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Exploratory Study On Challenges Faced By The Tech Start-ups In Access The Funds

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Abstract

For tech startups, raising funds is difficult because of the high R&D costs. This makes them tricky to present to traditional investors as complex technologies. Moreover, higher risk and uncertain returns are usually perceived by investors as stemming from these barriers, which can make it harder to attract funding. Data was collected from 113 respondents through the survey questionnaire, and the NVivo software was implemented in the case study. It analyzed the demographic profile and some basic descriptive statistics for the collected data. It also used EFA to learn the constructs by using SPSS. Besides that, it applied the SEM model to find R Square and therefore came to know the extent of the impact of independent factors on the dependent factor by knowing the P-values. A questionnaire was developed, and a pilot study of 8 startups was run using Nvivo to survey the challenges faced. Descriptive statistics indicated that though prototypes were not developed, skills and networking improved, with standard deviation indicating the margins. The independent variables, such as prototypes, social networks, experienced staff, and skills, have less effect on gaining external funding.

Conversely, innovation emerges as the most significant variable in the SEM analysis. Investors, in fact, are attracted to innovation for its potential to drive future growth. This suggests that deep-tech startups may not need to rely heavily on networks and staff skills in their early stages. The potential for further challenges to be uncovered through a more comprehensive study or case studies is an engaging prospect, highlighting the need for continued research in this area.

Keywords: - Funding challenges, Tech startups, Investment barriers, Innovation financing, Risk assessment, Early stage funding, Investor readiness, financial ace

Introduction

The paper bases its underpinning premise on a pecking order theory. Corporations must structure their funding sources in a pecking order. It was Stewart Myers and Nicolas Majluf who, in 1984, formally introduced the term. Business Internally financed retained earnings were the businesses' efforts to avoid debt and finance new projects using their retained earnings first. *Debt financing* is businesses turning to debt when internal funds fail to suffice. Equity financing is the last resort for business concerns. It dilutes ownership and can convey adverse messages to investors, leading to the wrong price for the company's stock.

"Exploratory Study on Challenges Faced by Tech Start-ups in Accessing the Funds" research paper is based on tech entrepreneurs' impediments while seeking capital. It becomes challenging to raise money because potential investors think of putting their money into complex concepts that require a lot of profit in the market. Investor perception about risk, among others, forms the core elements this study considers. The Literature review that sets the literature the variables for this research is Prototypes that reduce investor uncertainty by providing concrete evidence of concept (De Coster & Butler, 2005). The more robust the prototype is, the more confident the credibility will come with it to prove the feasibility of the invention. This will bring investors to start-ups. Social networks make start-ups more visible and credible by linking them with industry partners, mentors and potential investors (Hallen et al., 2014). Strong networks will attract ideas and incubation, and one will be prompted to apply for venture capital. The skills and skills of the founding team are highly inconsiderate of investment decisions (Franke et al., 2006). Strong teams are perceived to be better placed to implement strategies within the firm, thereby increasing the possibility of investment. Innovation is also attractive to investors due to its uniqueness and impact (Nanda & Rhodes-Kropf, 2016).

However, extremely risky and sophisticated innovations require sophisticated investors who understand their value in the long run. Financial constraints generally characterize technology start-ups because of high uncertainty and long development cycles (Hellmann & Puri, 2000). Investment is challenging to come by as it calls for the demonstration of market value and reduction of perceived risk. Strong networking abilities and teamwork skills complemented with a developed prototype increase the perceived value of innovation (Gompers et al., 2005). The factors combined make the start-up more attractive to external investors. The prepping of the market should also be looked into. It is most probable that investors would not pay much interest when deep-tech entrepreneurs cannot prove that their technology or product is ready for adoption in the market. This study will provide helpful information to investors, legislators, and entrepreneurs. Awareness of these challenges would thus also assist entrepreneurs to plan their fundraising better and be more strategic in negotiating the investment where necessary. The study will assist investors in perceiving lesser risks as it will give insight into how they could evaluate tech firms better. A study guides policymakers on the best means of establishing ecosystems that would favour the development of deep-tech businesses by providing resources and frameworks.

Literature Review

The research paper is based on the pecking order theory for a conceptual framework. Corporations should organize their sources of financing in a hierarchy, or "pecking order theory". In 1984, Stewart Myers and Nicolas Majluf proposed this concept. Internal financing (Retained Earnings) was the businesses' objective to avoid debt by financing new projects first with their own retained earnings. Debt financing is when businesses turn to debt when internal funds are inadequate. Equity financing is a last resort for businesses. We are examining the relationship in this context between the dependent variable, external finance, and the independent variables, prototype, social network, talents, experienced staff, and creativity.

