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Technology Capability, Innovation, and Market Traction as Drivers of Startup Valuation in Karnataka

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Abstract:

This study examines the influence of technology capability, innovation activities, and market traction on startup valuation in Karnataka's emerging startup ecosystem. Data were collected from 465 founders, employees, executives, and investors and analysed using factor analysis, structural equation modelling, and bootstrapped mediation analysis. The findings reveal that all three factors significantly and positively influence startup valuation, with market traction being the strongest predictor. Market traction also partially mediates the effects of technology capability and innovation activities on valuation. The study highlights market traction as a key indicator of startup scalability and value for founders, investors, and ecosystem institutions.

Keywords: Startup Valuation, Technology Capability, Innovation Activities, Market Traction, Mediation Analysis, Karnataka.

Introduction

Startups occupy a central place in Karnataka's economy, with Bengaluru widely regarded as India's leading innovation hub and a growing number of ventures emerging from regional clusters such as Hubballi-Dharwad, Mangaluru, and Mysuru. As of early 2025, India has more than 1.59 lakh DPIIT-recognised startups, a substantial share of which are

based in Karnataka. Alongside this growth, the question of how these ventures are valued has become increasingly important to founders raising capital, investors allocating funds, and policymakers designing support programmes.

Traditional valuation techniques, including discounted cash flow and

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comparable company multiples, depend on stable historical earnings and predictable risk profiles. Early-stage startups typically lack both, which means that valuation in this setting is shaped less by audited financial statements and more by forward-looking judgements about a venture's strategic capabilities and the credibility of the market evidence it can present. This paper focuses on three such capabilities, technology capability and adoption, innovation activities, and market traction, and examines both their direct influence on startup valuation and the mechanism through which they operate.

Rather than testing the full set of value drivers considered in the broader study, this paper concentrates on a focused subset of objectives and hypotheses that isolate the role of market traction as a possible mediating mechanism, since this question carries the clearest practical implications for how founders present their ventures and how investors structure their evaluation process.

Literature Review

The resource-based view of the firm argues that valuable, rare, and difficult-to-imitate resources, such as proprietary technology and innovation capacity, are sources of sustained competitive advantage and, by extension, of firm value [1]. In markets where founders possess more information about venture quality than outside investors, credible signals become the primary mechanism through which private information is

communicated to the market, a problem that is especially acute for young ventures without financial track records [2].

Empirical studies on entrepreneurial ecosystems in India show that technology-oriented clusters differ in the depth of institutional support, talent availability, and investor density, all of which shape the environment in which valuation signals are interpreted [3]. Research on venture capital financing further indicates that a startup's access to funding, and by extension its valuation, depends heavily on signalling mechanisms tied to technological readiness and demonstrated market credibility rather than on financial statements alone [4]. Studies examining value drivers of startup valuation from the perspective of venture capital investors consistently identify market traction, alongside team quality and technology, as one of the most influential determinants of perceived value [5].

A separate stream of literature on innovation and firm value shows that innovation outputs, such as patents, are capitalised into market value most strongly when they are associated with demonstrable commercial application rather than novelty in isolation [6]. This is consistent with the view that innovation and technological capability create economic value primarily when they are converted into market-facing outcomes, which motivates the mediating role assigned to market traction in the present study.

Objectives of the Study

This paper is guided by the following objectives:

1. To examine the influence of technology capability and adoption on startup valuation in Karnataka's startup ecosystem.
2. To analyse the impact of innovation activities on startup valuation.
3. To assess the effect of market traction on startup valuation.
4. To examine whether market traction mediates the relationship between technology capability, innovation activities, and startup valuation.

Hypotheses of the Study

Based on the objectives above, the study proposes the following hypotheses:

H1: Technology capability and adoption have a positive and significant influence on startup valuation.

H2: Innovation activities have a positive and significant influence on startup valuation.

H3: Market traction has a positive and significant influence on startup valuation.

H4: Market traction mediates the relationship between technology capability, innovation activities, and startup valuation.

Research Methodology

The study adopts a quantitative, explanatory, cross-sectional research design. The population comprises founders, co-founders, employees,

executive management, and investors connected to startups operating within Karnataka. A purposive sampling technique was used to select respondents who possess direct knowledge of valuation processes and investor interactions, yielding a final sample of 465 respondents. This sample size comfortably exceeds the recommended minimums for exploratory factor analysis, confirmatory factor analysis, structural equation modelling, and bootstrapped mediation analysis.

Primary data were collected through a structured questionnaire measuring technology capability and adoption, innovation activities across product, process, and business model dimensions, market traction through customer acquisition, user engagement, and revenue momentum, and perceived startup valuation. The instrument was assessed for content and construct validity and demonstrated strong internal consistency across all constructs.

The analytical strategy proceeds in stages. Descriptive statistics and reliability analysis were used to profile the sample and assess internal consistency of the scales. Exploratory Factor Analysis (EFA) was used to identify the underlying factor structure, and Confirmatory Factor Analysis (CFA) was used to validate the measurement model. Structural Equation Modelling (SEM) was then applied to estimate the direct effects of technology capability, innovation activities, and market traction on startup valuation.

Bootstrapped mediation analysis, using PROCESS Model 4 with 5,000 bootstrap samples, was conducted to test whether market traction mediates the relationship between the upstream capabilities and valuation [7]. All analyses were carried out using SPSS for descriptive statistics, reliability testing, and EFA, and AMOS for CFA, SEM, and mediation modelling [8].

