

## Emergence Or Non-Emergence Of Tech Start-Ups In India. What Are The Distinctive Features?

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### Abstract:

*Tech start-ups are the engines for innovation and job creation and the biggest contributor to the GDP. Tech startups are rapidly increasing in number, especially in the developed world. Despite the increasing number, the rate of emergence among tech start-ups is not experienced (Bala Subrahmanya, 2015). The tech startup journey is not short of challenges. Only 10% of the tech startups succeed in emerging. The emergence analysis is conducted to identify the contributing factors for the emergence and non-emergence of tech start-ups. The budding disruptive ideas, fueled by the external finance provided by the ecosystem and the passion of the entrepreneur are not sufficient to make the startup reach the breakeven point and emerge as a successful tech startup. This opens the research question, to identify the attributes that impact emergence of the tech start-ups. This study aims to understand attributes contributing to the emergence of tech start-ups. Primary data was collected from 312 tech start-ups from 9 major start-up hubs across India employing a random sampling technique. A structured questionnaire is used to collect responses. Binomial regression and Kruskal–Wallis tests are used to analyse determinants of the tech start-up emergence. Findings indicate education and prior start-up experience in entrepreneurial profiles, Patents, STEM employees in the enterprise profile and external funding, incubation facilities and Government grants in the ecosystem are the attributes for the emergence of start-ups the start-ups with experienced founders, employees with good knowledge of the technology and the support extended by the ecosystem are the determinants of the start-up emergence. The study results facilitate the budding technopreneurs for better equipping themselves and avoiding mistakes leading to the non-emergence of the start-ups. The study was limited to tech start-ups that originated in India.*

**Keywords:** Emergence, Non-emergence, Tech start-ups, Entrepreneurship.

### 1. Introduction

The hit of a big recession in the year 2008 forced businesses around the globe to reallocate resources including layoff of employees in large numbers. In India, It primarily affected IT professionals, who developed intense job-related fear and began looking for alternative means of support. The nation was shaken by this fear and an insatiable drive to prove themselves which caused its citizens to rise above mediocrity and take on the challenge. The launch of the start-up India program in the year 2015 has given one more boost to the start-up movement in India. This movem<sup>1</sup>ent of entrepreneurship arose progressively in a slow phase over the years. Soon the start-up revolution took shape in India. In a young country like India,

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more than 65% of the population falls under the category of 25 to 35 years. (Survey by Ministry of Health and Family Welfare Government of India, 2023). Passion to become an entrepreneur comes naturally. A paradigm shift in providing jobs was found more fascinating than job seeking amongst the youth population. Key abilities like self-discipline, critical thinking, networking, teamwork, and problem-solving. Boosted Entrepreneurial mind-set. The tech start-up journey is not short of challenges.

Hence it is interesting to probe the factors that lead to the emergence of tech startups in India. The study concentrated on identifying the variables responsible for the emergence of the start-ups. Tech start-ups are the brainchild of the founders of those start-ups. The key attributes that contribute to the emergence of the start-up are explored in the study. The start-up profile is the second attribute used for the emergence analysis of tech start-ups. Apart from the entrepreneurial profile and start-up profile, the prevailing conducive environment aids the emergence of tech start-ups. Attributes of the ecosystem are studied to identify the key features contributing to the emergence of tech start-ups.

The data was collected from 312 tech start-up founders across major start-up hubs in India. The study considers the extensive literature survey and information gathered from the start-up owners, field experts, academicians, start-up mentors, and literature reviews were pooled together to identify the real factors behind the emergence the tech start-ups. The final factors related to the emergence of start-ups are been considered from the literature as well as the pilot study results. SPSS Amos software is used for analysing the data. Kruskal-wallies (KW), binomial regression and chi-square test are used to analyse the data.

