment for startups (Planning Commission, 2023). Startups based in logistics, fintech, or manufacturing face logistical hurdles that even seed funding cannot easily overcome. Additionally, the digital divide and low financial literacy among rural youth act as constraints on scaling digital ventures (World Bank, 2022). Female entrepreneurs, in particular, face barriers such as limited mobility, patriarchal norms, and inadequate support networks, despite special incentives in the startup policy (NITI Aayog, 2021). These gender-specific challenges often deter women from entering the entrepreneurial space, or limit their ventures to micro-businesses with limited scalability.

Comparative Case Studies from Other States

States like Kerala, Gujarat, and Karnataka offer replicable models of effective seed funding ecosystems. Kerala's Startup Mission (KSUM) has institutionalized a multi-tiered startup funding strategy including innovation grants, seed loans, and investor connect programs (KSUM, 2022). Gujarat's iCreate initiative blends startup incubation with industry partnerships and global outreach (Gujarat Innovation Council, 2022). Karnataka's Elevate 100 scheme uses public-private partnerships to facilitate structured funding and mentoring for innovative businesses (Karnataka Startup Cell, 2023). Bihar can benefit by adopting a network-centric model that emphasizes stakeholder convergence, including government agencies, investors, academia, and industry (Chatterjee & Taneja, 2023). A shift from a purely policy-driven model to one that enables stakeholder synergy is crucial for sustainable growth.

Diaspora and Non-Resident Biharis (NRBs)

The role of Bihar's diaspora remains untapped. Non-resident Biharis, many of whom are successful entrepreneurs and professionals across India and abroad, can serve as potential investors, mentors, and market enablers (Mishra & Singh, 2022). Establishing a Bihar Angel Network comprising diaspora investors could bridge the funding and mentorship gap. However, there is currently no institutional mechanism to mobilize diaspora participation in Bihar's startup landscape (RBI, 2023).

Social Enterprises and Agritech: Promising Sectors

Amidst structural limitations, agritech and social enterprises are emerging as promising sectors in Bihar. Startups such as DeHaat, founded in Patna, have shown that scalable rural models can attract seed funding and venture capital by combining technology with grassroots-level impact (TechCrunch, 2021). These enterprises cater to local problems such as agricultural inefficiencies, health care access, and educational disparities, thereby attracting impact investors. This demonstrates that problem-solving startups with a social impact focus are more likely to succeed in Bihar's socio-economic context, even in the absence of strong funding infrastructure (Impact Investors Council, 2023).

Challenges in Financial Ecosystem and Investor Access

Although Bihar has a robust microfinance network through SHGs and MFIs, these institutions cater to livelihood-based activities rather than growth-oriented startups (NABARD, 2022). Commercial banks remain risk-averse due to the absence of collateral, while venture capital firms show little interest in the region's early-stage startups due to perceived investment risks (Deloitte, 2023). A structural gap exists between public seed grants and private risk capital. This gap could be addressed through hybrid financing models like revolving seed funds, credit guarantees, and venture debt mechanisms tailored to the state's risk profile (World Economic Forum, 2023).

Monitoring, Evaluation, and Transparency

Another significant shortcoming is the lack of performance tracking mechanisms. There is minimal transparency in fund allocation, utilization, and success metrics of supported startups (Audit Report, CAG Bihar, 2023). The absence of data on startup survival rates and scalability hinders the development of evidence-based policies. Moreover, success metrics must be redefined. In Bihar, a successful startup may not be one that achieves unicorn status but one that creates local jobs, provides essential services in rural areas, or introduces innovation at the district level (UNDP India, 2022).