As pointed out by studies like (J. Korpysa, Year: 2021) "New Financing Methods and ICT versus Logistics Startups," innovation and prototypes represent essential independent factors in attracting external financing. This study claims that the working prototype creates an impression of some feasibility of an idea in investors' minds, thus not being too hesitant toward it. As also pointed out in (Raffi et al., 2020), "The Role of Costs in Business Model Design for Early-Stage Technology Startups," innovation plays a great deal in business model design. As tech companies are, by nature, innovative entities, sometimes they need to explain very explicitly how their innovation would be turned into value in exchange for funding from external parties. Studies like (Jong Won's, 2016) "Promising ICT transfer fields for promotion of micro-startups" emphasize the value creation demonstrated by innovation transfer within ICT fields, thus paving the way for further funding and support to fund this research. The research (Ricardo et al., 2015) "The Design and Technological Innovation: How to Understand the Growth of Startups Companies in a Competitive Business Environment" this essay digs into the importance of technological innovation in the expansion of dog-eat dog markets.

Articles like "The Impact of the Lean Startup Methodology on entrepreneur-coach Relationships in the Context of a Startup Accelerator" (Yashar Mansoori, 2019) mention that firms can improve their access to external finance by adopting a well-planned approach to reviewing their business models and prototypes. "A configurational approach to entrepreneurial orientation and cooperation explaining product/service innovation in digital vs. non-digital startups" (Tobias, 2019) conceptualized the analyses of how entrepreneurial orientation and teamwork influence the creativity of digital as opposed to non-digital startups. This means that innovative firms, especially in digital fields, are more likely to get external funding because of the clear statement of their value propositions. The study by (A. Ghezzi, 2016), "A role for startups in unleashing the disruptive power of social media", shows how social media can help an entrepreneur increase their visibility toward the audience. In (Mina Akhavan, 2021), "Risk assessment modelling for knowledge-based and startup projects based on feasibility studies: A Bayesian network approach" is related to the issue of capital raising since firms are likely to attract investors so long as they appear to have a lower risk. In (Andreas, 2019), "Responding to the greatest challenges? A study on how ecologically conscious startups create value in the face of environmental issues looks into value generation in the startup. The study concludes that innovative and sustainable business models are

likely to appeal to impact investors because of the importance of social and environmental value creation. In "Changing Trends in Internet Startup Value Propositions, from the Perspective of the Customer", the author Min- ho Suh*, 2018 shows how, based on a study, entrepreneurs may have to update value propositions in line with changing customer needs. This is associated with innovation since it is apparent that firms with novelty propositions are more likely to be noticed and, hence, likely to receive investment. Ulrich Kaiser, 2020: "The value of publicly available, textual and non-textual information for startup performance prediction". The current study demonstrates the use of publicly accessible data to predict the success of startups and their attraction to investors. This points out that businesses are likely to be more attractive to outside investors if they apply innovation in order to show performance through sets of different data. In the conceptual framework, social networks are equally important, as exemplified by this study (Fritsch & Aamoucke, Year: 2013) "With a Little Help from My Friends? The Investigation of How Network Links and Learning Activities Affect High-Tech Startup Performance in Incubators." Robust social networks and well-crafted connections with mentors, advisers, and peers in incubators can significantly enhance a startup›s legitimacy and facilitate its acquisition of outside capital. Networking also reduces uncertainty, accelerates learning, and generates cash-ins, most especially for high-tech companies.

Studies such as (T. Oukes, Year: 2017) "Power in a Startup's Relationships with its Established Partners" detailing how relationships with established partners help startups get traction in a competitive marketplace and ignite increased investor confidence support this. Research like (Kerr et al. ‘s 2015) "The Role of High-Skilled Foreign Labour in Startup Performance: Evidence from Two Natural Experiments" can be well associated with the role of experienced workers and skills as independent variables. Tech startups require highly skilled and experienced staff at both technical and administrative levels. Based on previous experience, investors have more confidence that the team will accept challenging assignments and grow the business. In a study by Zhejiang Gongshang Year:2019, "Uncertainty in Financing Interest Rates for Startups," it is contended that qualified staff can also alleviate some of the risks due to unstable financial conditions, making the startup attract more investors. It is discussed in the article (by Fischer & Reuber Year 2014), "Strategic Choices: Accelerated Startups Outsourcing Decisions", and the paper by (Coad et al. Year 2013) ", Does Innovativeness Reduce Startup Survival Rates?" innovation is a joint product of new ideas and strategic business decisions. It is clear from these studies that though innovations are important for development and market differences, long-run security of investments demands that they go hand in hand with resource efficiency and strategic business decisions. Although innovation in itself may not guarantee survival, in a company with good strategic planning and innovation management, the chances of attracting investors increase tremendously. Moreover, it is predominantly the effectiveness of incorporating independent variables that significantly affect the dependent variable of external investment.

