EXPLORING THE STATISTICAL RELATIONSHIP BETWEEN FINANCIAL SUPPORT MECHANISMS AND INNOVATIVE OUTPUT AMONG INDIAN STARTUPS

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ABSTRACT

Over the past few years, Indian startup ecosystem has been developing exponentially on the basis of entrepreneurship, technology, and policy support. Nonetheless, availability of sufficient financial resources remains a very dominant factor that influences startup performance especially in the aspect of innovation. This paper does the statistical analysis of different financial support structures available of the innovation output of the Indian startups like, public and private institutions, government schemes, venture capital, and angel investment. The study was carried out on a sample of 250 start up founders and executives of various industries and regions in India through a structured questionnaire. In the research, various statistical models have been used to determine the relationship that existed between funding type, funding stage, perceived access to finance, and the components of innovation indicators like product development and process improvements, patent activity, and market expansion will include chi-square tests, one-way ANOVA, Pearson correlation and t-tests. These data were administered using Likert-scale choices to reflect the subjective impressions of the attainability of finance and its ability to influence R&D, innovative activities of the workers, and investor interest. The results indicate that there is a considerable relationship between the nature and state of financial support and the degree of innovation output of startups. The higher scores regarding innovation were recorded by those start-ups that had institutional support and had graduated funding levels as compared to the boot strapped ones. The study highlight that easy, institutionalized and age-appropriate funding methods are very crucial in facilitating innovation-led expansion in the Indian startups. They are of practical significance with policymakers, financial institutions and startup enablers in producing more comprehensive and powerful financial systems.

Keywords: Indian startups; financial support mechanisms; innovation output; funding stage; venture capital; institutional finance; startup ecosystem; statistical analysis; access to finance; entrepreneurship.

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I. INTRODUCTION

India has turned out to be one of the most vibrant and energetic start-up ecosystems on a global front. As the country has been witnessing a rising spread of the digital environment, funded by the policy facilitated by campaigns such as Startup India, and with a booming number of young entrepreneurs, the number of innovative developments in technology, healthcare, education, and fintech ventures is skyrocketing in India. In spite of this momentum, accessibility and efficiency of finance mechanisms required to support and grow innovation tends to be one of the most unswerving challenges that face start-ups.

Competitive advantage is one of the most accepted terms in the Middle Circle of Start-ups in respect to innovation. Nonetheless, innovation is a resource demanding activity as it in most cases involve huge spending in research and development (R&D), talented human capital, physical assets as well as market testing. By definition, startups work in a risky high-uncertainty environment with minimal internal funds. Consequently, they are only able to innovate with respect to the availability of external financing in the form of timely and appropriate funding by banks, government schemes, venture capitalists and angel investors.

There are multiple ways to finance the company in terms of financial opportunities available,

nevertheless, real access, reach, and perceived utility of such mechanisms change drastically across startups, based on the age, geographic location, industry, and development stage. Moreover, few empirical studies have been carried out so as to statistically determine the manner in which various financial support structures may affect the performance of Indian startups in terms of innovation. "It is towards this gap that the study aims at filling as the author examines the connection between financial institutions and innovation outcomes providing a data-based approach in assessing patterns, degrees of connectivity, and the practical implications of startups development and policy design."

II. REVIEW OF LITERATURE

Ngoc, Phung. (2022). Along with that, the policy-making of other types of non-institutional finances in start-up such as the operating policies of angel investors, acceleration programs, and investment groups also require the consideration of scientific perspective so that the policies issued support efficiency, the establishment of entrepreneurship in the field of innovation and creativity in Vietnam in the right direction and to attain the objectives aimed. The article is simply an attempt to list down some of the researches that were made with regards to financial assistance in the entrepreneurship in terms of innovation and creativity across countries and particularly on the emerging economies. Based on it, lessons learned may be drawn and a theoretical background to researches in VN may be developed. According to EY's 2018 Asian Fintech Panorama Report, Vietnamese startups have poured $129 million into fintech, and 47% of this fintech operates in the payments sector (the highest in Southeast Asia). It is also a chance of improving the systems of commercial banks using technology in payment and transactions.