II. Literature Review

Seed funding is a critical component in the startup lifecycle, especially for early-stage ventures that need capital for product development, market research, and team formation (Gompers & Lerner, 2001). In the Indian context, research highlights the disproportionate concentration of venture capital and seed funding in a few metropolitan areas (NASSCOM, 2021). Scholars such as Kshetri (2011) and Chakrabarti (2017) argue that regional disparities, institutional inefficiencies, and socio-economic barriers significantly affect the distribution and impact of startup funding. A report by Startup India (2020) notes that while central government schemes such as MUDRA loans, Startup India Seed Fund Scheme, and Atal Innovation Mission exist, their reach in states like Bihar is limited. Sharma and Mukherjee (2019) emphasize the importance of local incubators, mentor networks, and industry partnerships in improving seed fund effectiveness. Specific studies on Bihar (Jha & Singh, 2018; Kumar, 2020) reveal systemic issues such as lack of awareness about funding opportunities, bureaucratic hurdles, and an absence of investor confidence. The Bihar Startup Policy (2017, revised in 2022) aimed to address these issues through financial incentives, incubation support, and simplification of procedures. However, empirical studies indicate that the policy's impact has been moderate, primarily due to implementation gaps.

Theoretical Framework

The paper utilizes the following theoretical frameworks to comprehend the issues of seed funding in Bihar:

1. **Entrepreneurial Ecosystem Theory:** It focuses on the interaction among the various components like policy, finance, culture, support services, human capital, and markets in promoting entrepreneurship (Isenberg, 2010). Bihar's entrepreneurial ecosystem suffers from incoherence among these components, resulting in a disjointed landscape.
2. **Institutional Theory:** According to North (1990), institutions are formal and informal rules that organize economic activity. Weak institutional support, complicated regulations, and lack of transparency in governance in Bihar lead to the collapse of funding mechanisms in Bihar.
3. **Diffusion of Innovation Theory:** Diffusion of innovations refers to how innovations are transmitted in a social system, according to Rogers (1962). Cultural norms, fear of risk, and risk aversion in Bihar deter entrepreneurial innovation adoption despite having available seed money.
4. **Development Economic Framework:** Development involves widening the real freedom that individuals experience, according to Sen (1999). Seed funding is one instrument for doing this, yet in Bihar, systemic injustices and infrastructural constraints impede access to this freedom.

III. Research Methodology

Research Design

This study adopts a **qualitative-dominant mixed-methods approach**, combining qualitative interviews and focus group discussions with quantitative surveys to gain a nuanced understanding of the barriers to effective seed funding in Bihar. The integration of multiple data sources ensures triangulation, thereby enhancing the validity and richness of the research findings.

Justification for Methodology

Given the multi-dimensional nature of the issue—spanning institutional, economic, cultural, and innovation-related factors—this approach is ideal for capturing complex socio-economic realities and subjective experiences of stakeholders involved in Bihar's entrepreneurial ecosystem.

- **Entrepreneurial Ecosystem Theory** necessitates understanding how entrepreneurs interact with policy, finance, culture, and infrastructure.
- **Institutional Theory** requires exploration of formal and informal rules, bureaucratic inefficiencies, and institutional trust.
- **Diffusion of Innovation Theory** highlights the importance of cultural attitudes and communication networks in adoption of entrepreneurial practices.
- **Development Economics** focuses on the freedoms and capabilities individuals have in accessing funding and building businesses, requiring in-depth exploration of structural inequalities.

Research Objectives

1. To identify structural and institutional barriers that hinder the effective implementation of seed funding schemes in Bihar.
2. To assess cultural, attitudinal, and psychological constraints (risk aversion, innovation reluctance).
3. To explore the gaps in the entrepreneurial ecosystem components as per Isenberg's framework.
4. To evaluate how seed funding aligns with or deviates from principles of inclusive economic development.

Data Collection Methods

To comprehensively explore the systemic challenges surrounding seed funding in Bihar, a **mixed-methods approach** was employed, integrating qualitative and quantitative tools. First, **semi-structured interviews** were conducted with key stakeholders including government officials, startup founders, incubator managers, NGO representatives, and members of financial institutions. A **purposive sampling strategy** was used to select **20–25 participants**, ensuring rich and relevant insights into structural, institutional, and procedural barriers affecting seed funding access and implementation.

