Methodology, strategies, and factors for business innovation in large companies

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A R T I C L E I N F O

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A B S T R A C T

Despite its recognized importance, innovation strategy remains an underexplored field, often hindered by fragmented approaches and practical barriers. To address this critical gap, this study develops a structured methodology for aligning innovation strategies with business objectives, offering a pathway to bridge the persistent divide between intent and execution. Drawing on qualitative insights from interviews with innovation leaders and informed by classical and contemporary theories, this research identifies the absence of standardized frameworks as a key challenge impeding innovation's integration into organizational strategy.

The findings highlight systemic issues, including the frequent conflation of strategic vision with operational planning, the marginalization of innovation within executive leadership structures, and a narrow framing of innovation as solely technology-focused and supplemental rather than a central driver of business competitiveness and value creation. To extend beyond firm-level insights, the study underscores the interplay between organizational strategies and macroeconomic policies, emphasizing the necessity of collaborative ecosystems that foster open innovation.

This work contributes to both the academic literature and organizational practice by providing actionable recommendations to overcome structural and cultural barriers, promote a top-down culture of innovation, and ensure strategic alignment. By advancing a robust framework for business innovation strategies, it empowers organizations to harness innovation as a cornerstone of long-term success in increasingly volatile and competitive markets.

1. Introduction

1.1. Innovation strategy

The unpredictable conditions that characterize numerous sectors—such as shifts in market dynamics, the evolving needs of managers, and an increasingly competitive landscape—underscore the imperative role of business strategy as a key factor for success (Nickols, 2016). Within this context, innovation should be an integral component of a company's business strategy, which is essential for survival in an increasingly competitive market environment (Ferreira et al., 2015; Gaubinger et al., 2015; Wolf et al., 2021a, 2021b). However, incorporating innovation as a competitive advantage within organizations is often challenging (Agolla and Lill, 2013), and innovation is not confined to firm-level practices but is deeply intertwined with macroeconomic and policy dynamics

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(Cheng et al., 2024).

According to Ricart and Casarín (2017), while creating value is essential, the ability to capture that value is what ultimately drives long-term, superior performance. To accomplish this, companies should adopt business practices beyond value creation, ensuring they can effectively capture and sustain it. This evolution in strategic thinking highlights the need for companies to be more agile and innovative, not only by adapting to immediate market and technological changes but also by developing strategies that enable them to create and capture value sustainably.

However, at the same time, innovation needs its own strategy because it requires planning, prioritizing, and developing appropriate types of innovation (Afuah, 2003; Katz et al., 2010; Varadarajan, 2018). A well-designed innovation strategy ensures that the necessary resources, knowledge, capabilities, organizational structure, and processes are employed most effectively. Wolf et al. (2021a) state that the innovation strategy encompasses all organizational procedures and guidelines aimed at generating and managing innovations to achieve business objectives. This strategy should drive the value chain, customer value, or potential users, as noted by Govindarajan and Trimble (2004).

1.2. Strengths and gaps in existing literature

The existing knowledge on innovation strategy predominantly focuses on operational frameworks such as open innovation and the innovation funnel. These frameworks provide valuable insights into processes for generating and implementing innovative ideas. However, there is a noticeable gap in the literature regarding practical methodologies for formulating and executing innovation strategies. Specifically, there is limited guidance on aligning innovation with overarching business objectives or addressing ambiguities in key concepts, such as the distinction between strategy and planning.

Moreover, while the theoretical value of innovation is frequently emphasized, there remains a disconnect between intent and execution. Many organizations struggle with challenges such as resource constraints, cultural barriers, and a lack of integration between innovation efforts and overall corporate strategies. These gaps are compounded by the absence of consensus around key definitions, leading to varied approaches and inconsistent outcomes in practice.

As discussed in our previous work (López and Oliver, 2023), incorporating an innovation strategy is crucial for businesses to compete in a better position. Innovation strategy must be grounded in the corporate strategy and regarded as an integral component of long-term strategic business management, as emphasized by Gaubinger et al. (2015). This integration can enhance competitiveness in differentiation, productivity, and economic growth, leading to better financial outcomes (Jaruzelski et al., 2011; Mahmood et al., 2013). Therefore, the company should define a general framework composed of integrated options to achieve business objectives, along with an action guide that receives feedback from the action-result binomial. Even though there isn't a universal blueprint for innovation, assembling the right elements can significantly enhance the prospects (Hamel, 2006). The success of an innovation strategy depends on the quality of its parts (Lendel and Varmus, 2011), which in turn dictates the most suitable approach for a company. Innovation strategies guide companies in using innovation to boost their performance (Gaubinger et al., 2015). They describe it as a planned approach for resource allocation to different innovations to meet overall objectives. This provides a decision-making framework for businesses, helping them decide when to move on from past practices or shift their focus to future goals (Ghasemzadeh et al., 2022).

1.3. Research contribution

This study addresses these gaps by proposing a structured methodology for innovation strategy formulation and implementation. By analyzing insights from innovation managers across diverse industries, this research identifies critical factors influencing innovation strategies, highlights practical challenges organizations face, and provides actionable recommendations for overcoming these barriers.

The findings not only contribute to the academic understanding of innovation strategy but also offer practical value for organizations seeking to enhance their innovation capabilities. By fostering a clearer understanding of innovation's role within business strategy and providing a standardized framework for its integration, this study aims to empower organizations to unlock the true potential of innovation and achieve sustainable growth in a competitive environment. Therefore, attaining success in innovation is a multifaceted endeavor that goes beyond adopting industry best practices, hiring exceptional innovation leaders, or simply imitating others (Pisano, 2015).

The contributions of this study are detailed in Section 5.

1.4. Study objectives

This research aims to clarify innovation strategies, their factors, and organizational methodologies. It seeks to answer two key research questions:

- Do organizations have an explicitly approved innovation strategy?
- Are organizations following a specific methodology to implement, execute, and control the innovation strategy?

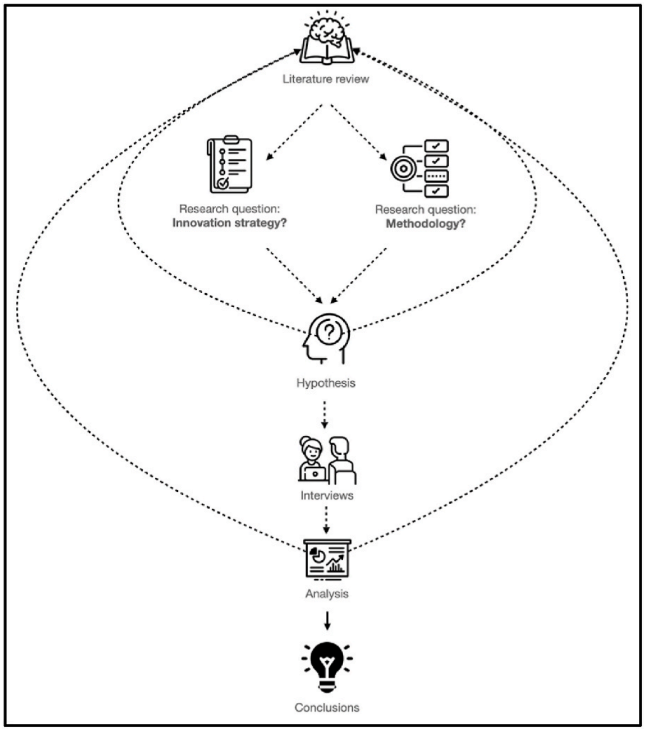

Fig. 1. Outline of the methodology employed in the study.

2. Research methodology

This study employed a qualitative research approach to explore innovation strategies, the organizational factors influencing their selection and implementation, and whether organizations follow a specific methodology. Given the complex, context-dependent nature of business innovation, qualitative methods allowed for an in-depth understanding of how these strategies are conceived, implemented, and experienced by those in leadership roles within large organizations.

Qualitative research is a method of inquiry that seeks to understand phenomena from a subjective and holistic perspective. Unlike quantitative research, which relies on numerical data and statistical analysis, qualitative research is rooted in exploring experiences, meanings, and perspectives through non-numerical data. This approach is especially useful in social sciences, humanities, and business studies, where complex, context-dependent issues often require a deep, nuanced understanding. Qualitative research is typically interpretive, meaning that the researcher actively analyzes data to uncover patterns, themes, and insights. This approach allows researchers to capture the complexities of human behavior, organizational dynamics, and cultural contexts, making it ideal for exploring topics such as leadership, innovation, and strategic decision-making.

This study corresponds to the analysis of innovation strategies through interviews with innovation directors of ten leading companies in their sectors, and this type of research encompasses several distinct modes, each suited to different research objectives and data types. For this study, the primary qualitative approaches considered were grounded theory (Charmaz, 2014) and phenomenology (Smith et al., 2009):

- **Grounded theory** seeks to generate new theories based on data collected. It was ideal in exploratory stages of research, such as identifying emerging themes in innovation strategies based on data gathered from initial interviews.
- **Phenomenology** centers on participants' lived experiences, aiming to uncover subjective interpretations. It was valuable to understand the impact of innovation roles on participants and their organizational roles.

Fig. 1 outlines the methodology employed in this study.

2.1. Literature review

Conducting a comprehensive examination of previous research by utilizing databases like Scopus, Web of Science, and Google Scholar allowed to identify relevant and up-to-date studies on innovation. The focus was on publications from the last two decades, mainly on the topics of innovation management, business strategy, and innovation strategy. The literature review provided a consolidated overview of previous studies and a guide to discovering new relevant information on the following:

- Context definitions use to align and clarify concepts.
- Possible innovation strategies list and their main actions for implementation.

- ac ors a e erm ne or n uence e nnova on s ra egy o rms.
- Methodology to generate the strategies.

The total number of articles and books reviewed is 269, of which 101 are finally referenced in this work. The selection of these studies is based on their direct relevance to the research topic, rigor of research design, methodology, and overall quality to ensure reliable and credible information.

2.2. Hypothesis

The chosen studies were analyzed to identify recurring themes, emerging trends, and patterns related to innovation strategies, key factors, and methodologies. This allowed us to formulate the hypothesis by synthesizing findings from the literature analysis. For more information about the hypothesis, please refer to Section 4.

2.3. Interviews with innovation directors

To avoid confusion related to definitions and to better understand the meaning of innovation for participants, face-to-face meetings were held instead of surveys, to obtain information before entering the strategy section. For this reason, the interview questions were carefully developed based on an extensive review of existing literature on innovation and strategic management, and they were divided into two sections: innovation and strategy. This approach ensured that the questions were theoretically grounded, aligned with the research objectives, and capable of yielding actionable insights.

