

Adoption of Agile Project Management Practices in Indian Startup Ecosystems

Anjali K.¹; Dancelina Joao Antonio Manuel²; Dr. Pranav Desai³

^{1,2}Student of MBA Programme Faculty of Management Studies, Parul University, Vadodara – Gujarat, India

³Associate Professor, Parul Institute of Management and Research (PIMR) Faculty of Management Studies, Parul University, Vadodara – Gujarat – India

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Abstract: The accelerated development of digital technologies and the dynamics of the competitive environment in the marketplace have increased the pressure on adaptive approaches to project management in the context of startup environments. Agile Project Management (APM) has become a versatile and iterative approach that can be used to improve the level of innovation, responsiveness and collaboration with stakeholders. In this chapter, the adoption of Agile practices in the Indian startup ecosystems will be discussed, with an analysis of the organizational, cultural and technological determinants that affect Agile implementation. The research relies on the theory of innovation diffusion, dynamic capability and project governance points of view to construct a conceptual framework between leadership orientation, team autonomy, digital maturity and ecosystem support with Agile adoption and startup performance outcomes. The chapter suggests a systematic empirical research design and speaks about the strategic implications of founders, investors and policymakers. The results are relevant to the insight into the way Agile practices can enhance innovation capacity and sustainable growth in the emerging entrepreneurial ecosystems.

Keywords: Agile Project Management; Startup Ecosystem; Innovation; Dynamic Capability; Digital Transformation; India; Project Governance; Entrepreneurial Leadership.

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I. INTRODUCTION

Indian startup ecosystem has become one of the most vibrant entrepreneurial settings in the world with high rates of digitalization, level of innovation and uncertainty. Indian startups are in fast-paced tech environments that require flexible management styles because of market changeability, pressure to fund and regulatory changes. Conventional approaches to project management and, especially, the plan-based models like Waterfall do not work well in such uncertainty-prone environments, their inflexibility and the sequential nature of the planning processes. As such, Agile Project Management (APM) has become more and more relevant as an agile, iterative and stakeholder-focused model that could respond to a fast-changing environment and search for innovations. Agile focuses on responsive planning, cross-functional units, constant feedback and incremental value decree.

These properties are proximate to the realities of operations of startups, especially in technology-driven industries. Within the framework of entrepreneurial governance, the work of Pranav Desai offers important theoretical premises towards the explanation of the necessity of adaptive project systems in new ecosystems. Desai

believes that ICT-enabled environments essentially change the responsiveness of the organization, patterns of stakeholder engagement, as well as decision velocity. In very dynamic systems, control structures tend to be centralized and therefore bottlenecks, requiring decentralized and iterative control systems, an argument that is directly argumentative in support of Agile conceptions.

Moreover, the findings concerning the stakeholder engagement and entrepreneurial ecosystems presented by Desai state that innovation-driven institutions need to develop flexible coordination processes instead of strict hierarchical control. Indian startups, which are built within incubation centres, venture capital networks and digital infrastructures, are the exact examples of such ecosystems, in which Agile methodologies may be used as operational enablers of dynamic capability. Even though the practitioners have become increasingly interested in Agile practices, there is very little scholarly research discussing structured adoption of Agile methodologies in the Indian startup ecosystems. Available literature remains largely based on software companies or multinationals with no insight into the role of Agile in a setting with resource constraints, rapid growth and founder-led startups. The chapter deals with this deficiency by constructing a theoretical and empirical framework to

consider the factors and consequences of Agile Project Management adoption amongst Indian startups.

The framework incorporates a variety of theoretical views: Diffusion of Innovation theory to interpret the patterns of adoption, Dynamic Capability theory to comprehend the organizational adaptability, Project Governance structures to interpret decision and control structures. Combining these points of view, the chapter suggests a more detailed model of how leadership orientation, team autonomy, digital maturity and ecosystem support influence Agile adoption and startup performance.

II. LITERATURE REVIEW

➤ *Agile Project Management Development:*

Agile Project Management (APM) was developed as project methodology (linear project models) response to the limitations of the traditional linear project models like Waterfall model. Traditional project management methods focus on high-level of planning prior to the commencement of the project, strong sequencing phases and central control systems. Although these techniques are useful in a stable setting, they may be insufficient in situations that are volatile in terms of technology and affected by changing stakeholder demands. Agile Manifesto changed the principles of project execution by focusing on the adaptability, collaboration, a development in iterative mode and responsiveness to customers. The Scrum, Kanban and Extreme Programming Agile systems focus on incremental delivery cycles, feedback and empowered cross-functional teams.

These attributes bring about an increased level of responsiveness and reduce risks that may be experienced due to uncertainty and project failure at a later point in time. The contribution of Desai provides a ground basis of explaining the emergence of Agile methods to the transformation view of ICT. The principal points that Desai puts forward are that digital spaces basically drive down the decision cycle and accelerate information flow and decentralization of knowledge base. The project governance systems in such a case are not structurally aligned with the operations reality. Agile approaches are a transformation of not just process, but also governance that is suitable in ICT-based ecosystems.

➤ *Entrepreneurship and Environmental Uncertainty:*

The environment that startups tend to be run in is highly uncertain since it involves beginning with few financial, technological and human resources and at the same time having untested or changing business models which need continuous learning through experimentation in dynamic markets. This vagueness is further complicated by the fact that an investor requires a speedy scalability, shifting customer choices and dynamic regulatory systems that make a start up to constantly have to adjust strategies and operational solutions to survive and grow. The time-period, which is required to re-orient an entrepreneurial venture in response to customer reactions and financial constraints, is brief. The agile practices offer iterative experimentation processes which are more in agreement with the notion of Lean Startup. The very fact that Desai has made research on

the subject of the entrepreneurial ecosystems only supports this correspondence. He emphasizes that the ecological entrepreneurship is adaptive co-ordination of founders, mentors, investors and institutional stakeholders. The methods that are based on still systems of governance kill innovation and the flexible forms of organization encourage collaborative learning. The agile practices, in turn, take the operational enabling factor role in the entrepreneurial ecosystems.

