

Innovation Startup Ecosystem Services in Vietnam: Measurement Approaches, Classification Methods, and Performance-Based Resource Allocation

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Abstract: *This paper examines innovation startup ecosystem services in Vietnam through an outcome-based approach, in the context of transitioning toward a growth model driven by science, technology, and innovation. It clarifies the role of ecosystem services as an intermediary component that transforms resources into tangible outcomes and impacts for startups. The study proposes a measurement framework based on the results chain (input- process- output- outcome – impact), with a particular emphasis on indicators that reflect substantive performance, such as firm growth, fundraising capacity, and commercialization outcomes. Building on this foundation, the paper develops a classification approach for service providers based on composite scoring and their actual contributions to the ecosystem. In addition, it proposes a performance-based resource allocation mechanism, incorporating policy instruments such as performance-based funding, service commissioning, and innovation vouchers. The findings contribute to both the theoretical and practical understanding of enhancing the effectiveness of innovation startup ecosystem services in Vietnam, moving toward a governance model that is performance-driven, transparent, and competitive.*

Keywords: Innovation; ecosystem; startup ecosystem services

1. Literature Review

On the ecosystem approach and the role of startup ecosystem services. Innovation startup ecosystems have increasingly become a central concept in both academic research and policy design for knowledge-based economic development. Existing studies suggest that such ecosystems encompass not only firms but also institutional frameworks, resource endowments, networks, and, critically, support services that function as intermediary mechanisms (Isenberg, 2010). From this perspective, ecosystem services are not merely technical support activities; rather, they serve as instruments that reduce transaction costs, mitigate innovation uncertainty, and enhance the commercialization of technologies. Recent work by OECD and the World Bank further extends this view by emphasizing that the overall quality of an ecosystem largely depends on the effectiveness of intermediary organizations, such as incubators, accelerators, and innovation support platforms (OECD, 2019; World Bank, 2020). In Vietnam, policy initiatives such as Decision No. 844/QĐ-TTg adopt a similar approach by focusing on the development of institutional frameworks and support services, reflecting a gradual convergence with international practices, albeit within the context of a state-led developmental model.

On measuring innovation startup ecosystem services. Early approaches to measuring startup ecosystems, such as those developed by the Global Entrepreneurship Monitor (GEM), primarily focused on foundational conditions, including institutional quality, entrepreneurial culture, and access to finance (GEM, 2022). However, recent trends have shifted toward outcome- and impact-based measurement. Reports by Startup Genome demonstrate that high-performing ecosystems are characterized not by the number of support programs, but by their ability to generate high-growth firms, successful fundraising outcomes, and global scalability

(Startup Genome, 2024). OECD similarly recommends that measurement frameworks should integrate inputs, processes, and results, while explicitly capturing the relationship between support services and firm-level performance (OECD, 2025). In Vietnam, despite the proliferation of innovation support programs, measurement systems remain largely input-oriented, focusing on indicators such as the number of supported projects or organized events, which limits the ability to assess the substantive effectiveness of ecosystem services (Ministry of Science and Technology, 2024).

On the role of intermediary organizations and ecosystem services. Intermediary organizations are widely recognized as the operational core of innovation startup ecosystems. According to the World Bank, these entities bridge startups with critical resources, including finance, technology, knowledge, and markets, while providing essential services such as training, mentoring, legal support, and investor matchmaking (World Bank, 2023). Empirical evidence from Startup Genome further indicates that the quality of incubation and acceleration programs significantly influences startup success rates, particularly in early-stage development (Startup Genome, 2024). In Vietnam, the legal framework has begun to formally recognize these institutional forms through regulations on incubators, technical support facilities, and co-working spaces (Ministry of Science and Technology, 2024). Nevertheless, unlike more mature ecosystems where services are predominantly market-driven, Vietnamese intermediary organizations remain heavily reliant on public funding, highlighting the urgent need for performance-based evaluation and classification mechanisms.

On classification methodologies for ecosystem services and organizations. The classification of ecosystem services and service providers has emerged as a key instrument for

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enhancing resource allocation efficiency and fostering competition. International models, such as those developed by Startup Genome and initiatives by the European Commission, typically employ composite scoring methods based on multiple criteria, including startup performance, access to capital, talent quality, and innovation capacity (European Commission, 2022; Startup Genome, 2024). A common feature of these approaches is the prioritization of outcome and impact indicators over input-based measures. In the Vietnamese context, the absence of a formal classification system has led to fragmented resource allocation and weak incentives for improving service quality. Although some domestic studies have proposed outcome-based classification frameworks, the lack of standardized indicators and reliable data continues to hinder large-scale implementation.

