

Development of strategic management models under conditions of technological innovation

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Abstract. Technological innovation creates a coordination problem for enterprises because technological maturity, intellectual property protection, regulatory compliance, commercial feasibility, and scaling readiness evolve at different rates. Fragmented assessment can cause premature scaling, under-protection of knowledge, or continued investment in projects without a viable commercialisation route. The study aimed to develop a conceptual strategic decision model based on an integrated three-dimensional classification of innovation projects. A structured review of peer-reviewed research published in 2021-2026, content analysis of Ukrainian and international legal sources, conceptual modelling, comparative mapping, and descriptive analysis of Ukraine's Global Innovation Index (GII) profile for 2020-2025 were applied. The study operationalised three dimensions: scientific and technological fit (N), legal and standards readiness (L), and business readiness (B). These dimensions were measured through observable managerial indicators and a documented 0-4 evidence rubric, with normalised low, medium, and high bands. It developed a closed process model comprising signal detection, classification, strategic choice, implementation, and learning, with explicit inputs, outputs, gate conditions, and feedback. A conceptual Strategic Suitability Index was introduced to rank innovation projects by N, L, B, and integrated risk R without replacing net present value (NPV), internal rate of return (IRR), or mandatory compliance gates. Six illustrative N-L-B configurations were formulated to connect project profiles with investment, intellectual property, partnership, and scaling decisions. Legal mapping showed how innovation support rules affect B and R, while patent and international trade rules affect L, commercialisation options, and enforcement risk. The national index data were retained only as contextual evidence and were not treated as validation of the project-level model. The framework can support preliminary portfolio screening, identify evidence gaps, and coordinate research and development (R&D), legal, and commercial functions under uncertainty

Keywords: dynamic capabilities; intellectual property governance; commercialisation readiness; portfolio prioritisation; ecosystem orchestration; regulatory compliance

INTRODUCTION

Technological innovation projects rarely progress synchronously across their technical, legal, and commercial trajectories. A prototype may be technically promising but unprotectable, non-compliant with target-market standards, unsupported by complementary assets, or unable to secure financing. Conversely, a legally protected technology may have insufficient customer value or scaling capacity. When these trajectories are assessed by separate organisational functions, the firm may optimise one dimension while

increasing total project risk. The managerial problem is therefore not merely how to select a novel technology, but how to coordinate evidence, rights, standards, capital, market access, and learning at successive decision gates.

The researchers O. Bradul & Y. Novikov (2025) addressed this fragmentation by proposing a three-dimensional classification that combines scientific and technological criteria, legal criteria, and entrepreneurial criteria. Their framework creates a common vocabulary for

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interdisciplinary assessment, but it remains primarily classificatory: it does not specify a reproducible scoring procedure, transition rules between stages, or the way in which a project profile should trigger portfolio, protection, and scaling decisions. P.C. Verhoef *et al.* (2021) conceptualised digital transformation as a multidisciplinary change involving strategy, business models, organisational structures, and performance metrics. Empirically, A. Abdurrahman *et al.* (2024) found that dynamic capabilities support digital transformation and innovation performance in banking. Together, these studies demonstrate that technological adoption must be embedded in organisational choice; however, neither provides a project-level mechanism that jointly assesses technological fit, legal readiness, and commercialisation readiness.

The scientists H. Hou & Y. Shi (2021) distinguished ecosystem-as-structure from ecosystem-as-coevolution, showing that strategic coordination depends on how interdependent actors and boundaries are understood. B. Kindermann *et al.* (2022) further integrated sensing, seizing, and reconfiguring routines into ecosystem orchestration. These contributions explain how firms mobilise complements, but they leave open how legal regimes, standards, and project-specific business evidence should be incorporated before an ecosystem commitment is made. P. Hurmelinna-Laukkanen & J. Yang (2022) distinguished appropriability, the potential to protect value, from appropriation, the realised capture of value. R.A.R. Pires & J.J. Ferreira (2025) likewise showed that research on innovation strategy and intellectual property remains fragmented despite clear links among protection mechanisms, collaboration, learning, and value capture. This literature substantiates a separate legal dimension, yet it does not integrate that dimension with technology maturity and commercialisation gates in a unified project assessment.