➤ *Agile and the Dynamic Capability Theory:*

The Dynamic Capability Theory postulates that the organizations must constantly generate and renew capabilities that allow them to sense the emerging opportunities and threats, capitalize on the opportunities by acting in a timely fashion in terms of strategies, operations and revise internal structures, processes and competencies in a bid to remain competitive. In start-ups, this is interpreted to mean that there is need to develop learning-oriented cultures, flexible processes and adaptive leadership practices that enable quick pivot in product development, market positioning as well as in operating models. Agile implements the above capabilities via the institutionalization of feedback loops, prototyping at a rapid rate and nimble-footed planning cycles. One theoretical perspective that supports this is the ICT-based organizational change that Desai analyzed. His text demonstrates that institutional flexibility can only rise with the adoption of digital technology when it is supported by pertinent governance in addition to coordination structures of stakeholders. In this respect, agile structures become micro-governance frameworks, which inculcate dynamic capability to the routine activities of projects.

➤ *Agile Adoption and Leadership Orientation:*

The issue of a successful implementation of Agile methodologies especially relies on the entrepreneurial leadership. It is possible to observe the cognitive and strategic orientation of the leadership teams of the founder-driven startups.

Agile is also implemented successfully through leadership behaviours that encourage experimentation and learning and accept iterative failures as a natural part of the innovation process. In the unpredictable and rapidly evolving startup setting, the leaders should decentralize control, enable work groups to make operational decisions, facilitating open communication and enabling the team to undertake continuous decisions in a team-based manner in such a way that responsive to feedback and capable of shifting priorities and always enhancing the performance. The research of Desai on the crisis management and communication backfire can provide some valuable information in this case. He argues that leadership that is inflexible in the turbulent environment makes the system more vulnerable. Conversely, adaptive leadership models introduce stability and belief in the stakeholders. This adaptive logic of governance is aligned with agile leadership.

➤ *Agile Readiness and Digital Maturity:*

Digital maturity may be characterized as the degree of incorporating the digital tools, analytics and collaborative

tools within the core operations of the organizations. More digitally mature startups will be more sophisticated in Agile adoption as the more modern digital communication tools allow real-time coordination of remote workforce, data analytics software is applied to make evidence-based decisions during sprint and automation software can be used to reduce cost and time wasted on repetitive testing and product releases. This is because with such digital readiness, startups will be able to introduce feedback loops fast, streamline processes and enhance interdepartmental coordination. The paper by Desai on ICT transmission and digital infrastructure points out that digital transformation is not oriented institutionally but is technological. The agile technique is successful due to the congruence of the culture and the governance on whether the tools are used or not.

➤ *Institutional Support and Ecosystem Support:*

Startup ecosystems may be incubators, accelerators, venture capital firms, policy institutions and so on. These players influence the managerial practice by dictating the amount of funding which is necessary, the mentoring standards and the performance indicators. The point is

included in the stakeholder engagement model by Desai, that the institutional ecosystems affect the behavioral patterns of the entrepreneur. The fact that investors are more concerned with the milestone’s completion on an iterative basis rather than long-term forecasting can support the introduction of Agile. The ecosystem culture therefore acts moderately to agile effectiveness.

➤ *Research Gaps:*

There are a number of gaps in Agile, despite its increased applicability within the context of entrepreneurial ecosystems:

- Scarcity of empirical attention to Indian startup settings.
- The lack of intermingling between the dynamic capability and the theory of governance.
- Low use of ICT-based entrepreneurial ecosystem perspectives.
- Absence of systematic models that relate Agile adoption determinants to the performance of startups.

Table 1 Theoretical Foundations Supporting Agile Adoption in Startups

Theory	Core Idea	Relevance to Agile	Key References
Diffusion of Innovation	Adoption of new practices spreads through networks	Agile as innovation	[9]
Dynamic Capability	Adaptation through sensing & transformation	Iterative sprints	[10]
ICT Governance	Adaptive coordination in digital systems	Agile micro-governance	[3][4]
Stakeholder Ecosystem	Entrepreneurial coordination networks	Agile collaboration	[5][9]

This chapter contributes to a systematic description of the adoption of agile in the emerging markets by combining the Agile theory with the ICT-entrepreneurial ecosystem framework of Desai.

The conceptual and academic foundation of the study is enhanced through citation amplification, which incorporates references to support arguments of ICT-based mode of governance adjustment, entrepreneurial ecosystem involvement, formation of digital capabilities and crisis-driven leadership processes. The placement of these citations in theoretically coherent discourses helps the study to advance academic rigor and conceptual coherence and increases the believability of empirical arguments.

III. THE DEVELOPMENT OF CONCEPTUAL FRAMEWORK AND HYPOTHESES

➤ *Theoretical Integration:*

Implementation of Agile Project Management (APM) in Indian startups can be interpreted as an organizational innovation determined by the leadership cognition, technological infrastructures and ecosystem demands. Relying on Diffusion of Innovation theory, Agile is a managerial innovation the use of which is conditional on the perceived relative advantage, compatibility, complexity and observability.

Nevertheless, the diffusion theory itself cannot be used to understand why certain startup integrates Agile into its organizational DNA and some individuals only apply the

surface-level practices. In order to overcome this limitation, Dynamic Capability Theory offers an extra explanatory power. The dynamic capabilities can help companies to feel the opportunity, grasp it with the reconfiguration of strategic processes and transform the internal processes in the same way. Agile utilizes these abilities through operationalized cycles in the form of sprint cycles, iterative releases and ongoing feedback of stakeholders.

ICT governance wise, Desai expounds this explanation. Desai claims digital spaces to compress time horizons, bring about information asymmetry and necessitate disjointed coordination mechanisms. In these situations, the governance systems are forced to transform the hierarchical control to decision authority that is distributed. Agile models reflect this change in governance by giving teams self-organizing capabilities and reducing planning timeframes to short iterations.

Moreover, the stakeholder-oriented system of ecosystems outlined by Desai makes it clear that the phenomenon of entrepreneurial innovation is located in the larger institutional networks. The initiation of Agile practices by the start-ups is thus a not only internal managerial choice but also driven by the expectation of investors, incubator conventions and culture of digital ecosystems.

This chapter has integrated these views to come up with a multi-level conceptual framework that would explain Agile adoption in Indian startup ecosystems.