For instance, (Frederiksen & Brem, Year: 2017) "Digital Startups and the Adoption and Implementation of Lean Startup Approaches" quoted that lean Startup approaches that are based upon rapid prototyping and learned from early failure

benefit the founders in acquiring investor backing. Lean philosophies show great flexibility in responding to any direction. For this reason, outside investors find them attractive. For example, the paper by Cohen & Hochberg Year 2014, "The Effect of the Lean Startup Strategy on the Interplay Between an Entrepreneur and a Coach in a Startup Accelerator", suggests that mentoring and structured processes bring about improvement in potential funding of a startup. Studies like Park's 2017) "Effects of System Management on Value Creation and Global Growth in Born Startups," that go up to Korean startups, and Chellappa & Pavlou's: 2002) "The Role of Information Technology Usage on Startup Financial Management and Taxation," pointed out the importance of the external factors represented by market conditions, interest from investors, and economic environments. These studies show a great exposure requirement of internal skills that startups have to meet with the demands of the outside market for them to do well in the provision of funding.

Conclusion: A number of studies have been carried out in this context of tech companies, whereby several verified the conceptual framework of relations connecting prototypes, social networks, expertise, experienced personnel, and creativity with outside investment. These studies show how, while deep-tech startups have particular obstacles to overcome, such as extensive and risky development cycles, highly capable prototypes, active social networks, knowledgeable staff, and smart innovation management significantly improve the chances of investment. In addition, the ability of the firm to raise capital is influenced by external factors such as investor perceptions and the preparedness of the market. There is also an understanding benefit to the entrepreneur, investors, and policymakers since it provides them with the information they need to alter the tech venture funding ecosystem.

Model and Hypothesis Development

- Dependent Variable: Access to External Fund
- Independent Variables: Prototype, Social Network, Skills, Experience staff and Innovation.

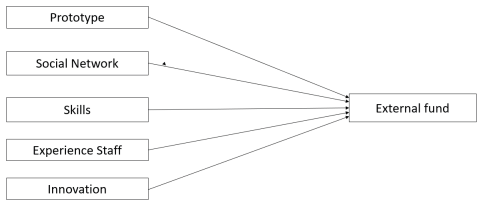

Figure showing Conceptual Framework

The above section depicts that a number of factors are influencing accessing the external fund. The structural equation model or SEM, is where the factors mainly. There is no assurance from the availability of a prototype that a startup receives funding because investors care much more about whether or not the technology could expand and succeed in the marketplace. It demonstrates an idea, but if the technological factor is not brilliant or practical, it won't attract money. Social Network: Connections help but, in deep-tech, ground breaking ideas can compensate for the lack of good networks. In traditional startups, personal networks are secondary to the capabilities of being innovative and promising the market. No strong proposition technology brings no attractive network to attract funding. No influence on external funding. The skill level of a startup team

has no relevance with funding decisions because investors care much more about how unique and useful the technology is rather than the individual skills of the team members. Even if the team is very skilled, they may not get funding if their technology isn't special or competitive enough. Hence no impact on external fund

Experience staff: Having experience staff doesn't really help in getting funding because tech investors care more about how new and unique the technology is. Even if a team has many years of experience, it won't matter much if they do not have some innovative idea. So, in this case, the experienced staff does not have a big effect on funding. Innovation: Investors invest in long-term projects where the potential of massive return is great, and innovation is the key signal of future growth and success for raising capital. A unique and groundbreaking idea can attract much more money, even if a startup does not have strong connections or a highly experienced team. So, it impacts external funds.