In accordance with N. Goruppec *et al.* (2022), real-options logic can reduce irreversibility by staging commitments under uncertainty. This approach supports conditional investment, but an option gate still requires evidence about what is being protected, which standards apply, whether a viable commercialisation route exists, and which risks remain non-compensatory. A ranking mechanism must therefore be combined with minimum gates rather than used as a substitute for legal or technical requirements. Across these streams, the unresolved issue is the absence of a transparent algorithm that converts an integrated N-L-B project profile into coordinated strategic decisions and subsequently updates that profile through learning. This gap motivated the present study. The purpose of the study was to develop a conceptual model for strategic decision-making under conditions of technological innovation by operationalising the N, L, and B dimensions, formalising a process cycle and a preliminary portfolio index, and defining the link between assessment results and managerial actions.

● MATERIALS AND METHODS

This study was conceptual, qualitative, and analytical, with an illustrative descriptive component. The unit of analysis was an innovation project considered at a portfolio or stage-gate decision point. The design does not test causal hypotheses and does not constitute empirical validation of

the Strategic Suitability Index (SSI); it develops a transparent procedure that can be tested in subsequent firm-level research. The evidence base comprised four groups of materials: 20 peer-reviewed articles published in 2021–2026, including the integrated N-L-B classification developed by O. Bradul & Y. Novikov (2025); the measurement principles of the Oslo Manual (OECD & Eurostat, 2018); official statistical and legal sources relevant to innovation, intellectual property (IP), standards, and international commercialisation; and two foundational multi-criteria decision analysis (MCDA) books used only to specify future procedures for weight elicitation and sensitivity analysis.

The literature component was a structured narrative review updated through July 2026. Bibliographic searches and reference chaining used combinations of the terms “technological innovation”, “strategic management”, “digital transformation”, “dynamic capabilities”, “innovation ecosystem”, “appropriability”, “intellectual property strategy”, “real options”, and “commercialisation”. Publication metadata were checked against publisher pages and DOI records. Eligible records were peer-reviewed articles or reviews in management, business, economics, or innovation studies, published from 2021 onward, with an explicit method and a direct connection to project, portfolio, ecosystem, protection, or scaling decisions. Non-peer-reviewed commentary, conference abstracts, and records without verifiable bibliographic data were excluded. Legal content analysis covered Law of Ukraine No. 3687-XII (1993), the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) (World Trade Organization, 1994), Law of Ukraine No. 40-IV (2002) and Strategy for the Development of Innovation Activity up to 2030 (Order of Cabinet of Ministers of Ukraine No. 526-r, 2019). Each provision was coded by its direct relation to legal readiness (L), business readiness (B), or integrated risk (R), and then translated into an evidence requirement or a non-compensatory decision gate.

The conceptual model was constructed in six steps: First, the N, L, and B constructs and their subcriteria were derived from the integrated classification, while the boundary between an innovation and an innovation activity was aligned with the Oslo Manual. Second, every subcriterion was mapped to at least one observable proxy and to the managerial record that could substantiate it. Third, proxy and a common evidence scale were defined. Fourth, normalised proxy scores were aggregated within N, L, B, and R. Fifth, score patterns were linked to explicit portfolio, protection, partnership, certification, and scaling rules. Sixth, implementation outcomes were returned to the model as feedback for rescoring and revision of weights or thresholds. Proxy indicators were selected according to five principles: construct relevance, observability in ordinary managerial records, comparability across projects, unambiguous directionality, and limited duplication. Acceptable evidence included test protocols, technology-readiness reviews, patent and ownership records, standards and certification maps, customer-validation data, unit-economics calculations, financing documents, and signed partner or channel commitments. A proxy is therefore an observable indicator of a construct, not a substitute for the construct itself.