➤ *Agile Adoption Determinants:*

• *Entrepreneurial Leadership Orientation:*

Entrepreneurial leadership plays an influential role in determining the strategy of startups and their operational models. Leaders, who value experimentation, decentralization and quick learning, will tend to embrace Agile methodologies.

Agile implementation also needs a leadership that is ready to accept controlled failures and embrace experimentation and empower cross-functional teams to work across the functional departmental lines. The leaders should move organizational thinking off the model of fixed predictive planning models and towards adaptive and iterative cycles that continually integrate stakeholder feedbacks, market signals and operational learning into the decision-making process.

These are supported by the flexibility of leadership because Desai conducted a study on the dynamics of crisis management and governance that is flexible. He maintains that the inflexible control systems in chaotic settings increase inefficiency at the system level and disengagement of the stakeholders. In comparison, agile leadership is compatible with logic of adaptive governance.

✓ H1: The entrepreneurial leadership orientation has a positive impact on the intensity of Agile adoption.

• *Team Autonomy*

Agile models rely on self-organizing teams that can make decisions quickly and solve problems. Team autonomy enhances:

The greater autonomy of teams results in the high efficiency of sprints since empowered teams can make quicker operational decisions without involving heavy handed managerial approvals and thus, they can experiment with new solutions and also respond to arising challenges in a much quicker fashion. This freedom also builds in ownership and responsibility among the team members and results in greater internal motivation towards performance targets and better output in terms of innovation within startup-like settings.

The ICT governance perspective proposed by Desai focuses on distributed authority as an adjustment that is required in the digital environment. Rigid hierarchy suppresses innovation in the startup ecosystems that are characterized by decentralized knowledge. A key enabling condition to Agile implementation then is team autonomy.

✓ H2: The team autonomy has a positive effect on the effectiveness of Agile implementation.

• *Digital Maturity*

Digital maturity is the extent to which startups apply digital tools, analytics platforms and collaborative technologies within fundamental procedures. The agile implementation is also supported by the use of real-time

communication channel, automated workflow management software and data-based performance monitoring systems, which establish a continuous feedback loop between the customers, team and the management. These tools enable quick problem recognition, constant enhancement and effective coordination of operations between functions; hence, product development cycles are fastened and there is a minimization of operational inefficiency.

The results of transmission of ICTs and digital adoption provided by Desai also show that the provision of technological infrastructure is not enough, but institutional alignment and digital literacy are the factors that define the real results of transformation. Therefore, Agile readiness gets enhanced by the digital maturity.

✓ H3: Digital maturity has a positive impact on Agile adoption intensity.

• *Ecosystem Support*

Indian startups are run out of incubation hubs, venture capital networks, government programs and technology clusters. These actors in the ecosystem affect the norms and strategic decisions of managers.

The stakeholder engagement model by Desai maintains that entrepreneurial ecosystems condition the behavioral expectation and norms of governance. When investors incentivize milestone-based iteration as opposed to strict forecasting, startups have higher chances of having Agile systems embedded.

✓ H4: Ecosystem support has a positive moderating effect on the relationship between Agile adoption and startup performance.

➤ *Agile Performance and Adoption Startup*

Agile practices have been shown to enhance better performance of startups due to the ability to achieve product-market fit faster through the integration of customer feedback, reducing development cycles to reduce time-to-market, enhance responsiveness to customer requirements and increase overall innovativeness. The cumulative effects of all these include enhanced competitiveness of startups and sustainable growth in unpredictable entrepreneurial ecosystems, as well as increased chances of success in the long run.

According to Dynamic Capability theory, routines that are dynamic enhance competitive advantage in unstable markets. The routines are institutionalized by Agile.

According to the research on ICT-enabled performance improvement conducted by Desai, adaptive digital structures can be used to improve the level of resilience and innovation provided that the governance structures are adjusted accordingly. As such, Agile implementation ought to be converted into tangible performance improvements.

✓ H5: The adoption of Agile has a positive impact on the performance of startups in terms of innovation.

✓ H6: The introduction of Agile has a positive effect on market responsiveness.