S., Malashree & Gupta, Ruchi. (2024). In a quest to analyze the critical knowledge of other sources of finance needed at various levels of development, the study used qualitative research approach, and it involved 9 entrepreneurs of diverse age bracket, gender and sectors in Bengaluru, India. The interviewees viewed the interview on telephone and video conferencing to shed more light on the preference of different sources of finance by the entrepreneur. This study can identify the trends, issues, and opportunities that are peculiar to these ventures as it analyzes the method of finances, which is preferred by these entrepreneurs. The results are to be used within the scholarly community as well as practice of entrepreneurial finance and may have the great significance in terms of policy, investment, and intentions of entrepreneurs. Based on the information given by the entrepreneurs, it may be observed that a great number of entrepreneurs have started with their personal savings and their family and friends. The bank and financial institutions is the other source that they have relied on and these institutions finance the business at minimum rate of interest and two of the entrepreneurs said that taking the funds is tedious because of the formalities to be completed and may take long time. Business men seek large sources of funding at a low mortgage rate; it was also highlighted that most entrepreneurs have failed in the past because lack of understanding in terms of finding the right source of money at the right time to satisfy their need. As far as finance is concerned; when to raise, how to raise and where to raise the finance is a big issue and the financial needs also depend upon the stages of the business. Here another crucial thing people were talking about is the support that they have been giving by its customer in the long run which has also helped them in terms of finance on time basis as well.

Errico, F., Messeni Petruzzelli, A., Panniello, U. and Scialpi, A. (2024). In this paper, the author undertakes to investigate how two drivers: received fundings, and interaction with the specialized competences possessed by the managerial board influence the R&D activities since start-ups undertake them. In the present paper the author evaluates hypotheses on a program of 405 innovating start-ups that were introduced in Italy and registered in the official database of the Chamber of Commerce. This paper bases its study on the cost of R&D as the proxy of innovative activity of start-up, and the authors took survey of the quantity and the total volume of grants given to them and the existence of high qualified staff in the management board of them. As I can see in the analysis, the number and the total amounts of the grants which start-ups obtain have a positive influence on the innovative performance. It applies to the combination of the sum of grants with the existence of high qualified team in the management board as well.

Ms. Monisha Chaudhary and Dr. Renu Sardana. (2025). This research paper explores the transformative role of startups in the economic growth of India, employing a case study approach to analyze specific successful ventures such as Flipkart, Zomato, Ola, and Byju's. Over the past decade, India's startup ecosystem has flourished, emerging as one of the largest globally, driven by factors such as a young population, technological advancements, and supportive government policies. The paper evaluates the contribution of these new firms to employment, innovation, and growth in

GDP besides dealing with the issues that they have to contend with consisting of rules and regulations as well as rivalry in the marketplace. Using the case studies of the business models and competitive advantages (moats) of these startups the research helps point out the fact that they play an important role in promoting an entrepreneurship culture and solving local socio-economic problems. The findings underscore the necessity for continued policy support and a conducive ecosystem to maximize the contributions of startups to India's economic landscape. Conclusively, this paper will argue that the future of the Indian economy cannot be complete without the startups, which are bound to reach success on account of their capacity to innovate and change in a favorable structure.

Jung, J., Ko, H., & Kim, Y. J. (2025). The present paper is empirical research on the mediating and moderating effects of absorptive capacity, appropriability, and openness on the association between innovation activities and sustainability performance of startups. Based on the Korean Innovation Survey 2018, a structured measure in line with international standards in monitoring innovation activities, we study 278 manufacturing firms that are young. According to the regression analyses, product innovation and organizational innovation are important constructs that relate with sustainability performance. In addition, absorptive capacity mediates the connection of this form of innovation and sustainability performance. In order to investigate the contingencies that affect such relationships, we examine appropriability (quantified by the mechanisms of protection) and openness (measured by external partnerships). When opening is moderated, then the direct relationship between product innovation and sustainability performance is enhanced to a certain point after which it is reduced by openness. The role of organizational innovation in the sustainability performance is entirely mediated through absorptive capacity where appropriability has moderated such mediation by increasing efficacy of absorptive capacity under low protection mechanism. The results of the study help to make research contributions to the topic of sustainability because they reveal the fact that the sustainability initiatives of startups are led by the activity of innovation filtered through the concept of absorptive capacity and under conditional prerequisites of factors like appropriability and openness. The research settles the paradox of openness in the startup contexts where they have triple bottom line aims. In practice, the study allows corporate leaders and policymakers to understand how they can develop absorptive capacity internally by seeking external knowledge and appropriately balancing appropriability mechanisms and collaborative strategies that would maximize the effects of sustainability.

III. OBJECTIVES OF THE STUDY

1. To determine the nature of the financial institutions that the Indian startups address and compare how much this particular financial institution is available and accessible in one sphere and in other regions.

2. To make an estimation of the level of funding that startups have gotten and see how such level directly shapes their abilities in carrying out innovation related activities like product development and process improvements.

3. In order to study the correlation between the perceptions of access to finance and innovation capacity with the help of statistical tools to state significant correlations.

4. To compare the effect of financial backing and non-financial startups on the level of innovation output and also ascertain the level of impact of institutional funding on innovation performance.