## **2 Literature review:**

All the variables relating to the enterprise that decide the emergence of the business is considered under this construct. Enterprise-specific factors are internal factors that can influence the emergence of the startup. A clear business plan is the key reason for the emergence of the venture. Amatucci (2011), during the seed stage or stage of initiation, a business plan assists the emergence of the startup. Most investors fund start-ups based on the viability of the business plan .The experience of the entrepreneur is the sole factor that decides the startup's emergence. The ability to manage the situations and passion of the entrepreneur are crucial elements of startups as opined by the researchers found a close association between an entrepreneur's age and the emergence of a tech start-up (Cressy, 1996), found that previous work experience and the ability to take risks are the key factors contributing to the rise of the startup venture. Gender has also proved to be a factor influencing the success of the venture. Risk perception and accessing the financial aid leading to the success of the venture plays a major role Gicheva & Link, (2012). Although the gender gap in entrepreneurship has reduced during past decades, the role played by female entrepreneurs is limited compared to male tech start-up founders. (Arenius & Minniti,2005). Prior to work experience and education, the passion of the founder was a key influencer of the emergence and growth of the startups (Massimo G. Colombo, Luca Grilli 2005).Most of the business founders will be interested in starting the business where they have good knowledge. (Fuente and Ciccone 2002, Powell &Sandholtz,( 2012), A startup ecosystem helps novel ventures in the procurement of customers, suppliers and employees Starr and MacMillan (1990) Williamson (2000) Governmental policies play a vital role in boosting the startup ventures. Literature proves that the startup financing journey starts from bootstrapping. Initial financing is done by the entrepreneur's own funds slowly taking funds from angel and venture investments based on the pecking order theory. Interest rates and the equity share or share in the profit-based fund will be obtained. Few investors take active participation in entrepreneurial activities whereas few act only as passive partners for the venture. Most of the startup companies in the initial stage of business fail to acquire external equity, hence business declines. Analyzing the

financial sources of startups venture capitalists and angel investors play a major role in financing the startups at the earlier stage of venture Private equity funding is the option for funding only during the maturity stage of startups. (Zaleski 2011). Startup profile, entrepreneurial profile, and ecosystem factors are considered as main constructs in the present study. The paper is divided into five sections. The last section includes the conclusion and implications of the study. The research focuses on identifying the attributes contributing to the emergence of tech start-ups. In the first section defines emergence of the startups is discussed in detail. The second section consists of the research design, the third section consists of the resulting methodology, and the Fourth section consists of the results and discussion.

### **2.1 The gap in the literature:**

Startups encounter challenges at various stages. In the initial stages attributes that favour the emergence of tech startups are scant. Despite having the strongest base for tech startups many startups fail to emerge. All established startup hubs also find it difficult to make all the tech startups emerge and reach the break-even point many fade away in the journey. Startup profiles and entrepreneurial profiles and entrepreneurial profiles are explored to understand their role in the emergence of tech startups.

### **2.2 Research Methodology :**

The survey comprises both incubated as well as full-fledged startups that started their operations after 2016 are counted for the study. The 500 tech startups from 9 cities that are identified as emerging startup hubs (NASSCOM 2022). 289 startups founders were survey participants. The responses include 151 emerged startups and 138 startups which did not emerge. Binomial regression was used to identify the emergence factors.

### **2.3 Scope:**

India is the home of many tech startups and continues to grow as the third largest ecosystem provider for startups globally as reported by the National Association of Software and Service Companies (NASSCOM, 2022). As identified by the NASSCOM report tier-one cities for startup hubs like Bangalore, Delhi NCR, Mumbai, Pune, Chennai, and Hyderabad and emerging cities like Ahmedabad, Thiruvananthapuram, and Coimbatore are considered for the data collection. The study is focused on 9 cities. The samples were chosen from LinkedIn, Nasscom, k-Tech, and the Department of Industrial Policy & Promotion (DIPP) databases. Responses for the structured questionnaire were collected from only the founder or cofounders. The data was collected from. 289 startup founders. The study included startup companies established from June 2016 to January 2023 whereas the data collection period ranged from July 2022 to March 2023.