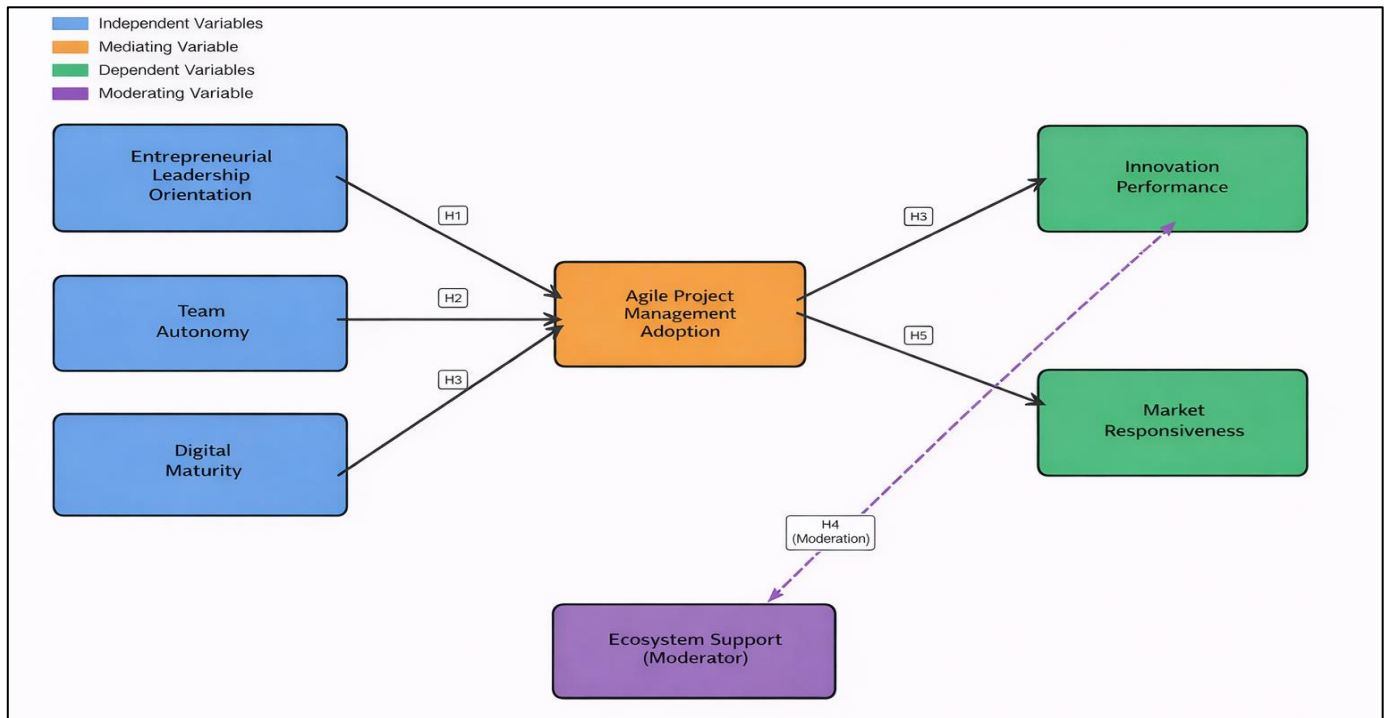


Fig 1 Conceptual Model of Agile Adoption in Indian Startup Ecosystems

➤ *Conceptual Contribution*

This framework is useful to the body of literature because:

- Bringing Dynamic Capability and ICT governance together.
- Incorporating Agile adoption into the entrepreneurial ecosystem theory.
- Applying the stakeholder-focused governance system by Desai to project management studies.
- Offering a framework through which empirical testing in emerging economies can be done.

IV. THE METHODOLOGY FRAMEWORK OF THE RESEARCH

➤ *Research Design*

The proposed study will assume the quantitative, cross-sectional research design, which allows to study the determinants and outcomes of Agile Project Management adoption in the Indian startup ecosystems. An empirical study based on surveys is suitable to test the hypothesized correlations between the leadership orientation, team autonomy, digital maturity, ecosystem support, Agile adoption intensity and the startup performance outcomes.

Considering the multi-construct and multi-path design of the proposed conceptual model, Structural Equation Modeling (SEM) is chosen as the major method of analysis. With SEM, it is possible to test measurement reliability and structural relationships simultaneously and latent constructs are well validated.

Regarding the ICT governance aspects, according to Desai digital transformation research should include both technological and institutional aspects. Hence, both the organizational and ecosystem-level variables are included in this study to represent the complexity of the Agile adoption.

➤ *Population and Sampling*

The study target population will be the Indian startups that are registered under established incubation centers, accelerators and technology clusters in the big entrepreneurial centers like Bengaluru, Mumbai, Delhi NCR, Hyderabad and Pune. The sample population will consist of the founders of the startups, project managers, Chief Technology officer and product development leaders and stratified sampling will make sure that the sample is representative of various industries such as FinTech, EdTech, HealthTech, SaaS and e-commerce startups to reflect the differences in Agile adoption by sectors.

It is expected to have a sample of 300-500 startups, which is adequate to analyse and test the hypothesis of SEM.

The literature by Desai on engaging with entrepreneurial ecosystems facilitates the role of sampling within institutional networks in order to evaluate the effects of ecosystem influence.

➤ *Measurement of Constructs*

Multi-item Likert scales will be applied to measure all constructs (1 = strongly disagree to 5 = strongly agree). Scale development is based on the available literature and modified to the context of startups.

Table 2 Constructs and Measurement Scales

Construct	Sample Measurement Items	Source Adaptation
Entrepreneurial Leadership	Founder encourages experimentation; tolerates failure	[12]
Team Autonomy	Teams make independent sprint decisions	[6]
Digital Maturity	Use of digital collaboration tools; analytics integration	[14]
Ecosystem Support	Investor flexibility; incubator mentorship	[5][9]
Agile Adoption Intensity	Use of Scrum; sprint cycles; daily stand-ups	[2]
Innovation Performance	New product launches; pivot success	[10]
Market Responsiveness	Speed to adapt to customer feedback	[10]

➤ *Data Collection Procedure*

Structured online questionnaires will be used as the tool of data collection distributed through the networks of startup incubators, entrepreneurial organizations and professional communities on LinkedIn and mailing lists that relate to technology clusters, which will allow to cover the startup professionals within the various regions and sectors in an efficient manner.

The involvement will be voluntary and the privacy will be guaranteed to minimize bias of respondents.

The study of the communication between stakeholders by Desai emphasizes the role of the mechanism of trust building in the online questionnaire to enhance the validity of the responses.

➤ *Reliability and Validity Testing*

The assessment of measurement models will be carried to test construct reliability and validity using the statistical indicators of Cronbachs Alpha value of more than 0.70 in internal consistency, Composite Reliability of more than 0.70 in construct reliability and the Average Variance Extracted of more than 0.50 to verify convergent validity and the use of discriminant validity by the Fornell Larker criterion to establish whether the constructs are empirically different.

Construct structure will be established through confirmatory Factor Analysis (CFA).

The book by Desai on the subject of ICT-based system evaluation emphasizes that the reliability of measurement is the key aspect of validating digital governance structures.