5. inform with the help of the data and policy recommendations towards the improvement of the supportive mechanisms of financial support that would boost the innovation ability of Indian startups.

IV. RESEARCH METHODOLOGY

4.1 Research Design

The research design used in the study is quantitative, descriptive, and correlational on the basis of investigating the connection between finances support mechanism and output in innovation among the startups in India. "The study aims at evaluating the patterns, relationships, and distinctions according to demographic characteristics, the type of financial institutions, fundraising stages, and a sense of financial accessibility." The design can be used to test the hypothesis and make the empirical generalization of data on a representative sample of startup founders and executives.

4.2 Population and Sample

The population group that will be targeted through this research covers the startup founders, co-founders, CEOs, and major decision-makers who work in different fields across India. The sample size consisted of 250 respondents and the selection of sample was made through purposive sampling so that the startups in various phases of their lifecycle and geographical variations, including metro, Tier 2, and rural areas could have been ensured. The sample was deliberately heterogeneous in terms of both characteristics of the sector to which a company belonged (e.g. IT, health, fintech, retail) and financing (bootstrapped, seed-financed, VC-backed).

4.3 Data Collection Instrument

A questionnaire was prepared and used to obtain primary data by means of a structured questionnaire. There were three large sections of the questionnaire:

1. **Demographic Information -** in the form of gathering gender, age, educational background, location and sector.

2. **Startup Profile and Access to Financial capital-** which includes the age of the start-up, kind of institution, the stage of funding, and the level of satisfaction.

3. **Innovation and Finance Metrics -** a set of items, which can be described as measuring on a 5-point Likert scale the access to finance, the influence of finance on the innovation, as well as an assessment of effectiveness of financial institutions.

To the extent possible to obtain the desired results, the pre-test of the questionnaire will be conducted on a small group of respondents (n = 15) in order to clarify, make questions reliable and relevant. Adjustments were done and then it was administered.

4.4 Data Collection Procedure

The collection of data was identified through Google Forms, email surveys and such offline techniques as field visits, incubators, networking events or as long as two months. All the subjects were given an informed consent, and they were made anonymous to give sincere responses. The research followed the ethical requirements of a research and all the subjects participated without coercion and discovered that no personal information could be revealed.

4.5 Variables and Measurement

In conducting the study, the researcher employs well-articulated independent, dependent and control variables to establish the relationship existing between finance and innovation.

The first independent variable is the type of the financial institution approached that is classified as public banks, privately owned banks, government schemes, venture capital firms, angel investors and so on.

The second independent variable consists of a stage of funding obtained. It is viewed as an ordinal variable and it has the categories as seed/pre-seed, Series A, Series B or above, and bootstrapped.

The third independent variable is perception to access to finance. This was on a 5-point Likert scale whose ease or difficulty was captured in the acquisition of financial assistance.

Innovation output is the dependant variable. It contains such indicators like the development of new products, process enhancement, patenting and new market entry.

These are the different control variables which are the age of startup, business category, location (Tier 1, Tier 2, rural) and the educational qualification of founder. Such variables enable one to reduce bias, and consider situations that are diverse.

4.6 Data Analysis Techniques

The analysis had been performed by gathering information and by the application of IBM SPSS (Version 26). The demographic profiling was done using descriptive statistics (frequency, percentage, mean and standard deviation). There were inferential statistics which involved:

- **Chi-Square Test of Independence** – to conduct association study of type of institution and level of innovation.

- **One-Way ANOVA** – to demonstrate variation in scores of innovations between the stages of funding.

- **Pearson's Correlation Coefficient** – to evaluate the correlation of the innovation ability with the perceived level of accessibility to money.

- **Independent Samples t-Test** – to compare the scores of innovations in

startups that receive financial aid and the ones that do not.

The test was found to be significant at 0.05 level (95% level of confidence). The interpretation of results was carried out to evaluate both statistical and practical implications of the Indian startup ecosystem.