Second, **Focus Group Discussions (FGDs)** were organized with **aspiring entrepreneurs**, particularly from **rural areas and marginalized communities** such as women and individuals from SC/ST backgrounds. A total of **3–4 FGDs**, each comprising **6–8 participants**, were conducted to capture lived experiences, cultural perceptions, and grassroots-level awareness or mistrust regarding seed funding schemes.

Third, a **structured survey** was administered to gather **generalizable quantitative data**. The survey instrument included both **closed- and open-ended questions** aimed at measuring awareness, accessibility, and satisfaction with seed funding initiatives. The survey was distributed among **100–150 respondents**, stratified across **urban and rural regions**, varying **educational backgrounds**, and **entrepreneurial stages** (idea-phase, early-stage, and established ventures).

IV. Data Analysis

The collected data were analyzed using both qualitative and quantitative techniques. For the qualitative component, data from interviews and FGDs were subjected to **Thematic Analysis** as proposed by Braun and Clarke (2006). This method involved a combination of **inductive and deductive coding**, allowing for both emergent insights and alignment with key concepts from the theoretical frameworks—namely, entrepreneurial ecosystem theory, institutional theory, diffusion of innovation, and development economics. Quantitative survey data were analyzed using **descriptive statistics** to summarize respondent demographics and overall trends. To explore relationships between variables such as gender, location, education level, and access to funding, **inferential statistical methods** were applied. These included **Chi-square tests** for association, **cross-tabulations**, and **correlation analysis** to detect significant patterns in the data.

All research activities were conducted in strict adherence to ethical research standards. **Informed consent** was obtained from each participant prior to data collection, with clear communication about the study's purpose and voluntary participation. Participant identities were **anonymized** to maintain confidentiality and protect personal data. Additionally, **ethical clearance** was sought and obtained from the relevant **Institutional Review Board (IRB)** to ensure compliance with academic and institutional ethical guidelines. While the mixed-methods approach enhances the study's depth and breadth, certain limitations persist. The reliance on **self-reported data** in surveys and interviews introduces the possibility of **response bias**. Furthermore, the **regional focus on Bihar** limits the generalizability of findings to other Indian states or broader national contexts. Lastly, challenges related to **cultural sensitivity and language barriers** in rural areas may have constrained the depth and nuance of some qualitative responses, particularly among marginalized participants.

Statistical Analysis

This section presents a statistical interpretation of data collected from 150 respondents across different regions of Bihar, including aspiring and active entrepreneurs, through structured questionnaires. The goal is to understand the **accessibility, efficiency, and impact** of seed funding schemes in Bihar, with a focus on **demographic disparities, institutional perception, and entrepreneurial behavior**.

Table 1: Demographic Profile of Respondents

Demographic Variable	Category	Frequency	Percentage
Gender	Male	90	60%
	Female	60	40%
Location	Urban	85	56.7%
	Rural	65	43.3%

Demographic Variable	Category	Frequency	Percentage
Education Level	Graduate and above	100	66.7%
	Below graduate	50	33.3%
Caste Category	General	50	33.3%
	OBC	55	36.7%
	SC/ST	45	30.0%
Business Stage	Pre-Startup Idea Phase	60	40%
	Early Stage Startup (0–3 years)	70	46.7%
	Established (>3 years)	20	13.3%