The interviews were recorded and transcribed for analysis. They were analyzed to identify the responses' common themes, trends, and patterns. The analysis focused on the factors that contribute to successful innovation, such as leadership, culture, resources, and collaboration. The results of the literature review and the interviews were integrated to provide a comprehensive understanding of the factors contributing to successful innovation. Due to the agreed-upon participation agreement, the names of the interviewees and the companies they represent were kept anonymous, rendering the raw data unavailable to the public. The participants needed permission from their respective companies to disclose their involvement in the study, which carried the potential risk of denial. Additionally, it was emphasized that the responses provided during the interviews might have differed if they had been permitted to participate officially. This confidentiality constraint underscores the need to protect the privacy and professional interests of the interviewees and their organizations. Although men dominate management positions, 20% of those interviewed were women, exceeding the average of 12% of female innovation executives, according to Accenture (2018). These statistics reveal gender disparities, urging more diversity and inclusivity in innovation management.

Before conducting the interviews, a pilot test was conducted with a small group of professionals to validate question clarity and relevance. Feedback from these initial sessions informed refinements in question phrasing, ensuring that each question was non-leading and designed to elicit open-ended, detailed responses. The final interview guide included a combination of exploratory and probing questions. Exploratory questions allowed interviewees to describe their organization's innovation practices while probing questions helped clarify specific aspects of strategic planning and execution.

Given the focus on innovation strategy, participants were selected based on their experience and influence within their organizations. Specifically, C-level executives, innovation managers, and department heads with at least five years of experience in leadership roles were targeted. This selection criterion ensured that participants had a comprehensive understanding of both strategic objectives and practical constraints in innovation. A purposive sampling was used to identify participants who represented various industries and organizational types while sharing relevant expertise in innovation strategies. This approach allowed the study to capture diverse perspectives across different business contexts, enhancing the generalizability of the findings.

The potential participants were identified through professional networks and industry forums. Once identified, participants were contacted via email with an overview of the study's purpose, methodology, and nature of their involvement.

Each participant was carefully vetted to confirm that they met the inclusion criteria and that their role provided them with insights relevant to the research questions.

A thematic analysis approach was employed to analyze the data, involving multiple stages of coding to identify common themes and patterns. Initially, a set of broad codes was developed based on the research questions and interview guide. These codes were refined through iterative review, creating more specific sub-themes that captured key insights related to innovation strategy, organizational alignment, and strategic challenges.

Since the participants were directors and managers of business, innovation, and strategy departments, their schedules were complicated. Therefore, the interviews were scheduled to last 30 min, respecting rigorously the time established.

Section 1: Innovation.

- What kind of innovation do you practice?
- Related to innovation resources, how are you doing innovation?
- Do you practice applied research?
- In the organization structure, where is the innovation department?
- How does the innovation department work in the organization?
- What are the main functions of the innovation department?
- How and who is proposing innovation projects?

- Do you have a reserved budget for innovating as you want, or is it coming from other departments?
- Does innovation have a direct presence on the Board or Executive Committee?

Section 2: Strategy.

- Is innovation in your business strategy?
- Do you have an innovation strategy?
- Did you participate in creating your innovation strategy, or did you participate in the updates?
- How often is the innovation strategy reviewed?
- Could you describe the basic pillars of your innovation strategy?
- What factors do you consider to be determinants or influences when choosing an innovation strategy?
- Could you describe the methodology used to establish the innovation strategy?
- Are you measuring the innovation strategy with key performance indicators (KPIs) and/or objective key results (OKRs)?
- Could you describe, at a high level, your main OKR/KPI?

The sectors of the companies that participated belong to research and telecommunications (2), financial services (1), media (1), fashion (1), legal (1), transport (1), logistics (2), and beverages (1). For further information regarding the companies' participants, please refer to Appendix A.

2.4. Analysis and conclusions

Data analysis in qualitative research followed these steps:

- **Data Organization**: Transcribing interviews, organizing field notes, and categorizing documents form the initial steps. These organized data served as the foundation for deeper analysis.
- **Coding**: Coding involves assigning labels to chunks of data and capturing concepts and themes to develop a comprehensive view of the data.
- **Theme development**: Themes were generated to represent recurring patterns across the data. These themes provided insights into the research questions and helped organize findings in a coherent structure.
- **Interpretation**: Interpretation was the stage where the findings were synthesized, linking themes to the research questions and the theoretical framework guiding the study. Interpretation involved insights and reflections on the significance of the data in addressing the study's goals.

The process involved repeatedly reviewing the recorded interviews to deeply understand the participants' responses, and grouping their processes, strategies, factors, and methodologies. This hands-on method allows for the normalization of answers and the identification of prevalent themes, trends, and patterns without using specialized software.

To simplify the information, the strategies described by innovation managers were categorized into three groups: those mentioned by less than 33% of the interviewees, those mentioned by 34%–66%, and those mentioned by more than 67%. This categorization helps to identify the least common, moderately common, and most widely used strategies.

Following the same approach, the factors selected by innovation managers were also grouped into three categories: mentioned by less than 33%, mentioned by 34%–66%, and mentioned by more than 67% of the interviewees. This method ensures consistency and makes it easier to analyze and compare the prevalence of strategies and factors.

While not all companies demonstrated a clear method for creating or updating their innovation strategies, managers highlighted several common approaches. These approaches were grouped into three key stages of innovation strategy: observation, comprehension, and action.

By comparing the hypotheses derived from the literature review with the findings from the interviews, we gained valuable insights into how theoretical frameworks align with or differ from their practical application in real-world business contexts. The findings and conclusions are detailed in Section 5.

3. State of the art: Strategy and innovation strategy

As conditions evolve, strategy should be viewed as a process embedded into the organization rather than a fixed outcome, particularly in the current dynamic and globalized environment. This means strategies must be adaptable and flexible to continuously respond to changing circumstances.

In contemporary business discourse, strategy is often used as a synonym for planning (Rumelt, 2017), but the two terms are not interchangeable. A strategic plan involves the control of costs and a focus on customer needs ("I am going to expand the business," "I am going to launch a new product"), while strategy is based on hypotheses about customer behavior and revenue generation. Strategies cannot be tested in advance or guaranteed, and planning begins once an option has been selected (Martin, 2022). While strategic plans have expiration dates, strategies are ever evolving and do not have set timeframes (Briones, 2017; Martin, 2022).

The strategy process involves asking and answering several key questions: What is your current situation? Where do you want to go? How will you get there? (Stadler et al., 2021). The strategy requires choosing correctly based on user preferences and needs,

competition, and organizational capabilities. Involve testing the theory and validating the assumptions to determine the best course of action. It is a problem-solving tool that overcomes barriers and moves from mission to vision, requiring creativity in designing a solution. To generate value, companies utilize strategies to mitigate risk and identify areas of convergence between people's desires, commercial viability, and technical feasibility.

After careful analysis of the literature on business strategy methodology (Gimbert, 2021; Grant, 2016; Guerras Martín and Navas López, 2022; Hitt et al., 2016; Lafley and Martin, 2013; Leinwand and Mainardi, 2016; Mintzberg et al., 2005; Porter, 1996; Thompson et al., 2017), we observe fundamentals where strategy is mainly divided into three sections: strategic analysis, strategy formulation, and strategy implementation.

Strategic analysis is the process of defining a company's mission, vision, and values. In this stage, companies explore the environment to understand their current position in the market and where they want to be: purpose, long-term goals, and core principles. This exploration is key to understanding their customers' needs and preferences and defining the unique and compelling value proposition that sets them apart from their competitors. Additionally, the strategic objectives are defined: Companies must set specific, measurable, achievable, relevant, and time-bound objectives that align with their mission, vision, and values. Usually, companies identify their internal and external strengths, weaknesses, opportunities, and threats through the SWOT analysis.

When the analysis is done, it is time to formulate the strategy. Companies formulate their strategies by taking advantage of or actively pursuing their competitive advantage. In doing so, they establish their scope of operations by determining the dimensions on which they will compete, such as quality, price, brand reputation, and more. This involves designing a business model aligned with the company's capabilities and enabling it to deliver its value proposition effectively.

Once the strategy has been selected, the next decisive step is its implementation. This implementation process can be subdivided into three essential steps: selection, execution, and control.

In the selection process, companies make strategic choices about where to focus their resources and efforts, understanding which areas of the business are critical to delivering the value proposition and which areas can be deprioritized. The selection process is when companies define how to develop value. To do this, they set the objectives and the action plan to achieve them. Therefore, they must clearly specify what and how they are going to do it; sometimes, it is better to develop a small set of priorities that everyone supports to produce results (Sull et al., 2017).

Once the strategy is selected, it comes to the go-live moment. Execution encompasses the process of carrying out actions in accordance with a pre-established plan. This phase often necessitates organizational adaptations, as certain tasks may require acquiring fresh skills and resources. To facilitate successful strategy execution, it is often necessary to establish a new organizational structure. This involves aligning incentives and accountability, fostering the formation of cross-functional teams, and ensuring proper role allocation for optimal performance.

And, finally, comes strategic control. Here, the companies manage the implementation of the strategy. They implement processes and tools to monitor progress, measure performance, and adjust the strategy as needed, including setting clear goals and metrics, creating a feedback loop to capture and act on customer insights, and fostering a culture of continuous improvement. Normally, companies monitor development and results through KPIs and OKRs.

Lafley and Martin (2013) argue that the innovation strategy, as part of the business strategy, should consist of a set of options designed to align with the company's purpose, define the competitive landscape, establish ways to create distinctive value, determine its competencies (both existing and lacking), and establish management systems for evaluating the strategy's effectiveness. Innovation strategy helps achieve better performance and business results (Adjei, 2013; Carmeli et al., 2010; Govindarajan and Trimble, 2004; Kaliappen and Hilman, 2017; Wolf et al., 2021b).

Therefore, the contrasted framework for business strategy seems adequate for innovation strategy (Lendel and Varmus, 2011). However, the literature related to innovation strategy focuses mainly on the innovation process (also called the innovation funnel, where it works in phases such as ideation, conceptualization, prototype/MVP development, validation/conclusions), types of innovation (innovation in product, service, marketing, social, etc.), actions, modes, or profiles (market trends, open innovation, exploration/exploitation, proactivist, etc.), but it is very limited when it comes to describing the methodology for innovation strategy. For example:

- Ali (2021), Chen et al. (2018), Gao et al. (2017), Jia (2019), and Müller et al. (2021) discuss two major movements: exploitative strategies (actions oriented toward efficiency and incremental improvements) and exploratory strategies (actions for discovering new ideas and new business models).
- Dodgson et al. (2008) explain types of strategies depending on the level of risk the company wants to assume and the level of leadership representing being a first-mover or a fast-follower: proactive, active, reactive, and passive.
- Kaliappen and Hilman (2017) discuss process innovation (for cost leadership, making efficiencies to attain superior performance and cost advantages) and service innovation (for differentiation, creating unique and different features).
- Gaubinger et al. (2015) identify four key strategies that are particularly relevant: technology strategy (due to technology's critical role in innovation); product strategy (to meet customer demands); process strategy (determined by the chosen technology and product strategies); and timing strategy (considering time-to-market factors).
- Bowonder et al. (2010) identifies 12 ways of visualizing innovation strategies: platform offering, co-creation, cycle time reduction, brand value enhancement, technology leveraging, futureproofing, lean development, partnering, innovation mutation, creative destruction, market segmentation, and acquisition.