4.7 Reliability and Validity

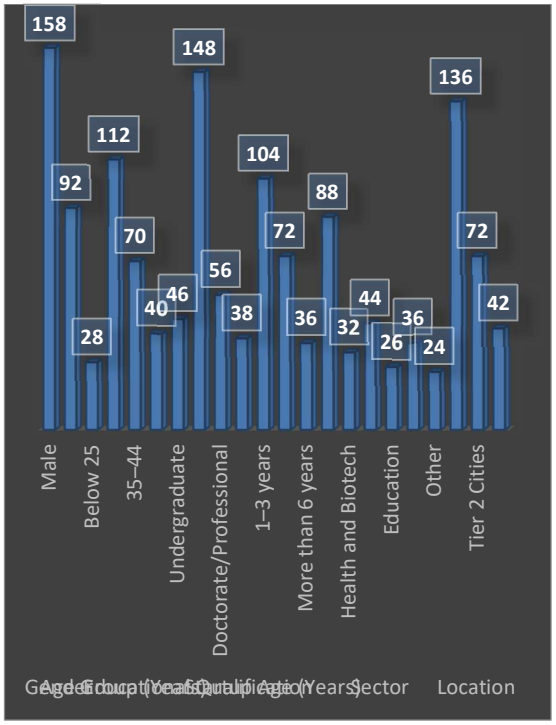
Cronbach Alpha internal measurement was used to test internal consistency of Likert-scale items and its results came back with more than 0.75, which was a high score. Expert review Content validity of the questions was maintained by the startup mentors and the academics of the finance field. Pilot testing made it easy to modify the ambiguous items that were present and make sure that everything was measured as expected.

V. ANALYSIS AND INTERPRETATION

Table 1: Demographic Profile of Respondents

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	158	63.2%
	Female	92	36.8%
Age Group (Years)	Below 25	28	11.2%
	25–34	112	44.8%
	35–44	70	28.0%
	45 and above	40	16.0%
Educational Qualification	Undergraduate	46	18.4%
	Postgraduate	148	59.2%
	Doctorate/Professional	56	22.4%
Startup Age (Years)	Less than 1 year	38	15.2%
	1–3 years	104	41.6%
	4–6 years	72	28.8%
	More than 6 years	36	14.4%
Sector	Technology (IT/Software)	88	35.2%
	Health and Biotech	32	12.8%
	FinTech	44	17.6%
	Education	26	10.4%
	Retail/Consumer Products	36	14.4%
	Other	24	9.6%
Location	Metro Cities (Tier 1)	136	54.4%
	Tier 2 Cities	72	28.8%
	Rural/Tier 3	42	16.8%

The demography of respondents shows a large, representative and nonhomogeneous sample.



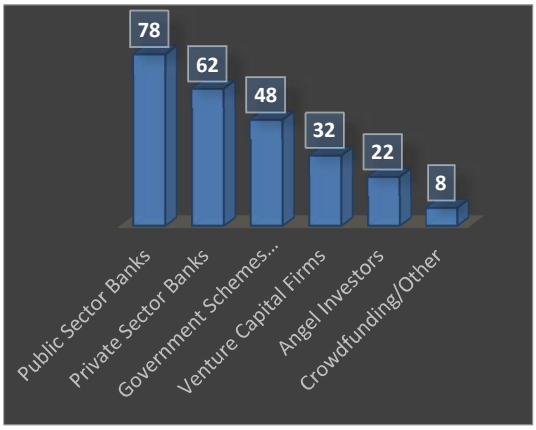
Most of the respondents were male (63.2 percent), but there was also a high proportion of female (36.8 percent), which demonstrated the increasing gender presence in the Indian startup business. The most prevailing age group was 25-34 years (44.8%) which indicated that entrepreneurial activity was youth-based. The educational status was also quite high, with 59.2 percent of the population possessing postgraduate degrees and 22.4 having professional or doctoral qualifications and shows a high skilled pool of respondents. The vast majority of startups were at the early to mid-stages of the development, 41.6 percent had 13 years of age. In terms of the sectors, IT/ Software led the pack with 35.2%, followed by FinTech and retailing, whereas geographic-wise, over 50% of startups originate in metropolitan (Tier 1) cities (54.4%), although Tier 2-3 regions are also relatively well-represented as well, highlighting the fact that geographic diversification is occurring.

Table 2: Type of Financial Institution Approached for Funding

Institution Type	Frequency	Percentage

	(n)	(%)
Public Sector Banks	78	31.2%
Private Sector Banks	62	24.8%
Government Schemes (e.g., SIDBI, Startup India)	48	19.2%
Venture Capital Firms	32	12.8%
Angel Investors	22	8.8%
Crowdfunding/Other	8	3.2%

As per the data, it has been observed that, the most approached institutions to finance startups are the public sector banks (31.2%), the second instance came up in the form of the private sector bank (24.8%) and lastly the government schemes (19.2%).

