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**Strategic ambivalence in Business
Experimentation:
Exploring the Dynamics between
Organizational Learning and Strategic
Legitimation**

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Abstract (English)

In an era defined by continuous market disruption and technological volatility, traditional strategic planning frameworks have become increasingly obsolete. To navigate extreme uncertainty, modern enterprises are shifting toward Business Experimentation, a paradigm that includes continuous empirical validation. By systematically testing key assumptions before committing significant resources, organizations can dynamically adapt their value propositions and mitigate the severe risks associated with complex markets.

However, the true complexity of embedding experimentation into established corporate structures extends far beyond methodological execution. It exposes a profound and inherently compelling organizational paradox: the strategic friction between the necessity to learn and the imperative to legitimize.

From a learning perspective, Business Experimentation is fundamentally a cognitive tool. It demands an organizational culture where uncertainty is embraced, mental models are challenged, and early failure is destigmatized as an essential mechanism for knowledge creation.

Conversely, innovation does not occur in isolation; organizations are bound by strict governance, budget constraints, and risk-averse stakeholders. Empirical data and structured tests are leveraged not merely to discover the unknown, but to signal operational competence, justify capital allocation, and build internal consensus.

The delicate equilibrium between cultivating the cultural vulnerability required to "fail fast" and enforcing the rigorous metrics needed to prove success represents a defining challenge in contemporary innovation management.

Exploring this strategic ambivalence and understanding the dynamics that govern it, is therefore of critical theoretical and practical importance. It holds the key to unlocking genuine strategic ambidexterity, transforming experimentation from a mere procedural tool into a sustainable driver of corporate resilience.

Keywords: Business Experimentation, Organizational Learning, Strategic Legitimation, Innovation Management, Strategic Ambidexterity

Abstract (Italian)

In un'era caratterizzata da continui stravolgimenti di mercato e volatilità tecnologica, i tradizionali modelli di pianificazione strategica sono diventati sempre più obsoleti. Per navigare l'estrema incertezza, le imprese moderne si stanno orientando verso la sperimentazione aziendale (Business Experimentation), un paradigma che include la validazione empirica continua.

Testando sistematicamente le assunzioni chiave prima di impegnare risorse significative, le organizzazioni possono adattare dinamicamente le proprie proposte di valore e mitigare i gravi rischi associati ai mercati complessi.

Tuttavia, la vera complessità di integrare la sperimentazione all'interno di strutture aziendali consolidate si estende ben oltre l'esecuzione metodologica. Essa espone un paradosso organizzativo profondo e intrinsecamente affascinante: l'attrito strategico tra la necessità di apprendere (Learning) e l'imperativo di legittimare (Legitimation).

Dalla prospettiva dell'apprendimento, la Business Experimentation è fondamentalmente uno strumento cognitivo. Essa richiede una cultura organizzativa in cui l'incertezza viene accolta, i modelli mentali vengono messi in discussione e il fallimento precoce viene destigmatizzato in quanto meccanismo essenziale per la creazione di conoscenza.

Di contro, i processi di innovazione non avvengono in modo isolato rispetto al resto dell'azienda. Le organizzazioni sono vincolate da una rigorosa governance, da restrizioni di budget e da stakeholder avversi al rischio. I dati empirici e i test strutturati vengono impiegati non semplicemente per scoprire l'ignoto, ma per segnalare competenza operativa, giustificare l'allocazione dei capitali e costruire consenso interno.

Il delicato equilibrio tra il coltivare la vulnerabilità culturale necessaria per "fallire velocemente" (fail fast) e l'imposizione delle metriche rigorose necessarie per dimostrare il successo rappresenta una sfida cruciale nel management contemporaneo dell'innovazione.

Esplorare questa ambivalenza strategica, e comprendere le dinamiche che la governano, è pertanto di fondamentale importanza teorica e pratica. Ciò rappresenta la chiave per sbloccare una vera ambidestrezza strategica, trasformando la sperimentazione da mero strumento procedurale a motore sostenibile della resilienza aziendale.

Parole chiave: Sperimentazione aziendale, apprendimento organizzativo, legittimazione strategica, gestione dell'innovazione, ambidestrisimo strategico.

Introduction

In an era defined by rapid technological advancement and continuous disruption, traditional strategic planning often falls short. To navigate highly uncertain environment, organizations are increasingly embracing Business Experimentation as a core strategic capability. Business Experimentation is defined as *“a structured and systematic way of testing key business assumptions about opportunities and bottlenecks of successful commercialization by formulating hypotheses, designing and executing tests to either accept/reject the hypotheses or pivot the experiment to other directions”* (Geissdoerfer, M., Savaget, P., Bocken, N., & Hultink, E. J. (2022). Prototyping, experimentation, and piloting in the business model context. *Industrial Marketing Management*, p.18).

Within academic literature, Business Experimentation has been predominantly conceptualized into multiple perspectives, one of these is the learning-based perspective. Heavily influenced by Agile methodologies and the Lean startup approach, Business Experimentation supports the paradigm of “fail fast” principle, recognizing early failure as an important source of learning. From this point of view, experimentation is primarily a cognitive tool: its goal is to reduce uncertainty, challenging existing models while generating new organizational knowledge through continuous trial-and-error cycles.

However, viewing experimentation exclusively as a learning mechanism overlooks a critical organizational reality: the necessity for legitimation.

Organizations, whether startup or established enterprises, do not operate in silos. Innovation teams must continuously secure financial resources, gain managerial approval while convincing risk-adverse stakeholders. From this alternative perspective, Business Experimentation acts as a strategic signalling tool used to signal value to external stakeholders rather than merely validate internal hypotheses. Empirical results are leveraged to demonstrate operational competence, build credibility and establish a strategic legitimation.

This dual nature of experimentation creates a profound strategic ambivalence.

On one hand, the imperative to learn requires organizations to embrace uncertainty and openly accept the potential failure of their hypothesis. On the other hand, the need for

legitimation forces those same organizations to project an image of stability and most important reliability to retain stakeholder confidence and justify resource allocation.

The primary objective of this research is to investigate the application of Business Experimentation, specifically focusing on how organizations balance the learning and legitimation perspectives.

While Business Experimentation has been extensively studied and applied within digital contexts, there is a lack of comprehensive research examining the equilibrium between these two distinct perspectives. Furthermore, the underlying organizational factors that enable companies to effectively implement experimentation and balance these dual conditions remain largely unexplored.

To achieve the research objectives, a quantitative methodology was employed through a structured survey. This approach facilitated the collection of data from a broad range of organizations, capturing insights from professionals across diverse functional areas, industries and experience levels.

The collected data was analysed to draw comparisons across different organizational contexts and to understand which organizational enabling factors influence the most Business Experimentation and its perspectives.

This research is organized into four chapters, each of which contributes to a comprehensive understanding of the topic and aims to provide new insights into the application of Business Experimentation.

- Chapter 1: This chapter establishes the theoretical foundation of the research through a systematic literature review on Business Experimentation. It maps the existing literature by categorizing it into five primary analytical domains: Learning-based perspectives, Validation and Lean approaches, Agile and adaptive logics, Legitimation processes, and Sustainability-oriented perspectives. Additionally, it explores two secondary dimensions, the Human-centric approach and Ecosystem thinking, to provide a holistic understanding of how experimentation is conceptualized across different strategic contexts.

- Chapter 2: The second chapter focuses on the research scope. Drawing from the literature review conducted in Chapter 1, it identifies the gaps in existing research and based on them, it formulates the main research question alongside a specific sub-question to clearly define the boundaries of the empirical research.
- Chapter 3: This section describes the methodology used to investigate the research questions. It outlines the quantitative approach adopted for this study, utilizing survey data to gather practical insights from a heterogeneous sample of organizations. The chapter further details the survey construction, data collection methods, and the statistical techniques employed to evaluate the hypotheses.
- Chapter 4: The fourth chapter presents the findings of the empirical investigation. It begins with a descriptive analysis of the sample's demographics and current validation practices. Then it transitions into a statistical analysis, empirically mapping how organizations balance the dualism between learning and legitimation, and identifying the specific structural and cultural enabling factors that drive these strategic orientations.

The concluding section of this thesis will synthesize the key findings and present a clear answer to the primary research question.

1 Literature review

The aim of this chapter is to explore the concept of business experimentation through a systematic literature review. The review began with an initial search for contributions addressing business experimentation, with the objective of capturing the diversity of perspectives and streams of research on the topic.

Business experimentation can be identified as “*a structured and systematic way of testing key business assumptions about opportunities and bottlenecks of successful commercialization by formulating hypotheses, designing and executing tests to either accept/reject the hypotheses or pivot the experiment to other directions*” (Geissdoerfer, M., Savaget, P., Bocken, N., & Hultink, E. J. (2022). Prototyping, experimentation, and piloting in the business model context. *Industrial Marketing Management*, p.18).

In order to understand how business experimentation has been conceptualized within the academic literature a total of thirty papers were initially selected. Among these, fifteen papers were identified as core contribution, as they more closely addressed the central theme of the study.

To date, existing literature who have been investigating business experimentation have approached the topic through a set of broad analytical domains. In this study, these domains are conceptualized as macro-areas that capture the main perspectives emerging from the literature.

The analysis of these core papers led to the identification of five main research areas: (i) Learning-based perspectives, (ii) Validation and Lean approaches, (iii) Agile and adaptive logics, (iv) Legitimation processes and (v) Sustainability-oriented perspectives.

The following sections provide a detailed examination of each macro-area, drawing on insights and evidence from the selected papers in order to highlight their key assumptions, theoretical foundations and implications.

1.1 Learning-based perspectives

Learning-based perspective has been identified as a macro area in which business experimentation is seen as a tool to create knowledge, sharing it within the organization, absorbing it and then storing it for future use such as exploring markets, understand customers' needs, technological development and decrease uncertainty. (Aminoff, Pihlajamaa, 2020)

This perspective finds its strongest theoretical roots in the Learning School of strategy making. According to this school of thought, in environments characterized by uncertainty, complexity and rapid change, traditional strategic planning, which relies on extrapolating past experiences to predict future outcomes, often fails. Instead, strategy must be conceptualized as "emergent", evolving dynamically through a continuous process of experimentation and discovery to get a logical incrementalism. Within this macro-area, scholars stated that organizational learning is not merely a byproduct of business operations, but rather a primary strategic objective and central operational tool.

The Lean Startup methodology is frequently cited within this literature as a highly practical implementation of these Learning School principles. It translates the abstract concept of strategic learning into a formal, scientific process through the Build-Measure-Learn (BML) cycle. By continuously testing business model hypotheses, the experimentation process aims to generate "validated learning", allowing to either iterate, pivot or escalate based on empirical feedback measuring effects and internalizing outputs.

Because organizations typically operate in unpredictable environments with severely constrained physical and economic resources, experimentation becomes a method of "making do". Entrepreneurs are encouraged to test their assumptions by applying combinations of the resources at hand (e.g. through Minimum Viable Products) to leverage contingencies, gather customer feedback and prioritizing affordable loss over expected returns. (Bortolini et al. 2018)

Experimentation has recurring characteristics: it is a method for learning, typically small in size and scope, with active stakeholder engagement. (Aminoff, Pihlajamaa, 2020)

Learning from experiments can vary significantly based on the type of experiment conducted and how the resulting outputs are absorbed by the organization. Depending on

the underlying assumptions and the degree of the experimentation, different loops of learning can be applied.

Single loop learning, which can also be associated with incremental innovation, occurs when an organization experiments to detect and prevent errors while maintaining its current way of working. In this scenario, the learning supports and optimizes the organization's present policies, objectives and core hypotheses. (Aminoff, Pihlajamaa, 2020) Within the Lean Startup methodology, this single loop learning directly corresponds to the act of "iterating". Iteration involves making less radical, continuous changes to the product or business model based on the acquired validated learning, with the goal of moving progressively closer to a viable result. In the paper analysed (Aminoff, A., & Pihlajamaa, M. 2020 Business experimentation for a circular economy-Learning in the front end of innovation. *Journal of Cleaner Production*) the lens of learning loops is used to examine four experiments conducted in a single organization.

Four forms of single loop learning have been identified (Aminoff, A., & Pihlajamaa, M. 2020):

- Confirmation

Confirmation of existing beliefs, the learning process has mainly confirmed what was already known;

- Development

The experiments helped further develop already known ideas: these were expanded and reconsidered, giving rise to more complete and mature versions;

- Prioritization

Existing ideas are compared to each other to understand and learn about the relative value;

- Exclusion

Learning also occurred through exclusion: some proposed ideas were discarded, thus allowing for a better understanding of the opportunity space. Organization can understand and learn which proposals are not in line with current needs.

Double loop learning, which can be associated to radical innovation, occurs when organizations aim to find root cause of problems, tackle them questioning about its fundamental assumptions, comparing current situation with future goals. In the Lean Start Up framework this level of learning can be associated with the action of “pivoting”. When a hypothesis is explicitly discarded through experimentation, a pivot involves radically changing one or more dimensions in order to formulate and test an entirely new set of hypotheses.

Three forms of double loop learning have been identified (Aminoff, A., & Pihlajamaa, M. 2020):

- Out-of-the-box ideas

New cognitive frameworks and truly innovative ideas, not based on existing solutions. From a critical perspective, in fact, those who lack the appropriate skills tend to propose ideas that have already been tested several times, without making a truly innovative contribution;

- Mental model change

Stimulate a change in participants' mental models, overcome the limitations of conventional thinking and lead them to abandon outdated beliefs;

- Widespread change

Experimental results can be disseminated to a wider audience through interactions between organizations. This type of change involves the transfer of knowledge and the transformation of mental models even among individuals who did not directly participate in the experiments.

The final learning loop is the triple learning loop which is even more radical than the double loop since the final goal is to build something to tackle future problems by devising entirely new processes and methodologies. Organizations that reflect on their past experimental methods, learning equally from failures and successes, are better equipped to design future projects and institutionalize a structured approach to innovation.

Four forms of triple loop learning have been identified (Aminoff, A., & Pihlajamaa, M. 2020):

- Challenge design

Challenge design during experimentations workshop requires some key considerations to be effective. In general, challenges should not be too technical if participants lack the necessary skills, nor should they be overly open-ended, as this can lead to ideas that are difficult to implement. It's also important to find a balance in contextual information: too little information can lead to misunderstandings of the problem, while too much can limit creativity or overly bias thinking. Concrete elements can help make the challenge more understandable and stimulate more creative ideas. Finally, challenges should be linked to real, ongoing activities to facilitate the practical application of the results.

- Selection of participants

Participant selection is crucial because it determines the skills available to address an innovation challenge. Generally, group composition directly influences both the quality of ideas and the type of results achieved. The presence of experts tends to foster more in-depth discussions and a better assessment of the feasibility of ideas, but it can reduce the variety of perspectives and the generation of more creative or unconventional solutions. Conversely, groups with diverse backgrounds are better suited to open exploration and the generation of more innovative ideas.

Participants' industry backgrounds are also relevant. Finally, linguistic considerations must be considered, which imply a trade-off between involving international experts and ensuring fluid communication between participants.

- Motivation of participants

Participation in innovation experiments requires a time commitment and can also generate other costs. For this reason, stakeholders tend to participate only if they perceive the benefits to outweigh the effort required. Consequently, it is crucial to understand how to adequately motivate participants to ensure their attendance and active contribution.

- Tool and resources

In general, ideation processes can vary greatly depending on the tools and resources used. The use of digital tools can increase efficiency in gathering and organizing ideas but can also reduce the spontaneity of discussions and the visual expression of ideas, highlighting a potential trade-off between the quantity of ideas and creative quality. More traditional approaches, on the other hand, encourage direct discussion but can be less efficient in managing and documenting content.

Beyond the tools, the working methodologies used are also important, but these are often limited by available time. A key element is the presence of external facilitators, considered essential for guiding the process, keeping the discussion focused and fostering more productive results, especially when they possess specific expertise in the field being addressed.

Knowledge of different forms of learning can be used to design more targeted corporate experiments and to support structured reflection on the results obtained after their implementation.

1.2 Validation and Lean approaches

In this macro area business experimentation is perceived as tool to test hypothesis. It is strongly related to Lean Startup methodology.

Eric Ries (2011) introduces Lean Startup as an approach with the goal of reducing waste in startup product and business development in startups, assisting entrepreneurs validating their assumptions and not focus on activity with no value creation. (Bortolini et al., 2018)

Here, processes like the Build-Measure-Learn (BML) loop play a central role. The Build phase begins with the development of a minimum viable product (MVP), a version created with minimal effort but still equipped with the core features needed to evaluate its potential, test key assumptions with the final goal of collecting early user feedback.

In the Measure phase, the main challenge is to assess whether these development efforts are effective by analysing how users interact with the MVP, based on a set of predefined relevant metrics.

The loop concludes with the Learn phase, where the results of the experiment are evaluated. At this point, entrepreneurs must decide whether to adjust the original way of working in response to feedback, continue with the current approach, or abandon it altogether. (Silva et al., 2021)

Although the BML loop may appear straightforward, the Lean Startup approach is rooted in a scientific mindset, where entrepreneurship and innovation are driven by hypotheses. (Eisenmann, Ries, Dillard, 2011) This means that particular care must be taken when defining the assumptions to be tested.

Within the BML cycle, each element is examined through falsifiable hypotheses so assumptions are derived from the initial idea that can be confirmed or rejected through experimentation. A well-known principle of this approach is “fail fast” which highlights how failure can be a valuable source of learning. Especially in the early stages of a startup, it is more beneficial to quickly recognize when an idea is not viable, rather than continuing to invest time and resources in a flawed concept.

With the current literature review the differences between the learning perspective and the Validation-Lean perspective can be identified based on the phase of the innovation

they target, the type of innovation they typically produce and the ultimate cognitive goals. The Validation-Lean perspective is primarily focused on the later phases of the innovation process. It generally assumes that an organization already has a basic concept and uses structured experiments to test predefined hypotheses. Through tools like Minimum Viable Products (MVP) and the Build-Measure-Learn cycle, the goal is to validate the business model and achieve product-market fit.

In contrast, the Learning perspective is highly relevant during the "front end of innovation". This early phase is characterized as fuzzy, chaotic and unstructured, focusing on opportunity identification and open-ended ideation. Rather than strictly testing hypotheses, experiments in this phase are used to explore what specific needs must be fulfilled and to evaluate which broad ideas are even worth pursuing. (Aminoff, Pihlajamaa, 2020)

The validation-lean approach is often criticized for promoting purely incremental innovation. Because it is heavily influenced by Lean manufacturing principles, which emphasize continuous improvement, waste reduction and immediate customer feedback, it typically results in single-loop learning that optimizes existing models without challenging the status quo.