Each applicable proxy was scored on a documented five-point evidence rubric: 0 means that no reliable

evidence exists; 1 indicates a preliminary assertion or single unverified observation; 2 indicates partial documentation; 3 indicates repeated or internally verified evidence appropriate to the current decision stage; and 4 indicates external validation, certification, contractual confirmation, or equivalent robust evidence. The normalised proxy score is $z = s/4$. A dimension score was the weighted mean of its applicable normalised proxies, with within-dimension weights summing to one. N measures strategic technological fit and does not reward radical novelty by itself; technical differentiation must be compatible with maturity and the decision horizon. For interpretation, dimension scores below 0.40 were classified as low, scores from 0.40 to 0.69 as medium, and scores from 0.70 to 1.00 as high. These ex-ante bands distinguish early, intermediate, and decision-ready evidence; they are not empirically estimated cut-offs and must be calibrated by sector. Sensitivity analysis around the 0.40 and 0.70 boundaries is required when a classification changes after a small score variation. R is assessed on the same 0–4 rubric for technological, regulatory, market, and ecosystem risks, but a higher R score denotes greater adverse exposure.

The link between indicators and strategic decisions combines a compensatory ranking rule with non-compensatory gates. SSI can rank otherwise eligible projects, but a high aggregate score cannot offset a mandatory standard, unclear ownership, a failed critical test, or the absence of an executable route to market. Illustrative equal weights were used only for the configurations in this article. In an empirical application, weights should be elicited from decision-makers and checked for robustness; the Analytic Hierarchy Process (AHP) described by T.L. Saaty (1980) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) developed by C.-L. Hwang & K. Yoon (1981)

were retained as candidate procedures. Descriptive statistics were calculated for Ukraine's Global Innovation Index (GII) rankings in 2020–2025 using the country profile published by the World Intellectual Property Organization (2025). The calculation included the arithmetic mean, sample standard deviation, annual input-output rank gap, and the change between 2020 and 2025. National rankings were excluded from N, L, B, R, and SSI because economy-level indicators are not project-level measurements; they were retained only as contextual benchmarking and not as model validation or a basis for causal inference. The main limitations followed from the conceptual design. The proxy set has not undergone reliability, convergent-validity, or predictive-validity testing; thresholds and weights are normative; the six configurations are not frequency estimates; and the GII analysis is vulnerable to ecological inference and year-to-year comparability problems. The legal mapping is specific to the selected Ukrainian and international sources and does not constitute legal advice for a particular jurisdiction.

● RESULTS

The analysis produced five interrelated authorial outputs: an operational evidence system for N, L, B, and R; a five-stage process model; a conceptual SSI; six strategic N-L-B configurations; and a legal-to-model mapping. The GII analysis is presented separately as contextual benchmarking and is not treated as a test of these outputs. The classification criteria were converted into observable evidence and decision uses. Table 1 distinguishes the three positive readiness dimensions from the auxiliary adverse-risk component. The operationalisation makes explicit both the evidence owner and the managerial action that a score can inform.

Table 1. Operationalisation of the N-L-B dimensions and auxiliary risk component

Component	Construct content	Observable proxy indicators	Decision uses
N – scientific and technological fit	Technological differentiation, strategic relevance, domain fit, and maturity for the current decision horizon	Technology readiness level (TRL) and test evidence; performance against a benchmark; prototype reliability; unresolved technical assumptions; research and development (R&D) resource intensity	Experiment, continue, partner, redesign, defer, or stop; determine technical milestones and tranche size
L – legal and standards readiness	Ownership and protectability; protection regime; standards and certification; target jurisdictions	Chain-of-title evidence; patent or secrecy rationale; freedom-to-operate review; certification map; filing and enforcement plan	Protect, license, retain as know-how, redesign, select jurisdictions, or block scaling until a mandatory requirement is met
B – business readiness	Value proposition, commercialisation route, financing, complementary assets, scaling, and export readiness	Customer validation; total addressable, serviceable available, and serviceable obtainable market (TAM/SAM/SOM) assumptions; unit economics; committed financing; channel and partner readiness; export logistics	Select business and financing model; build or access complements; choose pilot, license, alliance, export, or scale route
R – auxiliary integrated risk	Technological, regulatory, market, ecosystem, cybersecurity, supply-chain, and environmental exposure	Critical unresolved failures; probability-severity register; certification uncertainty; financing runway; partner concentration; data and supply risks	Apply the SSI penalty; tighten gates; reduce tranche size; add contingencies; postpone or terminate the project