Methodology

According to the research aim an ordinal scale was used to develop the questionnaire. This scale is going to measure categories that are ordered but have non-equal distances between their values. Instead of defining differences in objects, objects rank in a particular order (such as first, second, third). Another scale that could be used is the Likert scale, which is also a kind of ordinal scale widely applied in questionnaires to measure the attitudes and opinions of respondents. The response gathered is from the analysis of the major aspects the tech startups face most of the challenges that feature raising access to funds. This research is related to the case study about three objectives being considered to study the challenges that tech startups face in accessing funds and their determinants and recommend policy roadmaps for fund access of the startups.

It has been followed by the study on the 1st objective towards which personal interview was conducted with 8 startup companies. A case study was run based on these startups using NVivo software to gain insights into challenges resulting in operation expenses, research and development, etc. The objective was to examine the factors through descriptive statistics, resulting in a mean prototype that was less developed but social networks and social media much developed. Plotting standard deviation using SPSS software And EFA analysis represented eight factors having 3 to 5 variables and SEM analysis of skills, social network, prototype, and innovation being independent variable and external fund dependent variable, which results in innovation having an impact by using SPSS software and Smart PLS. Objective three gives the policy recommendation for fund access of startups, such as for investors how tech startups can better communicate their value to potential investors and build strong investor relationships. Entrepreneurs are to study how incubators and accelerators impact access to funding and growth for tech ventures and participate in a global study comparing funding challenges and opportunities for tech startups from different countries or regions in order to identify best practices.

Results

It is a research paper based on the pecking order theory. Corporations should

arrange their source of funds in a hierarchy or "pecking order theory." Internal financing (Retained earnings), debt, and equity financing are the last choices for businesses. Tech startups create technology but are not able to get the money required; helping them solve this problem becomes important. They include market validation, weak business models, and poor team dynamics. We can support their growth and bring more new ideas to life. First, based on objectives, a questionnaire was designed with questions to which responses were collected, considering the major aspects as challenges faced by tech startups in accessing the funds; later, the responses were converted into a Word file. Further, using the NVivo software, further analysis was done to determine the insights of the challenges that resulted, as shown below. Analysis is presented in the form of a word cloud, including customer acquisition cost, technology, etc. The other word tree offers marketing research, product development, etc.

A pilot study was conducted with 8 cases of startups represented data, such as IOT and eductech being the highest types of startups, challenges faced in operating activities and research and development. Main result of challenges when data collected like operating activities, research and development, and resource allocation. Other challenges faced include research and development manufacturing, loan sanction, and economic downturns. Data collected was represented in demographic formatfor a better understanding of the data. It provides data collection for tech startups, where most of the high-in-number startups were IOT and the lowest NANO tech. Cofounders more was 54 & less 1, getting funding was 100%. Out of 100%, only 10% went for external funding, with the rest going for self-funding. Incubation support: 44% of the startup received and 56% not received. Almost all startups had a business plan. External funding support 58% of the company received, 42% not received. Grant 27% companies received & rest had not received. The average age of cofounders ranged from 30 years (21%) - to 64 years (46%). Introduction to SPSS software plotting Mean & Standard Deviation were in the mean prototype as decreased social media & networking as increased, And standard deviation plotted were highest being 1.50 and lowest 0.50 as below.

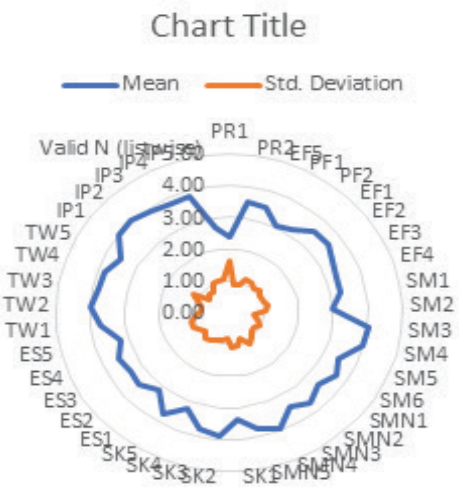

Figure of Mean and Standard Deviation

It is the Exploratory factor analysis, which had eight factors of variables ranging from three- to five, like experience staff, social network, social media, external fund, provident fund, skills, innovation and prototype. Next was SEM analysis, which is required to analyse relationships between variables that cannot be directly observed or measured. The variables in this paper were prototype, skills, social network, experienced staff, and innovation as independent variables, while the dependent variable was the external fund. Therefore, such an analysis is done to get to know the impact of

these factors on the startup's external funds so that the area where improvement can be done resulted in prototype, social network, experienced staff, and skills have low impacts compared to innovation.