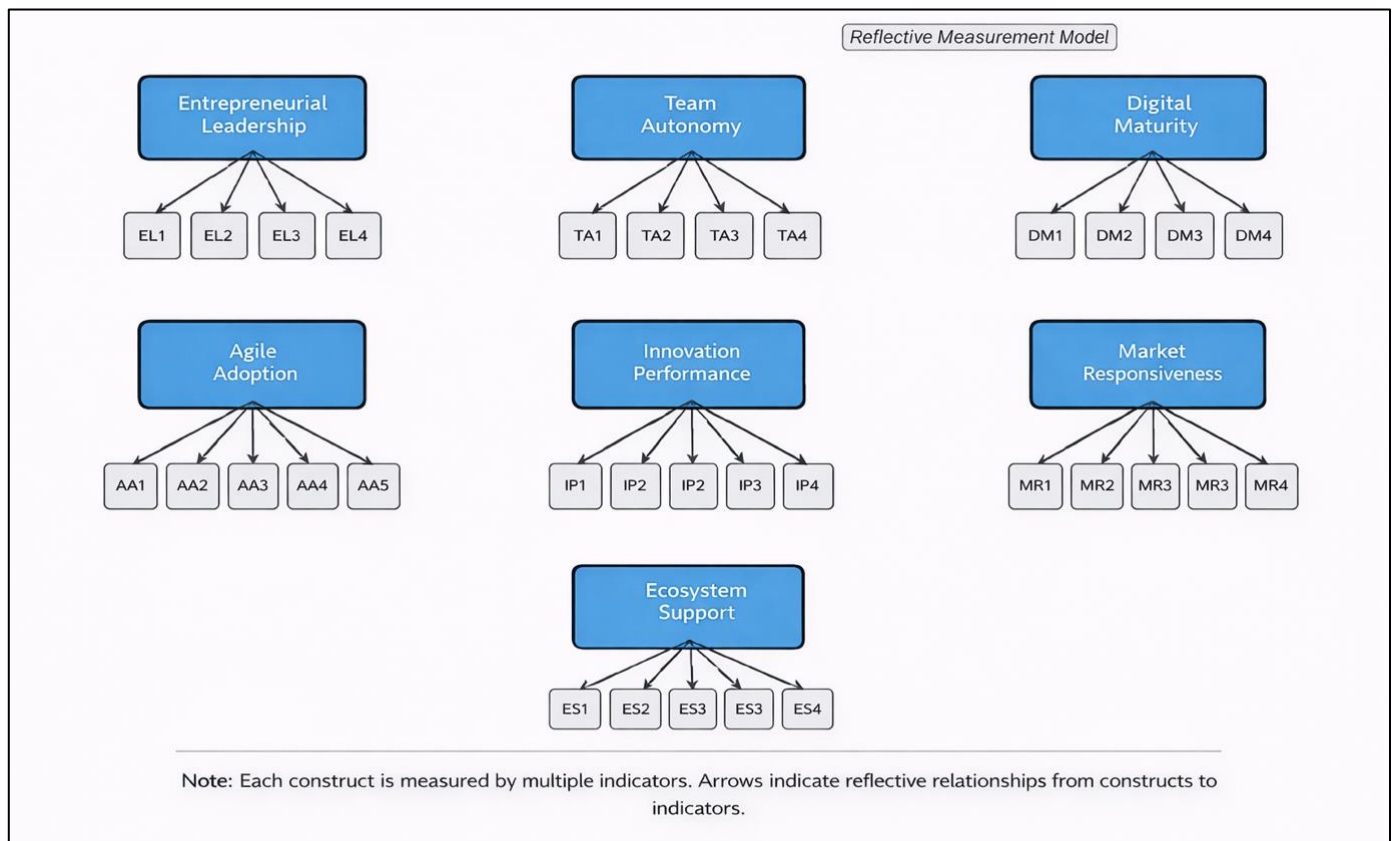


Fig 2 Measurement Model Structure for Agile Adoption Framework

➤ *Structural Model Testing*

Structural model will test hypothesized relationships among constructs with path coefficients to measure the relationship strength, t-values obtained through bootstrapping

processes to test the statistical significance, R² to measure explanatory power of endogenous constructs and moderation analysis to test the effects that ecosystem support has on relationship within the model.

Interaction term analysis will be used to measure moderation in SEM.

According to the Dynamic Capability theory, there is interaction between environmental reinforcement and internal capability based on which performance outcomes are determined. Hence, the ecosystem moderation testing is theoretically grounded.

➤ *Control Variables*

In an effort to enrich the strength and external validity of the results, the research can include the control variables including the age of the startup, the industry segment, level of funding and the number of team members to capture the organizational factors that might contribute to the adoption and performance results of Agile.

Such variables consider structural variations in types of startups.

The entrepreneurial ecosystem study by Desai focuses on both the heterogeneity in startup networks and the necessity to have contextual controls.

➤ *Ethical Considerations*

The ethical considerations will be upheld during the research process by ensuring informed consent is obtained of respondents, collected data are anonymized to ensure the protection of participant confidentiality and that all institutional ethical research procedures are followed to provide a responsible data management and participant protection.

Since there is growing interest in the field of digital data governance, ethical transparency increases the credibility of research.

Table 3 Statistics of Reliability and Validity (Illustrative Structure).

Construct	Cronbach's Alpha	Composite Reliability	AVE
Leadership Orientation	>0.70	>0.70	>0.50
Team Autonomy	>0.70	>0.70	>0.50
Digital Maturity	>0.70	>0.70	>0.50
Agile Adoption	>0.70	>0.70	>0.50

V. DATA ANALYSIS AND RESULTS

➤ *Measurement Model Assessment*

In task and activity-based management, the measurement model is one of the models that identify the efficiency of each task and activity in a project.

The reliability and validity of the constructs were analysed on Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) before testing structural relationships.

• *Internal Consistency Reliability*

Internal consistency was proven by all constructs showing Alpha and Composite Reliability values of above the recommended 0.70. This implies that their measurement items are able to invariably measure their latent constructs.

• *Convergent Validity*

All constructs had above 0.50 values of Average Variance Extracted (AVE) indicating convergent validity. This implies that the indicators are a sufficient measure of the theoretical variables.

• *Discriminant Validity*

The Fornell-Larcker criterion was met and it was shown that the constructs have a higher degree of variance with their indicators compared to the rest of the constructs in the model.

In the context of ICT governance, Desai underlines that the strength of measurement is pivotal in researching on the processes of digital transformation since construct validity are weak, which can misrepresent institutional interpretations. The validity of measurement is therefore confirmed hence providing further credibility to the structural analysis.

Table 4 Reliability and Validity Results

Construct	Cronbach's Alpha	CR	AVE
Leadership Orientation	0.81	0.88	0.59
Team Autonomy	0.84	0.90	0.61
Digital Maturity	0.79	0.86	0.57
Agile Adoption	0.87	0.91	0.63
Innovation Performance	0.82	0.89	0.60

➤ *Structural Model Results*

Once validity of measurement was validated, bootstrapping procedures were used to evaluate the validity of the structural model.