Comparative analysis of innovation strategy frameworks.

Framework	Focus	Strengths	Limitations
Open Innovation	Collaboration with external entities	Expands access to knowledge and resources; fosters faster innovation (Bogers et al., 2019).	Dependency on external partners; challenges in IP management and alignment with internal goals.
Disruptive Strategies	Creating market-changing innovations	High impact on market dynamics; potential to redefine industries (Christensen, 1997).	High risk; may fail to gain initial market traction; requires strong leadership to navigate uncertainties.
Incremental Innovation	Continuous improvement of existing models	Low risk; cost-effective; aligns with customer expectations (Kaliappen and Hilman, 2017).	Limited potential for significant differentiation; risks of being outpaced by competitors with radical ideas.
Exploratory Strategy	Discovering new ideas and models	Promotes experimentation and long-term growth (Jia, 2019).	Resource-intensive; difficult to manage and measure in the short term.
Exploitative Strategy	Enhancing efficiency and cost leadership	Drives operational excellence; improves profitability (Chen et al., 2018).	Risk of stagnation; may miss emerging trends or opportunities.
Proactive Innovation	Leading industry change through foresight	Enhances market leadership; fosters adaptability (Dodgson et al., 2008).	Requires significant investment; high reliance on accurate future predictions.
Market Readers	Incremental innovations based on trends	Fast to market; leverages proven demand (Jaruzelski et al., 2011).	Limited differentiation; risks of being overshadowed by more innovative competitors.
Technology-Driven	Leveraging technological capabilities	Drives breakthroughs in tech-heavy industries (Gaubinger et al., 2015).	It can lead to a tech-push without clear customer needs; expensive to implement.
Imitation Strategies	Copying proven models	Low risk; cost-efficient; fast market entry (Wanasika and Conner, 2011).	Limited innovation; risks of being labeled as unoriginal or reactive.

- Jaruzelski et al. (2011) define need seekers (those companies are looking for new products through customers' needs), market readers (those who focus on incremental innovations being fast-followers), and technology drivers (those who use their technological capabilities and try to apply new technologies).
- Bogers et al. (2019), Valmaseda-Andia and Albizu-Gallastegi (2017), and Wolf et al. (2021a) remark open innovation, the situation where an organization is not dependent on its own internal knowledge and resources, as it uses external sources to help create innovation.
- Wanasika and Conner (2011) explain imitation because not all investments in research and development are profitable, and sometimes copying what others are successfully producing is more effective.
- Adjei (2013) and Carmeli et al. (2010) highlight how innovative leadership and organizational proactivity enable companies to both adapt to and shape their external environments, ultimately improving performance.

Table 1 summarizes the strengths and limitations of the above frameworks.

Unfortunately, the reviewed literature does not provide a holistic view of the innovation strategy process, as it lacks information on the essential methodological steps that companies should follow to determine their innovation strategy. Through a clear path on how to incorporate innovation and its strategy, companies can optimize their business performance and gain a competitive advantage (Ryu et al., 2015; Swedish Ministry of Enterprise, 2020; Tohidi and Jabbari, 2012; Valmaseda-Andia and Albizu-Gallastegi, 2017). A deep understanding of the innovation strategy process could enable organizations to make informed decisions, align innovation initiatives with broader business objectives, and cultivate a culture of innovation that fosters sustained success in today's ever-evolving market landscape (Afuah, 2003; Gaubinger et al., 2015; Jaruzelski et al., 2011; Katz et al., 2010; Mahmood et al., 2013; Varadarajan, 2018).

Given the significance of this methodology in business strategy, the absence of such information in innovation prompted us to formulate the hypothesis presented in the following section.

4. Hypothesis

4.1. Chain reaction observed

In today's rapidly evolving business landscape, companies strive to maintain a competitive edge by adopting innovative strategies. Our analysis reveals a chain reaction of interconnected factors that underscores innovation's pivotal role in organizational success.

Companies require a solid business strategy to stay competitive (Porter, 1996), and business strategy needs innovation because it enables differentiation and efficiency (Christensen, 2013); however, the absence of a universally accepted definition of innovation leads to varying interpretations and undermines its utility as a key fundamental factor (Teece, 2010). This lack of consensus affects the position and recognition of the innovation department within the organizational hierarchy (Brown, 2008; Singh and Aggarwal, 2021; Tidd and Pavitt, 1998). Without a recognized position, not all companies have a direct presence of innovation in the C-Level. It is often viewed as a technological add-on rather than a business-embedded element (Dyer et al., 2009). Innovation needs its own strategy and a methodology based on established business strategy stages (Anthony and Duncan, 2012; Guerras Martín and Navas López, 2022; Lendel and Varmus, 2011).

4.2. Methodology for business innovation strategy

The chained circumstances previously exposed determined our hypothesis for innovation strategy methodology based on the main

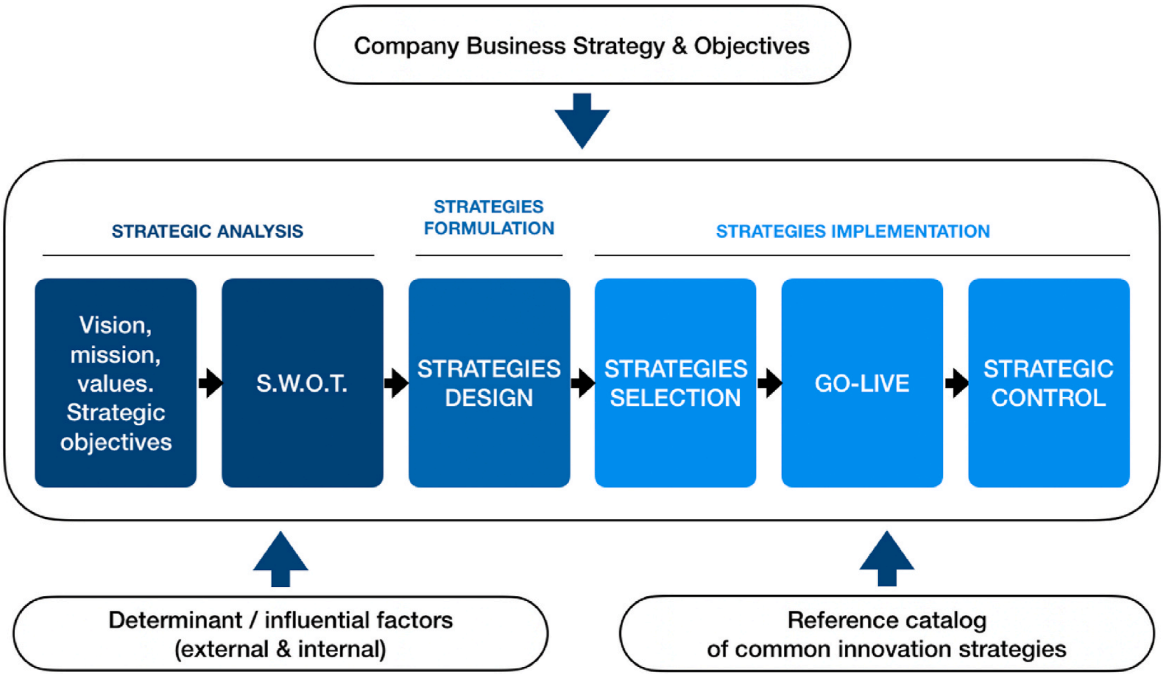

Fig. 2. High-level scheme of the methodological steps for the innovation strategy, adapted from the business strategy methodology by Guerras Martín and Navas López (2022).

points of business strategy presented in state-of-the-art (SOTA) analysis, which are mainly: strategic analysis, strategic formulation, and strategic implementation. However, this methodology can be influenced by three elements: the company's business strategy and objectives, determinant and influential factors (both internal and external), and a reference catalog of common innovation strategies (Bayarçelik et al., 2014; Briganti and Samson, 2019; Elia et al., 2021; Freeman, 1979; Haro Carrillo et al., 2017; Leavengood and Anderson, 2011; Lendel and Varmus, 2011; Lluch, 2021).

The company's business strategy and objectives serve as a guiding force, ensuring that innovation efforts align with the organization's broader goals. Determinant and influential factors, encompassing market dynamics, customer needs, technological advancements, etc., shape the innovation landscape. Drawing from a reference catalog of common innovation strategies, organizations can leverage proven approaches. Customizing these strategies to their specific context enhances the overall innovation methodology and increases the likelihood of achieving breakthrough results.

Hypothesis. By adopting and adapting the well-established steps of the business strategy methodology to the field of innovation, organizations can cultivate a systematic and effective approach that aligns innovation with the changing needs of business. This applied business methodology for making innovation strategy enables companies to strategically address innovation with business demands, quickly adapt to customer preferences, catalyze transformative change, and improve operational efficiencies, thereby driving superior results and sustained success.

The development of the hypothesis is referred to in Fig. 2.

4.2.1. Strategic analysis

Altıok (2011), Jones (2010), Kirkpatrick (2017), and Taiwo et al. (2016) argue that a clear vision, mission, and values can help create a framework for internal communication within an organization, and are critical for strategic decision making, including those involved in innovation efforts. Therefore, we posit that innovation can benefit from having its own mission, vision, and values.

Mission: A clear mission statement can help define the purpose of the innovation effort and guide the direction of the work. This mission statement helps clarify the goal of the innovation effort and the values that it aims to uphold.

Vision: A vision statement can provide a clear picture of what the innovation effort hopes to achieve in the long-term. This vision statement helps provide a target for the innovation effort and gives stakeholders something to strive toward.

Values: Values are also important for innovation efforts, as they help guide decision-making and shape the culture of the team. Values can help create a culture of innovation that encourages experimentation, learning, and growth.

Strategic objectives: At the same time, innovation must define its own strategic objectives, which will be aligned with the business objectives with intensity depending on the role of innovation in the company.

SWOT Analysis: Once we have these definitions ready, companies should analyze their internal and external environments to understand their current position in the innovation field and where they want to be in the future. One of the key tools used in this stage is SWOT analysis. For example, in Al-Mubaraki et al. (2012), Štěrbová et al. (2016), and Tidd and Pavitt (1998), the SWOT analysis is used to identify the strengths, weaknesses, opportunities, and threats of a company's innovation management, process, or culture; identify innovation opportunities; and develop strategies to leverage their strengths to take advantage of these opportunities.

s a so re evan o nc u e e cs n ec s on ma ng an organ za ona es gn, as s a e y e au ors n e r s u es ass man et al., 2022; Fontrodona et al., 2018), where they advocate the inclusion of ethical values, moral standards, and commitment in dynamic processes, which can be sources of competitive advantage and innovation.

All this information helps us modify or confirm the objectives before continuing with the next step, which is the formulation of the strategies.

4.2.2. Strategies formulation

Once companies have completed their innovation strategic analysis, they must design their strategies to achieve their goals.

The first step in strategy formulation is to identify the firm's innovative advantage. This refers to the unique strengths or resources the company's innovation possesses that allow it to outperform its competitors.