The Learning perspective, however, aims to facilitate radical and systemic innovations, which are critical for complex transitions like the circular economy (topic that will discuss later). To achieve this, it relies on the double-loop learning, process that forces organizations to question their fundamental underlying assumptions, discard outdated beliefs and explore entirely new opportunity spaces that go beyond existing dominant market logics.

Finally, the two approaches differ on the final goal of the experiments. In the Validation/Lean perspective, learning is highly deliberate and metric-driven; it is designed specifically to confirm or discard hypotheses about a business model, a process Ries refers to as "validated learning". (Eisenmann, Ries, Dillard, 2011)

The Learning perspective encompasses a much deeper, reflective cognitive approach. It values unplanned, action-based learning in addition to deliberate testing.

1.3 Agile and adaptive logics

The third macro area identified is agile and adaptive logics in which business experimentation is seen as a managerial lever that allows companies to continuously modify their business model in dynamic and uncertain contexts, particularly in digital contexts. The Agile methodology has been introduced in 2001 by 17 software developers in Utah USA, to transform software development practices. (Beck, Beedle, van Bennekum, 2001) In the agile manifesto, the main agile values are stated:

(i) Individuals and interactions over processes and tool

Focus more on people, their skills and team spirit and less on processes and tools.

(ii) Working product over comprehensive documentation

Prefer a tested and working product or application, than a plethoric documentation.

(iii) Customer collaboration over contract negotiation

The customer is a partner who is involved in the project, to give feedback regularly and not to negotiate a contract once.

(iv) Responding to change over following a plan

The schedule is flexible to accept necessary updates.

Agile practices enhance flexibility, velocity, learning and being ready to take initiative and change the way of working. (Ghezzi, Cavallo, 2020)

The most widely used agile methods are Extreme Programming, Scrum, Kanban, Lean, Feature-Driven Development, Dynamic Systems Development Method, Adaptive Software Development, Crystal and Rational Unified Process. In the literature examine scholars have identified the difference between two complementary dimensions of agility required for effective business model experimentation: operational agility and strategic agility.

Operational agility refers to the efficient orchestration and management of an existing pool of resources. It focuses on maintaining internal consistency and managing short-

term complexities by implementing tactical agile practices, such as Scrum sprints or Feature-Driven Development. Conversely, strategic agility represents a higher-order capability necessary when firms operate in, or actively seek to trigger, highly turbulent environments. It entails the continuous adjustment of the strategic direction, the rapid reconfiguration or recombination of resources and the deliberate creation of internal tensions that break business model consistencies to foster discontinuous innovation. (Ghezzi, Cavallo, 2020)

1.4 Legitimation processes

In this macro area business experimentation is not only to learn or validate, but also to build legitimacy. From this perspective, experiments are used to signal value and convince stakeholders such as investors, partners and of course customers.

Legitimacy has been defined by Suchman in 1995 as a *“a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions”*. (Suchman, M.C., 1995. Managing legitimacy: strategic and institutional approaches. Acad. Manag. p. 574)

In the literature the approach called “strategic legitimation” takes the managerial perspective, which views the acquisition of organizational credibility as a deliberate managerial objective rather than a passive outcome. Gaining legitimacy is a crucial process for emerging companies since resource providers are often cautious about partnering with unproven ventures; the ability to strategically signal legitimacy becomes a prerequisite for survival. In order to build legitimacy and acquire resources companies use symbolic management, they try to bridge the credibility gap by engaging in specific behaviours, such as showcasing expertise, formalizing organizational structures and fostering high-quality stakeholder networks, to secure necessary capital. A notable tactic involves the use of prototypes; by displaying unfinished products, entrepreneurs provide a tangible "symbol" of future success, thereby mitigating perceived technical or commercial risks. Scholars also emphasize that for nascent firms, "creating an impression" of stability and operational capacity is a decisive factor in gaining external support. (Bojovic, Genet, Sabatier, 2018)

The process of experimentation also allows firms to signal their viability to potential partners. By proving experimentation is worth, a venture establishes exchange legitimacy,

convincing customers of the tangible benefits of the relationship. However, Suchman (1995) identifies influence legitimacy as a more systemic form of approval, where stakeholders support the firm because it appears sensitive to their long-term interests. Cultivating this, as well as dispositional legitimacy, relies heavily on the entrepreneur's capacity to signal future intentions convincingly, ensuring that the organization is perceived as a trustworthy and compatible actor within the ecosystem. (Bojovic, Genet, Sabatier, 2018)

1.5 Sustainability-oriented perspectives

The last core perspective is the sustainability oriented. In this literature business experimentation is used to create sustainable value. Experimentation is not only focusing on economic profit but also on the development of solutions that create a social and environment impact. Traditionally, business value creation has been largely framed around a one-dimensional shareholder logic, primarily focused on profit maximization and the transformation of value-in-use into monetary value-in-exchange.

However, the sustainability-oriented perspective radically reframes this construct. Sustainable value creation arises from the deliberate integration of environmental, social and economic dimensions, within a firm's offering to fulfil customer needs. In this context, ventures aim not only to capture economic gains but also to actively reduce material consumption and pollution, decrease the human footprint and increase the inclusiveness of wealth creation and distribution. (Aagaard, Saari, Mäkinen, 2021)

Unlike traditional scientific methods, BES is deeply embedded in the business context and is inherently driven by organizational and societal values. Because sustainability challenges involve complex variables, BES assumes a low degree of experimental controllability and a high degree of outcome uncertainty. Consequently, the primary goal of BES is not definitive scientific proof, but rather the rapid generation of "evidence-based actionable knowledge". This allows both established businesses and startups to learn about novel ways of generating sustainable value while minimizing risks and resource expenditures. (Bocken, Weissbrod, Antikainen, 2021)

Crucially this literature highlights that sustainability-oriented experimentation operates across a broad spectrum of innovation, it extends beyond localized technological or

product improvements to include business models, value chains and the entire technical ecosystems. (Bocken, Weissbrod, Antikainen, 2021)

BES has been identified as a fundamental mechanism for the transition toward a circular economy, since the transition to it requires significant experimentation with a potential role for business to play a key role as driver but appropriate tools are needed to support and guide this process.

In the literature examined, Cleantech sector has been studied.

Cleantech is broadly defined as encompassing products, services and technologies within the energy, transportation, water and materials industries. The primary objective of cleantech start-ups is to create and deliver sustainable value by minimizing the use of non-renewable resources and drastically reducing waste compared to conventional ventures.

However, operating within this space presents unique strategic complexities. Unlike traditional IT or digital start-ups, cleantech ventures are heavily subjected to government interventions, strict environmental regulations and international policies. They frequently act as disruptors within existing business ecosystems, challenging established incumbents that typically limit themselves to incremental process innovations rather than proposing radical sustainable product designs. Furthermore, cleantech innovations often address broad environmental challenges that go beyond immediate customer requirements, necessitating highly specialized expertise in environmental technology and monitoring. These start-ups also face significant barriers to acquiring financial resources due to high capital intensity, severe technological risks and complex scalability issues.

Because they often operate in non-existing markets and face institutional resistance, business experimentation becomes a critical survival mechanism. Particularly in this sector, the economic goal is no longer the sole end, but rather an instrument for attaining a broader positive environmental and societal impact. Consequently, value is created, delivered and captured across multiple levels and for multiple stakeholders beyond just the customer and the shareholder. This means that sustainable start-ups inherently prioritize improving communities and the ecological environment as fundamental components of their business existence.

To have a comprehensive overview in the literature examined a secondary number of papers has discuss two other perspectives: human centric and ecosystem thinking.

1.6 Human centric perspective

Soft skills-human centric overview has been researched by one paper in particular, *Business innovation and critical success factors in the era of digital transformation and turbulent times* by Florek-Paszkowska, A. et alt 2021.

In a context of experimentation, especially during turbulent times: agility, digitalization and sustainability are terms that gains popularity in business and leadership.

Businesses try to react and become strategically resilient.

The interaction of these dimensions can enable this change and propose a new vision of resilience, understood as a strategic capability that allows companies to seize the opportunities by change and develop new ways of operating. Thanks to strategically agile processes, supported by digitalization, strategic resilience takes a proactive and opportunity-oriented approach to change. This form of resilience, which fosters organizational sustainability, is described as a multidimensional concept, aligned with the holistic vision of sustainability based on three pillars: environment, economy and society. (Florek-Paszkowska, Ujwary-Gil, Godlewska-Dzioboń, 2021)

Companies that can and are willing to adapt challenges, applying their lesson learned and changing the way of working can be called resilient. Chong et al. (2020) has listed five common characteristics that can enhance building agility: 1) Define a shared goal and ensure clear communication, 2) Organize structures that facilitate rapid decision-making; 3) Create local team networks with transparent and well-defined roles; 4) Promote a corporate culture that values individual autonomy; 5) Provide technological tools suited to operational needs. (Florek-Paszkowska, Ujwary-Gil, Godlewska-Dzioboń, 2021)

In the paper, the global crisis and the uncertainty caused by the COVID-19 pandemic are analysed as examples, highlighting agility as a characteristic that allowed organizations to overcome difficulties and adapt to obstacles, ensuring their survival.

Only organizations driven by a culture of trust, effective communication, and empathy (supported by leaders with strong interpersonal soft skills in human resources

management) have successfully addressed the challenges posed by digitalization and continuous change.

But often the skills needed to manage continuous innovation and growth are overlooked due to an excessive focus on technology and purely technical skills.

In order to understand how adaptability and change management can happen in uncertain environment, VUCA framework must be described.

The concept was originally introduced by the U.S. Army War College to describe the conditions that characterized the Cold War during the 1990s. It referred to the constantly changing environment and the lack of reliable information typical of military operations, where events occurred in an unpredictable and chaotic manner (Nurul Fadzilla Mohd Aris, 2021).

More recently, the acronym VUCA has become widely used in the business context to describe the unstable and unpredictable environment in which organizations operate, where rapid changes can strongly affect strategic decisions and learning processes (B. Akkaya & E. Sever, 2022).

The VUCA framework helps business identify, map and prepare themselves to respond to Volatility, Uncertainty, Complexity, and Ambiguity in the short and long term.

During periods of turbulence and crisis, organizations and their leaders need to respond with flexibility, rapidly adjusting their structures, capabilities, and resources in order to adapt effectively to changing circumstances.

In the literature Bennett and Lemoine (2014) have proposed two-steps approach to understand VUCA framework and support manager in decision making in this type of context. The steps are: 1) analysing and understanding uncertainty through the VUCA framework; 2) preparing the organization to respond effectively by defining appropriate actions and timing. The first stage is a breaking down to understand what is uncertain, volatile or complex, and ambiguous; the second stage is to prepare the organization to take actions. It is important to underline that actions to contrast ambiguity or volatility are different, for volatility is essential isolating and create mechanisms that can buffer or compensate the effects, for ambiguity is required enhancing internal changes within the organization's culture.

In order to drive business to resilience, stability and archive a competitive advantage in turbulent times success factors can be grouped in two groups: 1) human-based factors and 2) non-human-based factors (Florek-Paszkowska et al., 2021).

The first category includes:

- a) competent, responsible, and open-minded *leaders* who possess strong soft skills in managing people. Leaders that are able to attract and retain talent within the organization. Their approach reflects a willingness to embrace change, remain flexible and adapt quickly, while also fostering the same mindset among their employees.
- b) *skilled employee*, who are willing to share their knowledge and experience, remain motivated, and stay committed to supporting the organization during difficult periods, while also seeking to develop their ability to adapt quickly in the future.

The second category is a group of factors:

- a) *business culture*, built on trust, effective communication, and empathy
- b) *business model and its transformation*, aimed at fostering innovation and long-term sustainability
- c) *innovative strategies* designed for highly uncertain environments, including financial approaches linked to the entrepreneurs' personal characteristics
- d) *enabling (disruptive) technologies*, whose effectiveness depends on the organization's level of digital maturity and its capacity to support innovation and sustainability transitions

Each of the factors mentioned above plays a crucial role in achieving business success, and the elements within each group are closely interconnected and mutually dependent. (Florek-Paszkowska et al., 2021)

It is also important to underline that each company is different and is dependent on many factors that differentiate them: talented people (leaders and employees), its organizational, financial, technical and technological, environmental, social, political and other components. That is why it cannot be simplified, focusing only on one group of factors and ignoring the other. (Florek-Paszkowska et al., 2021)

The last macro area analysed from the literature review is the ecosystem thinking, that indicates a strategic and holistic approach in which the company and business experimentation are not perceived as an isolated entity, but as an integral part of a deeply interconnected "ecology" or network of business models, infrastructures, social actors and natural systems.

1.7 Ecosystem thinking perspective

To understand ecosystem thinking it is important to take in consideration business experimentation for business modelling, defining business modelling as “*the set of activities that cognitively manipulate the business model to evaluate alternative ways in which it could be designed*” (Aversa et al., 2015; Mangematin and Baden-Fuller, 2015; Rumble and Mangematin, 2015, p. 153).

In the business modelling process, managers play a central role through various cognitive processes. They may use analogical reasoning, identifying similarities between different systems to hypothesize further commonalities or combine existing concepts to develop new ones (Martins et al., 2015).

Managers actively participate in defining and evaluating different business model configurations, analysing their potential and determining the ways in which the firm can create and capture value (Lubik and Garnsey, 2016). This process involves a mental exploration of alternative scenarios and the possible consequences of the strategic decisions made.

In addition to the cognitive dimension, business modelling also includes experimentation, often considered a fundamental element of the process (Baden-Fuller and Morgan, 2010; Chesbrough, 2007, 2010; McGrath, 2010). Unlike cognitive processes, which are primarily oriented towards constructing representations of reality, experimentation aims to intervene concretely to modify it. (Hacking, 1983)

Aversa et al. (2015) emphasize that the increasing attention given to business modelling is linked to the need to better understand how business models evolve through experimentation and continuous adaptation. Likewise, Morris et al. (2005) describe business modelling in entrepreneurial firms as a dynamic and evolutionary process in which initially informal and implicit models gradually become more structured through

learning mechanisms based on experimentation, trial-and-error practices and accumulated experience.

Sustainable business models currently represent a major topic of interest both in academic literature and among practitioners and policymakers engaged in managing the environmental and social impacts of production and consumption systems. Despite growing attention to this topic, uncertainties remain regarding the concrete effects of sustainability-oriented business model innovations (Mont, 2002; Tukker, 2004, 2015; Lüdeke-Freund & Dembek, 2017).

Sustainable business model innovation aims to create value for both customers and the company by addressing social and environmental needs (Boons & Lüdeke-Freund, 2013). From this perspective, companies should actively engage in generating not only economic, but also social and environmental benefits, seeking to maximize the value produced for themselves and for the entire network of stakeholders involved. These include society and the environment, both considered fundamental elements of the overall system (Stubbs & Cocklin, 2008).

However, achieving shared value among various stakeholders is often complex in practice, as it requires a balance between economic objectives, social needs and environmental protection.

The literature highlights that the environmental or social impact of a new business model is heavily shaped by its interactions with existing models. For instance, a pay-per-use car-sharing model might save consumers money, but if those savings are then spent on resource-intensive activities (like flights), the systemic environmental impact is negated by a rebound effect. Therefore, ecosystem-level experimentation requires continuous boundary work to assess both direct and indirect, intended and unintended consequences across the value network. (Bocken, N. et al., 2019)

To navigate this complexity, experimentation evolves from a managerially controlled design process into a collaborative, multi-stakeholder learning process. Firms use systemic frameworks, such as the Ecology of Business Models Experimentation (EBME) map, to explicitly test and map their interdependencies. This involves analysing whether a start-up relies on existing infrastructures, other products, or external value chains, and

determining the nature of these interactions, which can range from competition to symbiosis and mutualism. (Bocken, N. et al., 2019)

Consequently, the strategic aim of business experimentation in this macro-area shifts from merely validating a customer value proposition to actively orchestrating system-level dependencies. Through iterative cycles of analysis and design, organizations experiment to achieve three systemic goals:

1. Modify: Minimizing symbiotic dependencies on less sustainable business models (e.g. finding ways to power a business without relying on fossil fuel infrastructures).
2. Destroy: Deliberately designing experiments to outcompete and disrupt unsustainable business models by challenging their key resources.
3. Create: Maximizing the contribution to a favorable institutional infrastructure, actively building collaborative partnerships to sustain a network of more sustainable business models.

In conclusion, the ecosystem thinking perspective reframes business experimentation as a strategic coordinating mechanism. It allows organizations to co-create sustainable value by understanding, testing, and reshaping the complex ecological relationships between multiple interdependent business models.

2 Research Scope

Through the literature review, the concept of business experimentation was explored with the aim of capturing the diverse perspectives and research streams surrounding this topic.

The analysis of the core contributions revealed that the existing literature has investigated business experimentation through five main analytical macro-areas: (i) Learning-based perspectives, (ii) Validation and Lean approaches, (iii) Agile and adaptive logics, (iv) Legitimation processes and (v) Sustainability-oriented perspectives, plus two secondary macro areas: human centric and ecosystem thinking perspectives.

Starting with the Learning-based perspective, business experimentation is fundamentally conceptualized as a strategic tool to create, share, absorb and store knowledge with the ultimate aim of decreasing uncertainty. For the Learning School of strategy making, in environments characterized by uncertainty, complexity and rapid change, traditional strategic planning, which relies on extrapolating past experiences to predict future outcomes, often fails. (Ghezzi & Cavallo, 2020) Instead, strategy must be conceptualized as "emergent", evolving dynamically through a continuous process of experimentation and discovery to get a logical incrementalism. (Silva et al., 2020)

The literature highlights that the outputs of experimentation can trigger different depths of cognitive reflection (Aminoff, A., & Pihlajamaa, M. 2020):

- Single-loop learning: associated with incremental innovation, it corresponds to the act of "iterating" to optimize existing models and detect errors without changing core assumptions.
- Double-loop learning: linked to radical innovation, it corresponds to "pivoting" forcing organizations to question root causes and discard fundamental outdated beliefs.
- Triple-loop learning: The most radical form, aimed at institutionalizing entirely new processes and methodologies to tackle future problems and structure the approach to innovation.

Shifting to the Validation and Lean approaches, the literature frames business experimentation strictly as a mechanism for hypothesis testing. Lean Startup

methodology is by Eric Ries and his perspective focusing on reducing resource waste by rigorously validating core assumptions rather than engaging in open-ended exploration. (Bortolini et al., 2018)

The operational core of this approach is the Build-Measure-Learn (BML) loop. The process starts with the creation of a Minimum Viable Product (MVP), a preliminary version of the product developed with minimal effort but containing enough features to trigger early user interaction. During the measurement phase, predefined metrics are used to objectively evaluate the MVP's performance. This empirical data feeds into the final learning phase, forcing entrepreneurs into a structured decision-making process: to persevere with the current strategy, adjust it or abandon the hypothesis entirely.