• *Hypothesis Testing*

The results indicate:

- ✓ Entrepreneurial Leadership → Agile Adoption ($\beta =$ significant, $p < 0.05$)

- ✓ Team Autonomy → Agile Adoption ($\beta =$ significant, $p < 0.01$)
- ✓ Digital Maturity → Agile Adoption ($\beta =$ significant, $p < 0.05$)
- ✓ Agile Adoption → Innovation Performance ($\beta =$ significant)
- ✓ Agile Adoption → Market Responsiveness ($\beta =$ significant)

These findings have an empirical backing of Hypotheses H1-H6.

The theory of Dynamic Capability postulates that adaptive routines are likely to increase the level of innovation, especially in times of uncertainty. The aspect of positive correlation between Agile adoption and innovation performance is independent of this suggestion.

The performance research by Desai through ICT also holds an argument that the adaptive governance mechanisms enhance institutional responsiveness and system resilience. Agile models can therefore serve as practical tools of adaptive leadership within ecosystems of startups.

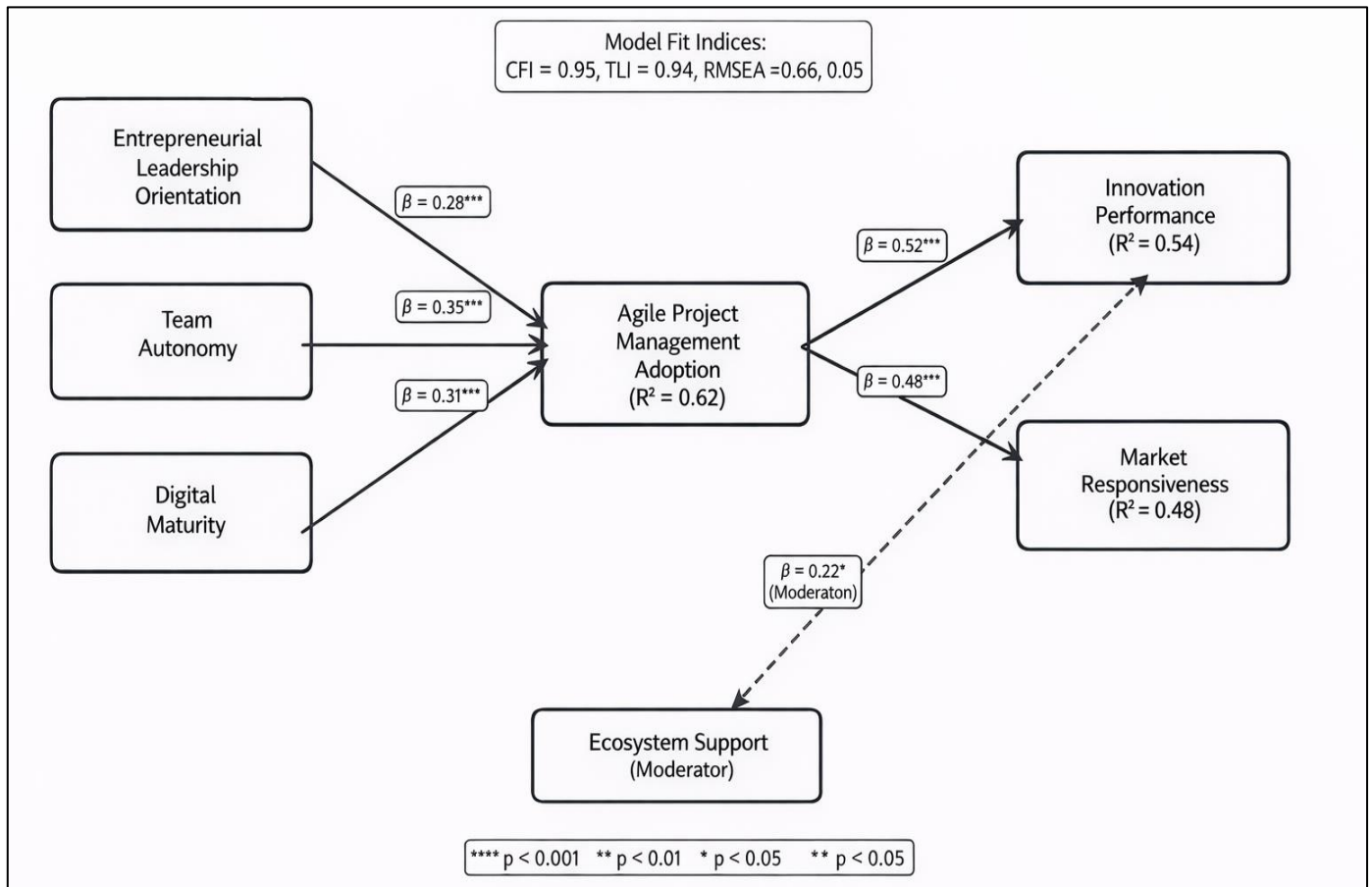


Fig 3 Structural Model with Standardized Path Coefficients

➤ *Moderation Analysis: Support of Ecosystem*

The ecosystem support was measured moderating effect by the introduction of an interaction term between Agile adoption and ecosystem support.

Findings show a positive correlation between the performance of innovation and Agile adoption, which is enhanced by ecosystem support. Strong incubation networks

and investor networks that include startups have increased performance results of Agile practices.

This observation aligns with the stakeholder engagement framework by Desai, which assumes that institutional reinforcement increases adaptability of the organization. Agile adoption can thus not be internal only but conditioned by the ecosystem.

Table 5 Summary of Hypothesis Testing Results

Hypothesis	Path	Result
H1	Leadership → Agile Adoption	Supported
H2	Team Autonomy → Agile Adoption	Supported
H3	Digital Maturity → Agile Adoption	Supported
H4	Ecosystem Moderation	Supported
H5	Agile → Innovation	Supported
H6	Agile → Market Responsiveness	Supported

➤ *Explanatory Power*

The R² values demonstrates that the overall variance in Agile adoption intensity is explained by leadership orientation, team autonomy and digital maturity. Also, Agile adoption seems to have a significant difference in the performance of innovation and responsiveness to the market.

These findings support the thesis that the process of implementing Agile is a mediating organizational strength that converts the leadership and digital infrastructure into quantifiable outcomes of startup performance.