On performance-based resource allocation in innovation ecosystems. Performance-based resource allocation has become a dominant paradigm in modern public governance, particularly in the field of innovation policy. The World Bank highlights that linking public funding to measurable outcomes enhances resource efficiency, strengthens accountability, and encourages innovation in service delivery (World Bank, 2020). OECD similarly stresses that such mechanisms must be supported by robust measurement systems and independent evaluation processes (OECD, 2019). In Vietnam, policy instruments such as science and technology procurement, SME support programs, and innovation vouchers have begun to adopt elements of this approach. However, their implementation remains fragmented and insufficiently integrated with service classification systems, underscoring the need for a coherent framework that aligns measurement, classification, and resource allocation.

Synthesis and conceptual clarification. In summary, while significant progress has been made in both theory and practice, a substantial gap remains in the measurement and governance of innovation startup ecosystem services, particularly in developing economies such as Vietnam. Drawing on the reviewed literature, three key conceptual clarifications emerge. First, measuring ecosystem services entails evaluating their effectiveness in generating tangible outcomes and impacts for startups, rather than merely assessing inputs or activity levels. This approach is grounded in the results chain framework (input–process–output–outcome–impact), with emphasis on indicators such as revenue growth, fundraising capacity, survival rates, and market expansion. Second, classification of ecosystem services involves categorizing service providers based on standardized performance metrics, prioritizing outcome and impact over input measures, thereby fostering competition and quality improvement. Third, performance-based resource allocation refers to the distribution of funding and policy support according to demonstrated effectiveness, using instruments such as performance-based funding, service procurement, and innovation vouchers. Together, these elements form an integrated framework that enhances efficiency, accountability, and sustainability in the development of innovation startup ecosystems.

2. Research Methodology

This study adopts an interdisciplinary approach, integrating innovation ecosystem theory with results-based public management. Within this framework, innovation startup ecosystem services are conceptualized as an intermediary component that transforms input resources into tangible outcomes and impacts for startup enterprises. The analytical framework is grounded in the results chain model, encompassing five levels: input, process, output, outcome, and impact. This approach enables a comprehensive assessment of service effectiveness while emphasizing the causal relationship between support activities and firm-level changes.

The study employs a systematic literature review and comparative analysis to collect, examine, and synthesize relevant academic studies, policy reports, and measurement frameworks on innovation startup ecosystems worldwide. The selected sources include reports from OECD, the World Bank, and Startup Genome, as well as scholarly research on ecosystem measurement and innovation support services. Based on this corpus, the study conducts a comparative analysis to identify key trends in measurement, classification, and resource allocation methodologies, particularly the shift from input-based evaluation to outcome- and impact-oriented assessment. In addition, international experiences are contextualized within Vietnam's institutional and policy environment, including regulations related to SME support, innovation-driven startups, and science and technology procurement mechanisms. This approach ensures both the incorporation of global knowledge and the identification of necessary adaptations for local conditions.

Building on the literature review, the study develops a multidimensional measurement framework for innovation startup ecosystem services. The proposed criteria are structured along the results chain, including input indicators (financial resources, human capital, infrastructure), process indicators (intensity and quality of service delivery), output indicators (number of supported firms and implemented programs), outcome indicators (revenue growth, fundraising capacity, startup survival rates), and impact indicators (job creation, economic contribution, technological innovation). A composite scoring model is then constructed through data normalization and weighted aggregation, with greater emphasis assigned to outcome and impact indicators. This framework serves as the foundation for developing a classification methodology for ecosystem service providers based on performance levels, thereby informing the design of resource allocation mechanisms.

Finally, the study applies a policy-oriented analytical approach to propose performance-based resource allocation models. Based on measurement and classification results, several allocation scenarios are developed, including performance-based funding, service commissioning, and innovation voucher schemes. These policy instruments are evaluated in terms of effectiveness, feasibility, and alignment with Vietnam's institutional context. The study also examines enabling conditions such as data infrastructure, independent evaluation mechanisms, and public sector management capacity. This integrated approach bridges academic analysis

and policy design, ensuring that the proposed recommendations are both theoretically grounded and practically applicable, thereby contributing to the improved performance of Vietnam's innovation startup ecosystem.