Once the company has identified its advantage(s), it must determine how to exploit or leverage that advantage in the marketplace. This implies defining the playing field through the dimensions in which the company's business innovation will compete. Like business strategy, innovation strategy can also be approached in a multidimensional manner, considering what a company innovates and how it innovates (Krishnan and Jha, 2011). The dimensions of the framework should be constructed using the essential components that the companies can provide, or aspire to provide, a value proposition, creating parameters that facilitate the attainment of objectives within the scope of the established competitive landscape. The dimensions define where a company is going to compete with an innovation mindset and the grade of intensity of the value proposition. Common dimensions of competition include quality, price, features, performance, design, customer service, advanced technologies, time-to-market, and brand prestige. Defining the playing field is critical because it allows companies to focus their innovation resources and efforts on the areas that matter most to their customers and will provide the most value to their business. The value proposition is the set of benefits or advantages the company promises to deliver to its customers in exchange for their business. Examples of value propositions may include convenience, reliability, speed, customization, or personalization.

By defining its playing field and strategic positioning, a company can create a clear and compelling innovation strategy that differentiates it from its competitors and resonates with its customers. This strategy can then guide the company's decisions and actions as it works to achieve its goals and succeed in the marketplace.

For example, Gurcaylilar-Yenidogan and Aksoy (2018) elucidate the relationship between business strategy and innovation. The authors use the Ansoff product-market matrix that offers a structured approach to strategy development. This matrix provides firms with two primary directions for growth: (1) expanding current operations through strategies such as market penetration, product development, and market development, or (2) diversifying into new ventures through the diversification strategy (Ansoff, 1965). Gurcaylilar-Yenidogan and Aksoy (2018) correlate the strategic direction with specific types of innovation by linking (a) market penetration to incremental innovation (it involves minor tweaks to existing products, like changing their color or size. The main goal is to boost the market share of the current product); (b) product development to breakthrough innovation (consequently, from substantial improvements in product function, necessitating significant R&D investments). It aligns with introducing new products to existing markets); (c) market development to disruptive innovation (pertaining to introducing existing products to new markets). It involves slight changes in product technology but can generate new revenue streams by addressing new customer needs or significantly enhancing product performance); and (d) diversification to game-changing (also known as radical) innovation (it involves introducing new products to new markets). Such innovations are revolutionary, altering how users interact with product features and sometimes leading to technological transformations in products and markets.

4.2.3. Strategies implementation

As previously mentioned, this stage is divided into three levels: strategy selection, go-live, and strategic control.

a) Strategies selection: In the selection process, companies define how to develop innovation value. To do this, they set the objectives and the action plan to achieve them. Therefore, they must clearly specify what and how they are going to do it, sometimes it is better to develop a small set of priorities that everyone supports (Sull et al., 2017).
b) Go-live: It is the execution of actions following the innovation plan. It usually implies organizational changes because the development of some tasks may require new skills and resources, so new activities of preparation or adaptation should be needed.
c) Strategic control: Here, the companies manage the implementation. They control innovation development and results through KPIs and OKRs. This section is key because companies will know whether their innovation strategy is working, so with good management, they will have the opportunity to modify tasks, adapt them to external or internal forces, or even change the line of action.

5. Findings and conclusions

After conducting the SOTA analysis and formulating the hypotheses, we proceeded to the interview process to gather qualitative data from innovation managers. These data were analyzed and compared against theoretical insights and the proposed hypothesis. Based on this comparative analysis, we derived key findings and formulated conclusions.

The interviews consisted of two segments. The first segment served as an introduction, aiming to comprehend the innovation culture and environment within the organizations. The second segment focused specifically on innovation strategy, which is the primary focus of this research. The main pillars discussed were: the use of innovation in business strategy, the existence of innovation strategy, the methodology used to determine the innovation strategy, the innovation strategies they employ, the factors they consider or influence when choosing a strategy, and how they control and manage the results.

Table 2
Innovation strategies in organizations.

Response category	Percentage of organizations
Innovation as a key component	70%
Dedicated Innovation Strategy	50%
Incorporated in Overall Strategy	20%
No Specific Innovation Strategy	20%

Table 3
Summary of the strategies most mentioned by those interviewed.

The called "Strategy" by the participants	**Description**	Mentioned by <33% of companies	Mentioned by 34%<66% of companies	Mentioned by >67% of companies
Grant projects	Actively participating in research projects funded by grants to expand financial capacity and explore new ideas.			
Open innovation	Collaborating with startups to access fresh ideas, technologies, and expertise that can accelerate innovation processes.			
Product innovation	Emphasizing product innovation as a central strategy for driving business growth and maintaining a competitive edge.			
Observation	Utilizing benchmarking and trend analysis to gain insights into industry best practices, emerging trends, and customer preferences.			
Customer needs	Developing solutions or features that address consumer needs and ensuring coherence between the offering and consumer necessity.			
Internal dedicated team	Establishing an internal team dedicated to innovation to provide focused expertise, align efforts, foster collaboration, and build a culture of innovation.			
Innovation mindset	Cultivating an innovation culture as a fundamental mindset within the organization.			
Validation with stakeholders	Involving stakeholders in the innovation process to gather valuable information and feedback for validating and refining ideas.			
Member of influential organizations	Actively participating in influential boards to contribute to industry standards, regulations, and best practices.			

5.1. Research question 1: Do organizations have an explicitly approved innovation strategy?

5.1.1. Innovation strategies

The interviewed companies have a broad understanding of the concept of innovation, and they apply different types of innovation (technological, product, process, IT, marketing, service, and social innovation), with different orientations (incremental, disruptive, architectural, and radical innovation), and with different relational structures (open, closed innovation). This diversity in the interpretation of innovation impacts the role of the innovation department, its position in the organizational structure, and the significance of innovation in the business (Alvares et al., 2021; Anthony et al., 2019; Keum and See, 2017; Sahay and Gupta, 2011; Sarna, 2020).

70% of the companies interviewed stated that innovation is a key component of their business. 50% declared having a dedicated strategy for innovation, 20% affirmed that they do not have a specific strategy because innovation is already incorporated into their overall strategic plan, and 20% declared that they do not have such a strategy (Table 2).

This finding raises important questions about the perception and implementation of innovation within these organizations. While companies recognize the significance of innovation, some organizations lack a formal and explicit strategy dedicated to driving and managing innovation initiatives. This suggests a potential gap between acknowledging the importance of innovation and actively pursuing it as a strategic priority. A comprehensive innovation strategy can provide a roadmap for identifying and capitalizing on new opportunities, fostering a culture of creativity and experimentation, and effectively allocating resources to drive meaningful

innovation outcomes. With a specific innovation strategy, companies can enhance their ability to navigate the ever-changing business landscape, stay ahead of their competitors, and achieve sustainable growth through continuous innovation (Afuah, 2003; Govindarajan and Trimble, 2004; Jaruzelski et al., 2011; Katz et al., 2010; Mahmood et al., 2013; Varadarajan, 2018; Wolf et al., 2021a).

The innovation leaders expressed their dissatisfaction with the reactive mode in which their departments operate and desire to reverse this situation. Only 10% of them have a direct representation of innovation at the C-level, specifically through the role of a chief innovation office, organizations whose primary focus revolves around research and innovation. In contrast, 50% of the remaining companies have their representation in the form of sub-departments embedded within other departments (such as marketing, sales, or product), meanwhile the remaining 40% don't have any representation.

This contrast in organizational structure highlights a distinction in how innovation is positioned and integrated within different companies. Having a dedicated chief innovation officer or similar representation at the C-level underscores the significance of innovation as a strategic driver, placing the integration of innovation into the overall business strategy and decision-making processes. Here, the innovation department can better align its activities with the organization's strategic goals, advocate for the necessary resources, and foster a culture of innovation throughout the company. Proactively engaging with innovation at the executive level enables companies to achieve several advantages, such as leading the industry, facilitating market differentiation, and enhancing their ability to effectively respond to disruptive forces (Cheng and Love, 2022; Stevenson and Euchner, 2013).

Below, we show in table format the "strategy" explained by the innovation managers categorized into three groups: Mentioned by less than 33% of those interviewed, mentioned by 34%–66% of them, or mentioned by more than 67% (Table 3). After the table, we cited the explanations by the interviewees when asked about their innovation strategies.

a) Strategy: Grant projects

All the managers interviewed operate with their own budget, although it is relatively limited in scope. This budget is primarily designated for internal proof-of-concepts (PoCs), event attendance, and similar activities. Recognizing the constraints of their internal budget, the participants emphasized their strategy of actively participating in research projects funded by grants. Specifically, they prioritize engagement with European grants, which offer larger funding opportunities than local sources.

This participation expands the innovation department's financial capacity and enables it to explore new ideas, conduct research, and develop innovative solutions beyond the limitations of its internal budget. Furthermore, it enables learning, and encourages collaboration, networking, and knowledge sharing within a broader innovation ecosystem (EC, 2022).

b) Strategy: Open innovation

All the companies highlighted adopting an open innovation strategy as a key approach to incorporating new features and products. Cheng et al. (2024) highlight that reduced dependence on technology imports can paradoxically accelerate domestic innovation, a finding that aligns with our study's emphasis on leveraging both internal and external knowledge. Collaborating with startups, they can easily, quickly, and cost-effectively access a wide range of fresh ideas, technologies, and expertise that can accelerate their innovation processes through fast MVPs, prototypes, PoCs, and more. The interviewees confirmed its benefit as an efficient way to test and validate new solutions. This collaborative approach allows companies to assess the viability and desirability of new features and products in a cost-effective manner, minimizing the risk associated with internal development or costly research and development efforts. The managers also emphasized that collaboration between companies and startups generates a mutually beneficial relationship. Startups gain valuable insights, real-world feedback, and potential partnerships with established companies, while companies gain access to innovative solutions and emerging technologies that can fuel their growth and competitive advantage (Usman and Vanhaverbeke, 2017).

c) Strategy: Product innovation

When listing the strategies employed, half of the participants stated that their primary strategy revolves around product innovation. This emphasis underscores its significance in driving business growth and maintaining a competitive edge. This approach enables them to capture market share, attract new customers, and retain existing ones by offering enhanced value and functionality. Meanwhile, they can enhance products sustainably, diversify the portfolio, and target new markets to boost competitiveness, reputation, and revenue. Using product innovations helps companies lead the industry and seize growth opportunities (de Medeiros et al., 2014; Gann et al., 2014).

d) Strategy: Observation

During the interviews, a recurring strategy employed by the participants was the importance of observing and understanding. By utilizing benchmarking and trend analysis, companies can gain valuable insights into industry best practices, emerging trends, and customer preferences. This information enables them to make informed decisions, stay attuned to market demands, and align their innovation efforts with the changing landscape (Travis and Hodgson, 2019).

Table 4
Summary of the factors mentioned by the interviewees.