Source: developed by the author, the measurement logic is aligned with OECD & Eurostat (2018) and the N-L-B construct content is based on O. Bradul & Y. Novikov (2025)

The process model was developed as a closed cycle. At the signal stage, technology, market, legal, standards, and ecosystem changes enter the model together with the existing project dossier; the output is a documented trigger and an evidence request. The model proceeds to classification only after the minimum evidence owner and

decision horizon have been defined. At the classification stage, proxies are scored, normalised, and aggregated into N, L, B, and R, producing an evidence-backed profile, a confidence note, and a list of missing data. The transition to strategic choice requires that all mandatory technical, ownership, standards, and compliance questions be

classified as met, unmet, or explicitly unresolved; an undocumented issue cannot be treated as a positive score.

At the choice stage, eligible projects are compared through SSI and non-compensatory gates. The output is a decision to experiment, protect, partner, license, scale, defer, redesign, or stop, together with resource, intellectual-property, certification, and commercialisation commitments.

Implementation converts that decision into milestones, contracts, tests, and key performance indicators (KPIs). Learning is triggered at a milestone, a material deviation, or a new external signal; realised outcomes then update the evidence scores, risk register, weights, and next gate. Figure 1 visualises this five-stage sequence, its transition logic, and the feedback path from learning to classification.

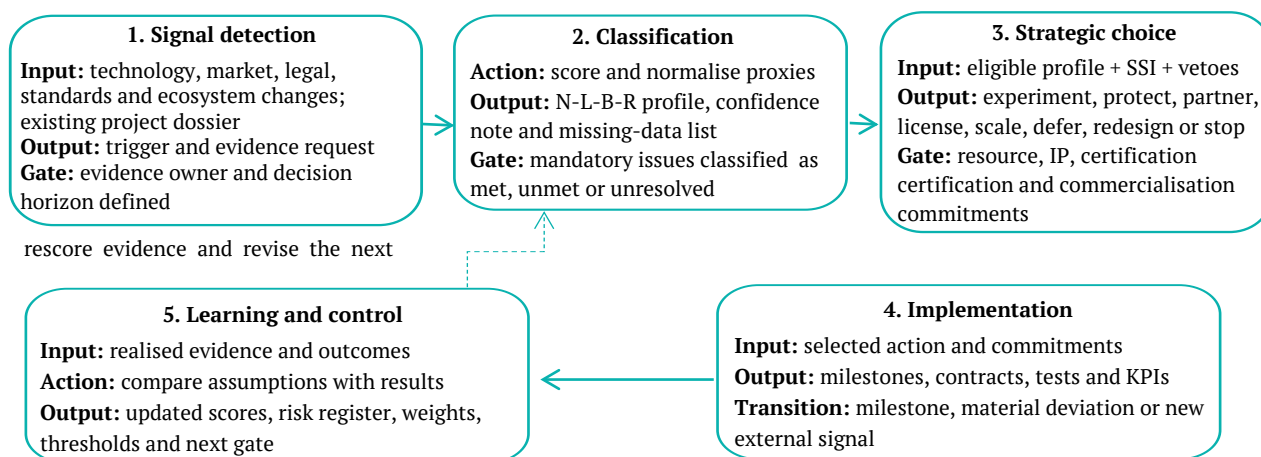


Figure 1. Five-stage process model for project-level strategic decisions under technological uncertainty

