

Ca' Foscari
University
of Venice

Single Cycle Degree Programme

in Innovation & Marketing

Final Thesis

Bridging Theory and Practice:
Operationalizing Product-Market Fit in Startups

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Academic Year
2025 / 2026

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1. Research Context

Startups nowadays face many challenges in developing products capable of generating sustainable demand while operating with limited resources and insufficient information in a highly uncertain and evolving market.

Nonetheless, policy makers and researchers often encourage entrepreneurial activity to promote economic growth, industry development, and innovation, despite its effectiveness relies on whether it is productive (Audretsch et al., 2021).

Startups can be defined as small emerging enterprises aiming at creating new needs or identifying existing ones and satisfying them by creating unique and innovative products. Therefore, the word implies **creativity**, **disruptive thinking** and **originality**.

Moreover, the goal of these businesses is to create a form of **scalable business**, achieving at the same time significant and rapid growth, becoming a fundamental engine for innovation, development and research, in addition to being a source of employment generation. Rather than a business model in itself, a startup represents a distinctive type of enterprise, characterized by its search for a scalable and repeatable business model, which has gained much interest and popularity in recent years, especially in the economic and industrial context.

It is worth mentioning the role of Business Angels in the contemporary economy, as they represent the largest external source of funding in newly established ventures (LBAN, 2022). In particular, startups are becoming more and more dependent on BAs, due to the limited lending banks can allow given the high-risk level and handling costs (LBAN, 2022). Additionally, according to the Luxembourg Business Angel Network (LBAN, 2022; Bednár & Tarišková, 2017), around 300 million people worldwide are trying to start approximately 150 million businesses.

Despite their long-standing importance, startups record high levels of failure all around the world, with estimated rates between 50% (Cressy, 2006) and 90% (Berg et al., 2018; Kalyanasundaram, 2018). Therefore, nurturing entrepreneurship will be crucial to foster economic growth, minimize the number of ventures that fails and the waste of valuable

capital. Investigating the reasons for startups' success will also raise the success-to-failure ratio.

CB Insights' most recent research (2026), which investigated the reasons for 385 startup failures, showed that the cause '*ran out of capital'*, stated by 70% of VC-backed companies, was not the root of their problems, but instead the final motive of their death. The actual origins that drained all the capital were the 43% poor Market Fit, the 29% bad timing, and the 19% unsustainable unit economics. In particular, two-thirds of the Product-Market Fit failures comprised early-stage companies that never found a market and 20 Series B+ companies.

However, researchers have proven that it is really difficult to predict whether or not a venture will succeed, and which factors will influence its success. On top of that, there is no commonly agreed definition of startups, as it differs in every country; similarly, there is no exhaustive and consistent definition of success and no universal theory or model that encompasses all the various aspects of startup success.

Nonetheless, in recent years the interest in this vibrant subject has grown, leading to the expansion of its body of knowledge, consequently enabling a more comprehensive review and identification of research gaps, as well as the right direction for future research.

Bethlendi et al.'s research (2024)[1], which analyzed 40 failed ICT startups between 2020 and 2023, identified insufficient customers, weak market traction and unsustainable business models as among the main causes of failure. These findings highlighted the importance of Product-Market Fit, defined as the stage where a product successfully satisfies a sustainable and strong market demand.

The study showed as well that while many startups were able to develop an MVP – Minimum Viable Product, a topic we will further analyze later - only 34% reached the Product-Market Fit stage. This suggests that developing a product alone is not sufficient for the survival of the company in the long run. In order to achieve scalable growth, habitual usage and customer retention, startups must be able to balance perfectly market demand, customer needs and value proposition.

[1] Study published in the proceedings of the "*Tourism and Hospitality Industry 2024*" conference (DOI: 10.20867/thi.27.28) - a venue primarily dedicated to tourism - however, the study appears in the conference's *'Other Selected Papers'* section and focuses specifically on the ICT sector.

Why is Product-Market Fit important?

The following considerations synthesize arguments developed by practitioners, which are analyzed in detail in Chapter 3. According to Feinleib (2011), everything a company does is to achieve Product-Market Fit until it finally reaches it.

Product-Market Fit is defined by a series of aspects that the company must accomplish, such as the willingness to pay of customers for the offering, an economically viable strategy to acquire customers and finding an adequate market size to sustain the business (Cooper & Vlaskovits, 2010).