Factors identified by the managers interviewed	Mentioned by <33% of companies	Mentioned by 34%<66% of companies	Mentioned by >67% of companies
Global external factors			
Public fundings			
Previous results			
Market trend			
Third-party relationship			
Focus			
Adaptation to collaborators			
Independency			
ROII			
Dissemination			
Proposals bottom-up			
Talent			
Input from BU			
Value perceived			
Industrialization			

e) Strategy: Customer needs

Managers ensure that consumer needs are of utmost importance in driving innovation. A primary objective is to develop new solutions or features that address these needs and bring them to the market. It is vital for companies to ensure coherence between the offering and consumer necessity. Fitting this, companies can identify opportunities to create innovative products, services, or experiences that directly cater to their target audience. This customer-centric approach not only helps meet existing needs but also enables companies to anticipate and address emerging needs or desires proactively (Tuominen et al., 2022).

f) Strategy: Internal dedicated team

Having an internal team dedicated to innovation was another strategy. This team provides focused expertise, aligns innovation efforts with organizational goals, fosters collaboration, enables rapid iteration and experimentation, and helps build a culture of innovation. Overall, a high-performing innovation team strengthens an organization's innovation capabilities and contributes to its long-term success (Johnsson, 2023).

g) Strategy: Innovation mindset

Without a strong innovation culture, implementing new projects, securing funding, or finding sponsors to support innovation initiatives becomes exceedingly challenging. An innovation culture encompasses the attitudes, values, and behaviors within an organization that promote and support innovation. It fosters an environment where creativity, experimentation, and risk-taking are encouraged and rewarded. When an organization embraces an innovation culture, it creates a fertile ground for generating new ideas, collaboration, and learning from failures. This cultural development may require organizational adaptation to new structures (Ikeda and Marshall, 2016; Kuczmarski, 1996). Organizational culture emerges as a vital element in successfully managing innovation strategy (Davies and Buisine, 2022).

h) Strategy: Validation with stakeholders

Another approach discussed was stakeholder validation of the innovation, which involves aligning expectations and desires by seeking input and feedback from relevant parties. By involving stakeholders, such as customers, partners, or internal teams, in the innovation process, companies can gather valuable information and feedback to validate and refine their ideas. This collaborative approach increases the probability of successful innovation results if we compare it when there is no such interaction (Greer and Lei, 2012); for this reason, companies prefer to be customer needs-oriented, implementing special actions to capture and retain customers, such as marketing campaigns, targeted promotions, or customer referral programs.

i) Strategy: Member of influential organizations

The participants emphasized the importance of alliances and relationships within the ecosystem. They expressed that actively participating in the board of clusters and associations is a key strategy for them. Their objective is to influence the future of market standard definitions. In this manner, companies can contribute to developing industry standards, regulations, and best practices. Being part of these influential boards demonstrates proactive action, giving them a platform to champion their perspectives, share expertise, and collaborate with other industry leaders (Ford et al., 2011).

5.1.2. Determinant or influence factors

Table 4 shows the factors chosen by innovation managers categorized into three groups: Mentioned by less than 33% of those interviewed, mentioned by 34%–66% of them, or mentioned by more than 67%. After the table, we cited the explanations by the interviewees when asked about their determinant or influence factors.

a) Factor: Global external factors

There was a consensus among the participants regarding the determinants or influential factors that guide the selection of a strategy. They emphasized the importance of considering global factors such as the ongoing pandemic, trends emerging from Silicon Valley, market movements, economic recessions, fluctuations in global stock markets, geopolitical factors, and regulatory duties. In this manner, companies can make informed decisions and adjust their strategies accordingly. Understanding the implications of these external influences allows them to proactively adapt to changing market dynamics, mitigate risks, identify opportunities, and align their innovation initiatives with the prevailing conditions.

b) Factor: Public funding

One of the critical factors cited by innovation managers for the continuous development of innovation is the receipt of grants from public funding. This is primarily due to the lower level of investment from the private sector. These grants provide essential financial resources that can be allocated for the research, development, and implementation of innovative projects. At the same time, it creates an environment that encourages innovation and attracts talent.

c) Factor: Previous results

Proof-of-concept outcomes emerged as another key valuation criterion for over 50% of participants, serving as critical inputs for steering future innovation pipelines. By analyzing and evaluating the results of these initial trials, companies can gather valuable information about the feasibility, viability, and potential success of specific concepts or ideas. Good results demonstrate the potential value and impact of innovation and can influence decision-makers to allocate resources and support for its continued advancement.

d) Factor: Market trend

The market trend is a relevant factor that requires rapid adaptation to signals, cited mainly for the companies oriented to sell to end users. Keeping a pulse on market trends is essential for businesses to remain competitive and relevant. Market trends encompass shifts in consumer preferences, emerging technologies, industry developments, and changing market dynamics. Staying attuned to these trends allows companies to identify opportunities, anticipate customer demands, and adjust their strategies and offerings accordingly.

e) Factor: Third-party relationship

Establishing relationships with third parties, including organizations such as enterprises, SMEs, and others, is essential for the successful implementation of an open innovation strategy. Open innovation involves actively seeking external collaborations and partnerships to tap into a broader ecosystem of ideas, expertise, and resources. By engaging with third parties, companies can access diverse perspectives, leverage complementary capabilities, and accelerate the innovation process.

f) Factor: Focus

As a non-general but strongly advocated statement, staying focused was necessary to achieve concrete results, especially when faced with diverse options. With numerous possibilities, it is easy to feel overwhelmed and scattered, resulting in a lack of progress or diluted efforts. To counteract this, it is essential to establish a clear focus and prioritize specific objectives so that companies can direct their resources and energy more effectively, doing the projects with the greatest potential for success and aligned with their overall strategy.

g) Factor: Adaptation to collaborators

Adapting to collaborators, particularly international providers, is key due to the different time-zones and working rhythms often observed with startups or young teams. Startups and young teams have a dynamic and agile approach to work and often operate faster, embrace experimentation, and prioritize innovation. Collaborating with these entities requires an understanding and willingness to adapt to their unique working style and methodologies.

h) Factor: Independency

The independence of the innovation department means that it is not subject to political dependencies that could potentially influence or condition its actions. By having an innovation department that operates independently, companies can create an environment where innovation can thrive without being influenced by internal politics or conflicting priorities. This separation allows the innovation team to focus solely on driving and implementing innovative initiatives, free from any external pressures or biases, and it can foster a culture of creativity, experimentation, and risk-taking.

i) Factor: Return of Innovation Investment

The return on investment in innovation (ROII) is also a factor in the innovation process mentioned by managers and is required by their superiors to control the relationship between investment and results. However, in certain cases, companies demand a business case too early in the innovation process before the innovation has been fully validated. This premature request for a business case can stifle innovation by emphasizing immediate financial viability rather than allowing for experimentation and validation of the innovation concept. The pressure to demonstrate a clear return on investment from the outset can discourage the exploration of risky or disruptive ideas that have the potential for significant long-term impact. It can create a barrier to truly innovative and transformative initiatives that may require additional time, resources, and validation before their full potential can be realized (Kaufman, 2008).

j) Factor: Dissemination

In addition to a communication plan, disseminating innovation results is essential. Effectively communicating and sharing the outcomes and achievements of innovation initiatives is pivotal in creating awareness, generating excitement, and inspiring others within the organization. By sharing innovation results, companies can highlight the value and impact of their innovative endeavors, encouraging a culture of innovation and reinforcing the organization's brand spirit. By disseminating the innovation results internally, companies can inspire and empower employees to contribute their own ideas and efforts toward innovation, fostering a collective spirit that aligns with the brand values. Externally, communicating innovation results is a powerful tool for enhancing brand image and reputation.

k) Factor: Proposals bottom-up

It is also relevant for managers to encourage innovation proposals that arise from bottom-up processes, encouraging employee participation at all levels of the company. Fostering a bottom-up innovation approach means creating an environment where ideas and suggestions for innovation can originate from employees throughout the organization, regardless of their hierarchical position. By actively involving employees from various levels, companies can tap into collective intelligence, diverse perspectives, and expertise within their workforce. It empowers employees and promotes a culture of innovation, where everyone feels that they have a stake in driving positive change and contributing to the company's success.

l) Factor: Talent

Talent shortage poses a significant concern for innovation strategies. A skilled and diverse workforce is fundamental for effective implementation, as innovation requires individuals with various skill sets and creative problem-solving abilities. Losing key team members responsible for driving innovation can disrupt ongoing projects. To address this challenge, some managers suggested forming partnerships with external organizations, academic institutions, or startup ecosystems to access additional talent pools and fill skill gaps. Collaborating with these entities can provide specialized expertise, fresh perspectives, and a broader network of potential talent.

m) Factor: Input from business units

Another factor that significantly influences an innovation strategy is the input received from business units within the organization. These departments are critical sources of valuable insights and knowledge about the market, customer needs, operational challenges, and industry dynamics. Engaging with these units allows companies to tap into their expertise and leverage their understanding of the specific business context.

n ac or: a ue perce ve

One key factor that significantly influences a company's decision in choosing an innovation strategy is the value perceived by the customer when purchasing a product or service. Companies must carefully understand and analyze the value proposition their products or services offer customers. They need to identify what sets their offerings apart from competitors and how these unique qualities align with customer needs and preferences. Therefore, by incorporating innovative elements, companies can differentiate their products or services, making them more appealing to customers and increasing their perceived value.

o) Factor: Industrialization

Managers declared that the capacity to industrialize the process is a key factor in achieving sustainable exploitability and scaling the product. Industrialization refers to transforming a product or service from a prototype or experimental stage into a full-scale, efficient, and commercially viable operation. By industrializing the process, managers aim to streamline operations, optimize resource utilization, and enhance productivity. Scaling the product is another critical aspect for managers. Scaling refers to expanding production capacity and meeting increasing market demand. Companies must be prepared to ramp up production efficiently when a product gains traction and attracts a larger customer base. This involves establishing robust supply chains, optimizing manufacturing processes, investing in infrastructure and technology, and ensuring quality control measures are in place. Scaling enables companies to seize growth opportunities, penetrate new markets, and maximize profitability. Therefore, companies are not interested in the investment if innovation cannot provide these two elements.

5.1.3. Conclusions for research question 1: Innovation strategies

The conclusions underscore the need for companies to address the ambiguities surrounding innovation and its integration into business strategies. A clearer definition of innovation, a distinction between strategy and planning, and the establishment of a standardized methodology for innovation strategy are crucial steps for fostering a culture of innovation that can drive sustained success in today's dynamic and competitive business environment. By embracing these insights, companies can unlock the true potential of innovation and position themselves for long-term growth and prosperity.

The study of innovation strategies in companies highlights several key findings that shed light on the current state of innovation within organizations.

