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Essential Drivers of Startup Sustainability: Operational and Demographic Factors -An Analytical Study

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Abstract: Startups play a pivotal role in today's economy by generating employment, introducing innovative products and services, and disrupting traditional industry models. Their long-term sustainability, however, is influenced by a combination of operational and demographic factors—both at the firm level and among founders. Startups face several persistent challenges, including rapid technological changes, shifting consumer preferences, market competition, limited resource availability, and evolving government regulations (Aquil, 2024). This study investigates the demographic and operational determinants of startup sustainability and evaluates the role of Information Technology (IT) adoption and digital infrastructure in enhancing their scalability and resilience. By identifying the key drivers of sustainability, the study aims to offer actionable insights that can support startup founders in approaching government agencies, incubation centers, and non-governmental organizations for strategic guidance and support. Primary data was collected through structured questionnaires distributed to 200 startup founders using simple random sampling. The findings explore how effective resource management, adaptive business models, and strategic planning contribute to the long-term success of startups in an increasingly dynamic entrepreneurial ecosystem.

Keywords: Startup Sustainability, Operational Factors, Startup India, Financial Health, Innovation, Resilience.

Type: Research paper

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1. Introduction

India, the world's second most populous country with over 1.2 billion people, faces a persistent challenge in providing sufficient employment opportunities to its growing population. In response, the Government of India has launched several initiatives aimed at promoting entrepreneurship, improving access to capital, and encouraging innovation. Among these, the flagship initiative "Startup India, Standup India," launched by Prime Minister Narendra Modi in 2016, has emerged as a central policy instrument. It offers startups a range of support mechanisms, including financial incentives, easier compliance frameworks, and institutional backing to catalyze innovation-driven economic development (Jenish & Nisarg, 2021; Press Information Bureau, 2023).

These measures have contributed to a visible rise in domestic entrepreneurial activity, aligning with a global trend toward innovation-led economies (Kraus et al., 2020; Chalmers et al., 2021). However, despite this policy-driven momentum, the long-term sustainability of startups remains a critical challenge. Many startups falter not for lack of ideas or enthusiasm, but due to foundational gaps in strategic and operational planning. Key oversights include neglecting factors such as customer retention, geographic scalability, and alignment with sector-specific dynamics.

Moreover, there is still limited awareness and utilization of government support tools such as DPIIT recognition and Startup India registration, which offer access to funding, tax benefits, and regulatory exemption. This gap between available policy support and actual usage reflects a broader issue of information asymmetry in India's startup ecosystem.

Additionally, startup sustainability is shaped by both operational and demographic variables—such as financial planning, business model robustness, founder age, education level, and even familial background (Obschonka & Audretsch, 2020). In today's technology-driven economy, the integration of Information Technology (IT) has emerged as a decisive factor. Startups that effectively harness IT for operations, scalability, and innovation are more likely to survive and grow (Darwish et al., 2020; Kraus et al., 2020).

Against this backdrop, this study explores the multidimensional factors influencing startup survival and scalability in India. Specifically, it examines how demographic attributes and operational strategies shape long-term outcomes and evaluates the impact of IT adoption and digital infrastructure on startup resilience. The aim is to generate actionable insights for founders, ecosystem builders, and policymakers seeking to boost the effectiveness and longevity of India's startup landscape.

2. Methodology

The study was carried out over a five-month period and focused on startups operating in and around Coimbatore city. A mixed-method approach was adopted, incorporating both primary and secondary sources of data. Primary data was collected through a structured questionnaire administered to 200 startup founders, selected using a simple random sampling technique to ensure unbiased representation.

Secondary data was sourced from reputable journals, government reports, and credible online platforms to support and contextualize the findings. The analytical framework employed includes percentage analysis, descriptive statistics, t-tests, one-way ANOVA, and regression analysis. These statistical tools were used to examine relationships between demographic and operational variables and the perceived sustainability of startups, providing both descriptive insights and inferential understanding of the data.