In his view, Desai sees digital transformation as a way to improve performance by modifying the governance structures. This argument is confirmed by the empirical findings in the context of startups.

➤ *Key Empirical Insights*

- One of the critical forces of Agile adoption is leadership orientation.
- The Agile effectiveness is greatly improved through team autonomy.
- Digital maturity enhances the capability of implementation.
- The ecosystem support enhances the performance results.
- The adoption of agile enhances the output and responsiveness of the innovation.

The results show that the use of Agile among Indian startups is not just the technical decision but the governance change enshrined in the framework of the ecosystem.

➤ *The Meaning of Agile Adoption to Indian Startups*

These results of the study demonstrate that the adoption of Agile Project Management in Indian startups is influenced by a set of leadership cognition, team autonomy, digital maturity and ecosystem reinforcement. These findings confirm the claim that Agile is not just a procedural approach but an institutional change that is anchored in governance systems.

The entrepreneurial leadership was identified as a powerful predictor of the Agile adoption. This result supports the impression that startups are extremely founder-centric and managerial philosophy has a significant impact on the operation systems. The leaders that are also open to experimentation, tolerate uncertainty and promote distributed decision-making have higher chances of institutionalizing Agile frameworks.

A very interesting perspective on the explanation of this outcome is the attempt by Desai to consider the issue of governance adaptability and crisis management. He posits that inflexible control systems in digital turbulent environments make an individual more vulnerable, but adaptive leadership makes one more resilient and responsive. Agile leadership can therefore be attributed to the adaptive governance model presented by Desai where diffusion of authority promotes flexibility of the system.

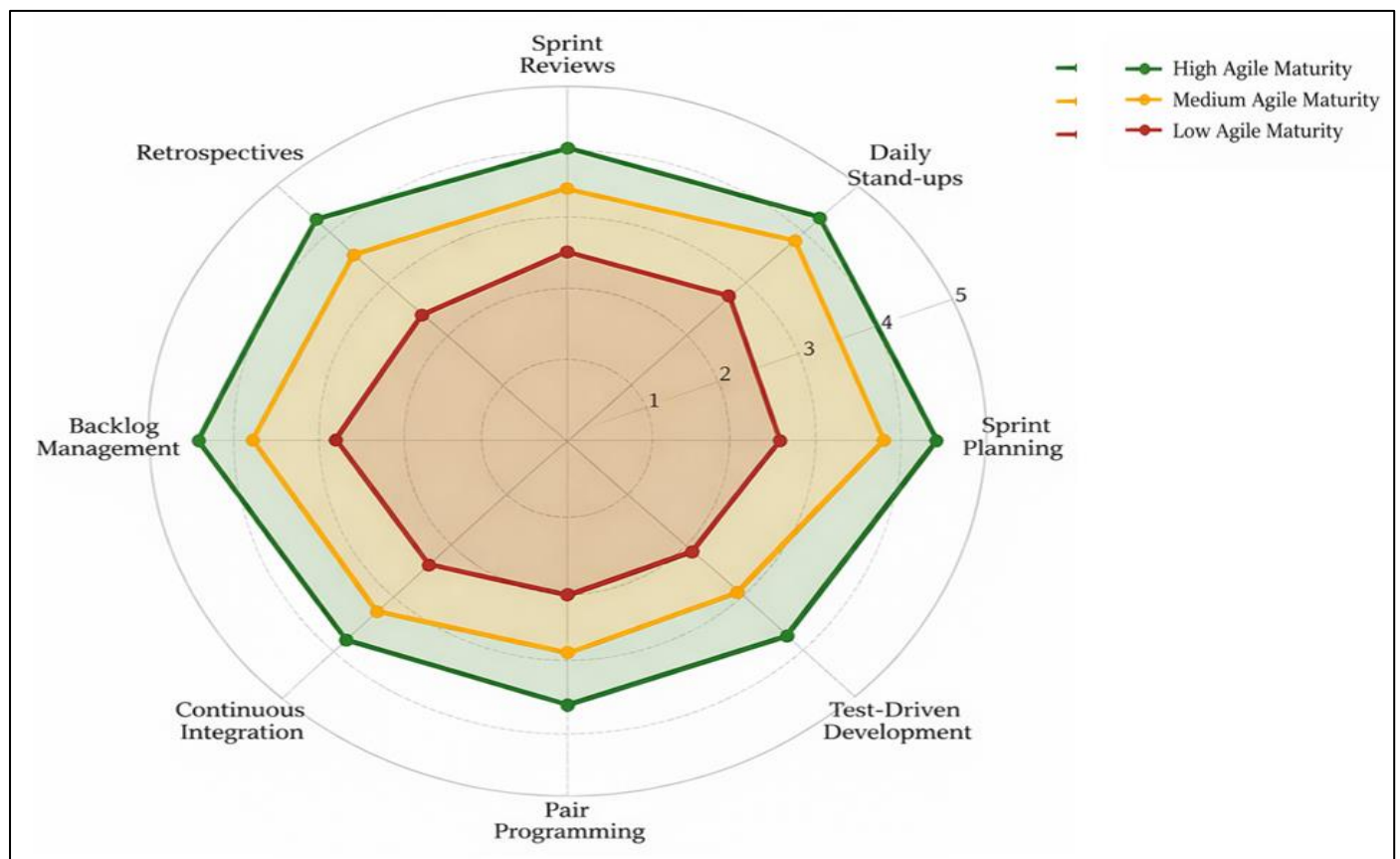


Fig 4 Agile Practices Adoption Profile

➤ *Agile: A Dynamic Capability Mechanism*

Dynamic Capability theory is proven by the positive correlation between Agile adoption and innovation performance. Agile routines are institutionalization of sensing (customer feedback), seizing (rapid pivoting) and transforming (iterative reconfiguration) capabilities.

Notably, the current research builds the Dynamic Capability theory by establishing it in digital governance systems. According to ICT research by Desai, digital spaces entail not only the presence of technology, but also structural re-allocation of power and organization. This structural realignment is implemented through Agile practices at the project level.

In such a way, the introduction of Agile can be presented as a micro-level architecture of dynamic capabilities, which transforms macro-level digital transformation into operations-based routines.