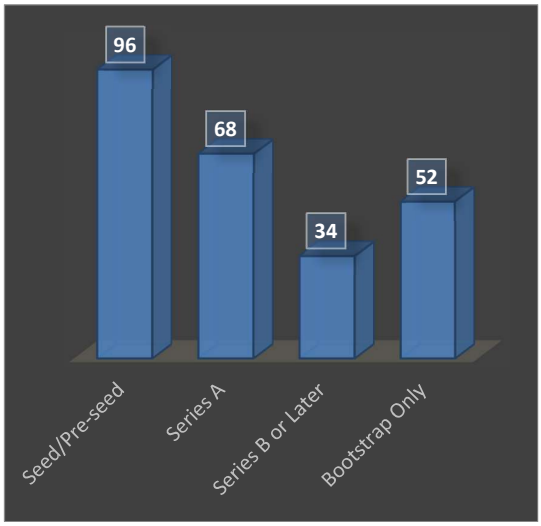


The less common source was venturing capital firms and angel investors in which only 12.8 and 8.8 percent of them were contacted respectively, and it is likely either there was little access or there were perceived barriers. Relatively low use of alternative finance in India has been identified with the revelation that just 3.2 percent of the respondents tapped into the crowdfunding or other sources. In general, the participation of different non-traditional players in the institutional finance is taking shape, but the traditional banking channels still dominate the field.

Table 3: Stage of Funding Received

Funding Stage	Frequency (n)	Percentage (%)
Seed/Pre-seed	96	38.4%
Series A	68	27.2%
Series B or Later	34	13.6%
Bootstrap Only	52	20.8%

The most significant portion of the startups among the respondents was found on the seed or pre-seed level of funding (38.4%), which means a producer of the responses was at an early stage of financial activity.

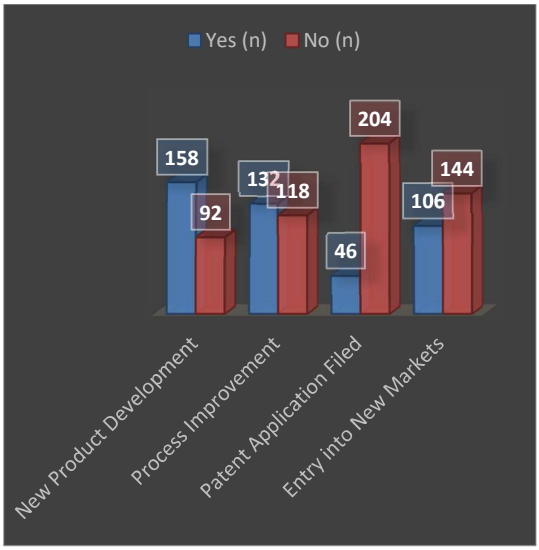


Regarding the financing stage, approximately 27.2 percent had advanced to Series A investing, and 13.6 percent was to the series B or beyond an indicator that attrition of startups increases as they grow. It is important to note that, 20.8 percent claimed to solely depend on the bootstrapping, which showed either lack of access to the formal funds or desire to sustain themselves. This is how the early-stage environment of most startups features the importance of the availability of funding above seed and early-stage investments.

Table 4: Innovation Output by Type (Past 2 Years)

Type of Innovation Output	Yes (n)	No (n)
New Product Development	158	92
Process Improvement	132	118
Patent Application Filed	46	204
Entry into New Markets	106	144

Most startups (63.2%) indicated having used new product development, which reiterates on the importance of coming up with workable products in the market. Logistics amelioration was also very high (52.8%), which was an indication of operation invention. Nonetheless, they have filed patents in only 18.4 percent making it possible that there is a gap between the innovation activities and proper intellectual property protection activities. Meanwhile, 42.4 percent had been entering into new markets and this implies growth orientation.



Generally, the innovative environment seems to be product and process-based, where the level of formalization (filed patent protection) is rather low, which indicates the possibility of the increased R&D investment and IP literacy.

Table 5: Perception of Access to Finance *(Likert Scale Analysis)*

Statement	SA	A	N	D	SD
Easy access to institutional finance is available	34	66	72	54	24
Documentation requirements are a major barrier	78	88	36	30	18
Government schemes are easy to access	22	46	90	64	28
Private investors are more approachable than public funding	48	84	66	36	16

The understanding of access to finance portrayed conflicting answers.

The percentage vote of agreeing that institutional finance is readily available stood at 40 percent (SA + A), as opposed to the percentages that disagreed (30.4) and were neutral (28.8). People generally felt that documentation was an impediment and 66.4 percent would respond to agree or strongly agree. The responses to the government schemes were not enthusiastic, as 27.2 percent agreed that they are accessible, but 36.8 percent of the respondents disagreed. The interesting part was the 52.8 percent who agreed to the fact that potential investors find it easier to approach than the government institutions. These findings emphasize that there is still a problem in navigating the current system of formal finance, and obstacles represented by bureaucracy and visibility of government programs are among the most pain-inducing phenomena.