As mentioned above, some companies fail to reach Product-Market Fit due to internal issues. In fact, many startups start scaling even before reaching Product-Market Fit, meaning that they invest too much time and resources in other activities, that could be developing the business model or their products, before meeting the market needs.

Diving more deeply, there are some reasons why Product-Market Fit is crucial for businesses.

First of all, PMF proves that the **product** is needed and validates the **concepts**. It shows that the product solves a real problem and stands out by meeting a specific, targeted need.

Additionally, startups that show they have achieved Product-Market Fit will attract **investors**, who will be more willing to commit their funds to a company with a strong foundation and a credible growth trajectory (Ho & Büyükdemir, 2025).

Moreover, having Product-Market Fit proves that there is a **market** for a venture's product, avoiding a waste of money on unnecessary features or marketing, as well as attracting new funds and minimizing the risks (Ries, 2011).

The enhancement of **customer retention** is also a crucial aspect of creating a loyal user base and long-term growth, as bringing in new customers is very important, but keeping the existing ones is cheaper and easier than attracting new ones.

In addition, achieving Product-Market Fit will give startups an **advantage** by demonstrating the ability to understand the market and respond quickly whenever there are shifts in market trends and customers' wants, while staying ahead of competitors.

Lastly, considering startups' limited resource availability, they must ensure that their capital is invested efficiently to stimulate and encourage the company’s growth, while simultaneously leveraging proven tactics and strategies.

Summing up, Product-Market Fit is essential for any startup aiming to thrive in today's competitive landscape. Product-Market Fit validates concepts, minimizes risks, attracts investors, drives growth and ensures committed efforts. Startups, therefore, will be able to build a solid foundation for sustainable growth and long-term success.

The role of Experimentation

Once the importance of Product-Market Fit has been clarified, it is time to learn about the common **pitfalls** that companies must avoid so as not to waste time, resources and money on unrequested solutions.

Testing market viability, in fact, nurtures startups’ development and sustains their innovation. Iteration is crucial for ventures to continuously adapt to ever-changing needs and evolving markets (Ries, 2011).

Testing and redefining **hypotheses** is the key to **iterating** towards a solution that matches the targeted audience’s needs. In order to do so, startups need to conduct A/B testing, gather feedback, as well as iterate on their products or services to create a product that really resonates with their customers on a deep level and that stimulates growth at the same time (FasterCapital, 2026; Board of Innovation, 2019). Therefore, in line with the Lean logic examined in Chapter 2, Product-Market Fit can be defined as a **continuous process** that requires **iteration**, **adaptation** and a **willingness to learn** from the venture’s customers (Ries, 2011).

Companies that reject Product-Market Fit testing are more likely to fail and be more vulnerable to investment risks related to solutions that do not meet customer needs (Faster Capital, 2026), consistent with CB Insights (2026) revealing that poor market fit has been mentioned in 43% of the failures analyzed.

Furthermore, in accordance with FasterCapital (2026), startups gain four main benefits from Product-Market Fit testing. In particular, we have the **refinement** of products or services, as

you have the possibility of identifying **pain points** and creating an appropriate solution to them. Nonetheless, startups can **save time and resources** by avoiding futile mistakes and product rework. Product-Market fit testing is also a way to increase **customer retention** by tailoring the offer to meet customers' expectations. Additionally, the company will be advantaged by offering a **unique product** and **standing out** from the competitors.

Research Gap

Product-Market Fit has become one of the most discussed concepts in startup development, entrepreneurial strategy, and innovation management. Achieving PMF is decisive for startups' survival, as it aligns the **value proposition**, **customer needs**, and **market demand**.

Startups, rather than representing a business model in themselves, are often described as a new and appealing type of enterprise distinctive for their search for a scalable and repeatable business model, which has gained significant interest and popularity in recent years, especially in economic and industrial contexts.

However, it is also a world characterized by high **uncertainty**, where founders rely on experimentation, iterative learning, and validation processes to improve their decision-making methodologies.

Despite the growing relevance of Product-Market Fit, the literature surrounding this topic remains fragmented across academic and practitioner-oriented perspectives. **Practitioners**, in fact, often contribute by proposing operational tools, experimentation methods, metrics and growth frameworks aimed at supporting startups' realization. On the other hand, **academic literature** frequently approaches Product-Market Fit from a broader, conceptual and theoretical perspective. As a result, it is difficult to define and translate all the theoretical concepts about the startup world into an actionable validation and growth process.

Research Questions & Objectives

In light of these considerations, this thesis aims to address and investigate the following areas:

1) How can Product-Market Fit be **operationalized** through experimentation, validation processes, and startup strategic frameworks?