Data Analysis and Findings

The sample is drawn predominantly from technology-oriented sectors, with SaaS/IT accounting for 25.4 percent of startups, followed by FinTech (11.8 percent) and Deep Tech/AI (11.2 percent). Founders and co-founders make up 46.2 percent of respondents, and Bengaluru accounts for 63.7 percent of the geographic spread, with the remainder drawn from Hubballi-Dharwad, Mangaluru, Mysuru, and other emerging clusters.

Sampling adequacy for factor analysis is excellent, with a Kaiser-Meyer-Olkin (KMO) value of 0.969, well above the recommended threshold of 0.60 [9], and Bartlett's Test of Sphericity is highly significant (chi-square = 12705.793, df = 528, $p < .001$) [10]. Exploratory factor analysis extracted factors corresponding to technology capability, innovation activities, market traction, and startup valuation, together explaining 71.46 percent of total variance. Confirmatory factor analysis shows standardised loadings mostly exceeding 0.75,

Cronbach's alpha ranging from 0.940 to 0.955, and Average Variance Extracted ranging from 0.623 to 0.747, exceeding the recommended threshold of 0.50 and confirming convergent validity [11].

Table 1: Goodness-of-Fit Indices for the Measurement and Structural Models

Model	CFI	TLI	RMSEA
Measurement model (CFA)	0.996	0.996	0.014
Structural model (SEM)	0.899	0.901	0.075

(Source: Confirmatory Factor Analysis and Structural Equation Modelling output, AMOS)

The structural model shows that technology capability significantly enhances innovation activities (standardised path coefficient = 0.602, $p < .001$), and innovation activities in turn exert a strong influence on market traction (0.958, $p < .001$). Market traction significantly influences startup valuation (0.828, $p < .001$, R-squared = 0.686), supporting a pathway that runs from capability to innovation to market validation to valuation.

Direct hypothesis testing confirms that all three drivers individually predict valuation. Technology capability shows a significant positive effect on valuation (H1: beta = 0.600, $p < .001$). Innovation activities also show a significant positive effect (H2: beta = 0.571, $p < .001$, R-squared = 0.563). Market traction shows the strongest effect among the three (H3: beta = 0.791, $p < .001$, R-squared = 0.563).

Table 2: Summary of Hypothesis Testing

Hypothesis	Relationship	β / Result	Decision
H1	Technology capability and adoption $\rightarrow$ Startup valuation	0.600, $p < .001$	Supported
H2	Innovation activities $\rightarrow$ Startup valuation	0.571, $p < .001$	Supported
H3	Market traction $\rightarrow$ Startup valuation	0.791, $p < .001$	Supported
H4	Market traction mediates technology capability and innovation activities $\rightarrow$ valuation	Indirect effects 0.407 / 0.089	Partial mediation

(Source: Structural equation modelling and PROCESS Model 4 bootstrapped mediation results, $N = 46$)

Mediation analysis using bootstrapped confidence intervals supports H4. For technology capability, the indirect effect via market traction is 0.407 (95% CI: 0.3396-0.4800), and the direct effect remains significant ($\beta = 0.237$, $p < .001$), indicating partial mediation. For innovation activities, the indirect effect via market traction is 0.0894 (95% CI: 0.0090-0.1716), while the direct effect becomes statistically weak once market traction is included ($\beta = -0.026$, $p = .466$), consistent with Cohen's guidance on interpreting effect sizes in behavioural research [12]. Taken together, these results indicate that market traction functions as a critical, though only partial, transmission channel linking technology capability and innovation activities to startup valuation.

Discussion

The results confirm that technology capability, innovation activities, and market traction each matter individually for startup valuation in Karnataka, consistent with the resource-based view

and signalling perspectives that inform this study [1] [2]. At the same time, the mediation results show that a substantial share of the valuation impact of technology capability and innovation operates indirectly through market traction rather than through a purely direct channel.

This has a practical implication for founders: technological sophistication and innovative product design are necessary but not sufficient conditions for higher valuation; they matter most when they are translated into visible customer acquisition, engagement, and revenue momentum. For investors, the findings suggest that due diligence frameworks should give explicit weight to traction metrics as a proxy for the eventual payoff of a startup's technology and innovation investments, particularly in the absence of long financial histories. For ecosystem institutions and policymakers, the results point to the value of programmes that help ventures convert technological and innovative capability into early market validation, such as structured pilot

programmes, customer discovery support, and improved market access for startups outside Bengaluru.

Conclusion

This paper examined the influence of technology capability and adoption, innovation activities, and market traction on startup valuation in Karnataka, and tested whether market traction mediates the relationship between the first two drivers and valuation. The findings show that all three drivers exert a significant positive influence on valuation, with market traction emerging as the strongest predictor, and that market traction partially mediates the effect of both technology capability and innovation activities on valuation outcomes.

These results suggest that sustainable startup valuation in Karnataka depends on the ability to convert technological and innovative capability into demonstrable market performance. Founders are advised to prioritise measurable traction alongside technology development, investors are encouraged to weight evidence of market validation in their evaluation frameworks, and ecosystem institutions are encouraged to design support mechanisms that help bridge innovation and market adoption. Future research may build on this focused analysis by examining how these relationships vary across startup stages and sectors within Karnataka's ecosystem.

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