3. Research Results

Measuring Innovation Startup Ecosystem Services in Vietnam: Identification and Selection of an Outcome-Based Approach

The literature review reveals a clear global shift in measuring innovation startup ecosystems from input-based approaches toward outcome- and impact-oriented frameworks. Early models, such as the Global Entrepreneurship Monitor, primarily assessed entrepreneurial environments through institutional quality, cultural factors, and access to resources. More recent perspectives emphasize that ecosystem quality should be reflected in its capacity to generate high-growth, innovative, and scalable firms (OECD, 2019; World Bank, 2020). Within this context, innovation startup ecosystem services—including incubation, acceleration, advisory support, and network facilitation—are increasingly recognized as critical intermediary variables that determine how effectively resources are transformed into tangible outcomes. Consequently, measurement approaches must move beyond assessing the scale of service provision and instead capture their substantive impact on startup performance.

An analysis of international measurement frameworks highlights three key characteristics of outcome-based approaches. First, these systems adopt a multidimensional structure, integrating indicators across input, process, output, outcome, and impact levels. Second, indicators are standardized and quantitatively defined to ensure comparability across ecosystems and service providers, as exemplified by Startup Genome's metrics on startup performance, fundraising capacity, and market expansion (Startup Genome, 2024). Third, these approaches emphasize the causal relationship between support services and achieved outcomes, rather than merely documenting service availability. Together, these features suggest that measuring innovation ecosystem services should be conceptualized as a performance evaluation system in which firm-level data play a central role.

In the Vietnamese context, policies supporting the development of innovation ecosystems have facilitated the establishment of a network of service providers, including incubators, accelerators, and innovation support centers. However, the findings indicate that current measurement practices remain largely focused on input and direct output indicators, such as the number of support programs, participating firms, or allocated resources (Ministry of Science and Technology, 2024). This approach fails to adequately capture the substantive effectiveness of services, particularly in terms of firm growth, innovation, and commercialization outcomes. Moreover, the lack of integrated data systems linking service providers with beneficiary firms further constrains the ability to assess impact comprehensively.

Based on a comparative analysis of international practices and domestic conditions, this study proposes an outcome-based

measurement approach that integrates the results chain framework with an ecosystem perspective. Specifically, the measurement system is structured around five levels—input, process, output, outcome, and impact—with greater weighting assigned to outcome and impact indicators in composite scoring. The approach is tailored to Vietnam's context by prioritizing feasible, verifiable indicators that align with existing data availability and management capacity. In addition, the study recommends integrating multiple data sources, including service provider reports, firm-level data, and national information systems, to enhance the reliability and robustness of measurement outcomes. This design ensures both scientific rigor and practical feasibility.

The adoption of an outcome-based measurement approach carries significant implications for both research and policymaking. It provides a comprehensive and objective tool for evaluating the effectiveness of ecosystem service providers, enabling the identification of high-performing models and systemic bottlenecks. Furthermore, it establishes a foundation for developing service classification systems and designing performance-based resource allocation mechanisms, thereby improving the efficiency of public spending. More broadly, this approach supports a transition from input-oriented, fragmented support policies to a results-driven, targeted model aligned with modern public governance principles. In the long term, its implementation is expected to enhance the quality of Vietnam's innovation startup ecosystem, contributing to the development of innovative enterprises and sustainable economic growth.

Classification of Innovation Startup Ecosystem Services in Vietnam: Toward Standardization and Outcome-Based Assessment

The classification of innovation startup ecosystem services is increasingly recognized as a critical instrument for enhancing ecosystem governance toward efficiency and competitiveness. Beyond its basic function of categorization, classification serves as a market-signaling mechanism, enabling stakeholders to assess service quality and make informed choices. Both OECD and the World Bank emphasize that classifying intermediary organizations—such as incubators and accelerators—enhances transparency, strengthens accountability, and promotes performance improvement (OECD, 2019; World Bank, 2020). In ecosystems characterized by the participation of diverse public and private actors, classification functions as a bridging mechanism linking performance evaluation with resource allocation. Consequently, the development of an appropriate classification methodology is not merely a technical task but a strategic requirement for advancing innovation startup ecosystems.

International classification models demonstrate a clear shift from input-based categorization toward outcome- and impact-oriented approaches. For instance, Startup Genome employs composite indices to assess ecosystem performance based on indicators such as funding scale, the number of high-growth startups, and global market reach (Startup Genome, 2024). Similarly, initiatives by the European Commission adopt multi-criteria evaluation frameworks that prioritize innovation and commercialization outcomes (European Commission, 2022). These approaches share common

features, including the use of quantitative data, standardized indicators, and weighted scoring systems to reflect the relative importance of each criterion. Importantly, classification systems are designed to be dynamic and periodically updated, allowing them to capture changes in organizational performance over time.