2) What similarities, differences and gaps emerge between **academic literature** and **practitioner-oriented PMF frameworks**?

3) Which **metrics**, **operational tools** and **indicators** are the most used and which are the most suitable to evaluate Product-Market Fit?

4) How can existing Product-Market Fit concepts and methodologies be integrated into an **operational** and **visual framework** to support startup development?

Reviewing academic research and practitioner publications in these areas could provide insights into factors that drive the operationalization of Product-Market Fit by integrating theory and startup practice.

As mentioned, experimentation plays a crucial role in reducing uncertainty when it comes to supporting the achievement of Product-Market Fit. The main objective of this thesis is to analyze Product-Market Fit within the **startup development** context through the examination of academic and practitioner-oriented frameworks. More specifically, the objective of this study is to investigate how startups use experimentation, metrics, validation processes and strategic approaches to **evaluate** and **achieve** Product-Market Fit.

Through a comparative analysis and structured literature review, this thesis attempts to identify recurring patterns, conceptual differences and operational tools between theoretical models and practical applications.

The ultimate aim is to synthesize these findings into an **integrated operational** and **visual framework** capable of supporting startups throughout their evolution and all along their decision-making processes.

Research Methodology

This thesis presents a **structured literature review** dealing with the implementation of Product-Market Fit by startups into their operating activities.

A literature review provides a comprehensive overview of the existing body of knowledge on this topic by organizing concepts - including definitions, theoretical foundations and conceptual relationships - and by comparing perspectives, supporting the determination of **similarities**, **divergences** and **gaps** among **theory** and **practice**.

According to Tranfield, Denyer and Smart (2003), a **review** of the literature enables both to map and assess a relevant intellectual territory leading to the **research question**, which will integrate the knowledge base. It also minimizes the risk of overlooking relevant studies or falling into some biases or lacking rigor. A review provides a thorough understanding of the existing knowledge and provides insights and guidance to address the operational needs of practitioners. The evidence and findings acquired through systematic methods will be synthesized in order to address the questions formulated.

In particular, the review was conducted with the use of articles by practitioners sourced from *LinkedIn*, as this thesis is not only about theoretical concepts, but also their **practical operationalization** within **startups**. **Academic literature**, in fact, provides not only theoretical foundations but also startup validation and entrepreneurial processes as well, while **practitioners**, such as founders, venture capital firms, investors and accelerators, contribute to operational frameworks, methodologies, and tools that help startups to apply these concepts in practice.

The decision to incorporate, in this study, practitioners' contributions from professional platforms such as *LinkedIn*, venture capital reports, startup-focused content, and company publications is justified by the empirical nature of Product-Market Fit and its strong connection to entrepreneurial practices. These selected sources were not meant to substitute for academic literature, but rather to serve as complementary evidence able to provide useful insights into pragmatic applications, metrics, operational tools and decision-making processes that startups adopt.

However, it is worth mentioning that practitioners' contributions are not subject to the same peer-review process that academic publications experience. For this reason, these will be

analyzed critically and then compared against academic literature, instead of addressing them as independent evidence.

Considering the intrinsic nature of the practitioner-oriented framework analyzed in Chapter 3, the underlying sources supporting this part of the thesis rely on a structured selection of individual practitioner contributions published on LinkedIn, instead of academic databases. This mirrors the broader pattern directly pursued in this thesis, meaning the daily, operational facet of Product-Market Fit generally is discussed more exhaustively by practitioners, rather than academic literature.

In the table below (Table 1a), every **source** is mapped to the **thematic area** it primarily discloses, from Product-Market Fit's concepts, archetypes and signals to the validation process and its backing tools, prototyping and experimenting methods, as well as Product-Market Fit measurement and metrics, market sizing and go-to-market strategy. This provides a formal overview of the overall distribution of practitioners' sources collected across the operational course formulated in the next chapters.