Source: developed by the author

The feedback loop is substantive rather than ceremonial: if implementation evidence changes a project's dimension band or exposes a failed gate, the project returns to classification or choice instead of continuing automatically. This mechanism converts the N-L-B framework from a descriptive taxonomy into a revisable decision architecture. SSI was formulated as a preliminary portfolio-ranking instrument for projects that have passed mandatory gates. All four inputs are dimensionless normalised scores ranging from 0 to 1. N represents scientific and technological fit; L represents legal and standards readiness; B represents business readiness; and R represents integrated adverse risk:

$$SSI = wN \cdot N + wL \cdot L + wB \cdot B - wR \cdot R, \quad (1)$$

where $wN + wL + wB + wR = 1$ and $w_i \geq 0$. The non-negative weights express the decision-maker's priorities and sum to one. SSI is a relative ranking score, not a probability of

success and not a replacement for net present value (NPV), internal rate of return (IRR), due diligence, or legal review. It may be negative when the weighted risk penalty exceeds positive readiness. Equal weights are acceptable only for illustration; empirical use requires elicitation, consistency checks, and sensitivity analysis. The decision logic also contains vetoes. A project cannot proceed to regulated-market scaling when a mandatory standard is unmet, when ownership is unclear, or when a critical technical test has failed, regardless of SSI. Low L combined with high N triggers staged investment and protection work; low B triggers customer discovery, licensing, partnership, or deferral; and a rising R score reduces tranche size or activates a stop rule. Six illustrative configurations were derived by combining the low, medium, and high bands. Table 2 summarises these decision archetypes and shows how similar aggregate SSI values may require different actions because their underlying N-L-B profiles differ; they are not empirically observed clusters.

Table 2. Illustrative strategic configurations based on the N-L-B profile

Configuration	N-L-B profile	Dominant logic	Typical portfolio, protection, and scaling decisions
Option-based radical project	High N; low/medium L; medium B	Staged learning under uncertainty	Fund critical experiments in tranches; complete IP landscape and standards map; prohibit full scaling until mandatory L gaps close
Protected scale-up	High N; high L; high B	Accelerated value capture	Secure priority jurisdictions; expand production, marketing, and service complements; execute the export or licensing plan
Regulated breakthrough through alliance	High N; high L; medium B	Risk sharing and access to complements	Use joint certification, licensing, or a strategic alliance; share financing and market-access costs with a qualified partner
Ecosystem digital project	Medium/high N; medium L; high B	Platform and complement orchestration	Pilot ecosystem rules; allocate data and IP rights contractually; test partner incentives and interoperability before expansion

Table 2, Continued

Configuration	N-L-B profile	Dominant logic	Typical portfolio, protection, and scaling decisions
Incremental process improvement	Low/medium N; high L; medium/high B	Exploitation and operational efficiency	Prioritise process KPIs and standards; replicate in phases; protect know-how and document implementation learning
Local commercialisation with weak formal IP	Medium N; low L; medium B	Speed plus organisational protection	Use secrecy, access controls, and contracts; differentiate through service; strengthen L before licensing or international expansion

Source: developed by the author

The six configurations show that a strategic decision depends not only on an aggregate readiness level or SSI value, but also on the internal N-L-B profile. Projects with similar aggregate scores may therefore require different actions: high N combined with low L calls for staged investment and protection work, whereas high L and B with only medium N supports controlled replication or process improvement. The weakest evidenced dimension identifies the immediate managerial priority and may activate a gate even when the aggregate score is comparatively favourable.

Because implementation feedback can change any dimension, the configurations should be treated as revisable decision archetypes rather than fixed development pathways. Table 3 presents the national data as contextual, not validating, evidence. Ukraine's overall GII rank changed from 45 in 2020 to 66 in 2025, while the 2025 input and output ranks were 80 and 54, respectively. The persistent input-output gap illustrates that resource conditions and realised outputs should not be collapsed into one construct, but it does not establish any causal relationship among N, L, B, R, or SSI.