The Lean paradigm relies on a scientific mindset driven by falsifiable hypotheses. It champions the "fail fast" principle, recognizing early failure not as a defeat, but as an important source of learning. When compared to the learning-based perspective, the validation-lean approach is positioned later in the innovation path.

The third analytical domain, Agile and adaptive logics, conceptualizes business experimentation as a managerial lever that enables companies to continuously adapt their business models in highly dynamic and uncertain environments, particularly the digital ones. Drawing from the principles of the 2001 Agile Manifesto, this perspective prioritizes human interactions, functional products, customer collaboration and responsiveness to change over rigid planning and comprehensive documentation.

Within this context, the literature distinguishes between two complementary dimensions essential for effective business model experimentation. On one hand, operational agility focuses on the efficient orchestration of an existing pool of resources to manage short-term complexities through tactical practices, such as Scrum sprints. On the other hand, strategic agility emerges as a higher-order capability required in turbulent environments; it involves the continuous adjustment of the overall strategic direction, the rapid reconfiguration of resources and the deliberate induction of internal tensions to foster discontinuous innovation. (Ghezzi, Cavallo, 2020)

The fourth domain, Legitimation processes, reframes business experimentation as a tool to build organizational credibility. From this perspective, experiments are utilized to deliberately signal value to external stakeholders, such as investors and customers, rather

than merely validating internal hypotheses. Drawing on Suchman's (1995) definition of legitimacy as the generalized perception of an entity's actions being appropriate within a socially constructed system of norms, the literature emphasizes the concept of "strategic legitimation". (Suchman, M.C., 1995.)

Putting this theoretical concept into practice is particularly critical because the inherent nature of business experimentation, which relies on continuous trial-and-error and rapid pivoting, can easily project an image of instability to risk-averse external observers.

For nascent ventures facing cautious resource providers, acquiring credibility is an explicit managerial objective and a prerequisite for survival. Firms engage in symbolic management to bridge the credibility gap, employing prototypes and MVP as tangible symbols of future success. This tactic mitigates perceived technical and commercial risks and creates an impression of stability and operational capacity needed to secure capital. This signalling mechanism allows organizations to establish different forms of approval: exchange legitimacy, convincing customers of immediate tangible benefits, as well as influence and dispositional legitimacy, which rely on the entrepreneur's capacity to signal long-term reliability and alignment with the ecosystem's broader interests. (Bojovic, Genet, Sabatier, 2018)

Finally, the fifth core macro area identified, Sustainability-oriented perspectives, radically reframes the traditional, one-dimensional shareholder logic of profit maximization. In this literature, Business Experimentation for Sustainability (BES) is conceptualized as a critical mechanism to create sustainable value by deliberately integrating economic, environmental and social dimensions. Ventures utilizing BES aim not only to capture economic gains but also to actively reduce their environmental footprint, lower material consumption and increase the inclusiveness of wealth distribution. (Aagaard, Saari, Mäkinen, 2021)

Given the complex variables in sustainability challenges, BES operates under conditions of low experimental controllability and high outcome uncertainty. Unlike traditional scientific methods, its primary goal is not to achieve definitive proof, but rather to rapidly generate "evidence-based actionable knowledge" deeply embedded in the business context. This approach allows both established firms and start-ups, to explore novel ways

of generating sustainable value while minimizing risks and resource expenditures. (Bocken, Weissbrod, Antikainen, 2021)

Crucially, sustainability-oriented experimentation extends far beyond localized product or technological improvements; it encompasses entire business models, value chains and broader technical ecosystems, to act as a fundamental driver for the transition toward a circular economy. (Bocken, Weissbrod, Antikainen, 2021)

To complete the theoretical framework, the two secondary perspectives that has been identified will be briefly outlined, the first one is the Human-centric.

In the literature analysed the Human-centric perspective highlights the role of soft skills and strategic resilience during turbulent periods. When facing high uncertainty, resilience is conceptualized as a proactive strategic capability rather than a simple defence mechanism. It allows companies to seize opportunities by integrating agile processes and digitalization with an holistic vision. (Florek-Paszkowska, Ujwary-Gil, Godlewska-Dzioboń, 2021)

Building this organizational agility requires specific conditions: clear communication of shared goals, rapid decision-making structures, well-defined team roles, a culture valuing individual autonomy and adequate technological tools. As observed during global crises like the COVID-19 pandemic, survival heavily depends on these cultural elements. Organizations that successfully adapt to continuous change are driven by trust, empathy and leaders who possess strong interpersonal soft skills. (Florek-Paszkowska, Ujwary-Gil, Godlewska-Dzioboń, 2021)

However, the literature warns that these essential human factors are frequently overlooked due to an excessive focus on purely technical skills and technological solutions. To properly manage adaptability and change in environments characterized by Volatility, Uncertainty, Complexity, and Ambiguity (the VUCA framework), organizations must recognize that human-based factors are just as critical as non-human ones.

Lastly, the Ecosystem thinking perspective analysed frames the company not as an isolated entity, but as an active node within a broader network of infrastructures and social actors. To fully grasp this approach, the literature closely links it to business modelling, the cognitive process through managers mentally manipulate and evaluate alternative

strategic designs using analogical reasoning. However, while cognitive mapping builds representations of reality, business experimentation serves as the concrete intervention to alter it. Through ongoing trial-and-error practices, initially informal assumptions gradually evolve into structured configurations.

This systemic lens is particularly crucial when dealing with sustainable business models. Despite high interest from academics and policymakers, the actual concrete effects of sustainability-oriented innovations often remain uncertain. Achieving shared value is practically complex, as a new model's impact is heavily dictated by its interaction with existing ones, such as unintended rebound effects that negate environmental benefits. (Martins et al., 2015)

To navigate this complexity, ecosystem thinking shifts experimentation from a tightly controlled internal process into a collaborative, multi-stakeholder learning effort. Organizations use systemic frameworks to explicitly map their interdependencies across the value network. Ultimately, the strategic goal moves beyond simply validating a customer value proposition; it becomes about orchestrating system-level relationships to actively modify unsustainable dependencies, disrupt legacy models and create collaborative partnerships that sustain a new ecological infrastructure. (Bocken, N. et al., 2019)

2.1 Gaps in the Literature Review

Thanks to the analysis of this literature some gaps have been identified.

The first gap identified is the mismatch between learning and legitimations approaches, it can be said that it exists a strategic ambivalence in the literature regarding this. On one hand we have the perspectives of learning and validation, which are supporting the “fail fast” principle to create a fast failure mindset, framing failing faster as an essential efficiency tool in knowledge generation. On the other hand, the legitimation perspective argued that emerging ventures must project an image of stability, operational capacity and consistent success to secure resources from stakeholders. The literature currently lacks a clear framework explaining how organizations can practically balance these conflicting paradigms, embracing failure internally while simultaneously signalling reliability and competence externally.

To understand this ambiguity in theory, it is important to investigate whether both perspectives are mutually exclusive by nature, and if it is at all possible for firms to exhibit strategic ambidexterity in practice. Specifically, current research analysed does not address the tipping criteria such as the age of the organization, financial limitations, or industry maturity that will influence whether a company has to focus on learning versus reputation. Besides structural conditions, the literature analysed is not recognizing the effect that the cultural aspects may create. Society’s ability to tolerate failure and its stringency when it comes to legitimacy requirements actually derives from particular cultural environments. To try to operate with this strategic ambiguity may also have side effects.

This means that while the balance between experimentation and legitimization may pose challenges in one market setting, it may do so in entirely a different way in other markets.

The second knowledge gap discovered refers to the unexplored role of enabling factors.

While the benefits of applying the theoretical concepts of business experimentation have been recognised, an important part of the current literature on the subject presupposes that the approach is easy to implement. This resulted in insufficient research into factors that can allow organizations to sustain their experimental approach. In order to fill this

knowledge gap, future research may explore whether any of the factors can allow for successful business experimentation.

While the possibilities are not limited to these, three interconnected dimensions can be cited simply as examples of what can be explored within this topic:

- **Organizational Architecture:** Current studies provide only limited insight into how organizational structures, role definitions and operational frameworks, such as Scrum methodology, can shape and enable an organization's ability to conduct and sustain experimentation. A more systematic understanding is needed of how these elements either facilitate or slow experimental practices.
- **Regulatory Constraints:** The literature is largely centred on digital startups, where rapid iteration and continuous testing are relatively easy to implement. Consequently, there is an insufficient knowledge of how experimentation is adapted within highly regulated sectors such as healthcare, biotechnology, pharmaceuticals and cosmetics, where compliance requirements, approval processes and safety regulations can significantly limit conventional trial-and-error approaches.
- **Technological Integration (AI):** The growing adoption of artificial intelligence is reshaping organizational decision-making processes, yet its contribution as an enabler of business experimentation remains underexplored. In particular, there is a lack of research examining how AI influences different stages of the experimentation cycle, from hypothesis generation and experiment design to data analysis, interpretation and decision-making.

The third gap relates the lack of quantitative evidence: benefit and hidden costs.

Due to the nature of the reviewed literature, which is more oriented towards a qualitative approach based on conceptual and single-case studies, it has been identified a need for quantitative analysis to measure the actual impact made by business experimentation on firm performance. In the literature there is no evidence of key performance indicator KPI to keep track and map how business experimentation is actually improving business performance. Even more, the prevailing paradigm related to continuous adaptation tends to suffer from a positive bias, focusing almost exclusively on the advantages of continuous adaptation and how business can benefit from it. A critical quantitative

assessment is required to investigate not only tangible benefits but also the costs of experimentation like resource depletion, employee fatigue, or the strategic confusion generated by excessive pivoting.

The last gap refers to the role of business experimentation in identifying and creating new business opportunities.

Whether the literature has extensively addressed experimentation as a means of learning that helps validate a priori hypotheses, very little focus has been given to the importance of this process in the identification of new business opportunities. The majority of current research views experimentation as a tool for improvement or optimization of an organization's model or product. Very few attempts have been made to examine how firms apply this approach as a means of identifying and exploiting potential opportunities, accessing new customer segments or partnerships or even settling new strategic business unit. Therefore, a gap still exists concerning the transition of firms from experimenting on what already exists to creating new future growth opportunities.

2.2 Research questions

Based on this premises, this research aims to empirically explore the first gap, the dualism between learning and legitimation perspectives. Since the balance between these two aspects does not occur in the abstract but could be influenced by the firm's internal environment, it is essential to understand not only how organizations address this challenge, but also which variables determine the outcome.

Rather, this is a process characterized by strong intrinsic tension: while the imperative to learn requires embracing uncertainty, iterating rapidly and accepting the potential failure of hypotheses, the need for legitimation asks innovation teams to maintain credibility, build consensus, and lastly justify resource allocation to management and stakeholders. The decision to investigate this specific gap is based on the realization that ignoring how firms manage this paradox can led to the risk of creating a partial and overly idealized view of business experimentation.

Considering these considerations, the primary objective of this thesis is to empirically explore the dualism between exploring new knowledge and seeking internal validation, addressing the following main Research Question (RQ):

- RQ: *How do organizations balance learning and organizational legitimation during business experimentation processes?*

However, it is reasonable to assume that this delicate balancing act does not occur in a standardized manner but takes different forms depending on the corporate ecosystem. To fully understand the mechanisms that facilitate or hinder this balance, the main question is complemented by a sub-question aimed at isolating the internal variables driving these processes:

- Sub-RQ: *Which organizational factors influence this balance across different organizational context?*

3 Methodology

This chapter outlines the main methodological approaches used in academic research and subsequently specifies which of them will be adopted to address the identified gap and answer the study's research questions.

Research is generally based on three main methodologies: qualitative, quantitative and mixed methods. Depending on the objectives and the type of problem to be addressed, each approach provides the most suitable methodological tools.

Quantitative approach involves examination and collection of numerical data. Its primary aim is to identify recurring patterns and make predictions with broad applicability (P. Bhandari, 2020).

Different methods can be used within a quantitative approach:

- Descriptive research, seek an overall summary of your study variables.
- Correlational research, where relationships between study variables are investigated.
- Experimental research, where the study systematically examines whether there is a cause-and-effect relationship between variables.

Applying quantitative approach presupposes that complex problems can be deconstructed into smaller, measurable units, thereby allowing for an objective evaluation and it is fundamentally based on impartiality and the researcher's detachment from the subject. By minimizing personal bias, this methodology aims to generate results that can be easily generalized to broader contexts. (Lim W. M., 2025)

This approach is primarily driven by the objective to test hypotheses, develop predictive models, or establish clear cause-and-effect relationships. To achieve these goals, this methodology relies on numerical data gathered through highly structured and standardized instruments, such as surveys and experiments. Because this data is systematically collected, it is suited for statistical analysis. By leveraging mathematical models and algorithms, researchers can efficiently process large datasets. This analytical approach allows them to isolate specific variables and identifies precise, and quantifiable trends, providing an objective foundation to either validate or reject their initial theories. (Lim W. M., 2025)

Within the data collection there are two sampling categories: random and non-random sampling.

Random sampling is considered the gold standard since it provides every individual in the population an equal chance of selection. This approach maximizes generalizability and minimizes selection bias, although it can involve significant logistical complexity and high costs. Common techniques within this category include cluster and multistage sampling. Conversely, non-random sampling is highly practical and easier to implement, allowing researchers to efficiently target specific subgroups. However, methods such as convenience, purposive, quota and snowball sampling inherently compromise the study's generalizability and increase the risk of introducing bias. To mitigate these sampling biases and enhance external validity, researchers must adopt a multi-faceted approach. Key strategies include diversifying data sources and recruitment channels, ensuring transparency in the study's design and varying the timing and locations of data collection to capture a truly representative sample. (Lim W. M., 2025)

While performing quantitative research there are four main categories of analysis:

1. Descriptive analysis, which provides an immediate snapshot of the dataset by identifying patterns, trends and distributions without establishing causal links. (Lim W. M., 2025)

There are two types of measures within a descriptive analysis:

- Measures of central tendency: mean (average value in a dataset), median (Middle value of data when sorted in ascending or descending order) and Mode (value of data that appears most frequently)
- Measures of dispersion: standard deviation (average distance of each data point from the mean, indicating the dispersion) and range (difference between maximum and minimum value, showing full spread of data). (George D., Mallery P. 2019) (Lim W. M., 2025)

2. Diagnostic analysis that shifts the focus from the 'what' to the 'why' and 'how', investigating the underlying causes and interactions between variables. (Lim W. M., 2025)

There are two types of diagnostic analysis:

- Not causal conditional, or experimental which is subdivided into:

- Factor analysis: Exploratory factor analysis (a statistical technique used to identify the underlying structure of a set of observed measures without preconceived notions) and confirmatory factor analysis (a statistical technique to test the assumption that a set of observed variables are influenced by specified latent variables based on existing theory or prior research)
 - Correlation analysis: Pearson's correlation (check the linear relationship between two, continuous, variables) and Spearman's correlation (assesses the monotonic relationship between two (continuous or ranked) variables, which may be ordinal (e.g. education), interval (e.g. Celsius or Fahrenheit), or ratio (e.g. income) (George D., Mallery P. 2019) (Lim W. M., 2025)
 - Causal, conditional, or experimental
 - Test of differences: Chi-square (Tests the independence of two categorical variables), t-test (Compares the means of two groups to determine if they are statistically different), Analysis of variance (ANOVA) (Compares the means among three or more groups to ascertain if they are statistical different) and Multivariate analysis of variance (MANOVA) (An extension of ANOVA that allows for the analysis of multiple dependent variables simultaneously) (George D., Mallery P. 2019)
3. Predictive analysis, utilizing advanced statistical methods to forecast future outcomes based on historical data. (Lim W. M., 2025)

The method used to perform predictive analysis are:

- Regressions, that can be linear (Assumes a linear relationship and predicts a continuous dependent), logistic (Estimates the probability of a categorical dependent outcome) or Polynomial (Extends linear regression

to model nonlinear relationships by including polynomial terms of independent variables)

- Structural equation modelling (SEM)
- Time series analysis (Lim W. M., 2025)

4. Prescriptive analysis that synthesizes the insights gathered from the previous stages to give actionable recommendations; it guides decision-making by determining not only what is likely to happen, but what specific actions should be taken in response. (Lim W. M., 2025)

In contrast to the quantitative method, the second primary methodological approach is the qualitative research.

Qualitative approach focuses on the acquisition and examination of non-numerical materials. The primary objective of this approach is to explore concepts, personal experiences, and viewpoints in depth. This methodology is essential for gaining a detailed understanding of complex phenomena or for generating new research hypotheses. The qualitative method finds its fullest expression in the human and social sciences. (P. Bhandari, 2020).

Usually, the qualitative approach wants to answer research questions that are broad, research gaps that may be revised iteratively as the research is carried out. There are three main methods used in qualitative research. (Denny, Weckesser, 2022)

The first method is interviewing.

Semi structured interview that contains pre-set and open-ended question with the possibility to have further questions based on the conversation; or unstructured interview that on the other hand focus on fewer topics with a great depth. (Denny, Weckesser, 2022)

The second method is having a focus group.

A focus group involve a guided discussion managed by a researcher using a clear framework. Researchers pay attention to the group's dynamics as well as the actual conversation. Focus group can be used as an independent tool, but usually they are most used to add detail or clarify information gathered through other methods. (Denny, Weckesser, 2022)

Interviews and focus group are usually adaptable rather than strictly structured. Compared to quantitative research, they place a much higher value on the personal thoughts and real-life experiences of the participants. (Denny, Weckesser, 2022)

The third method is observation.

Defining observation as “the act of watching social phenomena in real-world settings, recording what people do, rather than what they profess to do”, where the researcher can be part of the scene or stand outside it. (Denny, Weckesser, 2022)

Unlike quantitative studies, the amount of data in quantitative research isn’t decided in advance. Researchers continue gathering data until archiving saturation, meaning the point where no new themes emerge and extra data stops offering new perspectives. Consequently, sample sizes tend to be quite small. (Denny, Weckesser, 2022)

Focus group and interviews are usually recorded and transcribed.

The last methodological approach is the mixed one.

Mixed methods approach strategically combines quantitative and qualitative approaches to provide comprehensive answers to research questions. By integrating the strengths of both methods, this approach enables the construction of a far more complete analytical picture than the use of a single technique. Thanks to its ability to decipher complex social and situational contexts, the mixed-methods approach is widely applied in multidisciplinary research. (T. George, 2021).

It is valuable when a single methodology is insufficient to address the research question. Integrating both paradigms it offers three methodological advantages.