Author	PMF Concept, Signals & Archetypes	Validation Process & Tools	Pretotyping & Experiment Methods	PMF Metrics & Measurement	Market Sizing	Growth & GTM Strategy
Andreessen, M.	*The Only Thing That Matters*					
Ho, M.	*How to Define Your Own Version of PMF*					*Horizontal vs. Vertical Startups*
Ho, M. & Büyükdemir, B.	*How to Show VCs You Have PMF*					
Büyükdemir, B.	*10 Signs You've Found PMF*			*PMF Checklist for Founders*		
Dominguez Ibar, R.					*TAM, SAM, and SOM Demystified*	
Dominguez Ibar & Büyükdemir	10 Signs You've Found PMF					
Tottman, C.	*Sequoia's PMF Journey: Archetypes; What Startups Get Wrong About PMF (myths)*		*PMF Pretotyping Experiments*		*How to Determine Your Market Size*	
Huryn, P.		*From Assumptions to Hypothesis*	*Testing Business Ideas: The Ultimate Validation Experiments Library*			
Alaily, M.	*Will You Nail PMF? 4 Levels + 3 Ways*			*Will You Nail PMF? 4 Levels + 3 Ways*		

Sahil S.	*Eight Founder Journeys to PMF (paths)*					
Board of Innovation		*Validation Process (waterfall vs. lean; 3-step process; assumption mapper; experiment card)*	*24 Experiment Methods (Validation Guide)*			
Shah, F.					*Founder's Pocket Guide to Market Size*	
Burris, M.			*10 Types of MVPs for Venture Studios*			
Chawla, H.						*Go-to-Market Motions*
Flor, G.						*The Upgraded Go-to-Market Playbook*
Ellis, S. (secondary)				*Sean Ellis Test*		
Rachitsky, L. / Lenny's Newsletter (secondary)				*Retention Curve framework*		
Balfour, B. (secondary)				*The Trifecta*		
First Round Review (secondary)	*4 Levels of PMF*					
NFX (secondary)						*GTM 2.0 taxonomy*
Failory (secondary)					*Market-sizing methodology*	

*Table 1a - **Practitioner sources by theme** (Chapter 3)*

Methodological Note on AI Assistance

The preparation of this thesis has been supported by generative artificial intelligence tools, in accordance with Ca'Foscari guidelines on the use of AI. The tools used were: ChatGPT (free version) used between August and September 2026, and Claude Sonnet 4.5 (Anthropic).

The tools were used across the thesis' chapters in the following ways: 1) revising and optimizing the text's clarity and coherence; 2) verifying factual statements, citations, and examples against the original sources; 3) optimizing diagrams created by me; 4) supporting the format and location of bibliographic references.

These tools have only been used for technical and editorial purposes and have not directly influenced the content, the arguments, and the analysis presented in this thesis. The reliability and correctness of all AI-assisted outputs have been verified before being included. The content, overall structure, analysis and conclusions of this thesis are entirely my own work. The tools just mentioned have been implemented only for verification, illustrative and editorial support.

Thesis Structure

The thesis will follow a progressive analysis of Product-Market Fit throughout four chapters, starting from a focus on the literature review and the theoretical foundations of the research, examining startups, value propositions, Product-Market Fit, entrepreneurial uncertainty, experimentation, validation and growth processes.

The first chapter, '***Research Context'*,** introduces the research context and explains why Product-Market Fit is so important in the startup context. It presents the key characteristics of a startup and the challenges it faces throughout its development, focusing mainly on reducing uncertainty, validation, and experimentation. This thesis will also introduce the research problem, research questions, research objectives, and research methodology adopted in the thesis.

The second chapter, '***Product-Market Fit in a Theoretical Perspective***', will focus on the literature review and introduce the research's theoretical foundations through startups' examination, entrepreneurial uncertainty, validation, Product-Market Fit, experimentation and growth processes.

The third chapter, '***Product-Market Fit in a Practical Perspective***', analyzes Product-Market Fit from a practical perspective through analysis made by practitioners of frameworks, metrics, operational tools, assessment approaches and archetypes, and it comprises four subchapters. In particular, subchapter 3.1 focuses on startups' validation process implemented in their path to achieve Product-Market Fit. Additionally, subchapter 3.2 centers on experimentation in startups, MVPs, the analysis of key assumptions, multiple experimentation methodologies, hypotheses validation approaches, and prototyping techniques. Moreover, subchapter 3.3 investigates Product-Market Fit measurement, exploring the various indicators, evaluation systems, and metrics. Lastly, subchapter 3.4 provides an in-depth analysis of growth-related concepts for startups after achieving Product-Market Fit, examining market sizing frameworks, horizontal and vertical startup strategies, go-to-market strategies, as well as different scaling mechanisms.

Furthermore, the conclusion chapter (Chapter 4) and the ultimate section of Chapter 3 (Table 3.4c) present the comparative analysis between academic literature and practitioner contributions, aiming at identifying recurring patterns, similarities, divergences and gaps. Consequently, based on these findings, the chapter develops a visual and operational framework designed to support startups during their growth and Product-Market Fit accomplishment.