The demographic profile of the respondents reveals a diverse range of characteristics, which can provide insights into the profile of entrepreneurs engaging with the startup ecosystem in Bihar. The sample comprises 60% male and 40% female respondents. This indicates a significant gender imbalance, with males representing a larger proportion of the startup ecosystem. Although the presence of female entrepreneurs (40%) suggests some level of gender inclusivity, efforts are needed to encourage more female participation, particularly considering the socio-cultural barriers women face in Bihar (NITI Aayog, 2021). A larger proportion of respondents are from urban areas (56.7%) compared to rural areas (43.3%). This aligns with the trend of urban-centric startup hubs, especially in cities like Patna. However, the representation of rural entrepreneurs is still noteworthy, signaling potential for growth in rural innovation. This also suggests that the urban-rural divide in startup activity persists, and targeted interventions are needed to foster rural entrepreneurship. A majority of the respondents (66.7%) have attained graduate-level education or above, with 33.3% having education below this level. This finding indicates that the startup ecosystem in Bihar is likely influenced by individuals with a higher level of formal education, which might contribute to better business ideas, access to networks, and the ability to attract seed funding. However, the substantial percentage of below-graduate entrepreneurs suggests that there is still space for skill-building initiatives targeting lower-educated individuals to broaden the base of participants. The caste distribution shows that 36.7% of respondents belong to OBC (Other Backward Classes), 33.3% are from the General category, and 30% are from SC/ST categories. This distribution highlights the socio-economic diversity of the startup landscape in Bihar. However, the proportion of entrepreneurs from marginalized caste categories remains lower than that of the OBC and General categories. This could point to the need for more inclusive startup policies and schemes, which encourage the participation of entrepreneurs from disadvantaged communities and address barriers such as access to capital, networks, and social mobility. Regarding business maturity, the largest group of respondents are in the Early Stage Startup phase (0–3 years), constituting 46.7% of the total sample. This suggests that the majority of entrepreneurs are still navigating the challenges of establishing their ventures. The Pre-Startup Idea Phase group (40%) also shows a considerable interest in launching businesses, indicating a growing entrepreneurial spirit. Only 13.3% are in the Established (>3 years) stage, reflecting the early nature of startup ventures in Bihar. This also points to the need for sustained support and long-term funding mechanisms to help startups move beyond the early stages. These findings suggest that while Bihar's startup ecosystem is emerging, it still faces challenges related to gender inequality, regional imbalances, and educational barriers. A tailored approach to seed funding, mentorship, and inclusion could help address these gaps, leading to a more equitable and diverse entrepreneurial environment in the state. Further targeted research is needed to explore the factors contributing to these demographic patterns and identify strategies for fostering a more inclusive and sustainable startup ecosystem.

Table 2: Awareness and Access to Seed Funding Schemes

Indicator	Yes (%)	No (%)
Are you aware of seed funding schemes?	39 (26%)	111 (74%)
Have you ever applied for seed funding?	18 (12%)	132 (88%)
Was your application successful?	9 (50% of applicants)	9 (50%)

The analysis of awareness and access to seed funding schemes reveals crucial insights into the challenges faced by entrepreneurs in Bihar in accessing critical financial resources. Only 26% of respondents were aware of the existence of seed funding schemes, while a staggering 74% were not. This indicates a significant gap in information dissemination about funding opportunities, which may hinder the growth of startups. This suggests that despite the government's and private sector's efforts to launch such schemes, awareness campaigns and information-sharing mechanisms are insufficient. As seed funding is often a primary tool for fostering entrepreneurship, enhancing awareness through targeted outreach programs, workshops, and digital platforms could significantly increase participation rates.

Just 12% of respondents reported having applied for seed funding, indicating that even among those who are aware of such schemes, very few take the next step to apply. The 88% who have never applied could be due to factors such as lack of confidence in the application process, perception of difficulty, or inaccessibility to required resources. These findings highlight the need for simplifying the application process and providing guidance on how to successfully apply for funding.

Among those who did apply, 50% were successful in receiving seed funding. However, when considering the entire sample, only 6% of respondents received seed funding. This further emphasizes that the actual access to seed funding is significantly lower, despite the relatively high success rate among applicants. This reveals a systemic issue of underutilization of available funds and underscores the need for better mechanisms to ensure equitable distribution of seed funds, especially among entrepreneurs from underrepresented regions and demographics.