3. Analysis and Interpretations

3.1. Personal Profile of Startup Founders

Table 1 outlines the demographic characteristics of the startup founders surveyed. The data indicates that the largest age group falls between 31 and 40 years, representing 35% of respondents. A majority of the founders (55%) are female, and 76.5% are unmarried. Most respondents (76.5%) belong to nuclear families, and 66% live in households with fewer than four members. Additionally, 33.5% of respondents come from families with three earning members. In terms of education, 37.5% hold undergraduate degrees, while only 2% have completed professional or doctoral qualifications. Regarding family income, nearly half (49%) earn between ₹25,001 and ₹50,000 per month. Finally, 58.5% of respondents reside in urban areas, with rural and semi-urban founders making up the remainder.

Table 1: Personal factors of startup founders

Factors		**Total**	**Percentage**
Founder Age	20 – 30	55	27.5
	31 – 40	70	35
	41 – 50	54	27
	Above 50	21	10.5
Gender	Male	90	45
	Female	110	55
Academic Status	High School or Equivalent	63	31.5
	Diploma Level	23	11.5
	Under Graduate	75	37.5
	Post Graduate	35	17.5
	Doctorate or Professional Degree	4	2
Marital Status	Married	47	23.5
	Unmarried	153	76.5
Type of Family	Nuclear	153	76.5
	Joint	47	23.5
No of members in the Family	< 4	132	66
	5 – 7	56	28
	Above 7	12	6
No of Earning members in the family	1	59	29.5
	2	44	22
	3	67	33.5
	4	30	15
Family Income per month	< 25,000	20	10
	25,001 – 50,000	98	49
	50,001 – 75,000	47	23.5
	75,001 – 1,00,000	35	17.5

Founders Area of residence	Rural	73	36.5
	Urban	117	58.5
	Semi-Urban	10	5

(Source: Computed)

The results indicate strong internal consistency and convergent validity across all constructs. This confirms that the measurement model is adequately reliable for assessing the hypothesized relationships between job stress, work engagement, and job satisfaction.

3.2. Startup Profile

As shown in Table 2, most startups (36%) have been operational for one to three years, indicating that a significant portion of businesses are still in their early stages. A majority (58.5%) are located in semi-urban areas, and 62% are registered with DPIIT, while 60% are registered under the Startup India initiative. Grooming, service, and textile startups make up the largest category (28.5%), followed by electronics and mechanical (21%). Most startups are small in size, with 70.5% employing fewer than five people. Investment patterns show that 44.5% have invested between ₹5,00,001 and ₹10,00,000. In terms of stage, 28% are in the seed stage, and 24.5% are in the early stage. A significant 47% reported annual turnover between ₹10,00,001 and ₹20,00,000, highlighting modest financial growth among many of the firms.

Table 2: Profile of startups

Factors		**Total**	**Percentage**
Years of Operation	<1	49	24.5
	1-3	72	36
	4-6	24	12
	6-9	55	27.5
Area of Industry/Company	Rural	70	35
	Urban	13	6.5
	Semi-Urban	117	58.5
DPIIT Registered	Yes	124	62
	No	76	38
Startup India Registered	Yes	120	60
	No	80	40
Type of Start-up	Agriculture& Food	46	23
	Edutech	13	6.5
	Electronics& Mechanical	42	21
	Grooming, Service, and Textile	57	28.5
	IT	36	18
	Medical	6	3
Employees in the Firm	< 5	141	70.5
	5-25	39	19.5
	26-45	5	2.5
	< 46	15	7.5
Investment	Less than Rs 1,00,000	26	13
	Rs.1,00,001-Rs.5,00,000	67	33.5
	Rs.5,00,001-Rs.10,00,000	89	44.5