Lastly, the thesis will conclude by illustrating the main findings, discussing the theoretical and practical implications behind them, highlighting the study's limitations, and suggesting new directions for future research.

2. Product-Market Fit in a Theoretical Perspective

Startups and Established Firms

A fundamental distinction in entrepreneurship and innovation research concerns the comparative analysis between **startups** and **established organizations** (Astuti et al., 2023). Although both pursue value creation and innovation objectives, they present substantial differences across multiple dimensions, including resource availability, strategic priorities, mechanisms for dealing with uncertainty, and organizational structure.

Firms that are already established have marked their presence on the market throughout the years, and consequently generally dispose of a greater amount of financial, technological, and human resources. Considering that these organizations have been operating for a long time, they benefit from formalized processes and a loyal customer base built through continuous production and sales activity, which allows them to prioritize protecting the position they have already secured over pursuing entirely new market segments (Dumas et al., 2013; Buttle, 2009; Buckley & Prashantham, 2016, as cited in Astuti et al., 2023). On the contrary, startups are small, emerging enterprises - new businesses that entrepreneurs initiate by combining business ideas and resources into something economically useful, and that are explicitly designed to seek repeatable and scalable business models (Low, 1988; Smith & Miner, 1983; Baron, 2002; Dorf & Blank, 2012, as cited in Astuti et al., 2023). Given the **limited resources** and **high uncertainty** under which they are created (Deakins & Whittam, 2000, as cited in Astuti et al., 2023), these new organizations are often forced to implement alternative solutions for experimentation, adopt flexible structures, and continuously adapt to changing market conditions.

A further point of divergence concerns the **objectives** that guide decision-making within each type of organization. Startups typically prioritize simply remaining operational over the near term, since their position is precarious enough that failure is a real and immediate possibility (Lévesque et al., 2018). Established firms, having already secured a stable position in the market, can instead afford to orient their decisions toward maximizing returns, though this comes with the burden of higher fixed costs and a broader range of products to manage

(Lévesque et al., 2018). This contrast — one prioritizing continuity, the other prioritizing returns — helps explain why the two types of firms often reach different conclusions when facing similar strategic decisions, such as when and how aggressively to enter a new market.

One of the main things that sets these two types of businesses apart is the way they approach **innovation**. Prior research shows that established firms tend to focus on improving existing products and processes through cycles of incremental refinement, while startups are more sharply focused on new technologies and untapped opportunities (Abernathy & Utterback, 1978, as cited in Polidoro & Jacobs, 2024). Established firms, in particular, do not always manage the shift to new technologies smoothly, and in some documented cases this has contributed directly to their decline (Christensen & Bower, 1996; Henderson & Clark, 1990, as cited in Polidoro & Jacobs, 2024). Startups, by contrast, benefit from their flexibility and freedom from structural inertia, which allows them to pursue novel and intangible innovations more easily than established firms, because their entrenched routines make even minor changes to existing capabilities costly to justify, in a way that new entrants do not experience (Criscuolo et al., 2011, as cited in Polidoro & Jacobs, 2024). On the other hand, established firms that diversify into a nascent industry often bring relevant knowledge accumulated in other domains, and their larger resource base allows them to internalize a greater share of the opportunities their own inventions create, rather than leaving them open for others (Ahuja et al., 2013; Alnuaimi & George, 2016; Cattani, 2005; Helfat & Lieberman, 2002, as cited in Polidoro & Jacobs, 2024). This tension echoes Schumpeter's own dual framing of innovation - at times emphasizing startups as the drivers of technological change, at other times underscoring the role of established firms (Schumpeter, 1934, 1942, as cited in Polidoro & Jacobs, 2024) - which suggests that the innovation capabilities of the two should be viewed as complementary rather than as strictly superior or inferior to one another. In fact, established firms can better manage market expansion and large-scale implementation, while startups usually own greater capabilities to handle radical innovations and technological experimentation.

In addition, whether either form of organization proves effective at innovating appears to depend on the **level of uncertainty** surrounding the emerging opportunity and the

characteristics of the technological environment in which it operates (Polidoro & Jacobs, 2024; Lévesque et al., 2018).