Table 3. Contextual GII rankings for Ukraine, 2020-2025

Year	Overall GII rank	Innovation inputs rank	Innovation outputs rank	Inputs – outputs gap
2020	45	71	37	34
2021	49	76	37	39
2022	57	75	48	27
2023	55	78	42	36
2024	60	78	54	24
2025	66	80	54	26

Note: the mean overall rank for 2020-2025 is 55.3 and the sample standard deviation is 7.55; the 2025 rank is 21 positions lower than in 2020. Rank changes are descriptive because data availability and changes in the GII model affect year-to-year comparability

Source: author's calculations based on World Intellectual Property Organization (2025)

Accordingly, GII values are excluded from project scoring. They can inform the external signal and risk register, but they cannot demonstrate that a particular project should shift from N to L or B, and they cannot verify the reliability or predictive validity of SSI. The legal content analysis produced an explicit mapping to

L, B, and R. Table 4 presents the resulting mapping and shows that legal sources do more than define a general environment: they create evidence requirements, shape available commercialisation instruments, and expose costs or constraints that must enter project gates and the risk register.

Table 4. Mapping of selected legal sources to L, B, R, and strategic decision rules

Source	Model link	Operational result of the comparison	Decision rule in the model
Law of Ukraine "On Innovation Activity"	B; R	Project status, state-regulation instruments, and support conditions affect feasible financing and institutional exposure	Do not increase B for expected public support until eligibility and documentation are confirmed; record uncertainty as R
Law "On Protection of Rights to Inventions and Utility Models"	L; B; R	Patentability, registration, exclusive rights, assignment, and licensing connect protectability with commercialisation options and cost	Verify ownership and protection route before scale; include filing, enforcement, and design-around exposure in R
Innovation Activity Strategy up to 2030	B; R	Policy priorities shape the external support environment but do not guarantee project-level funding or market success	Use policy fit as contextual evidence only; no automatic SSI uplift without an executable instrument or commitment
TRIPS Agreement	L; R	Minimum international standards and enforcement rules create a legal floor, while protection and enforcement costs remain jurisdiction-specific	Map target jurisdictions before export or licensing; treat enforcement gaps and costs as risk rather than assuming uniform protection

Source: developed by the author based on Law of Ukraine No. 3687-XII (1993), World Trade Organization (1994), Law of Ukraine No. 40-IV (2002) and Order of Cabinet of Ministers of Ukraine No. 526-r (2019)

The mapping confirms that L is not a binary patent variable. It includes ownership, protectability, standards, certification, jurisdiction, transferability, and enforcement exposure. It also demonstrates cross-effects: public-support eligibility influences B and R; assignment or licensing affects B; and filing, certification, and enforcement costs

affect R. At low L, the managerial priority shifts from scaling to clarifying ownership, freedom to operate, the protection route, and certification requirements; external financing, licensing, and market entry should be staged or deferred. At medium L, a bounded pilot or partnership may proceed only with contractual allocation of IP and data

rights, certification milestones, and contingencies. At high L, validated ownership, standards compliance, and jurisdictional protection expand the feasible set of licensing, alliance, export, and scaling options, although continuation still depends on N, B, and R. Legal and regulatory readiness thus functions both as a value-enabling resource and as a non-compensatory gate that determines not only whether a project proceeds, but also the appropriate governance and commercialisation mode.