First it enhances generalizability; with the broad reach and external validity of quantitative data it compensates for the smaller sample sizes typically found in qualitative studies. Second, it allows for contextualization: qualitative insights provide descriptive details that help explain the nuances and human elements behind the numerical findings. (T. George, 2021).

Finally, combining these approaches significantly boosts the study's credibility. When qualitative and quantitative data converge to support the same conclusion, a process known as triangulation, the overall validity of the research is greatly strengthened. However, because of its complexity, this dual approach should only be adopted if the

research objectives cannot be adequately fulfilled by a standalone qualitative or quantitative analysis. (T. George, 2021).

3.1 Proposed approach

Given the objectives outlined in the previous paragraphs and considering that both the main research question and the sub-research question require standardizing and quantifying internal organizational dynamics that are difficult to observe externally, this study adopts a quantitative survey-based approach.

This choice is also consistent with the third gap identified in the literature review, the lack of quantitative evidence on the actual effects of Business Experimentation.

While the qualitative method is useful when analysing cases in detail, it does not provide the opportunity to compare patterns in a large sample of organizations. Moreover, a qualitative study cannot assess the relationships between the factors described in the literature and organizational balancing of learning and legitimization.

For this reason, the empirical part of the research relies on a structured questionnaire, which has been distributed online via professional networks and direct contacts.

To ensure a comprehensive and robust analysis, the sample selection was designed to be intentionally broad and inclusive. Rather than restricting the focus to a single sector, the research actively targeted a wide variety of industries. This cross-sector approach was chosen to capture a diverse range of perspectives and to understand how Business Experimentation is applied across different market contexts, avoiding biases tied to a specific field.

Furthermore, a key objective of the study was to investigate how organizational size and structure impact validation practices. For this reason, the sample deliberately encompasses a mix of Large Enterprises and Small and Medium Enterprises (SMEs). This structural diversity is a fundamental asset for the research, as it allows for a valuable cross-sectional comparison. Exploring how these variables influence validation practices is, in fact, precisely one of the primary objectives addressed by the research sub-questions.

The survey is anonymous, takes approximately ten to twelve minutes to complete, and the collected data will be analysed in an aggregated form.

3.2 Survey Construction and Design

The Survey was designed to address the research questions outlined in Chapter 2, providing a framework for gathering data on Business Experimentation and its dualism between learning and organizational legitimation.

The survey structure is composed by 40 questions, organized into eight sections to facilitate responses and ensure alignment with the study's analytical objectives, as attached in the appendix.

Table 1 Questionnaire structure

Section	Description
1 - Company profile	Collects general information about the participants' company profile, such as industry, company size, role of the participant and the presence of a dedicated Innovation or R&D function; these variables will later be used to check whether they have an influence on the balance between learning and legitimation, as required by the sub-research question.
2 - Innovation Validation Practices	Investigates if validation practices are used within the organization innovation operations and when specifically. This section includes a filter question: participants who do not recognize their organization in the definition of Business Experimentation adopted for this study are redirected directly to the section number seven in order to avoid forcing answers on practices that are not actually used.
3 - Organizational Enabling Factors &	These two sections are about organizational enabling factors for business experimentation practices. The responses gathered in this part of the survey are fundamental to the core analysis of this research since they can be used to empirically test which

4 - Business Experimentation Capability	specific factor influence the balance between the learning and legitimization dimension
5 - Learning and Legitimation	It is built on the research questions that this research wants to answer. Participants were asked to evaluate their level of agreement, using Likert-scale ratings, with statements formulated to in order to understand how the learning perspective and the legitimacy one is emphasized within their organization. A “non applicable” option has been included so participants were not forced to take a position on statements that don’t correspond to a practice they adopt in their organization. Statements such as “Negative experimental results are considered valuable learning opportunities” or “Experiments primarily generate new organizational knowledge” address the Learning Orientation, while statements such as “Experimentation strengthens the credibility of strategic initiatives within the organization” or “Experimental evidence facilitates managerial approval of innovation projects” target the Legitimation Orientation. Comparing how participants rate these two groups of statements is what should allow this dualism to be explored empirically.
6 - Outcome and Performance Measurement	It aims to measure the perceived outcomes of business experimentations on decision making and business performance. It also provides a list of KPIs to understand which are the ones that companies monitor while doing innovations. This offers a first indication of how experimentation is measured in practise in line with the third gap discussed previously.

7 - Barriers to Business Experimentation	This section is about barriers, participants were asked to select from a list, up to three main barriers that limit Business Experimentation in their organization.
8 - Final question	The last section only asks to give an overall assessment of their organization's experimentation maturity.

The questionnaire's design prioritized clarity and accessibility to ensure accurate and thoughtful responses. Each section was visually distinct and accompanied by concise instructions to facilitate navigation and reduce cognitive load on respondents. The layout's intuitive structure is supported by research on survey usability, which emphasizes the importance of logical question flow and clear response options to enhance data quality (Bhat, n.d.).

3.3 The Sample Selection

The research was designed to achieve a heterogeneous sample composition. The diversity should ensure a robust understanding of the phenomenon across varying environments, providing the variance to identify patterns and correlations, as well as further insights coming from comparing the different kinds of companies involved.

The target population was selected using a random sampling approach: aiming to reach a heterogeneous cross-section of professionals holding strategic/managerial and innovation-focused roles. By not restricting the distribution to a specific industry or company size, this approach ensured a broad and comprehensive overview of how different organizational contexts validate initiatives and balance learning with legitimation.

3.4 Data Collection

The primary data analysed for this study was collected with a structured online questionnaire. The reason why an online survey has been shared are because of its advantages:

- Using a digital platform reduces time for gathering data: an online survey can be distributed instantly, and real-time responses can be tracking. This streamlines the entire procedure and allow an efficient data collection process.
- The digital survey allows a wider reach and allows to eliminate geographical barriers, facilitating easier access to a global sample.

The survey was distributed leveraging professional networks sharing it via platforms like LinkedIn and targeted email invitation to specific companies or universities. These institutions acted as intermediaries to disseminate the survey among their affiliated start-ups and academic spin-offs.

To ensure maximum completion rates and minimize social desirability bias, the survey was designed to be completed in approximately 10 to 12 minutes, and respondents were assured of the strict anonymity and confidentiality of their answers.

At the conclusion of the data collection period, a total of (58) fully completed responses were registered. The collected responses provide a preliminary insight into the studied phenomenon.

3.5 Data Preparation and Statistical Approach

Data collected through the survey were organized and analysed using the R statistical computing software. To ensure the reliability and validity of the inferential analysis, a rigorous data preparation protocol was implemented.

Following the survey design, a preliminary screening was conducted to isolate the relevant sample for the inferential models. Respondents who indicated that their organization does not currently apply Business Experimentation (by answering 'No' to the filter question evaluating their alignment with the study's formal definition) were excluded from the subsequent analyses regarding organizational enablers and strategic orientations.

This step ensured that the statistical models were constructed exclusively on a consolidated dataset of organizations actively engaged in experimental practices, avoiding structural distortions in the variance.

To empirically measure the theoretical constructs identified in the literature review, composite scores were generated for each organization.

These indices were created by calculating the mathematical mean of the corresponding 5-point Likert-scale items:

- Learning Orientation Score: calculated as the average of the items assessing the generation of new knowledge, uncertainty reduction and the perception of negative results as learning opportunities
 - Q27. Experiments primarily generate new organizational knowledge.
 - Q28. Reducing uncertainty is the primary objective of experimentation.¹
 - Q29. Negative experimental results are considered valuable learning opportunities.
- Legitimation Orientation Score: calculated as the average of the items measuring stakeholder confidence, managerial approval and credibility enhancement
 - Q30. Experimental evidence increases stakeholders' confidence in innovation initiatives.
 - Q31. Experimental evidence facilitates managerial approval of innovation projects.
 - Q32. Experimentation strengthens the credibility of strategic initiatives within the organization.

During the data preparation phase, it was observed that within the valid subsample of organizations practicing Business Experimentation, a minority of 14 respondents occasionally omitted answers to specific individual statements (selecting "N/A" values).

To prevent the unnecessary loss of valuable statistical information and avoid the biases associated with listwise deletion (which discards entire organizational profiles for a single missing data point), a structured imputation strategy was applied.

¹ Although reducing uncertainty is primarily conceptualized as a learning mechanism, it acknowledges a theoretical overlap with the legitimation perspective, as mitigating risk is also a key driver for securing stakeholder confidence. However, to maintain the mutual exclusivity of the composite indices and ensure the methodological simplicity of the statistical models, this variable was assigned exclusively to the Learning Orientation Score.

Specifically, a Median Imputation technique was utilized: missing values on the ordinal Likert scales were replaced with the median score of that specific variable across the valid sample.

This methodological choice allowed to maximize the sample size for the regression models, ensuring more stable coefficient estimates while preserving the original central tendency and variance of the dataset. (Lim W. M., 2025)

To address the research questions regarding how organizations balance learning and legitimation, and which factors enable these dimensions, the analytical phase relied on two primary techniques:

1. Correlation Analysis

Before building models, a correlation matrix was generated to explore the relationships between all the variables. This step was essential to understand the interconnected ecosystem of organizational enablers and to empirically test the theoretical friction between the learning perspective and the legitimation perspective, assessing whether they act as a trade-off or evolve synergistically.

2. Multiple Linear Regression

To identify which enablers, act as primary predictors for the two main strategic orientations, two distinct Multiple Linear Regression models were developed.

Specifically, one regression model was constructed to determine the variables influencing the Learning Orientation Score, while a second model was designed to identify the predictors of the Legitimation Orientation Score.

Given the high number of potential independent variables:

- Top management support for experimentation
- Evidence-based decision-making by managers
- The perception of failure as a learning opportunity
- Psychological safety to challenge assumptions

- The widespread encouragement of experimentation
- The presence of a structured experimentation process
- The systematic documentation and sharing of results
- Employees' experimentation skills
- The availability of relevant data
- The support from digital technologies
- The integration of Artificial Intelligence

a backward stepwise selection method was adopted.

This algorithmic procedure begins by constructing a "Full Model" that includes all potential enabling factors simultaneously. Subsequently, the model systematically evaluates the statistical significance of each predictor, iteratively removing the variable with the highest p-value (the least significant). The model is then re-estimated and the process is repeated until the algorithm reaches the most streamlined configuration, an optimized model containing only the predictors that offer a statistically significant contribution to explaining the variance of the dependent variable (Learning or Legitimation). This approach maximizes the Adjusted R-squared value while mitigating the inclusion of unnecessary parameters that could overcomplicate the model.

To ensure the statistical reliability of the regression models and the validity of the estimated coefficients, a diagnostic check for multicollinearity was planned. This was achieved by calculating the Variance Inflation Factor (VIF) for each predictor in the models. Multicollinearity occurs when independent variables are too highly correlated with each other, which can artificially inflate the standard errors of the coefficients and render the model's predictions unstable. A conservative statistical threshold was established, aiming for VIF values below 3. The application of the backward stepwise selection method facilitates the removal of redundant variables, the VIF calculation served to verify and confirm that the final models respected the threshold and were free from problematic multicollinearity.

4 Findings

4.1 Descriptive Analysis

The first section of the findings presents a descriptive analysis of the collected data. The objective is to understand how Business Experimentation is managed across different company profiles, and by examining how organizational characteristics influence Business Experimentation practices, this section aims to unpack the strategic tension between organizational learning and legitimation.

As illustrated in Figure 1, the survey has encompassed a wide array of industries. This diversity aligns with the methodological intent to avoid restricting the study to a single sector, thereby allowing for a broader overview of experimentation practices.

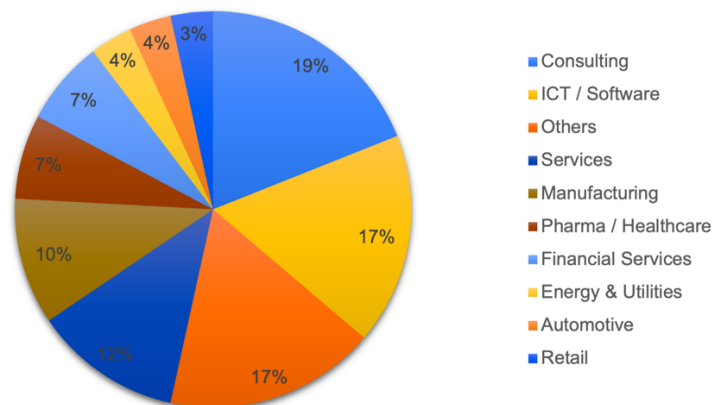


Figure 1 Sample distribution by primary industry

The data indicates that the highest concentration of respondents operates within the Consulting sector (19%), closely followed by the ICT / Software industry, which accounts for 17.2% of the sample. Other prominently represented sectors include Services (12.1%) and Manufacturing (10.3%). Furthermore, highly regulated industries such as Pharma / Healthcare and Financial Services are equally represented, each making up 7% of the respondents. The remaining portion of the sample “Others” is fragmented across various other sectors (e.g., Energy & Utilities, Food & Beverage, Retail, Automotive, Consumer goods, Aviator, Sport, E commerce, Wholesale luxury goods ...) confirming the cross-sectional nature of the collected data.

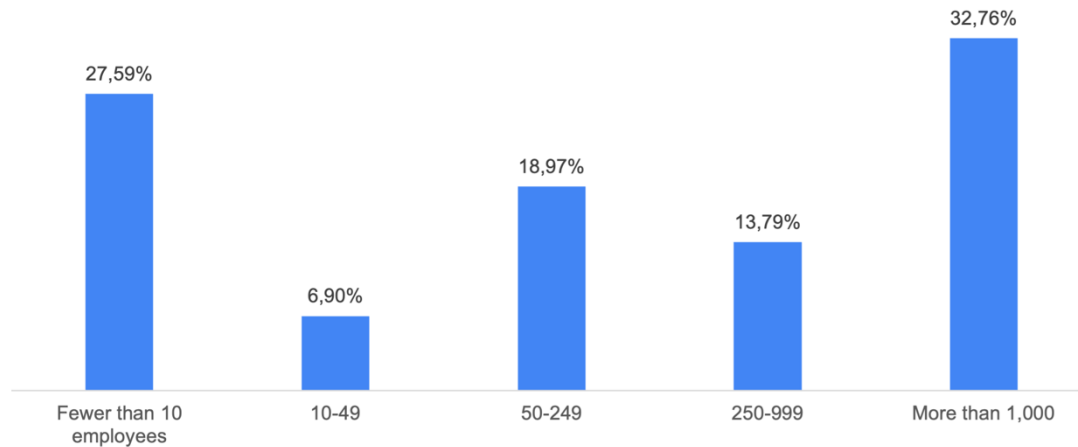


Figure 2 Sample distribution by company size.

The data reveals that the largest segment of the sample consists of large corporate enterprises with more than 1,000 employees, accounting for 32.8% of the total respondents. The second most populated group comprises micro-enterprises and early-stage startups with fewer than 10 employees, representing 27.61% of the sample. Together, these two extremes make up nearly 60% of the dataset. This polarization in company size is particularly valuable for the analytical purpose of this study. On one hand, large enterprises (>1000 employees) typically have structured R&D departments and greater financial capabilities, but they often face high bureaucratic inertia; in such environments, the legitimation aspect of experimentation becomes crucial for securing internal approvals and stakeholder consensus. On the other hand, microenterprises and early-stage startups (<10 employees) are agile but highly resource-constrained, often relying on continuous validation primarily for fast learning and market survival. Having a balanced representation of these two structural extremes provides a robust foundation for contrasting how organizational size influences the strategic tension between exploring new knowledge and justifying innovation efforts.

The mid-sized tiers are also well-represented: companies with 50 to 249 employees constitute 19% of the responses, while medium-to-large organizations ranging from 250 to 999 employees make up 13.8%. Small businesses with 10 to 49 employees represent the smallest fraction at 7%.

It is also necessary to understand the structural and geographical context in which these organizations operate, as physical distribution often influences how barriers manifest.

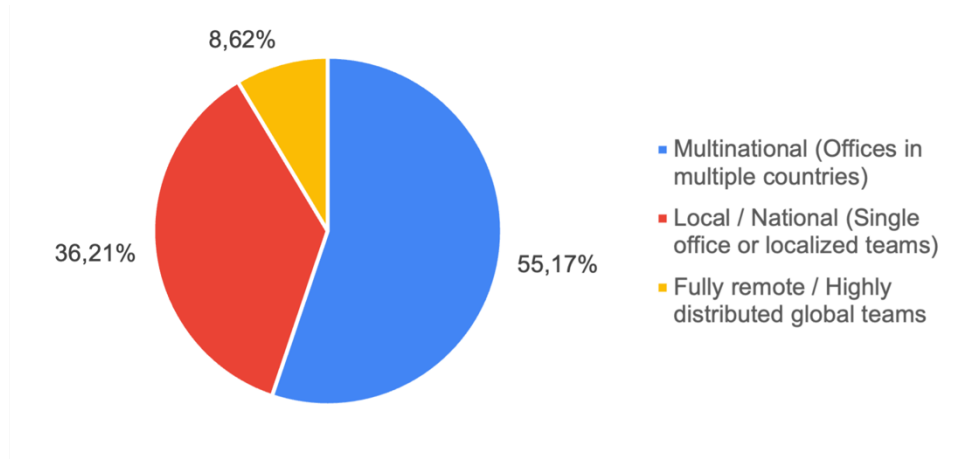


Figure 3 Organizational geographical scope and team structure.

The sample is predominantly composed of highly distributed organizations. Most of the respondents (55.2%) operate within Multinational companies, characterized by offices across multiple countries. An additional 8.6% belong to Fully remote or highly distributed global teams. Combined, nearly 64% of the surveyed organizations manage innovation across different locations, time zones, and potentially varying corporate subcultures.

36.2% of the sample operates on a Local or National level, relying on a single office or geographically localized teams.

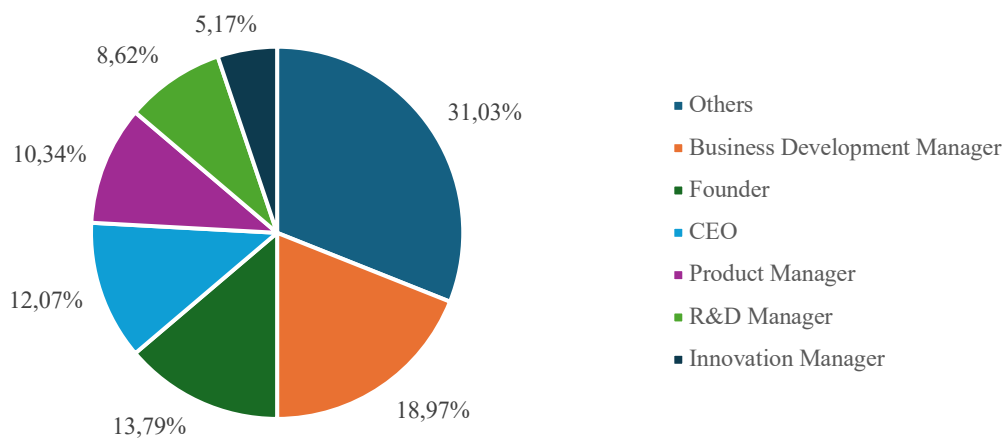


Figure 4 Sample distribution by respondent's current position.