The two types of organizations also tend to differ in how **ownership** and **control** are distributed. In established firms, ownership is typically spread among different shareholders, who usually restrict their participation to offering capital by assigning daily management operations to a board of directors they appoint (Courtney, 2002, as cited in Astuti et al., 2023). This configuration also means that the company is responsible not only for its owners, but for a greater group of stakeholders, including customers, employees, and creditors (Ciepley, 2013, as cited in Astuti et al., 2023). On the other hand, startups tend to concentrate control; the founder holds de facto all the authority, making direct decisions over the business's direction (Delmar & Shane, 2006, as cited in Astuti et al., 2023). This concentration of control in a single individual or small founding team allows startups to make decisions quickly, without the layers of governance and accountability that characterize larger, more established organizations.

Further studies point out that startups play a pivotal role in fostering **knowledge creation** in nascent industries. The limited availability of resources does not restrain startups from being sources of experimentation and innovative technological developments; in fact, evidence shows that the innovations created by startups are cited, and thus built upon, more often by other firms than are the inventions of established firms, a pattern that holds even after controlling for other characteristics the two sets of inventions have in common (Polidoro & Jacobs, 2024). This contribution is particularly evident in nascent industries characterized by high technological uncertainty, where firms are actively searching for novel technological alternatives (Kapoor & Klueter, 2021; Moeen et al., 2020, as cited in Polidoro & Jacobs, 2024). As a result, these distinctions position startups as disproportionately important, if resource-constrained, contributors to knowledge-building in emerging technological domains.

Unlike established firms, which can rely on existing customer bases, market knowledge, and organizational capabilities, startups must systematically discover customer needs, test hypotheses, and identify viable business opportunities - an idea echoed in Eric Ries's

characterization of the startup itself as an experiment, testing whether and how a founder's vision can create synergy with customer needs (Ries, 2011, as cited in Astuti et al., 2023). Consequently, understanding these structural and strategic differences, together with the distinct uncertainty each type of organization faces, provides an essential foundation for examining startup validation processes and the pursuit of Product-Market Fit.

Startups & Uncertainty

Risk, Uncertainty and the Entrepreneurial Function

Frank Knight's distinction between **risk** and **uncertainty** is the classic starting point for the majority of theoretical treatments of entrepreneurship and uncertainty: risk describes a situation where outcomes are measurable and probabilities are known or estimated and can be measured, whereas uncertainty refers to the situation where future outcomes cannot be predicted or assigned reliable probabilities (Knight, 1921, as cited in Audretsch & Belitski, 2021). The fact that risk can be insured, priced or hedged cannot solely explain why entrepreneurial profit exists. Knight considers uncertainty – the true unknowable – the only condition that entrepreneurs are willing to accept, which makes their potential profits justified for facing such a burden. (Knight, 1921, as cited in Audretsch & Belitski, 2021). In fact, the author argues that entrepreneurial profit does not arise from bearing measurable risk, but from making decisions under circumstances of true uncertainty.

This distinction matters for **startups** specifically because much of what a new venture faces is not insurable risk but authentic uncertainty: whether a market will materialize, whether a technology will work at scale or whether a business model will prove viable are not questions with a known probability distribution attached. Audretsch and Belitski's (2021) empirical analysis of UK firms supports this idea directly, showing that new ventures which respond to high uncertainty by innovating anyway achieve better innovation outcomes than **established firms** facing the same conditions - while perceived risk, by contrast, does not produce startup-specific advantage: its association with innovation does not change among startups and incumbents. In other words, it is specifically the capacity to act under unknowable conditions,

not mere risk tolerance, that appears to distinguish startups' innovative behaviour. Audretsch and Belitski (2021) build on this Knightian distinction to argue that incumbent organizations frequently generate knowledge that they are unwilling or unable to commercialize due to uncertainty, while entrepreneurs exploit this unused knowledge by creating new ventures.

Entrepreneurial action as a response to uncertainty

McMullen and Shepherd (2006) develop this idea into a more general model of entrepreneurial action. As a matter of fact, action is considered a fundamental aspect of most theories about **entrepreneurship**. An aspect that concomitantly embraces motivation, such as the willingness to bear uncertainty, knowledge, meaning the amount of uncertainty perceived, and stimulus (McMullen & Shepherd, 2006). This uncertainty generates doubt, the main factor that jeopardizes the prospective actor's beliefs – consequently, its intention to act – about the actual possibility that 1) an environmental stimulus could be an opportunity for a subject in the marketplace, 2) if this possibility would actually be feasible for the actor, and 3) whether harnessing the opportunity would sufficiently satisfy some personal aspiration (McMullen & Shepherd, 2006).