### **3.1 Emergence of the startup**

The emergence of startups was found to be evident when venture capitalists from the US Silicon Valley started funding the new ventures. Hence numerous startups sprang up. Slowly this momentum spread across the globe. Technology also played a prominent role in the upsurge of startups. Computers and software acted as an aid for promoting innovative products and services. Internet provided the platform for startups to reach out to potential customers using digital marketing tools disrupting traditional marketing channels. In India entrepreneurship journey took momentum through a paradigm shift of youth taking baby steps toward startup formation. The emergence of startups is inferred in varied forms by different researchers. The development of new technology that creates or adds value to the existing value chain, industry, or market is considered an emergence (Jones et al., 2011). Acquiring a considerable amount of financial assets, team, and tangible resources for the production of new technology (Moen,

2002). The formation of the skilled top management team itself is considered as the emergence of knowledge-based startups (Evangelista, 2006;). Production of unique and innovative products for small niches and the identification of customers are also regarded as the emergence of the startup (Cavusgil 2009). If the startup is successful in producing innovative technology or product or service and able to get the market share coined as the emergence of the startup, (Maltby, 2012; produced product or service if tested in the market and initially if a startup can convince the customer is also coined as the emergence of the startup. Many startups fade away during the initial years despite starting to earn revenue. Hence for the study crossing the break-even is considered as the emergence of the startup and all the initial cost is covered. The break-even point determines the point at which the product or service designed by the startup will start earning profit covering all the expenses Agus J. (2019). Reaching the breakeven point is considered to be the emergence of the startup in the present study.

**3.2 Entrepreneur Profile:** Over the last two decades, the Indian startup ecosystem has grown rapidly, and more support has become available in all dimensions. Start-ups are centers of novel innovations, they generate jobs and promote the start-up culture. The study attempts to understand the entrepreneur's role in the emergence and non-emergence of the tech startup. The study considered gender as an attribute of the emergence of tech startups. The sample had 272 startups whose founders are male and only 17 female startup founders were found. Out of 17 startups run by female entrepreneurs, 10 startups successfully emerged and 7 startups are still in the race of emergence. Out of 272 startups 141 startups successfully emerged and 131 startups did not emerge. The role of education was also examined for emergence of tech startups. The sample had a good mix of founders who completed their UG, PG and PhD. There 126 PG degree holders, of which 1 was Ph.D. holder and 163 startups UG holders participated in the survey. Data includes premier institutions were 120 startup founders graduated from premier educational institutions. The data consist of founders who have ventured for the 184 first timers who are in highest in number. The sample data has a good spread of different types of startup founders where the age group ranges from 21 to 56 years.