● DISCUSSION

The principal result is a project-level decision architecture that translates the N-L-B classification into an evidence-based cycle and combines SSI ranking with mandatory gates. Its scientific significance lies in separating compensatory portfolio comparison from non-compensatory feasibility conditions: readiness dimensions may trade off in SSI only among projects that satisfy critical technical, ownership, standards, and route-to-market requirements. This distinction explains why projects with similar aggregate scores may legitimately require different strategic actions. The results remain a conceptual integration rather than evidence of predictive validity. A. Hanelt *et al.* (2021) framed digital transformation as organisational change embedded in structures and context, while J. Konopik *et al.* (2022) showed that different organisational capabilities are needed at different stages of transformation. S. Kraus *et al.* (2022), based on a review of 217 articles, likewise positioned digital transformation as a synergistic business and management research domain. These findings support the shift from a static classification to a process model. The present framework extends that logic by making the evidence profile and gate conditions explicit at project level, but it does not estimate how strongly any capability affects outcomes.

D. Ellström *et al.* (2022) identified sensing, seizing, and reconfiguring routines that enable digital transformation. N.A. Al-Moaid & S.G. Almarhdi (2024) additionally found that change management mediates the relationship between dynamic capabilities and successful digital transformation projects. These studies support the signal, choice, implementation, and learning stages developed here. The distinction is that the N-L-B model records the state of project evidence, whereas dynamic capabilities and change management describe organisational abilities that influence how well the cycle is executed. J. Merín-Rodríguez *et al.* (2025) linked the expertise, external connectivity, and empowering leadership of chief executive officers (CEOs) to digital transformation and new-product performance in innovative small and medium-sized enterprises (SMEs). T. Yunita *et al.* (2023) found that technological capacity supports organisational ambidexterity through dynamic capabilities and also reported greater security risk in highly dynamic settings. These findings are consistent with including managerial evidence in implementation and a separate adverse-risk component R. The current framework, however, does not model CEO-level microfoundations or estimate sector-specific risk effects.

Using a configurational method, X. Xing *et al.* (2024) identified multiple pathways to inbound and outbound open innovation in a digital-platform ecosystem. J. Rabelo Neto *et al.* (2024) emphasised collaboration, governance,

human and social capital, and culture in the evolution of innovation ecosystems. Both studies support the premise that strategic outcomes arise from combinations rather than isolated indicators. Nevertheless, the six N-L-B profiles in this study are illustrative decision archetypes; unlike fuzzy-set qualitative comparative analysis (fsQCA) configurations, they have not been demonstrated to be necessary or sufficient for success. S. Marchese *et al.* (2026), drawing on eight EdTech cases, showed that digital technologies can enhance collaboration, information sharing, and the dynamic capabilities required for ecosystem orchestration. This supports the partnership and ecosystem indicators within B and the feedback function of the process model. The present study differs by requiring legal and standards readiness to be assessed before scaling, rather than treating protection and compliance as downstream implementation details.

The managerial value of SSI lies in disciplined sequencing rather than in creating another stand-alone composite score. Traditional additive ranking permits a strong score in one dimension to offset a critical weakness in another and can therefore obscure the reason for a portfolio decision. In the proposed model, non-compensatory gates are evaluated before SSI: unclear ownership, an unmet mandatory standard, a failed critical test, or the absence of an executable route to market cannot be offset by high N, L, or B. SSI then ranks only eligible projects and supports the allocation of experiment tranches, protection budgets, partnership effort, and managerial attention. The N-L-B profile and gate log retain the decision rationale and specify what evidence is required before a deferred or blocked project can be reconsidered. The legal-business coupling is also consistent with recent intellectual-property research. C. Ayerbe *et al.* (2023) demonstrated that patent-backed loans may alter borrowers' innovation strategies and can encourage short-term patent monetisation. C.T. Lohrey & K.W. Willoughby (2025) concluded that SMEs can improve innovation and business performance by treating intellectual-property management as a basic business function. Together, these findings support L as an equal strategic dimension and justify linking L with B and R. They also caution that a strong patent position is not automatically beneficial: financing terms, enforcement costs, and incentive shifts must be evaluated alongside formal rights.