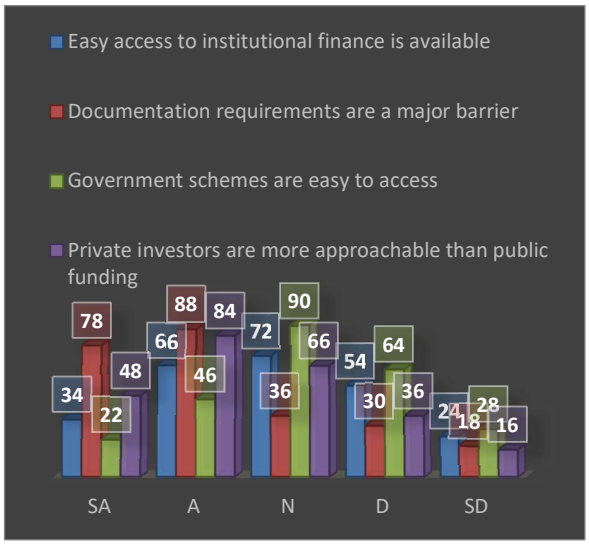
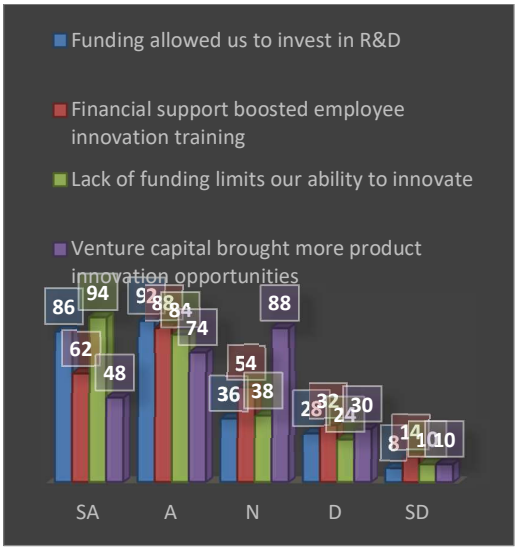


Table 6: Effect of Funding on Innovation Capability *(Likert Scale)*

Statement	SA	A	N	D	SD
Funding allowed us to invest in R&D	86	92	36	28	8
Financial support boosted employee innovation training	62	88	54	32	14
Lack of funding limits our ability to innovate	94	84	38	24	10
Venture capital brought more product innovation opportunities	48	74	88	30	10

The effects of money on innovation are evidently noticed as positive.

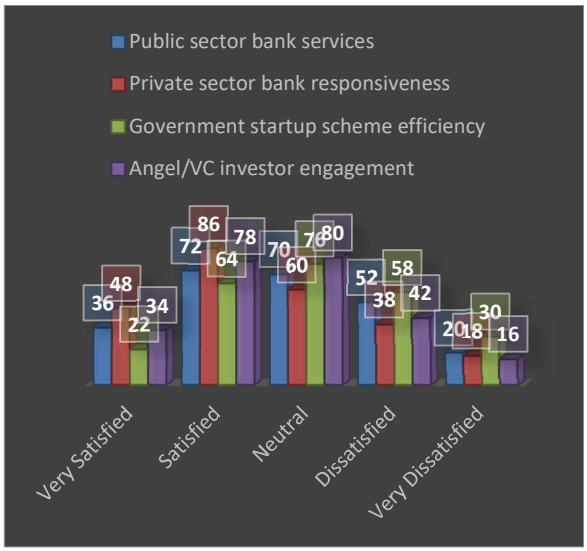


There was an overall agreement of 71.2 per cent (SA + A) who maintained that financing facilitated the investment in research and development and 60 percent of the respondents ranked the better training of employees in innovation as a result of funding. Further, 71.2 percent more agreed that innovation is constrained by lack of funds, proving the notion that in innovation, capital plays the center role in the outcome of an innovation. Ninety percent of them did not feel bad about the fact that venture capital improves product innovation but 35.2 percent of them did not feel good about this issue probably because of variation in the degree of investor interest. These results support the argument that the provision of a financial support is a booster in terms of innovation and capacity build of an organization.

Table 7: Satisfaction with Financial Support Mechanisms *(Likert Scale)*

Statement	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Public sector bank services	36	72	70	52	20
Private sector bank responsiveness	48	86	60	38	18
Government startup scheme efficiency	22	64	76	58	30
Angel/VC investor engagement	34	78	80	42	16

The way satisfaction with the financial support mechanism was found to differ largely among institutions.