The data indicates that the survey reached individuals in strategic, managerial, and innovation-centric roles. The largest single professional group consists of Business

Development Managers, representing 19% of the sample. Crucially, a significant portion of the respondents hold top-tier executive positions, with Founders accounting for 13.8% and CEOs making up 12.1%. Combined, these C-level executives and founders represent over a quarter of the total sample (25.9%), providing highly authoritative insights into the strategic pressures of organizational legitimization and resource allocation.

Furthermore, the operational side of innovation is well-represented by Product Managers (10.3%) and R&D Managers (8.6%). The remaining portion of the chart displays a highly fragmented "long tail" of various other specialized roles, combined in the "Others" slice, which further enriches the dataset with diverse operational perspectives.

Overall, this professional composition confirms that the collected data reflects the viewpoints of key decision-makers and practitioners who are directly involved in, or responsible for, their organizations' innovation and experimentation processes.

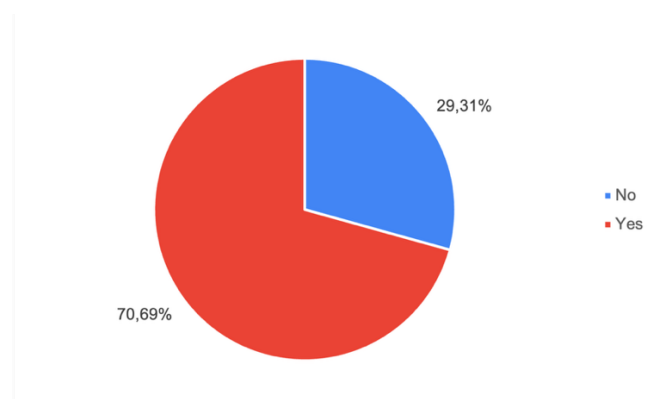


Figure 5 Presence of a dedicated Innovation or R&D function.

As illustrated in Figure 5, most of the organizations (70.7%) report having a dedicated unit explicitly tasked with innovation or R&D. Conversely, nearly one-third of the sample (29.3%) indicates that they operate without a formalized, dedicated department for these activities.

This distribution is highly relevant for investigating the core research question. The high prevalence of dedicated R&D functions suggests that most organizations in the sample have structurally allocated resources toward innovation. On the other hand, the 29.3% of

companies lack a dedicated unit to approach innovation and validation, it can potentially present a different dynamic in how they balance learning and legitimization.

Cross referencing the presence of a dedicated innovation or R&D function with company size shows interesting details. While the sample average shows that 70.7% of surveyed organizations have a dedicated unity, this metric can have a positive association with the organizational scale. Among surveyed micro-enterprises and early-stage startups (fewer than 10 employees), the majority (approximately 69%) operate without a formalized innovation department. In contrast, as organization size increases, the presence of a dedicated innovation function rises. For instance, nearly 90% of surveyed large corporate enterprises (more than 1,000 employees) report having a dedicated R&D function. From a theoretical interpretation of this study, this suggests that micro-ventures execute innovation agilely out of necessity while large firms structure it formally.

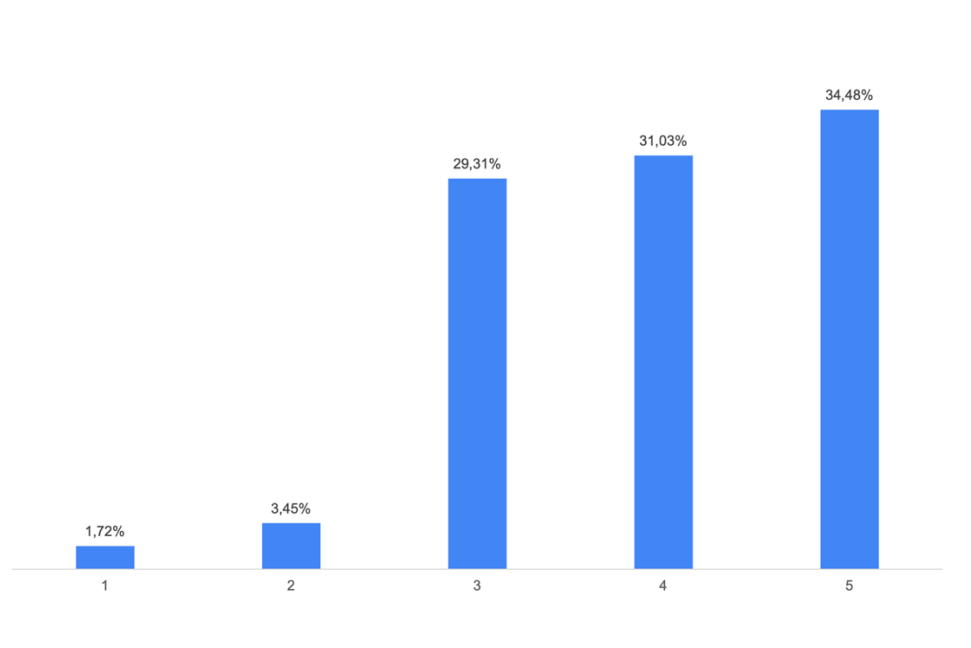


Figure 6 Self-reported rating of the company's orientation toward innovation.

To conclude the profile of the participating companies, respondents were asked to self-assess their organization's overall orientation toward innovation using a 5-point scale (where 1 indicates "Very low" and 5 indicates "Very high").

The data show a strong positive skew, suggesting that most of the surveyed individuals perceive their organizations as highly innovative environments. Specifically, one-third of the sample (34.5%) assigned the maximum score of 5, while another 31% selected a score of 4. Combined, nearly two-thirds of the respondents (65.5%) believe their companies possess a strong or very strong orientation toward innovation.

A significant portion of the sample (29.3%) positioned their organizations at a moderate level, selecting a score of 3. Only a marginal fraction of the respondents assessed their company's innovation orientation negatively, with just 3.4% selecting a score of 2 and a 1.7% (representing a single respondent) choosing the lowest possible score of 1.

However, it is crucial to emphasize that these are results given by a self-reported perceptions rather than objective measurements. Such results may be partially influenced by an optimism bias, where individuals tend to overestimate their own organizational capabilities. This positive baseline will serve as a point of comparison in the subsequent sections.

Transitioning from the demographic and structural profiles of the organizations, the findings now focus on the core behaviours associated with Business Experimentation. Specifically, this first section explores how companies validate new ideas and mitigate risks under conditions of uncertainty.

Respondents were asked to rate the frequency with which their company tests assumptions when developing new products, services, or business initiatives, using a 5-point scale (from 1 = "Never" to 5 = "Always").

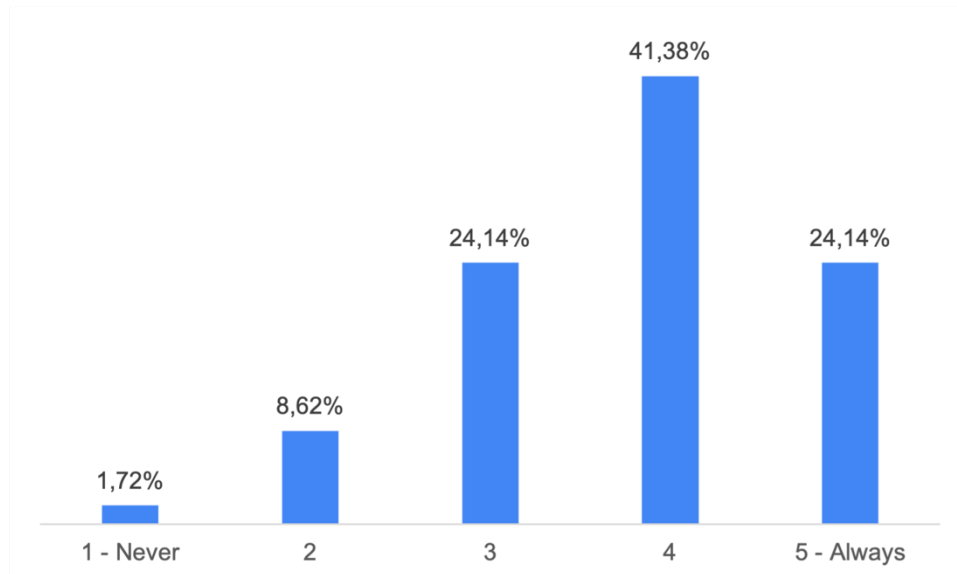


Figure 7 Frequency of assumption testing before making significant investments

The data shows an inclination toward proactive validation among the surveyed organizations. The most frequent response, capturing 41.4% of the sample, is a score of 4, suggesting that assumption testing is a highly regular practice. An additional 24.1% of respondents selected the maximum score of 5 ("Always"), suggesting a self-perception of a strict, embedded requirement to validate hypotheses before any major investment is approved. Combined, nearly two-thirds of the sample (65.5%) systematically seems to prioritize assumption testing.

A further 24.1% of the sample reported a moderate frequency, selecting a score of 3. This suggests an occasional or perhaps unstructured approach to validation, where testing might occur but is not yet a mandatory gate within the innovation process.

Conversely, practices that neglect validation are clearly in the minority. Only 8.6% of respondents assigned a score of 2, and a mere 1.7% (a single respondent) indicated that their organization "Never" tests assumptions before investing. This distribution suggests that the theoretical value of early-stage validation is widely recognized in practice, setting a solid foundation for understanding the specific methods companies use to achieve this validation.

To better understand how surveyed organizations actually test their ideas, respondents were asked to select which validation methods they currently use. Since innovation

projects often need different tools depending on the phase, this was a multiple-choice question.

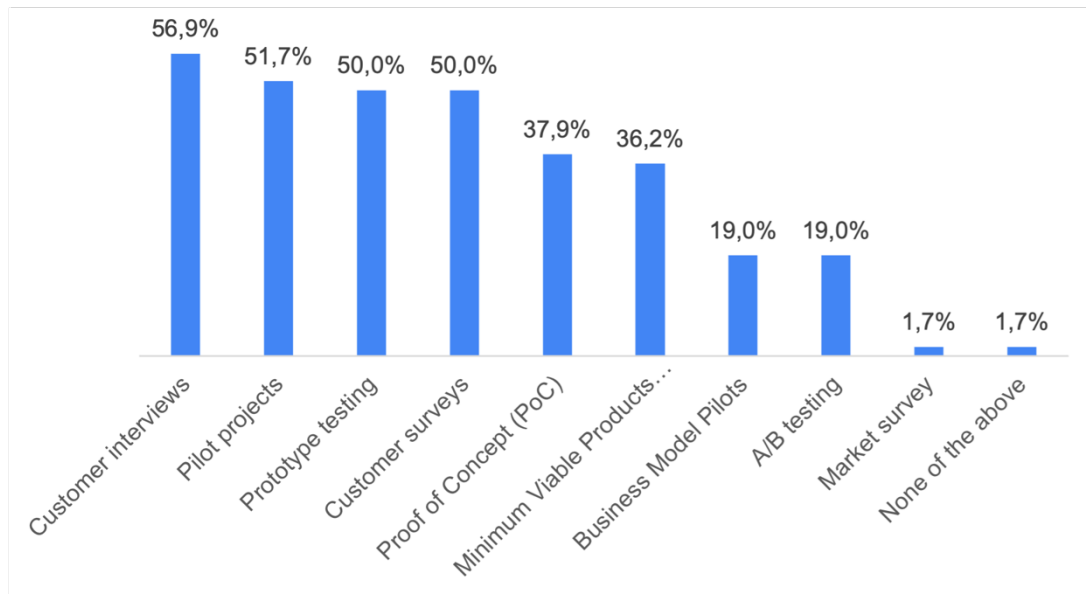


Figure 8 Current validation practices adopted by the surveyed organizations.

The bar chart shows a strong preference for direct customer feedback. The most popular method is customer interviews, used by 56.9% of the sample. This is followed closely by pilot projects (51.7%), customer surveys (50%), and prototype testing (50%). The frequent use of these four practices suggests that companies rely heavily on talking to the market and building early models to reduce risks before making big investments.

More structured methods are also quite common. About 37.9% of the companies use Proof of Concept (PoC), and 36.2% rely on Minimum Viable Products (MVPs).

On the other hand, more complex or quantitative experiments are less frequent in this sample. Only 19% of the organizations use A/B testing or Business Model Pilots.

This distribution shows a gap between qualitative exploration and quantitative validation. The strong reliance on foundational techniques such as interviews and survey suggests an orientation toward early-stage learning, which is typically highly accessible and less resource intensive. In contrast, the adoption rate drops noticeably for more structured methodologies like MVPs, A/B testing and Business Model Plots. These practices are more advanced, require higher technical competencies and greater financial investments.

This trend suggests the presence of a validation funnel within the surveyed organizations: while simpler qualitative tools are heavily utilized to gather preliminary feedback, the transition to formal metric-driven experimentation remains a structural challenge that fewer companies overcome.

Finally, just one respondent (1.7%) answered "None of the above".

It is also important to understand how often they perform validation practices. To measure this, respondents were asked to estimate how many validation activities their company conducted in the last 12 months.

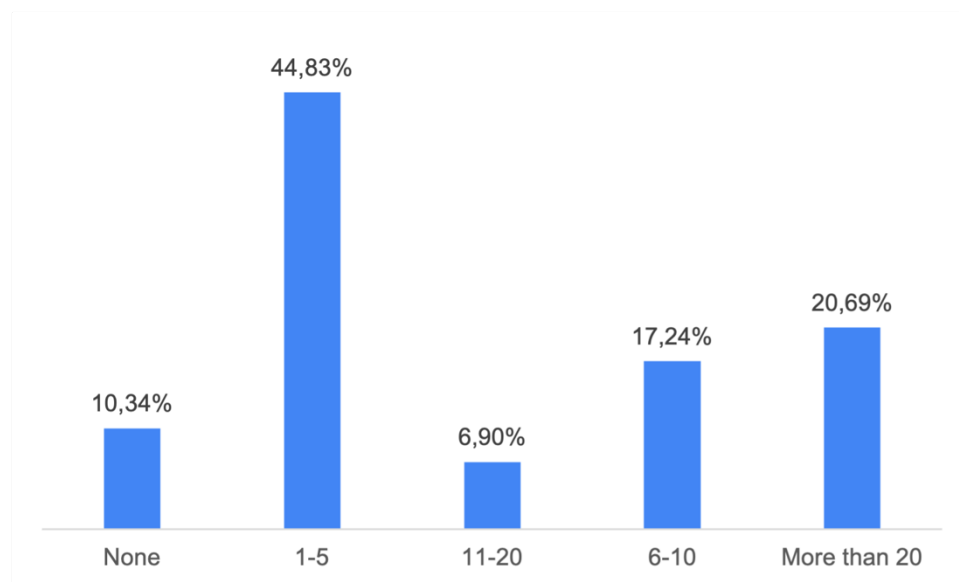


Figure 9 Number of validation activities conducted in the last 12 months

The volume of experimentation varies across the sample. The largest group, representing 44.8% of the respondents, conducted between 1 and 5 validation activities in the past year.

On the other hand, there is a distinct group of highly active organizations. About 20.7% of the sample reported conducting more than 20 validation activities. The middle ground is covered by companies doing 6 to 10 activities (17.2%) and 11 to 20 activities (7%).

Finally, 10.3% of the respondents admitted that their organization conducted zero validation activities in the last year.

While cross-referencing these execution metrics with the structural and demographic data presented earlier, an ‘execution gap’ seems to appear. While a vast majority of the sample reported having a dedicated Innovation or R&D function (70,7%) and rated their innovation orientation very highly (65.5%), almost half of the organizations (44.8%) execute five or fewer validation activities over an entire year. This discrepancy suggests that possessing formal innovation structures does not automatically translate into a high-frequency experimentation culture. In many of these firms, R&D department may still operate under traditional, long term development cycles rather than rapid iterative testing loops. On the other hand, the highly active segment (the 20.7% conducting more than 20 activities) likely represents the minority of organization that have transitioned from merely structuring for innovation to embedding continuous agile Business Experimentation.

Knowing the frequency and volume of validation is important, but it is equally crucial to understand when these activities take place during the innovation lifecycle. To explore this, respondents were asked to identify the main stages where their company conducts validation, it was allowed to have multiple selections.

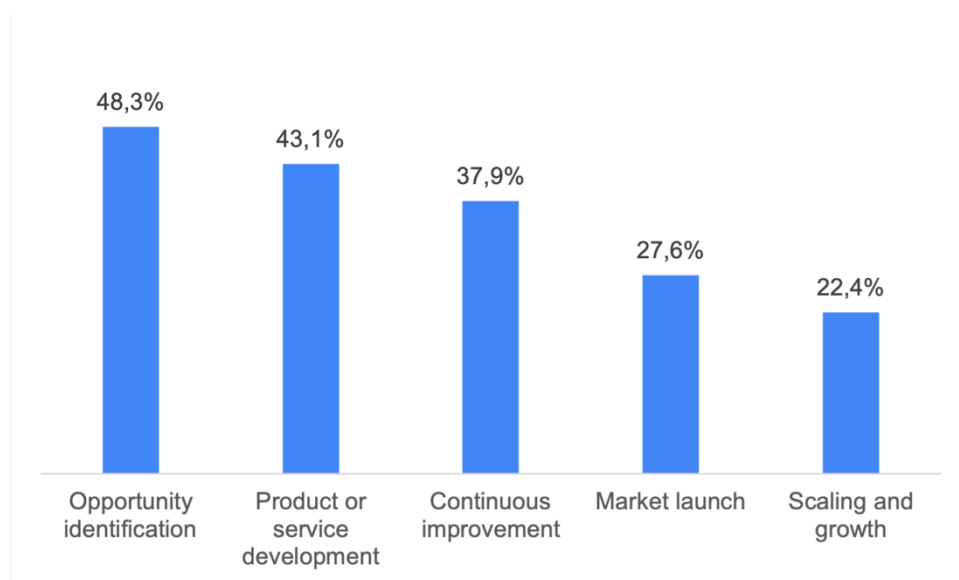


Figure 10 Stages in which validation activities are mainly conducted

Validation efforts are heavily concentrated in the early phases of the innovation process. Almost half of the sample (48.3%) conducts tests during the Opportunity identification stage and a similarly high percentage (43.1%) focuses on the Product or service

development phase. This early-stage focus makes practical sense, as testing assumptions at the beginning of a project is the most effective way to avoid expensive mistakes later.