● CONCLUSIONS

The study operationalised the N, L, and B dimensions through observable managerial indicators and a documented 0-4 evidence rubric, and it separated integrated risk R from the three positive readiness dimensions. The low, medium, and high bands provide a transparent preliminary interpretation while making clear that sectoral calibration remains necessary. The study developed the closed process model "signal-classification-choice-implementation-learning". The model specifies inputs, outputs, transition conditions, non-compensatory gates, and a feedback function that updates evidence, scores, and decision assumptions after each implementation milestone. A conceptual SSI was introduced for preliminary comparison of eligible innovation projects without replacing financial appraisal or mandatory technical and legal requirements.

Six illustrative strategic configurations were formulated to connect N-L-B profiles with investment, intellectual-property, partnership, certification, and scaling choices. The legal mapping substantiated the inclusion of L as an equal component and showed how selected rules also influence B and R. The developed framework enables R&D, legal, and commercial functions to identify evidence gaps and coordinate stage-gate decisions. The 2020-2025 GII data were used only as contextual benchmarking and not as validation of the project-level model. Further research should combine Delphi or AHP-based weight elicitation with pilot application to real project portfolios, empirically calibrate proxies and thresholds, test inter-rater reliability

and predictive validity, and estimate the associations of N, L, B, R, and SSI with commercialisation, export, and survival outcomes across sectors, firm sizes, jurisdictions, and longitudinal samples.

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Розроблення моделей стратегічного управління в умовах технологічних інновацій

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Анотація. Технологічні інновації створюють для підприємств проблему координації, оскільки технологічна зрілість, захист інтелектуальної власності, відповідність регуляторним вимогам, комерційна доцільність і готовність до масштабування розвиваються різними темпами. Фрагментарне оцінювання може призводити до передчасного масштабування, недостатнього захисту знань або продовження інвестування у проекти, що не мають життєздатного шляху до комерціалізації. Метою дослідження було розробити концептуальну модель прийняття стратегічних рішень на основі інтегрованої тривимірної класифікації інноваційних проектів. Застосовано структурований огляд рецензованих наукових публікацій за 2021-2026 рр., контент-аналіз українських і міжнародних правових джерел, концептуальне моделювання, порівняльне зіставлення та описовий аналіз профілю України за Глобальним інноваційним індексом (Global Innovation Index, GII) за 2020-2025 рр. У дослідженні операционалізовано три виміри: науково-технологічну відповідність (N), правову та стандартизаційну готовність (L) і бізнес-готовність (B). Ці виміри оцінювались за допомогою спостережуваних управлінських індикаторів і документованої шкали доказовості від 0 до 4 із нормалізованими низьким, середнім і високим рівнями. Розроблено замкнену процесну модель, що охоплює виявлення сигналів, класифікацію, стратегічний вибір, реалізацію та навчання, з чітко визначеними вхідними й вихідними параметрами, умовами проходження контрольних етапів і зворотним зв'язком. Запропоновано концептуальний Індекс стратегічної придатності для ранжування інноваційних проектів за N, L, B та інтегрованим ризиком R, який не замінює чисту приведену вартість (NPV), внутрішню норму дохідності (IRR) або обов'язкові контрольні умови відповідності вимогам. Сформульовано шість ілюстративних конфігурацій N-L-B, що пов'язують профілі проектів із рішеннями щодо інвестування, інтелектуальної власності, партнерства та масштабування. Правове зіставлення показало, як норми підтримки інновацій впливають на B і R, тоді як патентні норми та правила міжнародної торгівлі впливають на L, можливості комерціалізації та ризик правозастосування. Дані національного індексу використано лише як контекстуальні свідчення та не розглядали як валідацію моделі проектного рівня. Запропонована концептуальна модель може використовуватися для попереднього скринінгу портфеля проектів, виявлення прогалин у доказовій базі та координації функцій досліджень і розробок (R&D), правового та комерційного супроводу в умовах невизначеності

Ключові слова: динамічні спроможності; управління інтелектуальною власністю; готовність до комерціалізації; пріоритизація портфеля; оркестрація екосистеми; регуляторна відповідність