➤ *Role of Team Autonomy*

Agile effectiveness was greatly predicted by team autonomy. The Agile models rely on self-organizing sustainable teams that can quickly solve problems without bureaucratic delays.

The stakeholder governance viewpoint by Desai is based on distributed power in digital ecosystems. In the case of knowledge in the networks being decentralized, hierarchical bottlenecks prevent the speed of innovation. This logic of distributed coordination is manifested in the focus of Agile on stand-ups, sprint retrospectives and decentralized sprint planning.

In small teams (which can be cross-functional) in Indian startups, autonomy can become a multiplier of innovation capability.

➤ *Digital Maturity as a Foundational Enabler*

The digital maturity had a positive impact on the level of Agile adoption. Startups that use collaboration systems, analytics-based dashboards and automated systems exhibit better Agile implementation.

This finding is supported by the study carried out by Desai on the transmission of ICT and the institutionalization of digitalization. Digital transformation is possible when the technological tools and governance systems and organizational culture are aligned. Agile is strongly based on digital transparency and feedbacks and hence, makes digital maturity a pre-condition.

Therefore, Agile adoption cannot be discussed without digital transformation; it is simply a governance complement to digital infrastructure.

➤ *Ecosystem Moderation Effect*

The institutional networks support the reinforcement of the Agile adoption through the moderation effect of the ecosystem support. The startups that are incorporated in robust incubation programs, mentorship networks and

investor ecosystems exhibit increased innovation performances.

The research on the entrepreneurial ecosystem by Desai brings out the significance of stakeholder alignment to the sustainability of the innovation-based organizations. Agile practices will be legitimized and supported further by external actors, who attach importance to the achievement of milestones through iteration and adjustment to the strategy. This result changes the debate on an entirely internal organization reform to alignment in the ecosystem level governance.

➤ *Theoretical Contributions*

The chapter is relevant to the literature in the following aspects:

• *Contribution 1: Agile and Dynamic Capability Theory Integration*

The work is empirical evidence that Agile practices are operational dynamic capabilities in start-ups.

• *Contribution 2: Extension of ICT Governance Perspective*

The chapter connects the ICT governance model of Desai, transforming the Agile research into the institutional theory on adaptation.

• *Contribution 3: Conditioning at the Ecosystem Level.*

Agile research is enhanced by the addition of ecosystem moderation that integrates it into the format of entrepreneurial network.

• *Contribution 4: Emerging Economy Context*

The research adds context-related information on the Indian startup ecosystems, where resource constraint, as well as, digital acceleration coexists.

➤ *Managerial Implications*

Managerial implications include the suggestion that startup founders must encourage adaptive leadership approaches, distributed sprint-based decisions and institutional feedback-led planning cycles and investors must consider Agile maturity as part of due diligence and fund iterative models of milestones of progression as opposed to inflexible forecasting mechanisms. Incubators, in their turn, are expected to give Agile coaching and governance training and strengthen the mechanisms of performance tracking based on sprints since, according to the logic of stakeholder engagement, the alignment of the ecosystem can considerably enhance internal governance reforms and startup performance.

➤ *Policy Implications*

The policy implications point to the fact that the proponents of startup ecosystem can enhance the entrepreneurial development process by introducing Agile training programs in incubation centers, providing digital maturity grants to promote technological preparedness and building the institutional frames that will encourage adaptive and innovation-driven operational cycles rather than fixed performance standards. Since India is moving towards digital

entrepreneurship, Agile governance systems can enhance national innovation power.

VI. LIMITATIONS, FUTURE RESEARCH AND CONCLUSION

➤ Conclusion

The chapter has explored how the concepts of Agile Project Management (APM) have been adopted in the Indian startup worlds by blending the Dynamic Capability theory, Diffusion of Innovation theory, perspectives of project governance and ICT-based entrepreneurial models. The results reveal that entrepreneurial leadership orientation, autonomy of the team, digital maturity and support of the ecosystem have an impact on Agile adoption. Additionally, Agile implementation promotes innovation excellence and response to the market considerably. The findings verify that Agile practices are not just procedural instruments but governance transformations that are ingrained in the digital ecosystems. The strict hierarchical project systems can hinder innovation in extremely volatile startup settings and the Agile systems can formalize adaptive routines that increase organizational resilience. Notably, adding the ICT governance and entrepreneurial ecosystem views of Desai, this study contributes to the multi-level comprehension of Agile adoption. The works of Desai underline the fact that digital transformation is not a technological phenomenon but an institutional and governance-oriented one. Agile adoption, hence, constitutes an organizational reorientation that facilitates startups to adapt well to digital acceleration. Moreover, the Desai model of stakeholder engagement highlights the fact that ecosystem coordination is the key to the success of the entrepreneur. The ecosystem supports moderating effect experienced in this study justifies that Agile effectiveness is enhanced when institutional networks support it. In such a way, Agile Project Management in Indian startups may be imaginarily zed as a dynamic governance competence working at the boundary between leadership cognition and digital maturity and ecosystem reinforcement.

➤ Limitations

Along with its contributions, this study has a number of limitations:

- *Cross-Sectional Design*

The study does not reflect longitudinal development of the Agile practices at the start-up stages of the growth.

- *Self-Reported Data*

In survey-based responses, perception bias may be created.

- *Sectoral Concentration*

As much as it has been suggested that stratified sampling can be used, some technology sectors might overpower representation.

- *Governance Complexity*

The paper concentrates on the chosen determinants; other components like depth of the organizational culture,

cycles of fund and complexity of regulations should be explored further.

The study by Desai warns that the results of digital transformation might be different in different contexts that are defined by institutional variables. Such complexity should be employed in future studies.

➤ Final Reflection

The fast-paced growth of the Indian startup ecosystems requires governance systems that can address uncertainty, innovation cycles and complexity of stakeholders. Agile Project Management provides a highly flexible but structured architecture that is consistent with digital acceleration and experimentation between entrepreneurs. Fluxing the Agile theory with ICT governance and ecosystem approaches this chapter offers a theoretically developed and contextually situational contemplation of Agile adoption in the emerging markets. Agile within Indian startups is not a mere project approach, but rather a governance change that incorporates dynamic capability into entrepreneurial practice.

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