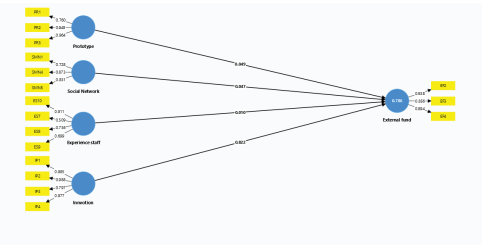

Figure Exploratory Factor Analysis

- So found R- Square, construct reliability analysis for dependent variables having different independent variables
- **R-square**

TABLE 4 R- square

	R-square	R-square adjusted
External fund	0.786	R.778

R-squared gives the percentage of variation in dependent variables that can be explained by independent variables. This shows the goodness of the fit of the model. $R^2 \geq 0.70$: Strong fit.

- **Construct reliability**

TABLE 5 Construct Representing Reliability

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Experience Staff	0.781	1.200	0.813	0.530
External fund	0.879	0.915	0.925	0.804
Innovation	0.955	0.976	0.968	0.885
Prototype	0.874	0.925	0.924	0.803
Social Network	0.744	0.771	0.853	0.661

Reliability of a construct in SEM is determined by how the latent variable can be measured consistently through its indicators, or observed variables, according to.

- **Composite Reliability (CR)-**

CR ≥ 0.70: Acceptable reliability (most often used standard)

- **Cronbach's Alpha (α) –**

Also measures internal consistency but it is not as versatile as CR. α ≥ 0.70: Good reliability.

- **AVE(Average variance extracted)**

Below was the chart showing average variance extracted were experience staff had less impact along with Prototype and Social Network compared to Innovation having more impact in accessing the funds.

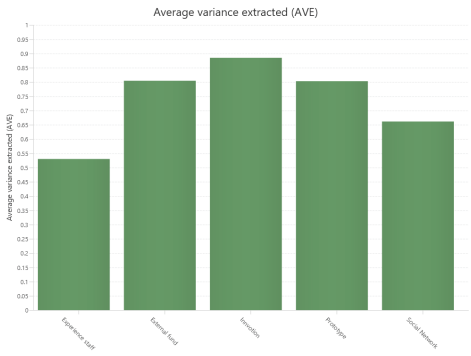

Figure of Average Variance Extracted

- **Discriminant Validity Fornell-Larcker Criterion**

The square root of the Average Variance Extracted (AVE) for a construct should be greater than the correlation of that construct with any other construct in the model.

TABLE 6 Discriminant Validity Fornell Larcker Criterion

	Experience staff	External fund	Innovation	Prototype	Social Network
Experience staff	0.728				
External fund	0.594	0.897			
Innvotion	0.657	0.885	0.958		
Prototype	0.655	0.851	0.941	0.896	
Social Network	0.257	0.231	0.210	0.172	0.813

AVE > inter-construct correlations: Satisfactory discriminant validity.

Policy roadmaps for the fund access of startups:

Tech startups are likely to articulate their value better to potential investors and build deeper investor relationships. Entrepreneurs would learn about how participation in incubators and accelerators affects funding access and growth for tech ventures. International benchmarking of funding challenges and opportunities for tech startups in different countries or regions to harvest best practices. Some of these strategies can improve the startup environment, but not every attempt is a winner, so policymakers are cautioned to be alert to any surprise problems that could thwart innovation.

Results:

Understanding of the issue by learning the deep challenges facing tech startups.

First of all, the questionnaire design converted responses into a Word file and analyzed them through NVIVO. Word cloud represents challenges faced during access to funds, such as the cost of technology, customer acquisition cost, and networking challenges. Treemap's overall challenges faced in accessing funds are competition, lack of marketing research, skill sets for product development, and cost of software development. The problem of start-ups that are majorly funded with personal money. Most of the problems experienced in the operating activities, R&D, and optimum utilization of resources resulted in the lack of access to funds. Other difficulties have been matters of R&D manufacture, loan sanction, economic slowdowns, reinvestment in asset & RM, high interest rates, collateral assets, etc.

R- Square, construct reliability analysis for dependent variables having different independent variables.$R^2 \geq 0.70$: Strong fit, Composite Reliability (CR)- CR ≥ 0.70: Good reliability (Mostly accepted benchmark). Cronbach's Alpha (α) yielded α ≥ 0.70: Adequate reliability. Average variance- The bar graph shows that experienced staff had a lower influence with Prototype, skills, and Social Networks had a relatively lower influence, while Innovation had the most significant influence on gaining the funding. Discriminant Validity Fornell-Larcker Criterion- The square root of the Average Variance Extracted (AVE) for a construct should be greater than the correlation of that construct with any other construct in the model. Hence, AVE > inter-construct correlations: Adequate discriminant validity. Therefore interpreted.