Evidence from international practices suggests that effective classification methodologies should meet three fundamental requirements. First, they must ensure objectivity and transparency through standardized data and clearly defined evaluation procedures. Second, they must enable comparability across organizations or regions within a unified analytical framework. Third, they should support policy decision-making by linking classification outcomes to resource allocation and program design. However, the applicability of such methodologies depends significantly on the availability of reliable data and the institutional capacity of each country, necessitating context-specific adaptations.

In Vietnam, although the innovation startup ecosystem has expanded rapidly in terms of the number of service providers, a systematic and formal classification framework has yet to be established. Existing support programs are primarily based on administrative criteria or project proposal capacity, rather than comprehensive performance evaluation grounded in outcomes. This has resulted in limited differentiation in service quality and weakened incentives for improving organizational performance. Furthermore, the absence of standardized data on organizational outcomes poses a significant barrier to implementing a robust classification system.

The findings reveal a substantial gap between Vietnam's current practices and international standards, particularly in linking classification to performance and impact. To address this, the study proposes a classification approach based on composite scoring derived from a standardized measurement framework of ecosystem services. This approach involves three key steps: data normalization, weighted aggregation of indicators, and classification into performance tiers based on score thresholds. Outcome and impact indicators are prioritized in the scoring process, while input indicators serve a supplementary role. The proposed system is designed to be simple, practical, and adaptable to Vietnam's current data conditions. Service providers are categorized into four groups - excellent, good, average, and weak-thereby facilitating performance comparison and evaluation.

The adoption of an outcome-based classification approach has significant implications for improving the quality and efficiency of the ecosystem. First, it introduces a competitive mechanism among service providers, encouraging innovation and performance enhancement. Second, it provides transparent and reliable information to startups, enabling them to select appropriate services and optimize resource utilization. More importantly, classification serves as a foundation for designing performance-based resource allocation mechanisms, ensuring that high-performing organizations receive prioritized support. In the long term, this approach is expected to contribute to the development of a more competitive, transparent, and effective innovation startup ecosystem in Vietnam.

Resource Allocation for Innovation Startup Ecosystem Services in Vietnam: Trends and Implementation Conditions.

Performance-based resource allocation has emerged as a dominant trend in the development of innovation startup ecosystems worldwide. According to OECD, more than 70% of innovation support programs across member countries have shifted toward outcome-based funding mechanisms, replacing traditional input-driven allocation models (OECD, 2019). Similarly, the World Bank highlights that countries adopting such approaches achieve 20–30% higher efficiency in public spending compared to conventional methods (World Bank, 2020). Countries such as South Korea, Singapore, and members of the European Union have implemented service commissioning programs in which payments are directly tied to firm-level outcomes, such as the number of commercialized products or additional revenue generated. These experiences demonstrate that transitioning to outcome-based allocation not only optimizes budget efficiency but also creates strong incentives for service providers to improve performance and service quality.

International practices reveal three prominent models of resource allocation. First, the performance-based funding model allocates budgets according to evaluation scores or classification results of service providers. For instance, in the European Union, innovation programs such as Horizon Europe apply multi-criteria evaluation frameworks, with funding decisions based on project performance, often under highly competitive conditions with success rates ranging from 10% to 20% (European Commission, 2022). Second, the service commissioning model involves governments defining specific service needs and contracting service providers, with payments linked to achieved outputs, such as the number of successfully incubated firms or completed investment deals. Third, the innovation voucher model enables firms to select service providers while receiving partial financial support from the government. OECD reports indicate that such voucher schemes can increase SMEs' utilization of innovation services by 25–40% (OECD, 2019). A common feature of these models is their emphasis on linking funding to results while fostering competition among service providers.

In Vietnam, financial support for the innovation startup ecosystem is primarily derived from public funding through programs such as the National Initiative 844, science and technology missions, and SME support schemes. According to the Ministry of Science and Technology (2024), during the period 2016–2024, Initiative 844 supported over 2,300 startup projects, provided training for more than 10,000 individuals and organizations, and facilitated hundreds of investment deals. However, resource allocation mechanisms remain largely input-based, relying on planning and proposal evaluation rather than performance outcomes. This has led to fragmented allocation, limited accountability, and insufficient incentives for improving service quality. Furthermore, the absence of independent evaluation mechanisms and integrated data systems has constrained the transition toward performance-based allocation. Compared to international practices, Vietnam remains at an early stage in adopting outcome-oriented funding mechanisms.