Interestingly, validation does not completely stop once a product is built. A solid 37.9% of organizations reported using testing for Continuous improvement, showing that experimentation is also used to optimize existing solutions.

On the other hand, validation activities drop significantly as the product moves closer to the market. Only 27.6% of companies test during the Market launch, and even fewer (22.4%) do so during Scaling and growth.

To wrap up the section on validation practices, the survey provided a formal definition of Business Experimentation: "The systematic testing of ideas, products, services or business initiatives through structured experiments aimed at reducing uncertainty". Respondents were then asked to state whether their organization currently applies this specific concept.

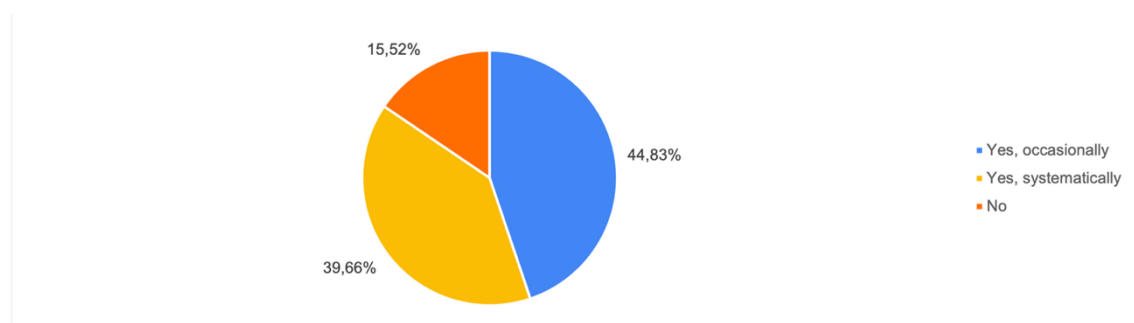


Figure 11 Current application of Business Experimentation based on the formal definition

Most of the sample recognizes this approach within their own corporate reality, though the level of commitment varies. The largest group, making up 44.8% of the respondents, stated that they apply Business Experimentation "occasionally". This aligns perfectly with the previous finding that many companies conduct a limited number of validation activities (1-5 per year), suggesting an ad-hoc approach rather than a fully integrated process.

However, a very strong 39.7% of the sample confirmed that they apply it "systematically". These organizations likely represent the most mature segment of the

dataset, where testing is a continuous loop fully embedded in their daily innovation activities.

Finally, 15.5% of respondents answered "No", indicating that their companies do not currently follow this structured approach. As per the survey design, these respondents skipped the sections regarding internal enablers and capabilities, moving directly to the final section about the barriers preventing experimentation.

Altogether, the fact that nearly 85% of the surveyed organizations apply Business Experimentation, occasionally or systematically, suggests that this practice is a highly relevant strategic tool in today's business landscape.

This provides a solid and validated starting point to explore the specific cultural factors, leadership styles, and learning-legitimation dynamics in the upcoming sections of the findings.

The third section of the survey evaluates the organizational enablers that make testing possible. As designed, respondents who stated they do not apply Business Experimentation at all were excluded from this section. The remaining participants were asked to rate their agreement with several statements on a 5-point Likert scale.

Table 2 Level of agreement regarding organizational enablers for Business Experimentation

Statement	N/A	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
Top management actively supports experimentation.	2,04%	6,12%	4,08%	12,24%	44,90%	30,61%
Managers encourage evidence-based decision making.	6,12%	4,08%	2,04%	8,16%	44,90%	34,69%
Failure is considered an opportunity for learning.	2,04%	6,12%	4,08%	24,49%	38,78%	24,49%
Employees feel psychologically safe challenging existing assumptions.	4,08%	4,08%	6,12%	16,33%	57,14%	12,24%

Experimentation is encouraged throughout the organization.	6,12%	4,08%	6,12%	24,49%	22,45%	36,73%
Experimentation follows a structured process.	2,04%	4,08%	18,37%	14,29%	30,61%	30,61%
Experimental results are systematically documented and shared.	2,04%	8,16%	8,16%	28,57%	32,65%	20,41%
Employees possess adequate experimentation skills.	2,04%	6,12%	10,20%	38,78%	32,65%	10,20%
Relevant data are readily available to support experimentation.	2,04%	6,12%	10,20%	28,57%	26,53%	26,53%
Digital technologies effectively support experimentation activities.	2,04%	4,08%	4,08%	24,49%	36,73%	28,57%
Artificial Intelligence is used to support Business Experimentation activities	2,04%	8,16%	10,20%	14,29%	34,69%	30,61%

Looking at the first five statements in the table 2, leadership plays a very positive role. Most respondents agreed (score 4) or strongly agreed (score 5) that top management actively supports experimentation and that managers encourage evidence-based decision making. This shows that, at least in theory, leadership pushes for data-driven innovation.

Similarly, psychological safety, the feeling that employees can safely challenge existing assumptions, received a massive peak of positive responses (score 4). However, an interesting dynamic appears when looking at how companies view failure. While the responses for "Failure is considered an opportunity for learning" are generally positive, there is a noticeable increase in neutral answers (score 3) compared to the leadership questions. This suggests a slight tension: while managers want evidence and encourage testing, accepting a failed experiment is still culturally difficult in many organizations. This is a classic example of the legitimation pressure, where positive results are celebrated but negative ones are harder to digest.

The second half of the table focuses on the practical side of experimentation. When asked if experimentation follows a structured process, responses were quite strong, with most people scoring 4 and 5.

However, the main barrier seems to be human capital. The statement "Employees possess adequate experimentation skills" received the highest number of neutral (score 3) responses across the entire table, with very few people strongly agreeing (score 5). This suggests that while companies have the right mindset and leadership support, they often lack the practical skills needed to design and run good experiments.

The statements regarding relevant data availability, the use of digital technologies, and the integration of Artificial Intelligence all show strong positive trends (scores 4 and 5). This suggests that companies are increasingly relying on tech and AI to fill the gap in human skills, automating the validation process and making it easier to gather data.

The survey then explored how companies actually execute their experiments in practice. Once the leadership supports the initiative, it is crucial to understand if the organization has the methodological rigor to run valid tests.

Table 3 Level of agreement regarding Business Experimentation capabilities.

Statement	N/A	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
Experiments are based on clearly formulated hypotheses.		6,12%	8,16%	26,53%	42,86%	16,33%
Success criteria are defined before experiments begin.		4,08%	10,20%	10,20%	59,18%	16,33%
Experimental evidence significantly influences managerial decisions.		4,08%	2,04%	18,37%	55,10%	20,41%

Experiments are continuously refined through iteration.	6,12%	4,08%	4,08%	16,33%	40,82%	28,57%
Experimentation is embedded within our innovation processes.	2,04%	4,08%	6,12%	20,41%	40,82%	26,53%
Knowledge generated through experimentation is systematically shared across the organization.		4,08%	12,24%	14,29%	48,98%	20,41%

Looking at the data in table 3 the most striking result is the absolute dominance of the score 4 as “Agree”, across all six statements. This indicates a high level of self-reported maturity in how these organizations manage the testing process.

When looking at the foundations of experimentation (the first two statements), companies appear very disciplined. There is strong agreement with the first statement “experiments are based on clearly formulated hypotheses”. Even more impressively, the statement regarding success criteria being defined before experiments begin received the highest peak of agreement in the entire table. This suggests a critical factor: defining metrics in advance prevents bias and ensures that the learning process is objective rather than adjusted to make an idea look good.

The table also shows that a large majority of respondents agree that “experimental evidence significantly influences managerial decisions”. This is a key finding for the legitimization dynamic of the study, suggesting that managers actually rely on these tests to approve or stop projects. Furthermore, companies agree that “experiments are continuously refined through iteration”, showing that they do not just run a single test but rather adapt their approach based on early feedback.

Finally, the last two statements suggest that testing is becoming a standard routine. Most participants agree that “experimentation is embedded within our innovation processes” and that “knowledge generated through experimentation is systematically shared across the organization”. While there is a slight increase in neutral (score 3) and negative (score

2) responses regarding knowledge sharing compared to the other areas, the overall trend remains highly positive. This suggests that while breaking down organizational silos to share learnings can still be slightly challenging, the structural integration of these practices is well underway.

The next section directly addresses the core research question of this thesis, investigating how companies balance the learning mechanism and organizational legitimation through Business Experimentation. To explore this dualism, respondents were asked to rate their agreement with six specific statements, divided into two strategic goals.

Table 4 Level of agreement regarding the strategic objectives of experimentation

Statement	N/A	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
Experiments primarily generate new organizational knowledge.		4,08%	2,04%	28,57%	32,65%	32,65%
Reducing uncertainty is the primary objective of experimentation.	2,04%	6,12%	4,08%	22,45%	53,06%	12,24%
Negative experimental results are considered valuable learning opportunities.		4,17%	6,25%	22,92%	41,67%	25,00%
Experimental evidence increases stakeholders' confidence in innovation initiatives.	2,04%	4,08%	2,04%	14,29%	46,94%	30,61%
Experimental evidence facilitates managerial approval of innovation projects.	2,04%	4,08%	2,04%	12,24%	48,98%	30,61%
Experimentation strengthens the credibility of strategic	2,04%	6,12%	2,04%	14,29%	42,86%	32,65%

initiatives within the organization.						
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The first three statements focused on the pure learning aspect of testing. Respondents showed agreement that “experiments primarily generate new organizational knowledge” and that “reducing uncertainty is the primary objective of experimentation”. This suggests that validation is recognized as a critical tool for understanding the market and managing risk. However, the statement "negative experimental results are considered valuable learning opportunities" presents a slightly different picture. While the overall sentiment is positive, there is a visible number of "Neutral" (score 3) responses. This highlights a common organizational friction: theoretically, a failed experiment teaches the company what not to do, but practically, failure can still be difficult to accept and celebrate.

The second half of the table focuses on how data is used to gain approval and support. Here, the strong presence of both "Agree" (score 4) and "Strongly agree" (score 5) responses indicates that the legitimization aspect is incredibly powerful. There is widespread consensus that “experimental evidence increases stakeholders' confidence in innovation initiatives” and actively “facilitates managerial approval of innovation projects”. Furthermore, respondents strongly agreed that “experimentation strengthens the credibility of strategic initiatives within the organization”.

The next section aims to investigate how surveyed companies measure outcomes and performances while doing experimentation.

Table 5 Level of agreement regarding the outcomes of Business Experimentation

Statement	N/A	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly agree
Experimentation improves the quality of managerial decision making.	4,08%	4,08%		16,33%	42,86%	32,65%

Experimentation accelerates innovation.	4,08%	4,08%		14,29%	30,61%	46,94%
Experimentation reduces innovation risk.	2,04%	4,08%	2,04%	14,29%	44,90%	32,65%
Experimentation positively impacts business performance.		4,08%	2,04%	24,49%	34,69%	34,69%
Experimentation improves customer satisfaction.	2,04%	4,08%	2,04%	28,57%	38,78%	24,49%

The most striking result relates to the speed of the innovation process. The statement "Experimentation accelerates innovation" received the highest number of "Strongly agree" (score 5) responses in the entire table. This is a very interesting finding: although running tests takes time upfront, respondents believe it ultimately speeds up the overall process, likely by preventing time wasted on the wrong ideas. Additionally, there is strong agreement that "Experimentation improves the quality of managerial decision making".

Respondents also clearly agree that "Experimentation reduces innovation risk", which perfectly aligns with the primary goal of reducing uncertainty highlighted in the previous section.

When looking at broader downstream impacts, such as whether "Experimentation positively impacts business performance" and "Experimentation improves customer satisfaction" the general sentiment remains positive. However, it is worth noting that these two statements gathered a slightly higher number of "Neutral" (score 3) responses compared to the others. This suggests a logical outcome: while testing early assumptions improves the product, overall financial performance and final customer satisfaction are complex metrics influenced by many other market variables beyond just the initial experimentation phase.

While the previous findings suggest a strong positive perceived perception of the benefits of Business Experimentation, it is essential to investigate whether these outcomes are measured. Believing that experimentation reduces risk is different from structurally proving it. To address this, respondents were asked if their company formally monitors

the performance of these activities. (Note: The sample size for this section is N = 49, as it correctly excludes the respondents who previously stated their organization does not apply Business Experimentation).

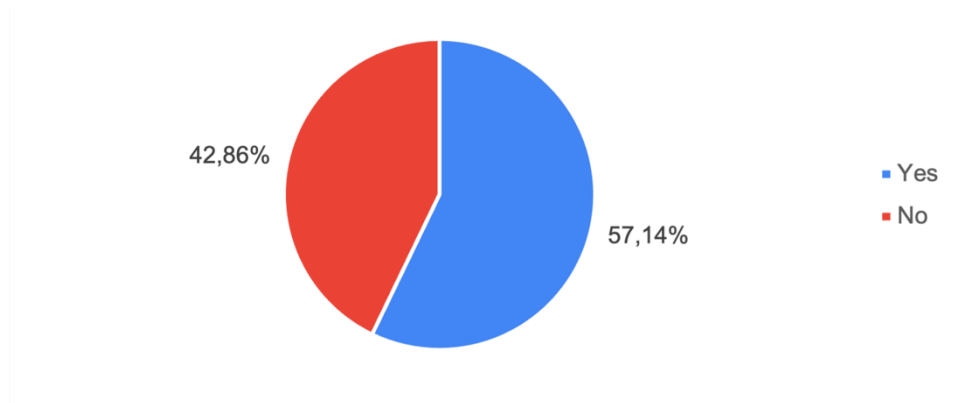


Figure 12 Presence of formal monitoring for Business Experimentation performance

As illustrated in Figure 12, the sample is quite divided. More than half of the organizations (57.1%) report having a formal system in place to monitor the performance of their experimentation activities.

However, a highly significant 42.9% of respondents admitted that their organization does not formally monitor these activities. This reveals a critical gap between perception and organizational governance. It suggests that while nearly half of the companies strongly believe in the value of experimentation, they still rely on informal evaluation, intuition, or ad-hoc observations to judge its success.

To investigate how these activities are measured, respondents were asked to specify the exact Key Performance Indicators (KPIs) they currently track regarding their innovation and validation efforts.

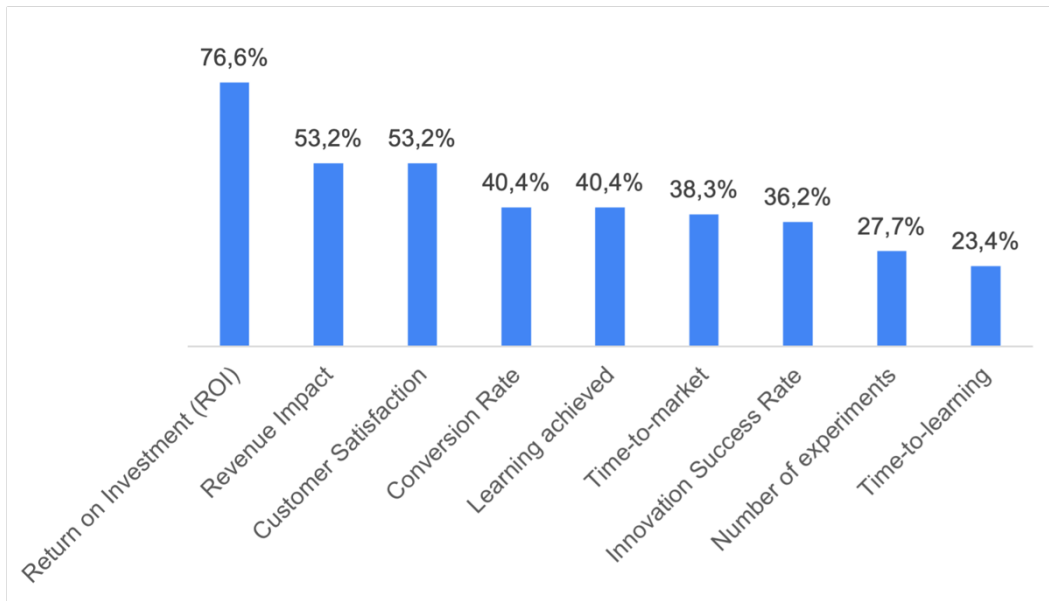


Figure 13 Specific KPIs currently monitored for Business Experimentation

As detailed the data shows a massive preference for traditional, outcome-driven business metrics over process-oriented learning metrics.

There is an absolute dominance of Return on Investment (ROI), which is monitored by a vast majority (78.7%) of the sample. This is closely followed by Revenue Impact and Customer Satisfaction, both tied at 53.2%. From a strategic perspective, this heavy reliance on financial indicators strongly supports the legitimization hypothesis. It shows that, at the end of the day, innovation teams and their experiments are primarily judged by their ability to generate tangible financial returns and justify the budget spent.

On the other hand, metrics that actually measure the speed and volume of the learning process are much less common. While learning achieved is tracked by a reasonable 42.6% of respondents, alongside with Conversion Rate, pure experimentation metrics are at the very bottom of the chart. Only 29.8% of organizations monitor the Number of experiments they run, and a mere 23.4% track Time-to-learning.

Companies claim to use Business Experimentation to reduce uncertainty and learn fast, but their measurement systems are still deeply rooted in traditional financial accounting. They want the agile benefits of learning, but they measure success using the rigid tools of organizational legitimization.

The final section of the survey investigates the primary barriers and challenges that company face when performing experimentation activities.

Respondents were asked to identify the main barriers preventing or limiting Business Experimentation in their organizations. Because obstacles are rarely isolated, participants were allowed to select up to three options.