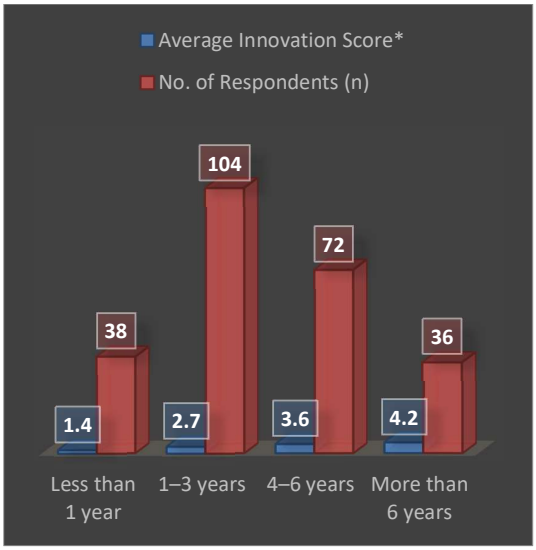
At 43.2 per cent, the satisfaction with the banks located in the public sector was moderate with only 43.2 per cent of them feeling satisfied or very satisfied with the service. The situation was better in banks in the private sector and 53.6 percent of them are satisfied indicating greater responsiveness. Start-up programs in government were least satisfying whereby 35.2 percent of the respondents said they were not satisfied or were very unhappy whereas satisfaction level reached 34.4 percent. Investors Angel/VC also got mixed feedback indicating that 44.8 per cent were satisfied but 23.2 percent were not satisfied. Such findings show that there is a disconnection between policies and practices and that institutions have sympathy on paper, but not necessarily in practice.

Table 8: Relationship Between Years of Operation and Innovation Output

Startup Age (Years)	Average Innovation Score*	No. of Respondents (n)
Less than 1 year	1.4	38
1–3 years	2.7	104
4–6 years	3.6	72

More than 6 years	4.2	36

The age of a startup and the average innovation score go along in a determined positive direction.



The average score was 1.4 and 2.7 in case of a startup younger than one year and those in the age range of 1-3 years respectively. Startups that are 4-6 years old scored 3.6 and the ones with operations lasting more than 6 years scored 4.2. This trend shows that the level of innovation output is expected to grow as an organization matures, which is most probably attributed to the experience gained, improved access to resources and, a better business model. It also makes an emphasis on the need of a continuous encouragement during various developmental phases.

Hypothesis Testing:

Hypothesis 1: Association Between Type of Financial Institution and Innovation Output

H_0: There is no significant relationship between the type of financial institution approached and innovation output.

H_1: There is a significant relationship between the type of financial institution approached and innovation output.

Table 9: Chi-Square Test of Independence

Type of Institution	High Innovation	Moderate Innovation	Low Innovation	Total
Public Sector Banks	28	36	14	78
Private Sector Banks	20	28	14	62
Government Schemes	18	20	10	48
Venture Capital Firms	16	12	4	32
Angel Investors	10	8	4	22
Crowdfunding/Others	2	4	2	8
Total	94	108	48	250

Chi-Square Value (χ^2): 23.87

Degrees of Freedom (df): 10

p-value: 0.008.

The Chi-square test shows a significant relationship between the type of the financial institution that was approached and level of innovation output (χ^2= 23.87, df = 10 P = 0.008). There was more spread of public sector banks and private banks in terms of the level of innovation whereas startups that were under venture capital firms and angels investors had a higher rate of creation of high innovation output. That means that the type of institution can do a difference in the performance of innovation, perhaps because, each institution differs in the size of funding, flexibility, and services provided to the individuals in their institutions. Thus, the type of financing source is not merely a transaction but may play a developmental role in a startup's innovation trajectory.

Hypothesis 2: Impact of Stage of Funding on Innovation Score

H_0: Funding stage does not significantly affect innovation score.

H_1: Funding stage significantly affects innovation score.

Table 10: One-Way ANOVA

Funding Stage	N	Mean Innovation Score	Std. Deviation
Seed/Pre-seed	96	2.98	0.86
Series A	68	3.42	0.92

Series B and above	34	3.74	0.88
Bootstrapped	52	2.63	0.81
Total	250	–	–

ANOVA:

Source	**SS**	**df**	**MS**	**F**	**p-value**
Between Groups	10.43	3	3.48	4.92	0.002
Within Groups	174.11	246	0.71		
Total	184.54	249			

Using ANOVA test, the significant effect between mean of the scores of innovations, according to the stages of funding, is observed ($F = 4.92$, $p = 0.002$). Startups which were Series A and beyond was found to have a higher mean of innovation scores (3.42 and 3.74 respectively) compared to bootstrapped ventures scoring a far lower figure at 2.63. Such results give indications that later phases of finances which mostly come with mentorship and proper growth plans play a crucial role towards promoting innovation. It confirms the hypothesis that the more difficult financially a startup becomes, the better effects innovation has.