Findings

Questionaries were designed, and connected responses from startups, converted into Word files, and a case study was run through NVO to get a word tree representing challenges faced like cost acquisition

and technology. Further, I interviewed different types of startups. Most startups high in number were IOT, and the lowest was NANO tech. Co-founders were 54 and less than 1, and receiving funding was 100%, etc. and also got to know other challenges facing and working on the same. I created a demographic profile in a pie chart to better understand the situation. Then, run SPSS software to see an overview of plotting mean and standard deviation in the mean Prototype as social media and networking increased. The standard deviation plotted was highest at 1.50 and lowest at 0.50.

SEM analysis is done to find variables(independent) having an impact on external funds (dependent). Prototype, social network, experienced staff, and skills have less impact compared to innovation. Same Prototype: of some use but typically of lesser importance in deep-tech, where the concept may be much more valuable than the actual product, especially at later stages. Similarly, Social Network relationships are helpful, yet the importance of a network may give way to revolutionary ideas in tech. Experienced Staff and Skills: These are important to the execution but not quite as critical as having a really innovative product or solution in a deep-tech area. And Innovation: Investors prefer long-term projects where there is a huge potential for return on investment, and innovation is the primary indicator of future growth and success while accessing finance.

Conclusion

Taking this study to see the challenges tech startups face startups in accessing the funds listed in Bangalore, the research paper is based on the pecking order theory. Corporations should arrange their source of financing in a pecking order, or "pecking order theory". In 1984, Stewart Myers and Nicolas Majluf developed this theory. Internal financing, also known as Retained Earnings, was how businesses tried to resort to debt financing as little as possible by first financing new projects using retained earnings. Debt financing is when businesses resort to debt financing whenever their internal funds are inadequate. Equity financing is a business's last resort to raising capital, which dilutes ownership and could pass the wrong signals to investors, hurting the company's stock price. The study used to explain this paper is about the impact of prototypes, social networks, experienced staff, and innovation on external funds. In general, it hypothesizes that there is a substantial effect on innovation as opposed to prototypes, social networks, and experienced staff.

SEM analysis with variables again on the graph proved that innovation is an indirect variable impacting external funds as investors like the unique and long-run product and are critical factors for attracting funds—no impact independent variables. A prototype may still be in the development stage, and investor thinks twice; social network people are not familiar with tech technical expertise, and innovation matters more than connections also, experienced staff alone cannot contribute if innovation or technology is not that compelling. This means that the company has to engage with variables that do not affect the company to enhance its efficiency and performance. However, this process is not as easy as it looks, although the company has to follow specific methods for the availability of funds, which has several vital benefits that can put the company back on the path to financial health and stability.

Thus, tech startup startups face a relatively complex environment wherein financial, operational and resource-related challenges altogether affect a startup's capability to gain funding and scale. While there have been some successes by a few startup startups in developing skills and networks, the ecosystem as a whole urgently needs support. This support, leading in providing access to necessary financial resources and incubation support, is crucial to facilitate innovation and growth. The audience's involvement is not just beneficial, but necessary for the success of the tech startup ecosystem.

Suggestion for future work

The particular types of risk tech startups bear, which may lead to a long timeline before reaching commercialization, entail a great need to innovate financial support systems. Encouraging venture capital investment will be one recommendation since it will probably increase the number of creative firms through incentives for investors and entrepreneurs alike. Academic institutions should also play a significant part in supporting entrepreneurs by acquiring knowledge, skills, and support. Governments can promote collaboration between academia and the private sector that can unlock expertise. If further analysis of this study is expanded to other regions outside Bangalore for the solution, it can further explore how startups show greater value to investors. Further case studies focused on the challenges of tech startups can bring more insight into overcoming funding barriers.

Limitations

It focused only on tech startups in Bangalore, data from 113 out of 2000 startups, 1200 of which exist in Bangalore. Small firms face a challenge in raising external debt or equity finance as many are limited to the personal wealth of owners and pricey; not even venture capital can be modestly priced, especially in bank-based economies such as Italy, which makes fundraising even more challenging in developing economies. Some startups are finding alternative means with equity-based crowdfunding, for instance, that bridges the gap in financing with some conditions.

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