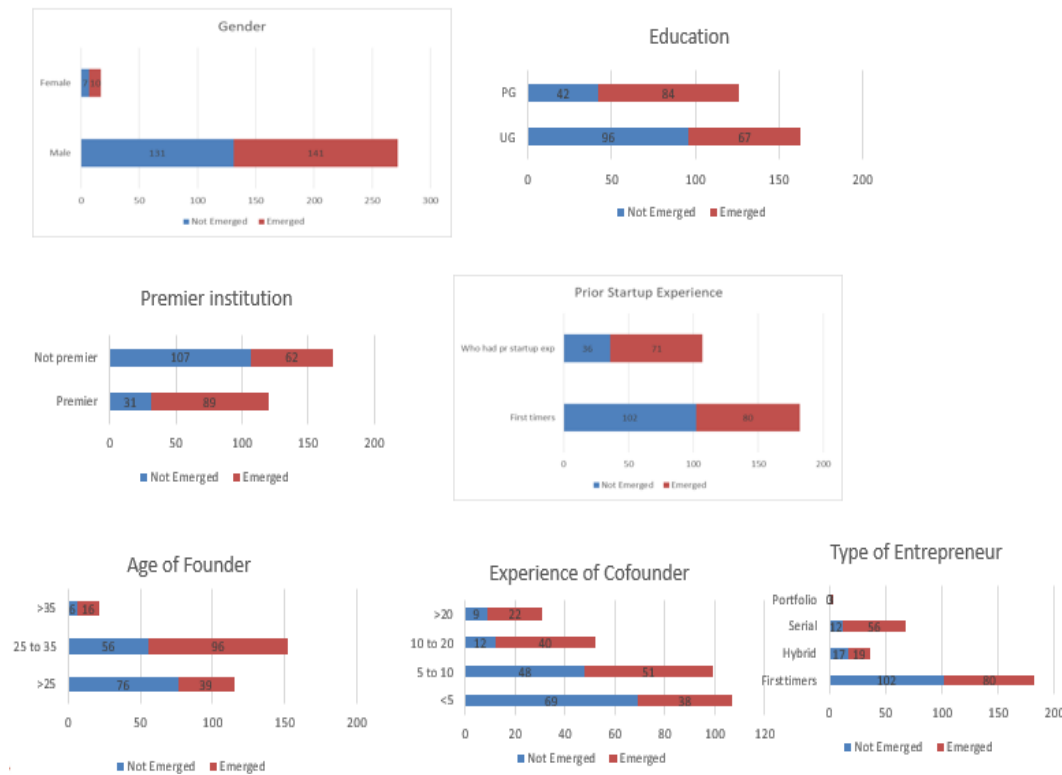
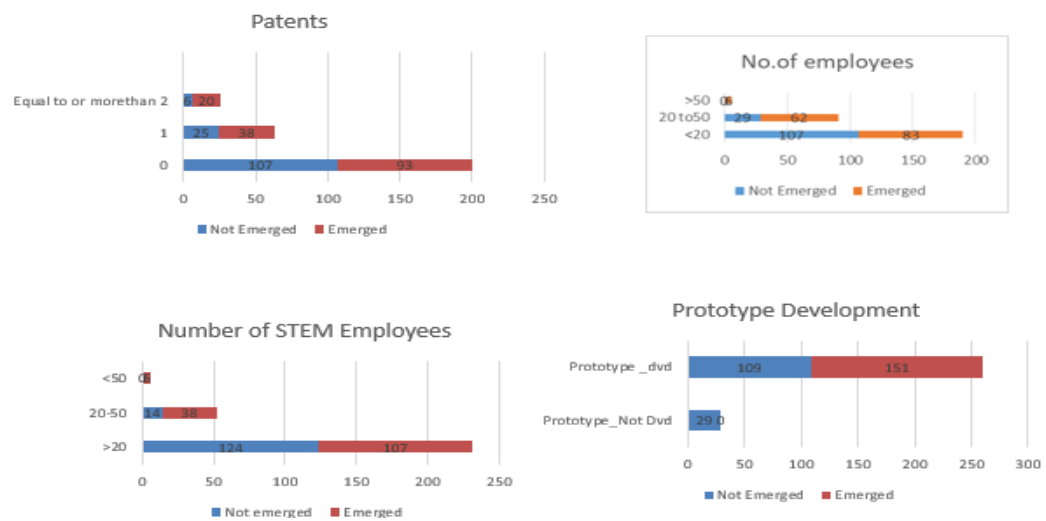


Figure 3.1 showing the entrepreneurial profiles and the Tech startup emergence

**Startup profile:** The start-up profile is interesting to probe to understand the role of start-up-specific features in emergence. The impact of patents on emergence was studied. The sample had 63 startups who had patents registered. The variable shows a good spread of employees in the startup ranging from 1 to 175. Most startups are innovation-driven which requires Science, technology, engineering, and mathematics (STEM) background employees. The sample had 231 startups with more than 20 STEM employees.



. Figure 3.2 shows the startup profiles and the Tech startup emergence

**3.3 Ecosystem:** The study considers the variables relating to the ecosystem the grant from the government was probed to check the impact on the emergence. The sample has a total of 52 startups that have received grants from the government and 237 startups that did not receive grants from the government. External funding support was also explored and it was depicted that,163 funded startups were included in the study. The impact of incubation and mentorship was also probed to study the impact on the emergence of the tech startups and it was found that there were around 101 startups have availed the incubation services.The study revolved around studying the various startup profiles, entrepreneurial profiles and ecosystem factors impacting the emergence of the startups.