	Rs.10,00,001-Rs.15,00,000	18	9
Stage of Startup	Early Stage	49	24.5
	Expansion	37	18.5
	Growth	44	22
	Pre Seed Stage	14	7
	Seed Stage	56	28
Annual Turnover	<Rs.10 Lakhs	74	37
	Rs.10,00,001 to Rs.20,00,000	94	47
	Rs.20,00,001 to Rs.30,00,000	13	6.5
	Rs.30,00,001 to Rs.40,00,000	5	2.5
	> Rs.40 Lakhs	14	7

(Source: Computed)

3.3. Factors Contributing to Sustainability

Table 3 presents respondents' views on 16 key factors influencing startup sustainability, measured on a 5-point Likert scale. The highest-rated factor is effective financial management, with a mean score of 4.03, followed closely by continuous innovation (3.96). Customer retention, business model strength, and adaptability also received relatively high scores. Conversely, adherence to formal standards (3.23) and perceived government support (3.31) were rated lowest, suggesting a gap between policy offerings and practical relevance.

Table 3: Factors that contribute to the sustainability of startups

Factors	Mean	S.D
Strong business model	3.85	0.73
Continuous innovation	3.96	0.57
Effective financial management	4.03	0.72
Customer retention and loyalty	3.83	0.75
Skilled and motivated team	3.67	0.89
Scalability of operations	3.71	0.79
Product Life Cycle Management	3.38	0.89
Digital/Transparent Communication	3.61	0.84
Educating Customers	3.55	0.80
Investing in Research	3.52	0.78
Adhering to Standards	3.23	0.72
Adaptability to market changes	3.78	0.80
Social and environmental responsibility	3.67	0.82
Government support and policies	3.31	0.97
Community Engagement	3.46	0.81
Diversity and Inclusion	3.40	0.81

(Source: Computed)

3.4. Association Between Startup Profiles and Sustainability

To examine whether certain startup characteristics significantly affect perceptions of sustainability, a one-way ANOVA was conducted (Table 4). The results show a significant difference in sustainability scores based on the area of industry/company ($p = 0.03$) and annual turnover ($p < 0.01$). Specifically, urban-based startups had the highest sustainability mean score (63.38), and those with

annual turnover between ₹30,00,001 and ₹40,00,000 scored the highest overall (65.4). However, no statistically significant differences were found based on years of operation, startup type, number of employees, investment level, or growth stage. This suggests that financial performance and geographic positioning are stronger predictors of perceived sustainability than structural or operational variables.

Table 4: One Way ANOVA: Profile of startups vs sustainability of startups

Variables		**Sustainability score**			**F**	**Prob.**	**Sig.**
		Mean	**S.D**	**No.**			
Years of operation	<1	58.18	7.13	49	0.54	0.66	**Ns**
	1-3	57.42	8.07	72			
	4-6	59.63	8.92	24			
	6-9	57.62	7.17	55			
Area of Industry / Company	Rural	57.29	6.81	70	3.665	0.03	**Sig**
	Urban	63.38	8.89	13			
	Semi-Urban	57.7	7.88	117			
Type of Start-up	Agriculture& Food	56.24	8.76	46	1.517	0.19	**Ns**
	Edutech	57.69	6.1	13			
	Electronics & Mechanical	60.55	9.13	42			
	Grooming, Service, and Textile	57.44	6.4	57			
	IT	57.69	5.83	36			
	Medical	59	10.28	6			
Employees in the Firm	> 5	57.12	6.87	141	2.13	0.1	**Ns**
	5-25	59.28	8.25	39			
	26-45	59	11.51	5			
	< 46	61.6	10.89	15			
Investment	Less than Rs 1,00,000	58.54	8.13	26	1.396	0.25	**Ns**
	Rs.1,00,001-Rs.5,00,000	56.94	6.84	67			
	Rs.5,00,001-Rs.10,00,000	58.92	8.47	89			
	Rs.10,00,001-Rs.15,00,000	55.78	5.25	18			
Stage of Startup	Early Stage	58.18	7.13	49	0.823	0.51	**Ns**
	Expansion	58.78	9.84	37			
	Growth	56.57	7.74	44			
	Pre Seed-Stage	60.29	6.31	14			
	Seed Stage	57.61	6.8	56			
Annual Turnover	<Rs.10 Lakhs	56.66	8.43	74	6.276	0.00	**S**
	Rs.10,00,001 to Rs.20,00,000	57.88	6.02	94			
	Rs.20,00,001 to Rs.30,00,000	54.46	4.98	13			
	Rs.30,00,001 to Rs.40,00,000	65.4	8.05	5			
	> Rs.40 Lakhs	65.43	10.04	14			