Table 3. Cross-Tabulation of Gender and Access

Gender	Aware of Seed Funding (%)	Applied for Funding (%)	Received Funding (%)
Male	32%	18%	8%
Female	17%	6%	3%

When breaking down the data by gender, we see distinct disparities. Among male entrepreneurs, 32% were aware of seed funding opportunities, 18% applied, and 8% received funding. These numbers reflect relatively higher awareness and access compared to females but still show that the gap between awareness and actual access remains substantial. Female respondents showed significantly lower rates of awareness (17%), application (6%), and success (3%). This indicates that women face more significant barriers in accessing seed funding compared to their male counterparts. This disparity may be attributed to cultural norms, limited access to networks, gender bias in funding decisions, and a lack of confidence or resources to apply. The findings point toward the need for targeted interventions to address gender-based disparities in access to seed funding, such as gender-sensitive programs, mentorship for women entrepreneurs, and support structures to enhance female participation in the startup ecosystem.

Table 4. Cross-Tabulation of Location and Awareness

Location	Aware (%)	Applied (%)	Received (%)
Urban	34%	16%	9%
Rural	16%	6%	2%

A location-based analysis reveals further insights into regional disparities as Urban entrepreneurs demonstrated better awareness (34%), higher application rates (16%), and a greater success rate in receiving funding (9%) compared to their rural counterparts. This is consistent with the trend observed across India, where urban areas tend to have better infrastructure, networking opportunities, and access to capital, creating a more favorable environment for startups. This urban-centric trend calls for focused interventions to bring more seed funding and startup support mechanisms to rural areas, where the entrepreneurial potential is equally high but the ecosystem is less developed. Rural entrepreneurs reported only 16% awareness, 6% application, and 2% success rates, highlighting a stark contrast with urban entrepreneurs. The lower awareness and success rates in rural areas are indicative of structural challenges such as poor internet connectivity, limited access to information, lack of local support networks, and the absence of targeted policies for rural entrepreneurs. This reinforces the need for decentralizing funding opportunities and creating innovation hubs in rural areas to ensure that rural entrepreneurs are not left behind in the startup ecosystem.

Table 5. Perception of Institutional Support

Statement (Likert Scale: 1–5)	Mean Score	Std. Dev.
Application procedures are clear and transparent	2.1	1.03

Statement (Likert Scale: 1–5)	Mean Score	Std. Dev.
Government departments are responsive to queries	2.3	1.10
Seed funding schemes are fairly distributed	1.9	0.95
Corruption is a barrier in accessing funding	4.3	0.72
Mentoring/support is provided after funding is received	2.0	0.87

The data on the perception of institutional support provides valuable insights into the challenges entrepreneurs in Bihar face when accessing seed funding and institutional resources. The responses, measured on a Likert scale (1–5), indicate substantial dissatisfaction with various institutional aspects of the startup ecosystem. The mean score of 2.1 with a standard deviation of 1.03 suggests that most respondents perceive the application procedures to be unclear and opaque. This low score reflects a significant barrier for entrepreneurs, as complex and unclear application processes discourage potential applicants from pursuing funding opportunities. Transparency and simplicity in the application process are critical for increasing participation and ensuring that seed funds reach the intended recipients.

The mean score of 2.3 and standard deviation of 1.10 further corroborates the dissatisfaction with government responsiveness. Entrepreneurs indicated that government departments are not proactive in addressing queries, which hampers the overall effectiveness of seed funding schemes. Slow or unhelpful responses from government departments can lead to frustration and deter entrepreneurs from seeking financial support, ultimately weakening the startup ecosystem. Timely and helpful responses are essential for fostering trust and engagement with institutional funding channels. The mean score of 1.9 with a standard deviation of 0.95 indicates a widespread belief that seed funding schemes are not equitably distributed. Respondents feel that there is a lack of fairness in how funding is allocated, which could be due to factors such as favoritism, regional disparities, or a lack of clear criteria for fund allocation. This perception of unfairness can erode trust in government schemes and reduce the motivation of entrepreneurs to apply for funding. For seed funding to be effective, the distribution process must be perceived as fair and impartial.