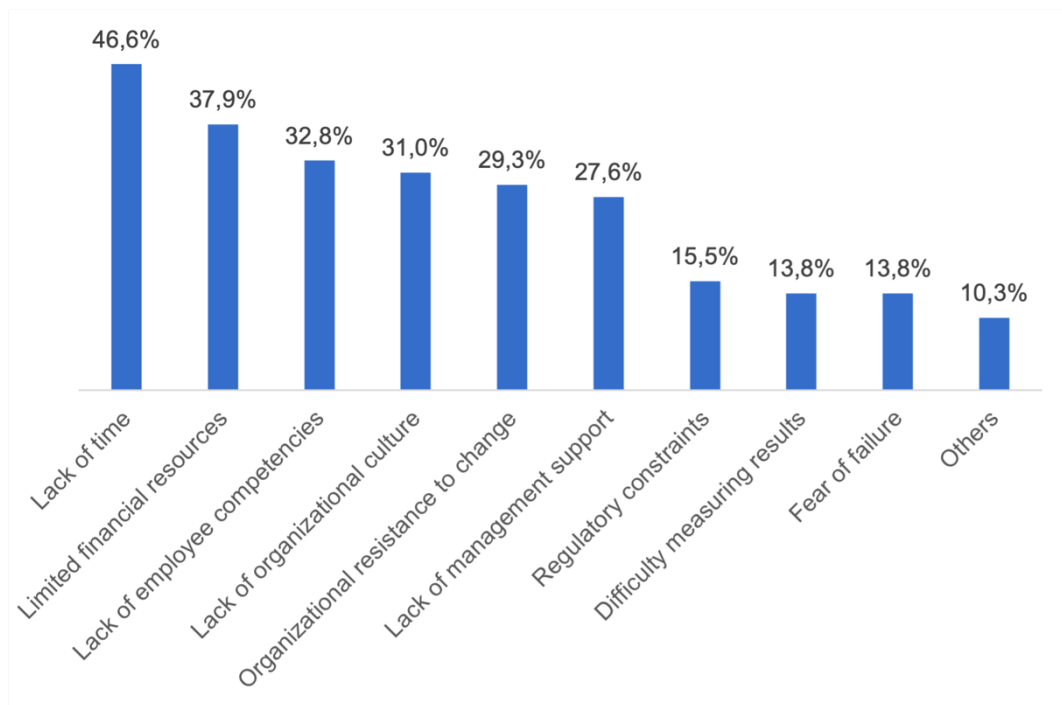


Figure 14 Main barriers preventing or limiting Business Experimentation

"Lack of time" emerged as the undisputed number one barrier, selected by nearly half of the sample (46.6%), closely followed by "Limited financial resources" (37.9%). This suggests a common organizational paradox: as seen in previous sections, managers strongly believe that experimentation accelerates innovation and saves money in the long run, yet teams still struggle to find the upfront time and budget required to actually design and execute the tests.

Beyond hard resources, human capital and corporate mindset represent the second major layer of barriers. "Lack of employee competencies" was chosen by 32.8% of respondents. Confirming that while the desire to test is high, the practical methodological skills to do so are often missing.

Furthermore "Lack of organizational culture" (31%), "Organizational resistance to change" (29.3%), and "Lack of management support" (27.6%) form a solid block of internal resistance. From the perspective of the Learning/Legitimation framework, these cultural barriers seems to be critical. When organizational culture is resistant and management support is lacking, the pressure for legitimation skyrockets.

Finally, factors like "Regulatory constraints" (15.5%), "Difficulty measuring results" (13.8%), and "Fear of failure" (13.8%) play a secondary role in this sample. However, the open-ended responses provided by individual participants (each representing 1.7% and grouped in 'Others') reveal highly specific contextual barriers. Most notably, one respondent highlighted a structural market constraint, stating: *"Most of our customers are public-sector organizations that award contracts through public tenders, for which all required functionalities are already defined by the customer"*. This is a critical insight for organizations operating in B2G (Business-to-Government) environments. In the public sector, the rigidity of predefined tender requirements largely eliminates the space for iterative learning, MVPs etc rendering standard Business Experimentation practices extremely difficult to apply. Additionally, another custom response cited "Management health (burnout)" demonstrating that severe operational stress can also act as a definitive roadblock to innovation efforts.

After reflecting on their current capabilities and the structural barriers they face, respondents were asked to look ahead. They were asked whether their organization would be interested in adopting a more structured experimentation approach in the future.

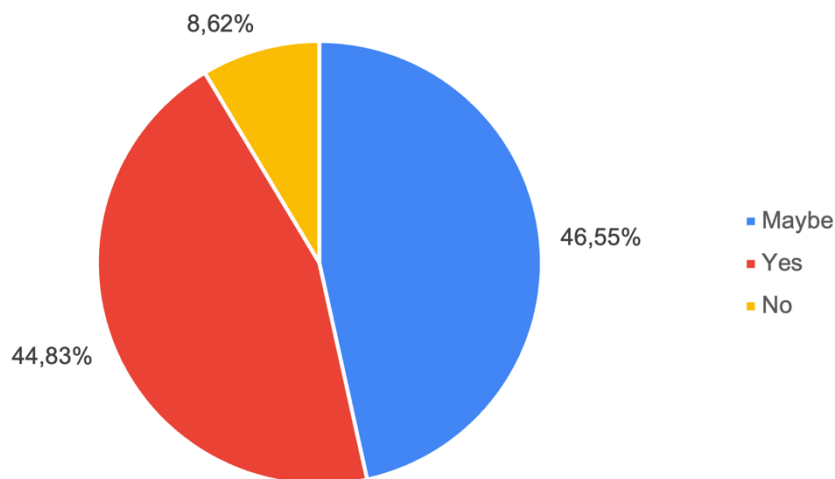


Figure 15 Organizational interest in adopting a more structured experimentation approach

There is a widespread appetite for methodological evolution, despite the practical obstacles previously identified. The largest segment of the sample, 46.6%, answered "Maybe". This suggests an openness to the idea, likely tempered by a realistic awareness of the barriers, that would need to be overcome to implement a formal system successfully.

Close behind, a very solid 44.8% of respondents answered a definitive "Yes". These organizations seem to actively recognize the need to formalize their validation practices, moving away from ad-hoc or purely intuitive decisions. Combined, over 91% of the surveyed professionals show some level of interest in improving and structuring their current methods.

On the other hand, only a small minority of 8.6% answered "No". This definitive lack of interest could represent organizations operating in highly constrained environments where structured experimentation simply does not fit the business model. Alternatively, it might represent companies that are already fully satisfied with their current innovation processes. Ultimately, however, the overwhelming majority recognizes the theoretical and practical value of embedding Business Experimentation more deeply into their corporate DNA.

To provide a final summary of the current situation before exploring future intentions, the survey asked respondents to rate their organization's overall Business Experimentation perceived maturity on a 5-point scale (from 1 = lowest to 5 = highest).

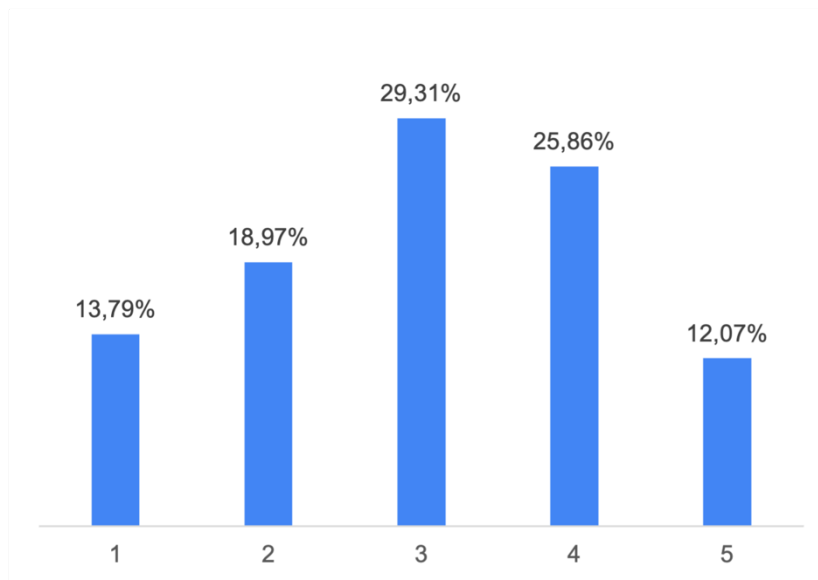


Figure 16 Overall assessment of Business Experimentation maturity

The most common response is a score of 3, chosen by 29.3% of the sample. This intermediate level reflects the friction highlighted throughout the previous sections: companies seem generally to have the right mindset and leadership support, but their actual execution is often slowed down by practical barriers.

On the positive end of the spectrum, a solid 38% of the organizations rate themselves as mature or highly mature, combining scores of 4 (25.9%) and 5 (12.1%). These likely represent the companies that have successfully integrated experimentation into their standard processes, effectively balancing the need to learn from the market with the need to legitimize strategic decisions internally.

Conversely, nearly a third of the sample (32.8%) reports low maturity, combining scores of 1 (13.8%) and 2 (19%).

Overall, this data provides a very realistic snapshot of the business landscape: while the theoretical value of experimentation is widely recognized, achieving a high level of operational maturity remains a complex organizational challenge.

This self-perceived becomes even more revealing when contrasted directly with the previous analysed metrics, showing a stinking “maturity gap”. In the previous chart analysed, data showed that 70.7% of the organizations have a dedicated innovation or R&D function, and that 65.6% rate their overall orientation toward innovation as high or very high. A combined 84.5% claimed to apply Business Experimentation either systematically or occasionally. However, when asked to evaluate the actual perceived maturity of these practices only 38% of the sample chose a score of 4 or 5. This drop off, from 70% structural readiness to a mere 38% operational maturity, suggests that adopting the label of experimentation is significantly easier than mastering its execution.

4.2 Statistical Analysis

In this second section of the findings, the study moves beyond the descriptive analysis to explore the associations between the learning-legitimation dualism and the organizational enabling factors that influence them.

To visually address the primary research question regarding how organizations balance learning and organizational legitimation during business experimentation processes, a scatter plot was generated mapping each organization's dual strategic orientation.

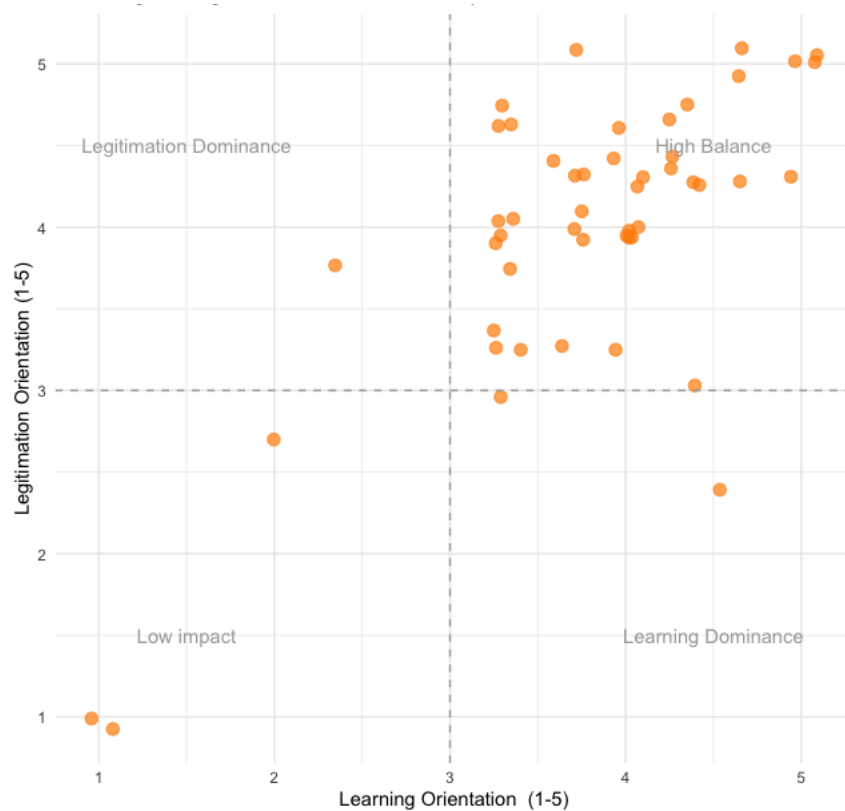


Figure 17 Learning vs Legitimation Balance Scatter Plot

As illustrated in Figure 17, the Learning Orientation Score is plotted on the x-axis against the Legitimation Orientation Score on the y-axis, dividing the conceptual space into four distinct quadrants based on the theoretical midpoint (score of 3.0).

The visual distribution of the sample shows that rather than clustering in the "Dominance" quadrants, which would imply a strict trade-off where an organizations must choose between learning (bottom-right) and legitimation (top-left), the majority of the surveyed

companies are heavily concentrated in the top-right quadrant. This area represents a state of "High Balance".

This concentration suggest a potential empirical answer to the research question: the strong positive association, trend visible in the scatter plot, between Learning and Legitimation suggests that the two dimensions are not necessarily mutually exclusive and may be pursued simultaneously by organizations.

Very few organizations fall into the "Low Impact" quadrant (bottom-left), suggesting that when Business Experimentation is genuinely adopted, it rarely fails to trigger at least one of the two strategic dimensions. Ultimately, this visualization shows that the true value of experimentation lies not in choosing between exploration and justification, but in successfully mastering their coexistence.

To then answer the sub-research question, this section investigates the underlying association and the statistical significance of the observed patterns through correlation analysis and multiple linear regression models.

To achieve this, measurable continuous variables of Learning and Legitimation composite scores have been created. As mentioned in the methodology, these were created by aggregating respondents' feedback on specific statements on Learning and Legitimation perspective, doing so it was possible to quantify each organization's baseline orientation toward these two distinct goals.

A Pearson correlation matrix has been generated to explore the bivariate relationships among all the organizational enablers and the two main strategic orientations.

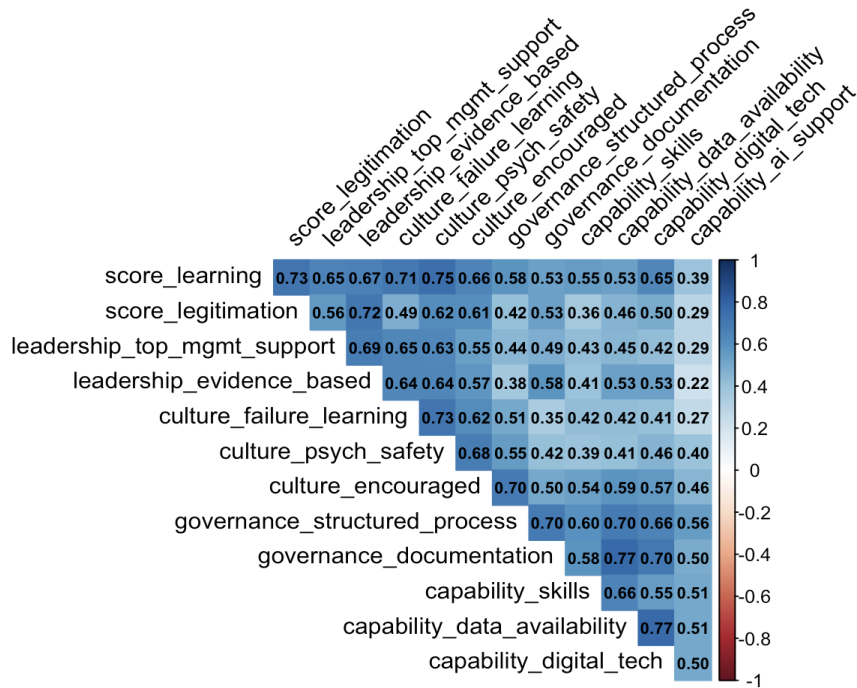


Figure 18 Correlation Matrix

The resulting correlation matrix reveals distinct patterns that begin to highlight the theoretical friction between the two dimensions.

First of all, the matrix shows a strong positive association between the Learning and Legitimation composite scores ($r = 0.73$), that from a statistical perspective demonstrates that the two dimensions tend to coexist and increase together. Rather than operating as a strict trade off where an organization must sacrifice one of the two to gain the other, the empirical evidence shows the positive linear trend previously illustrated in the scatter plot in the figure 17.

From a theoretical standpoint, this coexistence can be interpreted through the lens of “strategic ambidexterity”. While the statistical correlation directly proves only the simultaneous presence of both orientations, presenting this dynamic as ambidexterity suggests that organizations mature in their experimentation practices by developing the dual capability to explore new, uncertain knowledge while managing processes that required to justify and legitimize the innovation efforts.

The Learning Orientation Score shows the strongest positive correlations with cultural and human-centric variables. Specifically, psychological safety ($r = 0.75$) and the

organizational tolerance for failure ($r = 0.71$) emerged as the most significant factors. This indicates that the generation of new knowledge and the reduction of uncertainty are positive associated with environments where employees feel safe to challenge assumptions and where negative experimental results are reframed as valuable insights rather than definitive defeats.

Conversely, the Legitimation Orientation Score has a significant predictor the top-down managerial pressure. The strongest correlation is found with evidence-based leadership ($r = 0.72$). While psychological safety remains relevant ($r = 0.62$), the tolerance for failure drops significantly ($r = 0.49$) when the objective shifts toward legitimation. This empirical divergence supports the theoretical premise: while learning is associated with the freedom to fail fast, the pursuit of organizational legitimacy is linked on providing concrete data to secure stakeholder confidence and overcome internal resistance.

Interestingly, technological enablers present a mixed scenario. While general digital capabilities show a solid association with learning ($r = 0.65$), the specific integration of Artificial Intelligence (capability_ai_support) registers the weakest correlations across the entire matrix ($r = 0.39$ with Learning; $r = 0.29$ with Legitimation). This suggests that, as of now and within the analysis of this sample, the foundation of Business Experimentation remains deeply rooted in organizational culture and human interactions rather than purely in advanced computational tools.

To then move forward and determine which organizational enablers are positively associated with the generation of new knowledge and the reduction of uncertainty, a Multiple Linear Regression model was created with the Learning Orientation Score as the dependent variable.

Computing the regression model, in order to perform an exploratory approach to be able to identify a more parsimonious specification of the regression model a backward stepwise selection has been carried out. This method relies on the Akaike Information Criterion (AIC) and the algorithm systematically reduced an initial model of eleven variables down to a streamlined configuration of four predictors.

The Variance Inflation Factor (VIF) for all retained variables fell strictly below the conservative threshold of 3 (Max VIF = 2.45), confirming the statistical stability of the coefficients.

Overall, the final model obtained is:

Table 6 Learning - Linear Regression Model output

<i>Coefficients:</i>	<i>Estimate</i>	<i>Std. Error</i>	<i>t value</i>	<i>Pr(> t)²</i>	<i>VIF</i>
<i>(Intercept)</i>	0.39650	0.31906	1.243	0.220558	
<i>leadership_top_mgmt_support</i>	0.12318	0.08629	1.427	0.160507	1.947105
<i>culture_failure_learning</i>	0.17180	0.09652	1.780	0.082005 .	2.430683
<i>culture_psych_safety</i>	0.31893	0.11420	2.793	0.007706 **	2.449908
<i>capability_digital_tech</i>	0.27627	0.07449	3.709	0.000581 ***	1.321024
<i>Residual standard error:</i>	0.4614 on 44 degrees of freedom				
<i>Multiple R-squared:</i>	0.7297				
<i>Adjusted R-squared:</i>	0.7052				
<i>F-statistic:</i>	29.7 on 4 and 44 DF				
<i>p-value:</i>	5.391e-12				

The analysis suggests that an organization's capacity to learn through business experimentation is positively associated with a critical synergy between technological infrastructure and human-centric culture.