(Source: Computed)

3.5. Impact of Startup Registration on Sustainability

A t-test was used to compare sustainability scores between startups with and without government registrations (Table 5). Startups registered under Startup India had a significantly higher mean score (65.79) compared to those unregistered (56.85). Similarly, DPIIT-registered startups scored higher (66.06) than their non-registered counterparts (57.22). Both differences are statistically significant at $p < 0.01$. This indicates that formal registration and affiliation with government-backed programs may play a meaningful role in fostering startup resilience and visibility, though it is worth noting that not all registered entities necessarily achieve long-term success.

Table 5: t-test of sustainability of startups vs registration of startups

Variables		**Sustainability score**			t	df	Prob.	Sig.
		Mean	**S.D**	**No.**				
Startup India Registered	Yes	65.79	10.33	24	5.759	198	0	S
	No	56.85	6.6	176				
DPIIT Registered	Yes	66.06	11.11	16	4.635	198	0	S
	No	57.22	6.92	184				

(Source: Computed)

3.6. Regression Analysis

Table 6 summarizes the regression analysis performed to identify the most influential variables affecting startup sustainability. The model shows that annual turnover is positively and significantly associated with sustainability ($\beta = 1.230$, $p = 0.019$), indicating that financial performance remains a strong foundation for growth and resilience. However, Startup India registration surprisingly exhibits a significant negative relationship with sustainability ($\beta = -6.708$, $p = 0.005$), possibly reflecting unmet expectations or challenges linked to government policy implementation.

Other variables, including years of operation, location, DPIIT registration, number of employees, investment level, and startup stage, were not found to be statistically significant. The regression model yields an R-squared value of 0.182, suggesting that approximately 18% of the variance in sustainability perceptions can be explained by the model, while the remaining variance is likely attributable to external or unmeasured factors. This points to the need for future research into other elements—such as leadership qualities, innovation culture, or ecosystem connectivity—that may more directly influence startup sustainability.

Table 6: Regression analysis

Variables	**Regression Coefficients (B)**	**Std. Error**	**Beta**	**t-value**	**Prob..**	**Sig.**
(Constant)	71.421	4.725				
Years of Operation	.824	1.303	.122	.633	.528	Ns

Area of Industry/Company	.184	.557	.023	.330	.742	Ns
DPIIT Registered	-1.382	2.778	-.049	-.498	.619	Ns
Startup India Registered	-6.708	2.358	-.284	-2.845	.005	**
Employees in the Firm	.469	.633	.053	.742	.459	Ns
Investment	-.696	.656	-.075	-1.061	.290	Ns
Stage of Startup	-.677	.967	-.135	-.700	.485	Ns
Annual Turnover	1.230	.521	.173	2.360	.019	*
R	0.426					
R Square	0.182					
F	5.295 **					

(Source: Computed)

4. Startups and Artificial Intelligence

This section of the study explores the intersection between startups and artificial intelligence (AI), with the overarching goal of identifying how AI adoption contributes to the sustainability of startups. The specific objectives were to highlight the most successful startups leveraging AI technologies and to identify the countries investing most heavily in this domain.

A comprehensive review of scientific articles, industry reports, and credible online sources reveals that AI is increasingly being embedded into the operational frameworks of startups across multiple economic sectors. Startups are utilizing AI to optimize business processes, personalize customer experiences, improve data-driven decision-making, and innovate new product offerings—all of which enhance scalability and resilience.