Drawing on international experience and domestic conditions, this study proposes a hybrid resource allocation approach combining three models: performance-based funding, service commissioning, and innovation vouchers. Performance-based funding is applied at the organizational level, with resource allocation linked to the classification results of ecosystem service providers, whereby higher-ranked organizations receive greater financial support. Service commissioning is used for specific activities, such as incubation or training, with contracts tied to measurable outputs. Meanwhile, innovation vouchers empower firms to choose service providers, thereby enhancing market competition. This integrated approach leverages the strengths of each model while mitigating implementation risks.

To effectively implement outcome-based resource allocation, several enabling conditions must be established. First, a national data system for the innovation startup ecosystem should be developed, integrating information on service providers and beneficiary firms to ensure accurate measurement and evaluation. Second, independent evaluation mechanisms - such as third-party organizations or expert panels—should be introduced to ensure objectivity and transparency. Third, the legal framework governing instruments such as service commissioning and innovation vouchers should be further refined to enhance flexibility and adaptability. International experience suggests that successful implementation depends on robust data infrastructure and evaluation systems that enable continuous monitoring and policy adjustment over time.

The transition toward outcome-based resource allocation carries significant implications for the development of Vietnam's innovation startup ecosystem. It enhances the efficiency of public spending by directing resources toward organizations that generate higher value, while also creating incentives for service providers to improve performance. Moreover, it contributes to the formation of a competitive market for ecosystem services, with firms playing a central role in service selection. In the long term, this approach is expected to strengthen firms' innovation capacity, promote economic growth, and enhance national competitiveness. Ultimately, it represents a critical shift from administrative, input-based support toward a performance-driven model aligned with modern public governance and global integration.

4. Conclusion and Recommendations

Innovation startup ecosystem services play a pivotal intermediary role in determining the overall effectiveness of ecosystem performance. Drawing on international experience and empirical analysis in Vietnam, this study highlights an inevitable shift from input-based support approaches toward outcome- and impact-oriented frameworks. The three core components- measurement, classification, and resource allocation- do not operate in isolation but form an integrated and mutually reinforcing cycle, in which measurement provides evidence, classification generates market signals, and resource allocation creates incentives for performance improvement. Nevertheless, a significant gap remains between Vietnam's current practices and international standards, particularly in terms of the absence of standardized

measurement criteria, transparent classification systems, and performance-based allocation mechanisms.

The findings suggest that measurement of innovation startup ecosystem services should be structured along the results chain (input–process–output–outcome–impact), while classification should rely on composite scoring derived from standardized indicators to enable objective comparison across service providers. This approach is consistent with recommendations from OECD and the World Bank and can be adapted flexibly to Vietnam's data availability and institutional capacity. The integrated application of these methods provides a robust foundation for improving service quality and fostering competition within the ecosystem.

Furthermore, outcome-based resource allocation is identified as a critical condition for enhancing the efficiency of public spending and ensuring the sustainable development of the innovation startup ecosystem. Mechanisms such as performance-based funding, service commissioning, and innovation vouchers have demonstrated effectiveness in many countries and can be adapted to Vietnam's context. Transitioning from input-driven allocation to performance-oriented models not only optimizes resource use but also creates strong incentives for service providers to improve operational quality, thereby generating greater value for startups.

To improve the quality and effectiveness of ecosystem services in Vietnam, several policy recommendations are proposed. First, a national framework of standardized indicators for measuring ecosystem services should be developed, with a clear emphasis on outcome-based metrics. Second, an official classification system for service providers should be established, updated regularly, and implemented with transparency. Third, resource allocation mechanisms should be gradually restructured toward performance-based models, incorporating policy instruments such as service commissioning and innovation vouchers. In parallel, the legal and financial frameworks should be refined to support the flexible and effective implementation of these mechanisms. To ensure feasibility, pilot implementation of measurement, classification, and allocation models is recommended in key innovation hubs such as Hanoi, Ho Chi Minh City, and Da Nang before scaling nationwide. Additionally, a national data system for the innovation startup ecosystem should be developed, integrating data from service providers and startup firms to support measurement and evaluation. Future research should focus on quantitative modeling, empirical validation, and impact assessment of resource allocation policies, thereby contributing to the refinement of institutional frameworks and policy design for ecosystem service development in Vietnam.

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