Moreover, the authors argue that most economic theories of the entrepreneur (Schumpeter, Kirzner, Knight) each capture only one half of the picture: some emphasize how much uncertainty a person perceives, while others emphasize how willing that person is to bear whatever uncertainty they perceive (McMullen & Shepherd, 2006). McMullen and Shepherd (2006) combine the two into a single relation: entrepreneurial action occurs solely when an individual recognizes a possible opportunity for someone (called '***Third-person opportunity'***) and is motivated enough to see this opportunity as for themselves, meaning the actor (called '***First-person opportunity'***), although the positive outcome is not guaranteed.

This two-view conceptual model helps frame startups' behaviour because it does not handle delay, hesitation, or inaction as simply the absence of information, but in fact, as a decision problem, whereas knowledge and motivation must both be recognized before committing resources. A founder may recognize that a market opportunity plausibly exists yet still fail to

act unless they judge the potential reward worth the doubt involved. Conversely, high motivation is not sufficient on its own if the individual has no basis for believing the venture is feasible at all.

Differentiating uncertainty from other knowledge problems

More recent scholarship cautions against treating "*uncertainty*" as a single catch-all term for everything an entrepreneur does not know. Townsend, Hunt, McMullen and Sarasvathy (2018) argue that much of the literature has stretched Knight's original concept to cover several distinct knowledge problems that actually require different logics of resolution. They separate uncertainty from three related but different conditions: **complexity**, where the sheer number and interaction of variables makes outcomes hard to predict even with more information; **ambiguity**, where the situation itself is unclear or open to multiple interpretations because it is partly socially constructed; and **equivocality**, where several plausible interpretations conflict with one another, so that additional information does not resolve the confusion and may even deepen it (Townsend et al., 2018).

The practical implication for startups is that not all "*unknowns*" can be addressed the same way. Some knowledge problems are reduced by gathering more information (closer to true uncertainty), while others are only resolved through negotiation, framing, or building shared interpretation with stakeholders (**ambiguity** and **equivocality**), and others resist resolution altogether regardless of how much data is collected (**complexity**) (Townsend et al., 2018). According to Townsend et al. (2018), whenever founders fail to recognize the type of knowledge problem they are facing, they might end up wasting resources and adopting the wrong strategy.

Furthermore, entrepreneurs tend to manage **uncertainty** by focusing on controlling what is within their power rather than trying to forecast unpredictable future events (Townsend et al., 2018; Sarasvathy, 2001, as cited in Townsend et al., 2018). They rely on control, stakeholder involvement, experimentation, negotiations, ongoing learning, and goal adjustment instead of solely relying on predictions to navigate uncertain situations. Rather than depending on

forecasts, they embrace a **control-oriented logic**, enabling entrepreneurs to act confidently despite environmental unpredictability.

Additionally, another distinction made by the authors is that entrepreneurs do not simply respond to uncertainty, but their actions change the environment itself as well (Townsend et al., 2018). In fact, decisions made by entrepreneurs have the power to influence markets, stakeholder expectations, institutions, and future opportunities, suggesting that the environment will evolve as a consequence of **entrepreneurs acting**. This means that entrepreneurial actions serve as both a reaction to uncertainty and as a catalyst capable of shaping new conditions for future entrepreneurial choices.

How startups and established firms diverge in handling uncertainty

A common theme discussed by various authors is the noticeable asymmetries between the way startups and established firms manage uncertainty; such divergence among the two realities, consequently, shapes their individual strategies and how they interact with one another. Any disruptive innovation is associated with three different sources of uncertainty according to Kapoor and Klueter (2021): the enabling technology, the broader ecosystem of partners and authorities, and the underlying business model. They also state that every startup and incumbent responds differently to each of these. Startups, in fact, usually dispose of fewer resources. Therefore, they are more exposed to technological uncertainty, as a long-term investment would be required to overcome it. Additionally, startups are unable to influence regulators, complementary product-providers or other ecosystem actors due to their lack of credibility or lack of scale.

On the contrary, established firms often dispose of enough resources to deal with technological uncertainty, even though they are challenged by business-model uncertainty given that internal performance benchmarks and investor ambitions usually favor maintaining a current profit structure over attempting a fresh approach (Kapoor and Klueter, 2021).

This credibility gap highlighted by the authors is strictly linked to a broader distinction concerning legitimacy and stakeholder perception.