**4 Methodology:**

The study used Kruscal-wallies test to differentiate the attributes among emerged and non-emergence of tech startups. Binomial regression to understand the attributes contributing to the emergence of the startup. Further sections are giving the detailed analysis of attributes contributing to the emergence of the tech startups

**4.1Attributes differentiating the startup emergence and non-emergence of the startups:**

By conducting a detailed statistical analysis to examine the research objective: Do the profiles of start-ups, entrepreneurs and ecosystems differentiate tech startup emergence or non-emergence?

The Kruskal Wallis (KW) test at a 0.05 level of significance was performed. The startup, entrepreneur profile and ecosystem attributes distinguishing the emergence and non-emergence of the startup are identified. The KW test was performed and the result presented in the table 1. Further Binomial regression method is used to study the impact.

Table 1 showing significance levels

Code	$\chi^2$	DF	P value
<b>Startup profile</b>			
Business Vertical	7.16	1	0.56
Business Segment	2.41	1	0.127
Target market	2.29	1	0.143
No. of Patents held	12.35	1	0.002
Average years of Experience of Cofounders	10.32	1	0.03
Average Age of Cofounders	0.35	1	0.56
No. of Employees	0.06	1	0.672
No. of STEM Employees	9.35	1	0

Product prototype developed	2.78	1	0.753
Own funds	3.46	1	0.25
<b>Entrepreneurial profile</b>			
Gender	0.81	1	0.321
Education	7.52	1	0.03
Type of entrepreneurs	6.47	1	0.147
Premier institution_ graduation	8.32	1	0.45
No. of Prior startups	2.36	1	0.02
<b>Ecosystem</b>			
Incubation	10.36	1	0.002
Government grant	2.05	1	0.01
External Funding	10.44	1	0.03

### 5.1 Result and Discussion:

Registration of the startup is the first and foremost important step in the journey of entrepreneurship. The test results show there is no significant difference in the startup emergence level concerning registration status as the P - value of 0.561. Registration is merely a state which does not add value to startup emergence. The resultant values ( $P < 0.05$ ) for patents held. There is significant difference exists between the emergences of startups concerning patents. It indicates that patents held have a greater impact on the emergence of the startup. The study depicts that there no significant difference exists between the emergence of startups concerning the number of employees. The P value is higher than 0.05 accepted level. Ultimately the emergence of the startup is not depending on the number of employees that the startup has. The number of Science, technology, engineering, and mathematics (STEM) based employees in the startups, has a significant difference in the emergence of the startups. As tech startups are innovation-driven businesses they require the presence of STEM employees will help the startup to focus on innovation and continuous improvement in the product and processes in turn helps the emergence of the startups. The target market has no significant impact emergence of the startups. There is no significant difference exists between startup emergence concerning business segments. The P-value greater than 0.05 results in acceptance of the null hypothesis. Few startups use a single segment whereas few startups use multiple segments, still, the rate of emergence does not show much difference among varied segments. There is no significant difference exists in the emergence of the startups concerning the startups with business plans. 99% of the data in the survey had business plans and very 2 startups that did not have clear business plans have not emerged. The p-value =0.64 which is greater than

0.05 indicates acceptance of the Null Hypothesis. The startups that have availed of incubation services have emerged in greater numbers when compared to the startups without availing the incubation services. The P-value 0.046 which is lesser than 0.05 results in the rejection of the null hypothesis. Availing the incubation increases the chances of the emergence of a startup due to a greater amount of facilities networking and access to the investment pitch facilitated and the right mentorship may result in the emergence of the startups in higher numbers.