- First, it becomes evident that there is no universally accepted definition of innovation. As a result, companies approach innovation with varying degrees of intensity, and the roles and responsibilities of innovation departments differ significantly.
- Despite the aspirational mottos often proclaimed by companies, innovation is still largely perceived as a supplementary aspect of business, often linked to technological projects. This perception may hinder companies from fully embracing the transformative potential of innovation across all aspects of their operations.
- A critical issue identified in the study is the confusion between the concepts of strategy and planning. This misunderstanding limits companies from harnessing the full potential and value of a well-designed innovation strategy. Without a clear differentiation between these two concepts, implementing innovative approaches may not fully realize their potential for driving positive returns.
- Furthermore, the study points out the lack of a comprehensive description of the innovation process within organizations. This absence of clarity results in companies being unsure about the precise steps they need to take to formulate an effective innovation strategy. The lack of a standardized methodology for developing innovation strategies can result in innovation not becoming a central pillar of the overall business strategy, hindering its seamless integration into broader organizational objectives.
- Whether or not companies adopt a structured innovation strategy methodology, they innovate in different ways and with different results. While it may seem logical that companies that employ a specific innovation strategy methodology can achieve better results, this research did not conclusively establish that connection because it did not analyze companies with or without an innovation strategy methodology to see a comparison of results.
- By categorizing the responses into three distinct groups, we were able to deduce the following:
- While many businesses recognize the theoretical value of innovation, practical application seems to be lacking, indicating a possible disconnect between intent and execution.
- There is a common trend among companies in adopting certain strategies. This convergence might indicate a missed opportunity to generate unique value.
- Only one-third of the participating companies fully embrace the importance of an innovation-centric approach. This oversight may hinder their potential for growth and differentiation.
- Over two-thirds of these companies show reluctance to validate strategies with stakeholders or align with influential entities. This suggests they may face challenges in developing their innovation or risk misalignment with industry best practices.
- Companies exhibit individual preferences based on their specific business cases, especially when identifying key factors influencing their strategies.
- While there is agreement on the high-level methodologies employed, the divergence from standard business strategy methodologies suggests an information gap in actual practice.

Table 5
Practical implications in innovation strategies.

Factor/Aspect	Trend/Concern	Implication	Recommendation
Lack of Definition	No universally accepted definition of innovation, leading to varied intensity and roles.	Creates ambiguity in innovation strategy formulation.	Develop a clear, shared definition of innovation tailored to the organizational context.
Global External Factors	Strong emphasis on adapting to market trends and global dynamics.	Businesses must remain agile to external influences.	Enhance agility by closely monitoring external market conditions and integrating flexibility.
Collaboration and Partnerships	Increasing focus on third-party relationships and open innovation.	Collaboration enhances adaptability and access to expertise.	Foster partnerships and cross-industry collaborations to leverage external innovation opportunities.
Strategy vs. Planning Confusion	Misunderstanding between strategy and planning limits potential.	Strategy execution may fail to deliver meaningful outcomes.	Provide training to differentiate strategy from planning and align execution with strategic goals.
Public Funding and ROI Demands	Heavy reliance on public funds and early ROI demands create financial constraints.	Financial pressures can hinder long-term innovation efforts.	Balance long-term innovation objectives with short-term ROI demands.
Bottom-Up Innovation Culture	Increasing value placed on diverse input from all levels, though not yet a widespread strategy.	Missed opportunities for holistic innovation contributions.	Encourage diverse contributions and establish mechanisms for bottom-up innovation participation.
Industrialization Needs	Operational bottlenecks related to scaling innovations.	Limits scalability and industrial applicability of innovation efforts.	Invest in infrastructure and processes to streamline innovation scaling and industrialization.
Talent Shortages	Difficulty attracting and retaining skilled talent.	Talent gaps hinder innovation initiatives.	Address talent gaps through training, partnerships, and workforce development initiatives.
Reluctance to Validate with Stakeholders	Over two-thirds of companies avoid stakeholder validation.	Risks misalignment with industry standards and best practices.	Involve stakeholders in strategy validation to align with market needs and standards.
Gap in Methodological Understanding	Divergence from standard methodologies indicates gaps in understanding.	Limits the consistency and effectiveness of innovation strategies.	Provide training and resources to bridge gaps in methodological knowledge and application.

The study of the factors that influence or determine innovation strategies reveals the following trends and concerns:

- Innovation managers place a strong emphasis on understanding and adapting to both global external factors and specific market trends, indicating a trend toward businesses being highly responsive to the broader environment. This is further emphasized by the value they place on adapting to collaborators and third-party relationships, suggesting a move toward more collaborative and open innovation strategies.
- The strategic significance of open innovation at the firm level lies in its ability to harmonize internal capabilities with external knowledge flows. Beyond its practical applications for businesses, our findings also highlight critical policy implications, particularly the role of government initiatives in cultivating robust and sustainable innovation ecosystems. Recent studies, such as Cheng et al. (2024), demonstrate that reduced reliance on external technology imports can paradoxically drive domestic innovation. This dynamic is particularly relevant to national policies that promote open innovation at both the firm and macro levels. Governments can play a crucial role by creating environments that facilitate knowledge integration, support collaborative innovation efforts, and reduce structural barriers to technology adoption. For example, policies that establish and support innovation clusters, such as national technology development zones, can emulate the success observed in Cheng et al.'s research. These zones provide platforms where firms can leverage external knowledge while simultaneously developing indigenous innovation capabilities, thereby aligning macroeconomic goals with firm-level strategies.
- While there is a clear recognition of the importance of past results and data-driven decision-making, there is also a notable trend toward fostering a bottom-up innovation culture. This suggests that while data and past successes are important, increasing value is placed on diverse inputs from all levels of the organization. Despite this relevant factor, it does not reach the level of strategy, as we have seen that the innovation mentality is below 33% of the measurement of the respondents.
- However, there are areas of potential concern. The emphasis on public funding, coupled with the challenges around early ROI demands, indicates potential financial constraints or pressures in driving innovation. Additionally, the challenges around talent shortages and the need for industrialization highlight potential operational and resource-based bottlenecks. In essence, while companies are becoming more adaptive and collaborative in their innovation approaches, they also face financial and operational challenges that could hinder their innovation efforts.

These elements highlight opportunities and challenges for companies striving to enhance their innovation practices. Table 5 provides a comprehensive summary of these factors, along with their implications and practical recommendations to address them.

Governments play a pivotal role in fostering innovation ecosystems that integrate firm-level strategies with macroeconomic objectives. Based on our findings and supported by studies like Cheng et al. (2024), we propose several policy recommendations:

Table 6
Policy recommendations for strengthening innovation ecosystems.

Policy recommendation	Description
Fostering Open Innovation environments	Create platforms like technology hubs, national innovation clusters, and publicprivate partnerships to facilitate knowledge exchange and collaboration, enhancing firms' capacity for innovation.
Incentivizing domestic R&D	Provide tax credits, subsidies, and grants to reduce dependency on foreign technology and promote sustainable, indigenous innovation ecosystems.
Promoting balanced knowledge flows	Balance internal and external knowledge flows through mechanisms such as trade agreements, cross-border collaborations, and international knowledge networks.
Leveraging policy tools to address innovation gaps	Address systemic barriers including workforce skill shortages, inadequate funding for early-stage innovation, and insufficient infrastructure for scaling innovative ideas.

- Fostering open innovation environments policies should focus on creating platforms where firms can exchange knowledge and collaborate. These platforms can include technology hubs, national innovation clusters, and public-private partnerships. By facilitating access to external knowledge sources, governments can enhance firms' capacity for innovation while fostering competitive ecosystems.
- Incentivizing domestic R&D to address the reliance on imported technologies, governments should incentivize domestic R&D through tax credits, subsidies, and grants. This approach not only reduces dependency on foreign technology but also aligns with the goal of developing sustainable, indigenous innovation ecosystems.
- Promoting balanced knowledge flows aligning with Cheng et al. (2024), we emphasize the importance of balancing internal and external knowledge. While firms must develop robust internal capabilities, external knowledge flows—enabled by trade agreements, cross-border collaborations, and international knowledge networks—remain essential for sustained competitiveness.
- Leveraging policy tools to address innovation gaps, policymakers should focus on addressing systemic barriers, such as a lack of skilled workforce, inadequate funding for early-stage innovation, and insufficient infrastructure for scaling innovations. By targeting these gaps, governments can support firms transitioning from exploration to exploitation of innovative ideas.

The recommendations outlined above are summarized in Table 6.

5.2. Research question 2: Are organizations following a specific methodology to implement, execute, and control the innovation strategy?

5.2.1. Innovation strategy methodology

While not all companies have a clear methodology for formulating or updating their innovation strategies, the managers highlighted some common approaches.

a) Observation

The first stage emphasized was observation. It involved closely monitoring market trends, keeping an eye on competitor offerings, remaining updated on emerging technologies, engaging in conversations with providers, and understanding customer preferences. To support their observation process, managers mentioned using various tools, such as market benchmarks, attending industry events, and conducting market research. This step enables companies to gain valuable insights and identify potential opportunities for innovation.

b) Comprehension

The second stage mentioned by the managers was understanding. Once the observations were made, the next step involved analyzing the gathered information and interpreting its implications. This analysis helps comprehend market dynamics, customer needs, and potential challenges. By understanding the observations, companies can formulate a strategic plan to capitalize on the identified opportunities and address any underlying issues.

c) Action

Following the understanding stage, the managers emphasized the importance of acting. This involved implementing the results of the analysis into practical initiatives and projects. Companies would allocate resources, define timelines, and establish clear goals to bring their innovation strategies to life. Acting ensures that the insights gained from the observation and understanding stages are put into practice, resulting in tangible outcomes and progress.

In particular, the significance of validating the analysis with stakeholders, and addressing business problems through internal self-discovery and direct feedback from various business units was mentioned. Their emphasis lies in identifying specific challenges or areas that require innovative solutions; thus, in this manner, companies can gather different perspectives and ensure that their innovation strategies align with the expectations and needs of those involved. Furthermore, managers mentioned a preference for qualitative ideas over quantitative ones. Qualitative ideas often provide deeper insights into customer needs, pain points, and potential solutions. They help companies focus on delivering meaningful experiences and innovative solutions that resonate with their target

Table 7
Summary of the stages of methodology cited by the interviewees.

Stages of Innovation Strategy identified by the interviewees	Common Approaches
Observation	Monitoring market trends; Analyzing competitor offerings; Tracking emerging technologies; Engaging with providers; Understanding customer preferences; Utilizing tools like market benchmarks, industry events, and market research. Particularly specified: Validation with stakeholders (gathering different perspectives; Ensuring alignment with expectations and needs of stakeholder). Relying on public funding (seeking external grants for research-oriented business. Public funding supports innovation initiatives and advancement).
Comprehension	Analyzing gathered information; Interpreting market dynamics, customer needs, and challenges; Formulating a strategic plan based on observations. Particularly specified: Addressing business problem (internal self-discovery and direct feedback from business unit).
Action	Implementing analysis results; Allocating resources; Defining timelines and goals; Transforming strategies into practical initiatives and projects. Particularly specified: Preference for qualitative ideas (focusing on deeper insights into customer needs, pain points, and potential solution).

Table 8
Summary of the main KPIs mentioned during the interviews.