A significantly higher mean score of 4.3 with a standard deviation of 0.72 suggests strong agreement among respondents that corruption is a major barrier in accessing seed funding. This result is particularly concerning, as it indicates that many entrepreneurs believe that corrupt practices significantly hinder their ability to secure funding. Corruption creates an uneven playing field, where access to resources is often determined by factors other than merit or innovation. Addressing corruption within funding processes is crucial for ensuring that seed funding serves its intended purpose of fostering entrepreneurship and innovation. The mean score of 2.0 with a standard deviation of 0.87 reflects low confidence in the availability of post-funding mentoring or support. Entrepreneurs indicated that after receiving seed funding, they do not receive adequate mentoring or guidance, which is essential for navigating the challenges of scaling their businesses. Without mentorship and continued support, many startups struggle to grow beyond the initial stages, potentially leading to failure. This highlights the need for more comprehensive support systems that go beyond financial assistance and focus on the holistic development of startups.

Table 6. Inferential Analysis: Chi-Square Test

Hypothesis: There is a significant association between location (urban/rural) and awareness of seed funding schemes.

• **Observed Data:**

	Aware	Not Aware	Total
Urban	29	56	85
Rural	10	55	65

Result : Chi-square value = 7.56, Degrees of Freedom = 1, p-value = 0.006

The Chi-Square test was used to assess whether there is a significant relationship between the location (urban or rural) and awareness of seed funding schemes among entrepreneurs in Bihar. The observed data showed that among urban respondents, 29 were aware of seed funding opportunities, and 56 were not aware. In contrast, for rural respondents, only 10 were aware, while 55 were not aware. The Chi-square value was calculated to be 7.56, with 1 degree of freedom, and the p-value was 0.006. Given that the p-value is less than the standard threshold of 0.05, the result is statistically significant, suggesting a strong association between location and awareness. This means that urban respondents are significantly more likely to be aware of seed funding opportunities compared to their rural counterparts. The result emphasizes the disparity in access to information and resources between urban and rural areas, which could be attributed to better networking opportunities, higher levels of connectivity, and more centralized information dissemination in urban regions. Therefore, enhancing awareness in rural areas is crucial to ensuring equal access to seed funding opportunities for all entrepreneurs, regardless of location.

Table 7: Correlation Analysis of Key Variables

Variables	Awareness of Funding	Application Rate	Perceived Institutional Support	Education Level	Risk Aversion	Gender (1=Male, 2=Female)
Awareness of Funding	1.00	0.68	0.52	0.46	-0.41	-0.39
Application Rate	0.68	1.00	0.60	0.38	-0.33	-0.35
Perceived Institutional Support	0.52	0.60	1.00	0.29	-0.27	-0.31
Education Level	0.46	0.38	0.29	1.00	-0.22	-0.10
Risk Aversion	-0.41	-0.33	-0.27	-0.22	1.00	0.44
Gender (1=Male, 2=Female)	-0.39	-0.35	-0.31	-0.10	0.44	1.00

The correlation analysis explored the relationships between several key variables, including awareness of funding, application rates, perceived institutional support, education level, risk aversion, and gender. The results revealed several important insights into the dynamics of the startup ecosystem. First, there was a strong positive correlation between awareness of funding and application rate ($r = 0.68$), indicating that higher awareness of funding schemes leads to higher application rates. This suggests that increasing awareness could directly boost the number of applications, facilitating access to seed funding. Additionally, awareness of funding and perceived institutional support also showed a moderate positive correlation ($r = 0.52$), suggesting that entrepreneurs who are more informed about funding opportunities tend to view the institutional support structures more favorably. Education level was another significant factor, as it positively correlated with both awareness ($r = 0.46$) and application rate ($r = 0.38$). Entrepreneurs with higher education levels were more likely to be aware of funding opportunities and to apply for them. On the other hand, risk aversion negatively correlated with awareness ($r = -0.41$), implying that individuals who are more risk-averse tend to be less informed about seed funding schemes. Finally, gender also showed a negative correlation with awareness ($r = -0.39$), suggesting that female entrepreneurs are less likely to be aware of seed funding opportunities than male entrepreneurs. This highlights the gender disparities in access to information and funding, which may be exacerbated by social, cultural, or institutional barriers. These findings emphasize the need for targeted interventions to increase awareness, particularly among rural and female entrepreneurs, while also addressing the educational and risk-related barriers that hinder access to funding.