Hypothesis 3: Correlation Between Perceived Access to Finance and Innovation Capability

H_0: There is no significant correlation between access to finance and innovation capability.

H_1: There is a significant correlation between access to finance and innovation capability.

Table 11: Pearson's Correlation Coefficient

Variable	**Mean**	**Std. Deviation**
Perceived Access to Finance Score	3.21	0.87
Innovation Capability Score	3.58	0.79

Correlation Table:

Variables	**Pearson r**	**p-value**
Access to Finance ↔ Innovation Capability	0.48	< 0.001

Pearson correlation test demonstrates that the relationship between innovation capability and perceived access to finance is positive correlation of moderate strength and statistically significant ($r = 0.48$, $p < 0.001$). This observation validates the fact that the higher the degree of perceiving that financial systems are accessible, the higher the likelihood that startups become likely to report better innovation performance. Such perception probably affects the decision-making process towards R&D investments, recruitment of talent and expansion of innovative ideas. The finding is consistent with the assumption that psychological and procedural access to capital, no matter the fact that it has not resulted in the receipt of funds, produces a measurable effect on the culture of innovation among startups.

Hypothesis 12: Difference in Innovation Output Based on Financial Support Status

H_0: There is no significant difference in innovation output between startups with and without institutional financial support.

H_1: There is a significant difference in innovation output based on financial support status.

Table 11: Independent Samples t-Test

Group	**N**	**Mean Innovation Score**	**Std. Deviation**
Received Financial Support	172	3.48	0.83
No Financial Support	78	2.73	0.76

t-Test Results:

Levene's Test for Equality of Variances	**F**	**Sig.**
Equal variances assumed	1.32	0.25

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t-Test for Equality of Means	**t**	**df**
Equal variances assumed	3.27	248

The independent samples t-testing result illustrates the fact that the difference between the innovation output of startups inclined on institutional financial provision and those who did not is statistically significant ($t = 3.27$, $p = 0.0013$). The average score of innovation of supported startups was 3.48 whereas that of the unsupported ones was 2.73. This is a clear expression that institutional means of financial support does influence positively the capability of a startup to innovate. Startups with financial resources will be able to work on bigger ambitions with higher risks but greater returns, invest in research and development and quicken scaling of ideas, things that can hard to do when

such startups are self-funded. These results also confirm the place of external funding in the achievement of concrete innovation results.

Summary of Hypothesis Testing Results:

Hypothesis	Test Used	p-Value	Inference
Institution type vs innovation output	Chi-Square	0.008	Significant – Reject H_0
Funding stage vs innovation score	One-Way ANOVA	0.002	Significant – Reject H_0
Access to finance vs innovation capability	Pearson Correlation	< 0.001	Significant – Reject H_0
Financial support vs innovation output	Independent Samples t-Test	0.0013	Significant – Reject H_0

VI. CONCLUSION

This paper has discussed the complicated association amid the mechanisms of financial support and the innovative output of the Indian businesses of start-ups. The results were obtained based on a heterogeneous sample size of 250 respondents whose analysis revealed that the category of the financial institution and the stage of financial operation and perceived access to the finances strongly affect the performance of innovation. The innovation score was also raised in startups that were presented offerings by venture capital firms or ones that obtained funding aimed at meeting advanced stages and it could be the case that access to capital directly gives contributions to research and development, invention of products, and market expansion. On the contrary, startups that had no institutional financial backing, or those that had no financial backing at all but limited themselves to bootstrapping, indicated low innovation activity which further confirms the theory that financial support is an effective driver of innovation activity.

The findings also indicated that the perceptions of accessibility to money is important as much as access to the money. Of the various barriers cited by many of the startups, complex documentation and lack of exposure to government schemes are some of them that limit access to funding when various startups need funding most. Although individual financial institutions and investors are regarded as more responsive, they are not able to reach a larger part of the ecosystem. Thus, the research recommends more open, transparent, and entrepreneurial financial architecture with its focus both on inclusiveness and efficiency.

Future Scope

Although the study has given a quantitative base of how the financial support influences the innovation, this study may be enlarged in a few ways forward. The first way is to apply longitudinal research and follow the development of startups as time goes by to see how a gradual change in financial activity affects innovation pathways. Second, additional structural and behavioral barriers of finance access could be identified using qualitative approaches in order to interview the founders, investors, and policy stakeholders. Also, it may be interesting to study sectoral (e.g. tech vs. biotech) or geographical (e.g. urban vs. rural) differences which may allow to better customize the financial intervention. Lastly, a cross-country comparison of the emerging economies can bring about enlightenment of the global best practices that can be cloned to the Indian scenario. With these areas, the future studies will be able to add more value to the process of defining an innovation-led startup ecosystem in India.

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