Mentioned by >67% of companies	Num. of ideas worked; num. of ideas converted in PoC; num. of PoC converted in product
Mentioned by 34% < 66% of companies	Success of a startup; stakeholder satisfaction
Mentioned by <33% of companies	Collective factor; volume, value, and distribution

audience. On the other hand, another manager highlighted their company's focus on securing public funding as a key aspect of their innovation strategy. This company depends significantly on external grants to support its innovation initiatives, and public funding plays a vital role in enabling them (but, at the same time, limiting and causing trend dependencies).

Table 7 summarizes the stages identified by managers.

During interviews with innovation managers regarding KPIs in their sector, more than half of the interviewees did not utilize KPIs, and even fewer employed OKRs. Among those who did use KPIs, they primarily relied on typical indicators such as the number of ideas worked on, the number of ideas converted into PoCs, and the number of PoCs converted into actual products, among others. However, the issue was that these indicators were not focused on the business impact directly or indirectly. In addition to the typical indicators, some managers highlighted two KPIs: the success of a startup, which signifies a return that contributes to the open innovation initiative; and the stakeholder satisfaction.

In addition, one manager revealed that although nearly one hundred KPIs had been defined, only a select few were actively utilized in practice. However, they analyzed these indicators collectively, adopting a holistic view. They prioritized qualitative analysis rather than quantitative analysis, focusing on the group's overall results, even if the outcome was not sufficient. This approach attracted their curiosity and drived them to continue their efforts. The last manager emphasized that their main indicators revolved around volume, value, and distribution in the business segment. They were the only ones who incorporated KPIs directly related to the business.

Table 8 categorizes the main indicators mentioned by innovation managers into three groups: Mentioned by less than 33% of those interviewed, mentioned by 34%–66% of them, or mentioned by more than 67%.

5.2.2. Conclusions for research question 2: Innovation strategy methodology

Based on the comparison between the theoretical hypotheses and the insights drawn from the analyzed interviews, the following conclusions can be drawn regarding specific aspects of innovation strategy methodology within companies.

a) Mission, vision, and values, along with strategic objectives

Innovation departments appear to lack a clear and explicit definition of their mission, vision, and values. These foundational elements are essential for guiding the direction of this key organizational unit. Without a good definition, innovation efforts may lose focus and coherence, and the absence of clear articulation may indicate a missed opportunity to fully integrate innovation as a core aspect of the company's identity and strategic intent.

Practical insight: Innovation departments should clearly articulate these guiding principles, using them as a navigation compass to direct their efforts toward meaningful and purposeful innovations that align with broader organizational objectives.

b) SWOT analysis

The absence of references to SWOT. The analysis of the interviews suggests that this widely used strategic tool might not be a prevalent practice within innovation departments. SWOT analysis provides valuable insights into an organization's internal strengths and weaknesses, as well as external opportunities and threats. By conducting an SWOT analysis specifically tailored to innovation endeavors, companies can identify areas where they have a competitive advantage and areas where they need to address weaknesses or

capitalize on untapped opportunities.

Practical suggestion: Companies should incorporate this type of analysis into their innovation strategy development process. This will allow them to make informed decisions about which innovation projects to pursue, where to allocate resources, and how to mitigate potential risks associated with innovation initiatives.

c) Competitive advantages

Similarly, the lack of identified references to analyzing competitive advantages in the interviews suggests that companies might not systematically assess their unique strengths in the context of innovation. Identifying and leveraging competitive advantages in innovation can be a powerful driver of success, helping companies differentiate their offerings and create lasting value for customers.

Practical suggestion: To strengthen their innovation strategies, companies should comprehensively analyze their unique competitive advantages in innovation. By strategically leveraging these advantages, they can gain a competitive edge in the dynamic innovation landscape.

d) Exploiting advantages, dimensions definition, and value proposition

The absence of identified practices related to exploiting advantages, defining dimensions where to compete, and articulating a clear value proposition indicates a potential gap in how companies conceptualize and communicate the value of their innovative offerings. Effective communication of the value proposition is essential for capturing the interest of stakeholders, including customers, investors, and internal teams.

Practical insight: Companies should invest in defining a compelling value proposition for their innovation initiatives. By clearly articulating the unique benefits and advantages of their innovations, they can create a stronger case for adoption and investment, both internally and externally.

e) Selection of objectives aligned with competitive advantage and value proposition

The interviews did not reveal specific instances of companies aligning their objectives with competitive advantage and value proposition analysis. This implies that the strategic alignment between innovation objectives and the organization's core strengths and value proposition might be underutilized.

Practical suggestion: Companies should actively seek to align their innovation objectives with their identified competitive advantages and value propositions. By doing so, they can focus their innovation efforts on areas where they can achieve maximum impact and deliver unique value to customers and stakeholders.

f) Definition of action plan

While some companies indicated the existence of action plans, the predominant focus on short-term goals might limit the long-term transformative potential of their innovation efforts. Tactics are necessary, but a well-defined action plan is essential for guiding the execution of innovation projects, ensuring that they align with the overall innovation strategy and broader business goals.

Practical insight: Companies should develop comprehensive action plans encompassing short-term and long-term objectives. This will provide a clear roadmap for executing innovation projects in a coordinated and strategic manner, facilitating a balanced focus on immediate results and sustained innovation success.

g) Execution and adaptation activities

Although the interviews did not provide detailed insights into the specific execution and adaptation activities, it is reasonable to infer that companies engage in some form of these activities, albeit in a limited context due to the innovation department's role. It suggests that there is room for improvement in how companies manage the execution and adaptation of their innovation initiatives.

Practical suggestion: To optimize execution, companies should embrace a more adaptive approach that can effectively respond to the dynamic demands of the present era. This could involve using agile management and methodologies, actively seeking stakeholder feedback to iterate and refine innovation projects as needed, but mainly fostering a culture of experimentation and learning.

h) Management and Control (KPIs/OKRs)

The interviews indicated that the use of KPIs or OKRs to manage the development and results of innovation department actions had not been widely adopted. In cases where indicators are utilized, they tend to be more operationally focused rather than capturing the direct impact of innovation on business revenue and overall success.

Practical insight: Companies should establish a robust set of innovation specific KPIs or OKRs that align with their strategic innovation objectives. These indicators should go beyond operational metrics and include measures that quantify the value generated by innovation initiatives, or in other words, the business impact. By tracking the effect of innovation on key business outcomes, companies can better understand the return on their innovation investments and make data-driven decisions to optimize their innovation strategy.

Table 9
Summary of practical recommendations for articulating the innovation strategy.

Aspect	Practical recommendation
Mission, Vision, and Values	Clearly, articulate these guiding principles to align innovation efforts with organizational objectives.
SWOT Analysis	Incorporate SWOT analysis to identify strengths, weaknesses, opportunities, and threats specific to innovation.
Competitive Advantages	Conduct a comprehensive analysis to identify and leverage unique strengths in innovation.
Exploiting Advantages and Value Proposition	Define and communicate a compelling value proposition to engage stakeholders and drive adoption.
Alignment of Objectives	Align innovation objectives with competitive advantages and value propositions for maximum impact.
Action Plan Definition	Develop action plans that balance short-term and long-term goals, ensuring alignment with broader strategic objectives.
Execution and Adaptation	Foster adaptive approaches using agile methodologies, stakeholder feedback, and a culture of experimentation and learning.
Management and Control (KPIs/OKRs)	Establish innovation-specific KPIs/OKRs that measure business impact, not just operational outcomes.

Table 10
Summary of practical recommendations for addressing challenges in innovation strategy implementation.

Challenge	Recommendation
Internal Limitations	Allocate resources strategically, provide training to build internal capabilities, and prioritize innovation in budgeting.
Organizational Dynamics	Simplify internal processes and establish dedicated innovation teams to streamline methodology adoption.
Communication and Collaboration Challenges	Promote cross-departmental collaboration through structured frameworks, shared goals, and tools to break down silos.
Market Pressure	Balance short-term pragmatic solutions with long-term strategic innovation planning to ensure sustainable growth.
Organizational Culture	Cultivate a culture that values innovation by promoting experimentation, risk-taking, and aligning practices with strategic goals.
Leadership and Buy-in	Secure strong leadership commitment by demonstrating the business impact of innovation and aligning it with organizational goals.
Misunderstandings	Develop a clear, shared definition of innovation tailored to the company's context and ensure consistent communication of its goals.

Table 9 summarizes the practical recommendations for articulating the innovation strategy.

In conclusion, comparing theoretical hypotheses and real-world practices in innovation strategy within companies highlights several areas that require attention and improvement. Various factors can influence or hinder the practical implementation of an innovation methodology. These challenges, along with corresponding recommendations, are summarized in Table 10.

By addressing the identified gaps, companies could enhance their innovation management processes, unlock the full potential of innovation initiatives, and establish a strong foundation for long-term success in the ever-evolving business landscape. Embracing a more strategic and holistic approach to innovation will position organizations to stay competitive, drive growth, and create lasting value for all stakeholders.

5.3. Practical example (partial) of an innovation strategy

Although not the primary focus of this research, we will briefly illustrate how a company might define its innovation strategy via a

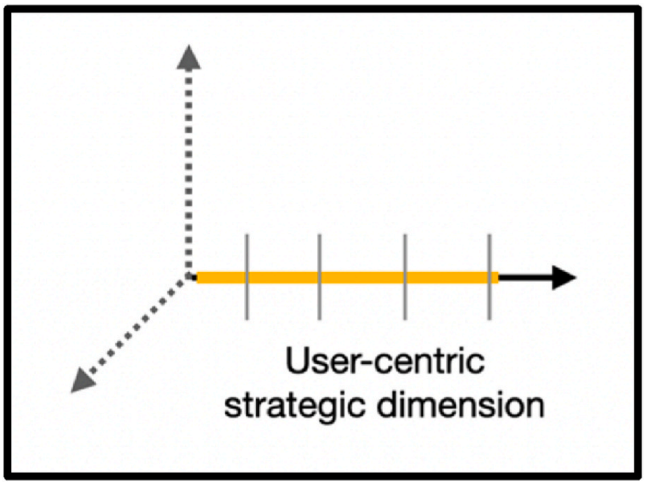

Fig. 3. Example of strategic dimension for innovation strategy.

hypothetical example. This example involves a technology firm developing AI tools for healthcare, offering insights not explicitly observed in the literature or the managers' interviewed responses.

As part of its overall business strategy, the company has already defined its mission, vision, objectives, and other key elements. For example, the company has decided to compete in the field of user experience (UX) as one of the dimensions of its business strategy. To align with this, the corresponding innovation strategy dimension could be "user-centric innovation." This dimension emphasizes creating solutions that prioritize end users' needs, desires, and behaviors. It directly supports the business strategy by embedding user-focused principles throughout the innovation process, ensuring that the innovations enhance the overall user experience (Fig. 3).