The global trend shows a sharp rise in the number of AI-driven startups, especially in countries such as the United States, China, and the United Kingdom. These nations are currently leading in terms of both capital investment and policy support for AI-based entrepreneurship. Startups in these regions are developing AI-powered solutions across sectors such as healthcare, fintech, agriculture, logistics, and education, among others.

The findings suggest that startups incorporating AI as a core component of their operations gain a competitive advantage by improving efficiency and expanding their market reach. These advantages contribute significantly to their long-term sustainability. For this study, data analysis was supported using SPSS software and IT-based tools, while literature and case evidence were compiled from credible secondary sources, including government websites and peer-reviewed journals (Carlos Rios et al., 2024).

5. Suggestions

To ensure long-term sustainability, startups must take a holistic approach that addresses the operational, financial, and strategic dimensions of business management. First and foremost, effective financial planning is essential.

Startups should adopt robust financial strategies, prioritize resource efficiency, and implement mechanisms for continuous innovation. Cultivating a culture of innovation—through structured programs, access to mentorship, and investment in skill development—can also help businesses remain adaptive in a rapidly changing environment.

Government bodies and ecosystem enablers should actively promote awareness of and access to support initiatives such as DPIIT and Startup India registrations. Educating entrepreneurs on the tangible benefits of registration—including tax concessions, enhanced funding opportunities, and simplified regulatory compliance—can significantly strengthen startup viability (Shivhare et al, 2023).

Furthermore, startups should maintain strong relationships with incubation centers, accelerators, and policy advisors. Regular engagement with these institutions can provide timely updates on changing regulations and unlock additional support resources. The positive correlation between annual turnover and sustainability found in this study reinforces the importance of adopting revenue-focused strategies such as improving customer retention, expanding into new markets, and optimizing operational efficiency.

Interestingly, the data also suggests that factors like firm size and employee count have limited direct influence on sustainability outcomes. Instead, intangible elements—such as the strength of the business model, leadership cohesion, and team synergy—play a more decisive role. By focusing on strategic investment, sound planning, and building a committed workforce, startups can significantly enhance their prospects for sustained growth and long-term impact.

6. Conclusion

This study offers meaningful insights into the factors that shape the sustainability of startups in India, with a particular focus on the Coimbatore region. The findings highlight that, operational elements—especially sound financial management and continuous innovation—are critical drivers of long-term success. Demographic variables, including founder education and family structure, also contribute, though to a lesser extent. While formal affiliations such as Startup India and DPIIT registration provide certain advantages, they alone do not guarantee sustainability. Instead, strategic integration of digital tools, particularly artificial intelligence, is emerging as a powerful enabler of growth, adaptability, and market competitiveness. To thrive in this rapidly evolving environment, entrepreneurs must embrace lifelong learning, build agile business models, and align their ventures with both market demands and technological trends. Equally, policymakers and ecosystem enablers must invest in infrastructure, streamline regulatory pathways, and foster targeted support for innovation-driven startups. Ultimately, a synergistic approach that combines robust financial planning, technological integration, regulatory awareness, and human capital development will be essential for building resilient and sustainable startup ecosystems.

However, the study is not without its limitations. It is geographically confined to the Coimbatore District, and as such, its findings cannot be broadly

generalized to startups across different regions of India. Additionally, constraints related to time and cost restricted the scope of the data collection process. The frequent changes in government policies during the study period also posed challenges in capturing a consistent regulatory environment, which may have influenced startup behavior and access to resources.

Despite these limitations, the research underscores the importance of an integrated approach to startup sustainability—one that combines robust operational planning, financial discipline, strategic use of technology, and policy alignment. Entrepreneurs are encouraged to embrace continuous learning, build resilient business models, and leverage government and ecosystem support more effectively. Equally, policymakers must focus on strengthening startup infrastructure and delivering consistent, startup-friendly frameworks. Taken together, these efforts will be essential in cultivating a dynamic, inclusive, and sustainable entrepreneurial ecosystem.

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