Founders' education and the graduation from the premier institutions are having impact on the emergence of startups. The P-value is less than 0.05 indicating that there is a significant difference in the emergence of the startup concerning education and graduation from premier institutions respectively. The startups with founders with PG degree have emerged in greater numbers compared to UG degree holders. Startups are nurtured in the premier institutions in a better way compared to the other institutions. To study the further impact of startups, entrepreneurs and ecosystem impact on the emergence of the startups Binomial regression is used. The tech startups that reached their breakeven point is considered as the emergence of the startup. It is interesting to probe the ecosystem attributes like funding details and their impact on the startup emergence. As per the pecking order theory, Myers (1984) believes that a firm prefers internal sources of finance compared to external funding which comes with a cost. The study shows no significant difference in the emergence of the startup concerning the usage of its own funds. There is a significant difference in the emergence of startups concerning external funding. The P-Value indicates is external funding makes a difference in the emergence level of the startup. Startups are compelled to dilute their equity for getting external funding. The responses from survey reveals that, greater number of funded startups have emerged compared to the venture that are bootstrapped. On the Contrary, There are startups despite receipt of funds, have not emerged indicates that the either business model is not able to generate cash flows or poor financial control exercised by the firms. There is a significant difference in the emergence of the startup concerning government grants. The P-value indicates a significant difference. The startups that received a grant from the government have emerged in greater numbers compared to the startups that did not receive any grant from the government. Hence results can be interpreted as the startups that received grants from the government might have emerged due to the support and recognition, networking, and visibility obtained by the startups. The startup availed incubation services emerged in greater number.

Table 3 showing the binomial regression results

Attribute	B	S.E.	Wald	df	Sig.	Exp(B)
Emergence			18.24	2	0.001	
SP11	1.54	0.37	16.98	1	0.02	3.26
SP7	1.01	0.31	10.49	1	0.05	2.64
SP8	0.3	0.07	7.53	1	0.165	0.89
SP6	0.14	0.1	2.23	1	0.12	-0.52
SP12	0.34	0.07	2.01	1	0.002	1.1
SP15	0.21	0.08	5.3	1	0.01	1.32
ENT2	0.02	0.08	0.04	1	0.54	0.26
ENT3	0.05	0.14	7.92	1	0.034	1.38
ENT7	0.31	0.02	8.96	1	0.004	0.12



ENT4	0.15	0.13	2.89	1	0.005	0.25
ENT5	0.16	0.14	4.5	1	0.02	1.07
SP18	0.26	0.24	3.06	1	0.12	0.85
SP21	0.12	0.04	4.2	1	0.072	1.04
SP17	0.1	0.18	0.04	1	0.001	1.05
FC2	0.42	0.2	7.86	1	0.001	1.23
FC4	0.43	0.24	3.08	1	0.002	0.98
	Significant variables					

The Binomial regression identified key variable to be possessed by the startup owners for the emergence. The omnibus test results indicate that the regression Model is X2 significant with 572.6, DF 13 at, p value of 0.000. The model expressed by  $\text{Exp}(B)$  shows 12 attributes are statistically significant. Out of these, the ten attributes with  $\text{Exp}(B) > 1$  are accelerators and the six attributes with  $\text{Exp}(B) < 1$  are decelerators. This indicates statistically significant evidence to reject the null hypothesis and conclude that start-ups' emergence dependent on the attributes identified by the regression

The study results indicate the importance of startup profile, entrepreneurial profile and ecosystem in the emergence of the startups. The attributes like Number of patents held and STEM employees held have a great impact on the emergence of the startup compared to any other attributes considered for the study among startup profiles. Education of the entrepreneur, earlier startup experience, and education from premier institutions have a greater impact on the emergence of tech startups in the entrepreneurial profile. Among ecosystem funding, incubation services availed and grants obtained from the government had helped the startups to emerge faster.

## 5.2 Conclusion

From the literature, we have identified attributes like startup profile, entrepreneur profile and ecosystem facilitates for the emergence of the startup. The KW test distinguished statistically significant profile attributes and addressed the research objective. The attributes like number of patents held, the number of STEM employees in the startup, external funding support extended, and governmental grants obtained are having considerable impact on the emergence of the startups. In entrepreneurial attributes, the experience of the founder, prior startup managing experiences, networking skills, education, and graduation from premier institutions have a considerable impact on the startup emergence.

**5.3. Contributions:** This empirical study has identified start-up and entrepreneur profile attributes and ecosystem attribute that distinguished emerged start-ups from the startups that did not emerge

## 5.4 Implications:

The empirical study identified the contributing factors to emergence of the tech startups. The study proposes the prime implications of having a clear business plan, skilled team, STEM employees patents for emergence of the startups. The entrepreneurial characteristics along with the environment in which the startup is groomed decide the emergence of the startup.

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