The level of intensity the company assigns to this dimension will determine the relevance, allocation of resources, talent requirements, and other critical factors for achieving its goals. For example, suppose the company aims to lead the market in user experience. In that case, its innovation strategy must reflect this ambition, which means that the company cannot rely solely on adopting existing solutions from the market. Instead, it must actively engage in research and development (R&D) to create groundbreaking innovations in user-centric technologies. Depending on the resources available, particularly talent, this research could be conducted internally, externally through partnerships, or as a combination. Regardless of the approach, prioritizing R&D is essential to maintain a competitive edge and establish leadership in user-centric innovation. Once this dimension of competition is established, the innovation strategy will define the specific goals, actions, resources, and control measures needed to achieve it. With the strategy in place, the company can proceed to the planning phase, where detailed action plans are developed to operationalize the strategy and ensure its successful implementation. Establishing a strategy requires making critical decisions about what actions to prioritize and, equally importantly, what to forego. These decisions can often be daunting, as they demand clarity, accountability, and a willingness to embrace uncertainty. Unfortunately, some managers may shy away from this responsibility due to a lack of knowledge, misunderstandings about strategic processes, or fear of the potential consequences of their choices.

This example is intentionally brief, simple, and partial, serving solely to illustrate a basic process in creating an innovation strategy. It highlights key steps and considerations but does not capture the full complexity and nuances of real-world applications, which would require a more detailed and comprehensive approach.

5.4. Comparison with classical theories

Our findings contribute to the broader academic discourse on innovation strategies by building upon and challenging existing classical theories. Here, we compare key insights from our research with foundational theories in strategic management and innovation:

- Originally proposed by Rogers (1962), innovation diffusion theory explores how innovations are adopted within a social system over time. Our findings complement this framework by demonstrating how organizational readiness, leadership commitment, and strategic alignment can accelerate the adoption of innovative strategies. Additionally, we identify how external partnerships and cultural factors influence the rate and success of innovation diffusion in dynamic industries.
- Fiedler (1964) suggests that there is no one-size-fits-all approach to strategy; instead, optimal decision-making depends on situational factors. Our research supports this view by showing how firms tailor their innovation strategies based on, among other factors, internal capabilities, market conditions, and external partnerships. This adaptive approach ensures that strategies align with both organizational objectives and environmental realities.
- Our findings align with Porter's (1985) emphasis on differentiation as a critical competitive strategy. Innovation, particularly through open innovation frameworks, strengthens firms' ability to create unique value propositions. Additionally, Porter's five forces framework provides a lens through which to understand how disruptive technologies alter competitive dynamics, especially by lowering barriers to entry and increasing substitution threats.
- The resource-based view (RBV) explained by Barney (1991) emphasizes that firm-specific resources, which are valuable, rare, inimitable, and non-substitutable (VRIN), are critical to achieving and sustaining a competitive advantage. Our study corroborates this framework by identifying internal resources—such as leadership commitment, organizational culture, and innovation capabilities—as essential factors influencing innovation success. However, our findings extend the RBV by demonstrating that the synergistic alignment of these internal resources with external knowledge flows is necessary to maximize their impact. This integration underscores the increasing relevance of open innovation in dynamic and competitive market environments.
- Professor James Utterback's work highlights how industries evolve through distinct phases of innovation, characterized by shifts from product to process innovation and the eventual establishment of a dominant design. Our findings align with this framework, particularly in recognizing the fluid phase of innovation where multiple designs compete before a dominant standard emerges. However, our study extends this by emphasizing how firms can strategically position themselves not only to adopt dominant designs but also to influence their emergence. We also highlight how firms in dynamic industries, such as those adopting generative AI, navigate the transition between product and process innovation while maintaining adaptability to ongoing technological disruptions.
- The theory of disruptive innovation, commented by Christensen (1997), explains how new entrants or technologies often displace established players by initially targeting underserved or low-end markets before moving upmarket. While our findings align with this theory in recognizing the transformative potential of disruptive innovations, they extend it by highlighting how established firms can proactively engage with disruptive technologies. By embedding adaptive strategies into their core operations, incumbents can leverage disruption to create opportunities for innovation and growth, co-opting its advantages rather than succumbing to its challenges.

Table 11
Summary of classical theories and contributions.

Theory	Focus	Contribution
Innovation Diffusion Theory (Rogers, 1962)	Adoption of innovations within social systems over time.	Organizational readiness, leadership, and partnerships accelerate adoption
Contingency Theory (Fiedler, 1964)	No one-size-fits-all strategy; decisions depend on situational factors.	Firms tailor strategies based on internal and external conditions.
Competitive Strategy (Porter, 1985)	Differentiation and competitive dynamics (Five Forces framework).	Innovation strengthens unique value propositions and alters competition.
Resource-Based View (Barney, 1991)	Firm-specific resources (VRIN) for competitive advantage.	Aligning internal resources with external knowledge flows maximizes impact.
Dynamics of Industrial Innovation and Dominant Design (Utterback, 1994)	Industry phases from product to process innovation and dominant design emergence.	Firms can influence dominant designs while navigating product-process transitions.
Disruptive Innovation (Christensen, 1997)	New entrants displace incumbents by targeting underserved markets.	Established firms can proactively use disruption for innovation and growth.
Dynamic Capabilities Framework (Teece et al., 1997)	Sensing, seizing, and reconfiguring resources for competitive advantage.	Adaptable firms implement sustainable innovation strategies effectively.
Open Innovation Framework (Chesbrough, 2003)	Combining internal and external knowledge for innovation.	Strategic alignment and cultural readiness enhance knowledge integration.
Organizational Ambidexterity (O'Reilly and Tushman, 2004)	Balancing exploitative and exploratory innovation.	External knowledge integration improves dual-focus innovation.
Decision-Making Under Uncertainty (Kahneman, 2011)	Risk aversion and cognitive biases in decision-making.	Balancing intuitive (System 1) and analytical (System 2) decisions support effective innovation leadership.

- Teece et al. (1997) emphasize the critical role of dynamic capabilities— a firm's ability to sense opportunities, seize them, and reconfigure resources—to sustain competitive advantage in volatile environments. Our findings align strongly with this framework, demonstrating that firms with greater adaptability—such as those actively restructuring their innovation processes—were better positioned to implement sustainable innovation strategies. These firms exhibited an enhanced capacity to realign their resources and capabilities in response to market shifts and technological changes.
- The open innovation framework established by Chesbrough (2003) highlights the strategic importance of combining internal and external knowledge to accelerate innovation and create value. This approach challenges the traditional closed innovation model by advocating that organizations leverage external ideas and technologies while also allowing their own unused knowledge to flow outward. Our study builds on this framework by identifying critical factors that influence successful knowledge integration, such as the strategic alignment of external partnerships with organizational objectives and the cultural readiness of firms to embrace openness.
- Explored by O'Reilly and Tushman (2004), organizational ambidexterity emphasizes the balance between exploitative and exploratory innovation. Our findings reinforce this concept by showing that successful firms can simultaneously focus on incremental improvements (exploitation) while pursuing groundbreaking innovations (exploration). We further expand on this framework by highlighting how external knowledge integration enhances the ability to manage this dual focus.
- Our study complements Kahneman's (2011) insights into decision-making under uncertainty. For instance, we observe that firms' innovation strategies are often shaped by risk aversion and cognitive biases, consistent with prospect theory. Furthermore, effective innovation leaders balance intuitive decision-making (System 1) with deliberate, data-driven analysis (System 2) to navigate complex market environments.

Table 11 summarizes how our findings build upon and extend key insights from foundational theories in innovation and strategic management.

5.5. Limitations and future work

This research is grounded in a comprehensive literature review and qualitative data from interviews with experienced innovation managers and directors from leading companies. The interviewees bring diverse perspectives, representing a range of ages, genders, nationalities, and managerial experiences. While the sample includes companies with a global presence, this study intentionally adopts a qualitative approach, focusing on depth rather than breadth, to explore the nuanced and contextual aspects of innovation strategy. Qualitative research often prioritizes rich, detailed insights over large sample sizes, making it particularly suitable for examining complex, context-specific phenomena like innovation management. The participants' expertise ensures that the findings are informed by real-world experience and practical knowledge, contributing valuable perspectives to the academic and practical discourse on innovation strategies.

However, the study acknowledges that future research could expand its scope by incorporating more companies. Longitudinal studies tracking innovation strategies over time could provide additional insights into the evolving nature of innovation management. Furthermore, complementing the qualitative approach with quantitative methods, such as surveys and structured data collection, could yield statistically robust insights into the prevalence and impact of specific innovation strategies on business performance.

Ethics statement

All participants in this study gave informed consent to participate in the research, with the understanding that their personal identities and company affiliations would be kept confidential. The consent process ensured that the participants were fully aware of the objectives of the research, the nature of their participation, and their rights to withdraw at any time. Following our confidentiality agreement, no personal or company-specific information has been disclosed in this publication, and it is presented in a manner that safeguards the privacy of all individuals and entities involved.

Declaration of competing interest

The authors hereby declare that there are no conflicts of interest related to this publication. This includes any financial, personal, or other relationships with people or organizations that could inappropriately influence the work.

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Appendix A

The sectors of the companies that participated belong to research and telecommunications (2), financial services (1), media (1), fashion (1), legal (1), transport (1), logistics (2), and beverages (1). A brief description of each company can be found below:

- A company specializing in the telecommunications industry, specifically in the management and operation of wireless telecommunications infrastructure, such as radio and television broadcasting towers and telecommunications sites. As of 2021, it has over 1500 employees and generates revenue of €1.5 billion in 2020.
- A company specializing in telecommunications research and innovation. As of 2021, it has around 150 employees, and generates revenue of €15 million in 2020.
- A company that provides financial services to its customers, including consumer credit, personal loans, and credit cards. It has over 1200 employees, generating revenue of over €600 million in 2020.
- A company that is a broadcaster that produces and broadcasts television and radio content, including news, sports, and entertainment programs. As of 2021, it has approximately 6000 employees, generating revenue of €1.0 billion in 2020.
- A company that is a global leader in the fashion industry, producing and distributing fashion products. It has over 8000 employees and generated revenue of almost €2 billion in 2020.
  -A company that is a law firm that offers legal services to individuals and companies in a wide range of areas, including corporate law, mergers, and acquisitions, and dispute resolution. It has over 1000 lawyers and professionals and operates in more than 10 countries, generating revenue of over €300 million in 2020.
  -A company that is a leading infrastructure operator, managing highways and toll roads in multiple countries around the world. It has over 13,000 employees, generating revenue of almost €5 billion in 2020.
- A company that is a leading infrastructure operator specializing in managing parking facilities and urban mobility solutions. As of 2021, it operates an extensive network of parking lots and garages, providing efficient and convenient parking services in urban and suburban areas. With over 2300 employees, it has a strong presence in several countries, offering services in both the public and private sectors. In 2020, it generated revenue of over €200 million.
- A company that operates the largest maritime infrastructure in the Mediterranean, offering transport services to businesses and individuals. As of 2021, it has over 1000 employees and a revenue of over €170 million in 2020.
- A company specializing in the beverage industry, particularly in producing, marketing, and distributing of beer and other alcoholic beverages. As of 2022, it has a global workforce of over 85,000 employees and a revenue of €34.7 million.

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