V. Discussion

The data underscores the persistent barriers in the seed funding landscape in Bihar, particularly in terms of awareness and access. Although seed funding is a crucial support mechanism for early-stage startups, the low awareness and application rates indicate that many entrepreneurs are either unaware of such schemes or face obstacles in applying for them. This is further compounded by gender and regional disparities, with women and rural entrepreneurs particularly disadvantaged. The findings suggest that while the existing funding schemes may have the potential to support startups, their reach and accessibility remain limited. To address these issues, targeted interventions are needed, such as more robust awareness campaigns, simplified application processes, and gender- and region-sensitive policies that ensure equitable access to seed funding for all entrepreneurs. By focusing on enhancing awareness, improving access, and promoting inclusivity, Bihar can cultivate a more vibrant and diverse startup ecosystem, ultimately fostering economic development and innovation in the state. The perception data strongly highlights critical weaknesses in Bihar's institutional support structures for startups. Entrepreneurs express significant dissatisfaction with the transparency, fairness, and responsiveness of government seed funding schemes, which indicates a need for urgent reform in these areas. The most pressing concern, as identified by respondents, is the prevalence of corruption, which creates a barrier to equitable access to funding and undermines the effectiveness of the entire system. Moreover, the low ratings for application procedures, government responsiveness, and post-funding mentoring suggest that while seed funding may be available, the accompanying support mechanisms are either inadequate or non-existent. This lack of institutional support beyond funding may contribute to high failure rates among startups, as entrepreneurs struggle without proper guidance or resources to grow their ventures. To improve institutional support for startups in Bihar, several measures are necessary: streamlining and clarifying application processes, enhancing government responsiveness to entrepreneur queries, ensuring equitable distribution of funds, addressing corruption at all levels, and providing ongoing mentoring and support for funded startups. These changes would help build a more transparent, fair, and supportive ecosystem for startups, encouraging greater participation and ultimately contributing to the sustainable growth of the startup ecosystem in the state.

The results from both the Chi-Square test and correlation analysis provide valuable insights into the factors influencing awareness and access to seed funding in Bihar. The Chi-Square test clearly revealed a significant urban-rural divide in awareness of seed funding schemes, with urban respondents being more likely to

be aware of these opportunities. This highlights the need for focused efforts to increase awareness in rural areas, possibly through decentralized information dissemination strategies such as digital platforms, local networks, and community outreach programs. Additionally, the correlation analysis revealed important insights into how education and risk aversion influence awareness and access to seed funding. Entrepreneurs with higher education levels were more likely to be aware of funding schemes and to apply for them, suggesting that educational programs and training could play a key role in increasing awareness and participation. The negative correlation between risk aversion and awareness highlights the challenges faced by entrepreneurs who are hesitant to take risks, indicating that more support and encouragement may be needed to engage risk-averse individuals in the startup ecosystem. Gender disparities also emerged from the correlation analysis, with female entrepreneurs showing lower levels of awareness and access to seed funding opportunities than their male counterparts. This points to the need for gender-sensitive policies and initiatives that specifically target women entrepreneurs, providing them with the information, resources, and mentorship needed to navigate the seed funding process. Addressing these barriers will be critical in ensuring an inclusive and equitable startup ecosystem in Bihar.

VI. Analysis and Conclusion

In conclusion, the findings underscore the importance of addressing both structural barriers (such as location and gender disparities) and individual barriers (such as education level and risk aversion) in order to improve awareness and access to seed funding. Tailored strategies, including information campaigns, educational programs, and gender-focused initiatives, are essential to foster a more inclusive and dynamic startup ecosystem in Bihar. By addressing these disparities, Bihar can unlock the full potential of its entrepreneurial community, encouraging innovation, job creation, and economic development across the state.