The availability and support of digital technologies (*capability_digital_tech*) emerged as the strongest and most highly significant predictor (p value = 0.000581). This finding suggests that while learning requires a specific mindset, it is also linked with the practical digital tools necessary to design, execute and evaluate experiments efficiently.

The second most significant predictor is psychological safety (*culture_psych_safety*) with a significant relevance (p value = 0.007706). This suggests that learning can occur in environments where employees feel secure in challenging the status quo. Furthermore, the model retained the organizational tolerance for failure (*culture_failure_learning*) as a

² Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

marginally significant predictor (p value = 0.082005), although not significant it can be considered near significant.

Finally, while active support from top management (leadership_top_mgmt_support) did not reach standard statistical significance independently, its retention by the stepwise algorithm may indicate that leadership is also associated with the overall learning ecosystem.

The model has a Multiple R-squared value of 0.729, while the Adjusted R-squared stands at 0.705. In the context of organizational and management research, an Adjusted R² of 70.5% indicates a good fit: more than two-thirds of the total variance in a company's orientation toward learning may be explained by this specific combination of technological capabilities and cultural safety.

The next step has been performing the same steps for the legitimation perspective.

A second Multiple Linear Regression and a backward stepwise selection procedure was performed as exploratory approach to identify a more parsimonious specification of the regression model for the Legitimation Orientation Score.

The Variance Inflation Factor (VIF) for both retained variables is 1.48, well below the conservative threshold of 3.

Overall, the final model obtained is:

Table 7 Legitimation - Linear Regression Model output

<i>Coefficients:</i>	<i>Estimate</i>	<i>Std. Error</i>	<i>t value</i>	<i>Pr(> t)³</i>	<i>VIF</i>
<i>(Intercept)</i>	0.9724	0.3913	2.485	0.0167 *	
<i>leadership_evidence_based</i>	0.5110	0.1092	4.678	2.57e-05 ***	1.481704
<i>culture_encouraged</i>	0.2349	0.0925	2.540	0.0145 *	1.481704
<i>Residual standard error:</i>	0.585 on 46 degrees of freedom				
<i>Multiple R-squared:</i>	0.5743				
<i>Adjusted R-squared:</i>	0.5558				
<i>F-statistic:</i>	31.03 on 2 and 46 DF				

³ Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

<i>p-value:</i>	2.949e-09
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Evidence-based leadership style (*leadership_evidence_based*), which exhibits a strong positive coefficient and extremely high statistical significance (p value < 0.001), has been shown as a significant predictor of the legitimation score. This empirical finding seems to align with the theoretical framework of strategic legitimation. When top management strictly demands objective data and tangible proofs to justify resource allocation, experimentation can not only be used as an exploratory tool; instead, it can become a mechanism for innovation teams to signal competence, build internal credibility and lastly convince stakeholders.

The second significant predictor resulted by the model is the widespread organizational encouragement of experimentation (*culture_encouraged*), which shows a positive structural effect (p value = 0.0145). This suggests that while legitimation can be a top-down requirement, it also has a positive association with a corporate environment that authorizes teams to run tests to gather that required evidence.

The Adjusted R-squared of this model stands at 0.556, indicating that over 55% of an organization's drive toward internal legitimation is explained by these two core enablers.

Comparing these results with the Learning model reveals a striking theoretical divergence.

Table 8 Regression models comparison

Coefficients:											
Model Learning						Model Legitimation					
	<i>Estimate</i>	<i>Std. Error</i>	<i>t value</i>	<i>Pr(> t)</i>	<i>VIF</i>		<i>Estimate</i>	<i>Std. Error</i>	<i>t value</i>	<i>Pr(> t)</i>	<i>VIF</i>
<i>(Intercept)</i>	0.39650	0.31906	1.243	0.220558		<i>(Intercept)</i>	0.9724	0.3913	2.485	0.0167 *	
<i>leadership_top_mgmt_support</i>	0.12318	0.08629	1.427	0.160507	1.947105	<i>leadership_evidence_based</i>	0.5110	0.1092	4.678	2.57e-05 ***	1.481704
<i>culture_failure_learning</i>	0.17180	0.09652	1.780	0.082005	2.430683	<i>culture_encouraged</i>	0.2349	0.0925	2.540	0.0145 *	1.481704
<i>culture_psych_safety</i>	0.31893	0.11420	2.793	0.007706 **	2.449908						

<i>capability_digital_tech</i>	<i>0.2762 7</i>	<i>0.07 449</i>	<i>3.70 9</i>	<i>0.000 581 ***</i>	<i>1.32 1024</i>	
<i>Residual standard error:</i>	<i>0.4614 on 44 degrees of freedom</i>				<i>0.585 on 46 degrees of freedom</i>	
<i>Multiple R-squared:</i>	<i>0.7297</i>				<i>0.5743</i>	
<i>Adjusted R-squared:</i>	<i>0.7052</i>				<i>0.5558</i>	
<i>F-statistic:</i>	<i>29.7 on 4 and 44 DF</i>				<i>31.03 on 2 and 46 DF</i>	
<i>p-value:</i>	<i>5.391e-12</i>				<i>2.949e-09</i>	

Technological capabilities and psychological safety, which were the strongest significant predictor of organizational learning, were completely excluded by the algorithm in the legitimation model.

Furthermore, the tolerance for failure (*culture_failure_learning*), which supports the "fail fast" mindset, was also discarded.

This provides a possible empirical answer to the sub-research question: while an advanced, psychologically safe environment and digital technologies emerge as main predictors associated with learning and accepting failure, the results suggest that evidence-based and organizational encouragement of experimentation are instead particularly relevant to the legitimation dimension.

4.3 Discussion

The empirical findings of this study offer a contribution to the understanding of Business Experimentation in practice. Before addressing the core duality of the Learning and Legitimation, the descriptive analysis provides insights into the current state of experimentation across surveyed different organizational contexts.

The data suggest a friction between theoretical aspirations and operational reality. With the majority of organizations self-reported a strong orientation toward innovation and claim to apply Business Experimentation occasionally or systematically, this self-perceived readiness shows an execution gap.

For instance, despite the widespread of dedicated innovation or R&D functions, almost half of the sample reported conducting five or fewer validation activities in the past year, suggesting that structural containers do not automatically translate into high-frequency experimentation. Furthermore, it emerged that micro-enterprises navigate experimentation informally out of necessity, while large enterprises institutionalize it.

From the data it appears that organizations rely on foundational qualitative methods like customer interview and surveys while adoption rates drop for metric-driven approaches like MVPs or A/B testing. This hesitation is also reflected in the performance measurement systems. Surveyed organizations rely on traditional financial metrics such as ROI over learning-centric KPIs; It suggests that while companies want the agile benefits of learning, they still evaluate success using the tools of traditional business.

Lastly, it seems that despite high structural readiness only 38% of the sample feels confident in rating their actual operational experimentation maturity as high.

On this foundational context, the inferential analysis addresses the primary research question regarding how organizations balance the dualism between learning and legitimation.

A comparative insight emerging from the data is that Learning and Legitimation, despite being strongly correlated, appear to be associated with partially different organizational conditions.

On one hand, Business Experimentation serves as a mechanism for building knowledge and learning. As shown by the first regression model, this perspective is associated with

a high degree of psychological safety and robust digital technological support. When the primary goal is to reduce uncertainty and generate new insights, teams seem to require the cultural freedom to challenge assumptions without fear of negative repercussions. Furthermore, Learning is positively linked to practical digital infrastructure to design, execute and evaluate these iterative tests efficiently. In this context, experimentation is an exploratory and agile process.

On the other hand, Business Experimentation acts as a strategic tool for production of evidence useful for legitimizing decisions and initiatives. As highlighted by the second linear regression model, this orientation has as significant predictors the presence of an evidence-based leadership style and a top-down encouragement of the practice. When the objective shift to legitimation, experimentation can be positively associated to a communicative and political dynamic. Innovation teams use structured test to gather resource allocation and build consensus among stakeholders.

Comparing these two models highlights a potential divergence in the organizational environments associated with them. While Learning appears to be closely related to bottom-up cultural elements (psychological safety) and operational enablers (digital technology) that allow teams to safely test and fail, Legitimation seems to be primarily associated with a top-down managerial dynamics (evidence-based leadership and organizational encouragement). This comparative finding suggests that promoting a “fail fast” learning environment might not automatically guarantee the ability to legitimize those results to stakeholders, just as demanding rigorous evidence might not automatically create the psychological safety needed to explore disruptive ideas.

The correlation analysis further highlights that the strong positive association between learning and legitimation suggests that the two dimensions are not necessarily mutually exclusive and may be pursued simultaneously by organizations.

Surveyed companies that perceived themselves successfully mastering business experimentation are those able of navigating both perspectives simultaneously: they preserve a safe cultural environment where innovators can fail fast and learn while enforcing the rigorous measurement practices necessary to translate those learnings into the evidence demanded by stakeholders.

Conclusion

In an era characterized by continuous disruption and volatility, organizations are increasingly moving away from rigid strategic planning, adopting Business Experimentation to navigate uncertainty.

The primary objective of this research was to empirically investigate this phenomenon, addressing a specific gap identified in the existing literature: the strategic ambivalence between using experimentation to explore new knowledge (*Learning*) and using it to secure stakeholder approval and resources (*Legitimation*).

The initial literature review established the theoretical foundation for this study by mapping Business Experimentation across five primary analytical domains: Learning-based perspectives, Validation and Lean approaches, Agile and adaptive logics, Legitimation processes and Sustainability-oriented perspectives, along with two marginal dimensions exploring Human-centric approaches and Ecosystem thinking.

While this comprehensive mapping highlighted the multi-faced nature of Business Experimentation, it also revealed a specific gap in the existing research.

On one hand we have the perspectives of Learning, which supports the “fail fast” principle to create a fast failure mindset, framing failing faster as an essential efficiency tool in knowledge generation. On the other hand, the Legitimation perspective argued that organizations must project an image of stability, operational capacity and consistent success to secure resources from stakeholders.

Consequently, this study formulated its primary Research Question, “*How do organizations balance learning and organizational legitimation during business experimentation processes?*”, to understand how organizations balance these two potentially conflicting dimensions, alongside a sub-question aimed at isolating the specific organizational enablers associated with this balance across different contexts.

To address these questions, a quantitative methodology was carried out through a structured survey capturing data from 58 professionals operating across diverse industries and company sizes. The empirical findings provided a comprehensive snapshot of both

the current execution practices and the underlying strategic orientation of Business Experimentation.

The descriptive analysis highlighted that while organizations self-report a strong orientation toward innovation, actually testing frequency often remains low, and advanced quantitative methods are overshadowed by qualitative approaches. From the survey it also appears that micro-enterprises tend to navigate experimentation informally while large enterprises that have structural capabilities, such as a dedicated R&D functions, often evaluate success using traditional KPIs rather than learning-centric metrics.

The inferential statistical analysis proposes an answer to the primary research question. The findings show that Learning and Legitimation have a positive association, suggesting a state of theoretical ambidexterity: mature organization seems to not choose between exploration and justification, rather, they tend to pursue both simultaneously.

Addressing the sub-research question, the comparative analysis of the regression models showed that these two dimensions are associated with partially different organization conditions. The Learning orientation is closely linked to bottom-up enablers: it has as significant predictors high psychological safety and robust digital technological support, where teams feel culturally free to challenge assumptions; while Legitimation can be associated with a top-down managerial dynamics, having as main predictors an evidence-based leadership and explicit organizational encouragement.

Lastly, this research suggests that mastering Business Experimentation remains a complex organizational challenge. The findings suggest that higher levels of perceived maturity might be associated with the capacity to navigate this strategic ambivalence. The organizations in the sample that perceived themselves as most mature appear to balance these dimensions by cultivating a safe, technological-enabled culture, while simultaneously maintaining the rigorous measurement and leadership support associated with legitimizing those learning within the broader corporate ecosystem.

While the research provides empirical insights into the dynamics of Business Experimentation, limitations must be acknowledged, which simultaneously present opportunity for future research.

The sample size and the sampling method may limit the broad generalizability of the findings; the output of the survey mostly relies on self-reported perceptions rather than on objective performance data. The sample obtained through convenience sampling will not necessarily be representative of the whole population of organizations, but it can still represent a coherent first step to empirically address the research questions of this thesis.

This research employs a cross-sectional design capturing organizational behaviours at a single point in time. While the multiple linear regression models identified strong predictive associations between specific enablers and the learning-legitimation orientations, this design precludes the establishment of strict casual relationships.

Finally, the sample purposely encompassed a wide array of industries and company sizes to provide a broad macro-overview. While this structural heterogeneity allowed for an exploration of general trends, it prevented an analysis of industry-specific behaviours.

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Appendices

Survey:

Dear Participant,

Thank you for taking part in this research.

This survey aims to investigate how organizations validate new ideas, products, services and business initiatives under conditions of uncertainty. In particular, the study explores the organizational factors that support experimentation, how experimentation contributes to organizational learning and legitimacy, and how companies assess the effectiveness of their experimentation activities.

The questionnaire is anonymous and confidential. The collected data will be analyzed only in aggregated form for academic research purposes.

The questionnaire requires approximately 10-12 minutes to complete.

Section 1 - Company Profile

Q1. Which industry does your company primarily operate in?

- ☐ Manufacturing
- ☐ Services
- ☐ ICT / Software
- ☐ Financial Services
- ☐ Healthcare
- ☐ Retail
- ☐ Public Sector
- ☐ Automotive
- ☐ Consulting
- ☐ Other _____

Q2. Company size

- ☐ Fewer than 10 employees
- ☐ 10–49
- ☐ 50–249
- ☐ 250–999
- ☐ More than 1,000

Q3. Your current position

- ☐ CEO
- ☐ Founder
- ☐ Innovation Manager
- ☐ R&D Manager
- ☐ Product Manager
- ☐ Marketing Manager
- ☐ Business Development Manager
- ☐ Other _____

Q4. Does your company have a dedicated Innovation or R&D function?

- ☐ Yes
- ☐ No

Q5. Overall, how would you rate your company's orientation toward innovation?

1 = Very low

5 = Very high

Section 2 - Innovation Validation

Practices

Q6.

When developing new products, services or business initiatives, how often does your company test assumptions before making significant investments?

1 Never

2

3

4

5 Always

Q7.

Which of the following validation practices are currently used in your organization?

(Check all that apply)

☐ Customer interviews

☐ Customer surveys

☐ Prototype testing

☐ Pilot projects

☐ Minimum Viable Products (MVPs)

☐ A/B testing

☐ Proof of Concept (PoC)

☐ Business Model Pilots

☐ Other _____

☐ None of the above

Q8.

Approximately how many validation activities has your company conducted during the last 12 months?

☐ None

☐ 1–5

☐ 6–10

☐ 11–20

- More than 20

Q9.

At which stage are validation activities mainly conducted?

- ☐ Opportunity identification
- ☐ Product or service development
- ☐ Market launch
- ☐ Scaling and growth
- ☐ Continuous improvement

Q10.

For the purpose of this survey, Business Experimentation is defined as:

"The systematic testing of ideas, products, services or business initiatives through structured experiments aimed at reducing uncertainty before committing significant investments"

To what extent does this definition reflect your organization's current practices?

1 = Not at all

5 = Completely

If your answer is 1 or 2, please skip to Section 7.

Section 3 - Organizational Enabling

Factors

Please indicate your level of agreement with the following statements.

1 = Strongly disagree

5 = Strongly agree

Q11. Top management actively supports experimentation.

Q12. Managers encourage evidence-based decision making.

Q13. Failure is considered an opportunity for learning.

Q14. Employees feel psychologically safe challenging existing assumptions.

Q15. Experimentation is encouraged throughout the organization.

- Q16. Experimentation follows a structured process.
- Q17. Experimental results are systematically documented and shared.
- Q18. Employees possess adequate experimentation skills.
- Q19. Relevant data are readily available to support experimentation.
- Q20. Digital technologies effectively support experimentation activities.

Section 4 - Business Experimentation

Again, using the same scale:

1 = Strongly disagree

5 = Strongly agree

- Q21. Experiments are based on clearly formulated hypotheses.
- Q22. Success criteria are defined before experiments begin.
- Q23. Experimental evidence significantly influences managerial decisions.
- Q24. Experiments are continuously refined through iteration.
- Q25. Experimentation is embedded within our innovation processes.
- Q26. Knowledge generated through experimentation is systematically shared across the organization.

Section 5 - Learning and Legitimation

- Q27. Experiments primarily generate new organizational knowledge.
- Q28. Reducing uncertainty is the primary objective of experimentation.
- Q29. Negative experimental results are considered valuable learning opportunities.
- Q30. Experimental evidence increases stakeholders' confidence in innovation initiatives.
- Q31. Experimental evidence facilitates managerial approval of innovation projects.
- Q32. Experimentation strengthens the credibility of strategic initiatives within the organization.

Section 6 - Outcomes and Performance Measurement

Using the same scale:

Q33. Experimentation improves the quality of managerial decision making.

Q34. Experimentation accelerates innovation.

Q35. Experimentation reduces innovation risk.

Q36. Experimentation positively impacts business performance.

Q37. Experimentation improves customer satisfaction.

Q38.

Does your company formally monitor the performance of Business Experimentation activities?

☐ Yes

☐ No

Q39.

Which of the following KPIs are currently monitored?

(Check all that apply)

☐ Number of experiments

☐ Learning achieved

☐ Time-to-learning

☐ Time-to-market

☐ Customer Satisfaction

☐ Conversion Rate

☐ Innovation Success Rate

☐ Return on Investment (ROI)

☐ Revenue Impact

☐ Other _____

Section 7 - Barriers to Business Experimentation

What are the main barriers preventing or limiting Business Experimentation in your organization?

(Select up to three.)

- ☐ Lack of management support
- ☐ Lack of organizational culture
- ☐ Lack of employee competencies
- ☐ Limited financial resources
- ☐ Lack of time
- ☐ Difficulty measuring results
- ☐ Regulatory constraints
- ☐ Organizational resistance to change
- ☐ Fear of failure
- ☐ Other _____

Q40.

Would your organization be interested in adopting a more structured experimentation approach?

- ☐ Yes
- ☐ No
- ☐ Maybe

Section 8 - Final Questions

Q41.

Overall, how would you assess your organization's Business Experimentation maturity?

1 = Very immature

5 = Very mature

Closing Statement

Thank you for your valuable contribution.

Your participation will help advance research on Business Experimentation and innovation management and contribute to a better understanding of how organizations manage uncertainty through evidence-based decision making.