1. **Infrastructural Shortfalls:** Bihar lacks quality physical and digital infrastructure. Startups in the semi-urban and rural regions experience regular power cuts, slow internet speeds, and insufficient co-working facilities. Such shortcomings raise the cost of operation and deter investors from placing their investments in the state.
2. **Limited Financial Literacy and Awareness:** Several potential entrepreneurs lack knowledge of government schemes or cannot manage the intricate application procedures. Financial awareness is low, and there is overall lack of awareness of investment readiness, pitch creation, or simple bookkeeping.
3. **Bureaucratic and Institutional Hurdles:** Government policies encouraging entrepreneurship tend to be ineffectively implemented. Fund disbursements are slow, there is a lack of coordination among departments, and lengthy documentation procedures dishearten applicants. An insufficient local supporting regulatory environment and procedures friendlier to startups further aggregate the problem.
4. **Risk Aversion and Cultural Norms:** Entrepreneurship in Bihar is generally considered a risky and uncertain profession. Social penchant for secure employment, particularly in government organizations, results in low embracement of entrepreneurial activities. Failure is branded negatively, and there are limited role models that instill confidence in young entrepreneurs.
5. **Gender Disparities:** Women entrepreneurs are confronted by additional hurdles in the patriarchal social system. Mobility restrictions, the lack of support from their own family, and concerns for their safety limit their involvement in entrepreneurial pursuits. Gender-biased embedded schemes in the funding of seed schemes ignore women-led startups.
6. **Hesitation of Investors:** Investors are discouraged to invest in startups in Bihar because of the perceived risk and lack of a mature ecosystem. They prefer metro cities where there is a better possibility of becoming scalable and where there are options of exits. It leads to a critical shortage of private seed money in Bihar.
7. **Policy Implementation Gap:** Although policies such as the Bihar Startup Policy 2022 offer monetary incentives, ground-level implementation is lacking. Monitoring is in disarray, and there is a lack of transparency in fund distribution. Startups also complain of red tape and the lack of feedback from the government.

VII. Recommendations for Future Progress

To strengthen the seed funding ecosystem for startups in Bihar, several multi-stakeholder strategies must be adopted. First, a diaspora-backed Bihar Angel Network should be established to facilitate funding and mentorship from successful non-resident Biharis. Second, the state should promote decentralized innovation hubs in Tier-2 and Tier-3 towns to ensure geographical inclusivity, complemented by virtual mentorship platforms for remote accessibility. Third, a milestone-based disbursement mechanism for government seed funds should be implemented to enhance transparency and accountability in fund utilization. Fourth, the creation of gender- and caste-sensitive startup funds is essential to ensure that entrepreneurship opportunities reach marginalized communities, and these should be supplemented by integrated mentoring and skill-building initiatives. Fifth, academic-commercial partnerships must be encouraged by introducing innovation credits, student entrepreneurship schemes, and technology transfer units in universities. Sixth, the state should commit to publishing annual performance reports detailing startup impact, regional spread, and survival rates, thereby enabling evidence-based policymaking. Finally, public-private partnerships (PPPs) should be mobilized to fund

high-potential sectors such as agritech, edtech, and clean energy, aligning local innovation with broader developmental goals.

VIII. Conclusion

Seed funding represents more than just a financial lifeline; it embodies belief in the innovator, a catalyst for socio-economic mobility, and a strategic tool for inclusive development. In the context of Bihar—where historical underdevelopment and infrastructural deficits have limited industrial growth—startups can play a transformative role by creating localized employment, solving community-specific problems, and fostering economic decentralization. However, this latent potential can only be harnessed through a robust and responsive seed funding ecosystem. Transparent governance, dynamic institutional collaboration, inclusive policy frameworks, and strategic public-private partnerships are essential to ensure that Bihar's startup ecosystem evolves from promise to performance. A critical shift from policy intent to practical ecosystem-building is necessary for Bihar to emerge not just as a participant, but as a leader in India's next wave of entrepreneurial innovation.

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