Established companies benefit from a history of demonstrated performance, which reassures external parties about their prospects and makes it easier for them to reach stakeholders, customers, investors, and partners (Polidoro & Jacobs, 2024). Startups, by contrast, face substantially higher uncertainty in the eyes of third parties regarding their prospects of success (Stuart et al., 1999, as cited in Polidoro & Jacobs, 2024), often requiring external endorsements — such as scientific or institutional validation — to draw attention to their work, and are less able than established rivals to use the threat of legal action as an effective deterrent (Agarwal et al., 2009, as cited in Polidoro & Jacobs, 2024; Higgins & Gulati, 2003). Therefore, startups need to invest substantial effort in proving their credibility and validating their business assumptions prior to gaining market acceptance.

This same asymmetry surfaces at the level of joint ventures between startups and established firms. The studies conducted by Gomes et al. (2025) on radical open innovation projects between large firms and startups showed that partners often struggle to agree on a common solution not just on which uncertainties are most critical, but also on how to manage them. Entrepreneurs, in fact, tend to favor strategies that actively create new possibilities, whereas managers in established companies typically prefer a more cautious approach to adapting to existing constraints. However, if these divergences remain open, they might escalate and create pressure over budget, duration, or the scope of a common project, sometimes leading to the withdrawal of one of the partners.

Overall, these findings suggest that **uncertainty** cannot be considered only a motivational challenge or an individual cognitive one, as McMullen and Shepherd (2006) emphasized, but is a relational one as well, that must be actively controlled whenever established organizations and startups work together.

Given that startups are structurally exposed to this uncertainty on multiple fronts - technological, financial, and reputational - while also lacking the track record that shields established firms from external scrutiny, the central challenge for a new venture becomes not simply enduring uncertainty, but systematically reducing it before resources run out. This is

precisely the function that startup **validation processes** are designed to serve, offering founders a structured means of testing assumptions, gathering evidence and building the credibility needed to move from an **uncertain idea** toward a **viable, market-tested venture**.

Startup Validation

Startup validation refers to the process by which entrepreneurs test the assumptions underlying their business model against real evidence from the market, rather than assuming those assumptions to be true from the outset.

In '*The Four Steps to the Epiphany*', Blank (2006) opens not by proposing a new method, but by dissecting the **Product Development Model** in order to show why it leads most new ventures astray. As Blank (2006) recounts, this model has a much longer history than the startup world itself: originating as a manufacturing practice, it was later carried over into consumer goods and, only decades afterward, into technology ventures - becoming so embedded along the way that founders now rarely question its use as a startup planning tool.

For Blank (2006), the model is not inherently wrong - it can work reasonably well once a company already knows its market and understands how competition in that market functions. His concern is that this is rarely the situation a startup finds itself in: many have not even settled on what market they are addressing, and yet they keep leaning on the same sequential process to decide when to hire, what to promise investors, and when to launch.

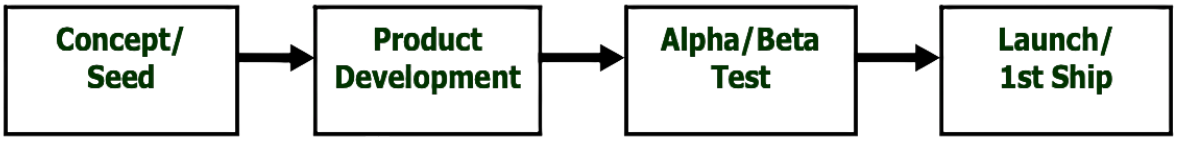


*Figure 2a: The **Product Development Diagram** described by Steve Blank (2006)*

The model unfolds across four sequential stages:

1. **Concept & Seed Stage**: founders translate their vision into a business plan, defining the product concept, its feasibility, potential customers, distribution channels and a preliminary financial model.

2. **Product Development**: the organization begins to specialize by function and moves into building the actual product.
3. **Alpha/Beta Test**: external users try the product so that defects can be identified and corrected.
4. **Launch/First Customer Ship**: the first day that the product or service is released publicly, backed by an intensified marketing and sales effort in order to maximize the reach and acquire as many customers as possible.

Blank (2006) points out the structural flaws of this model. Firstly, he argues that the model is too centered on the product, and it completely ignores what truly makes a startup successful or not: the customers. The Product Development model follows a linear flow, bypassing customers' needs and wants discovery and learning, for which a cyclical flow would be appropriate, enabling constant feedback collection as well, step by step.

It is worth mentioning that the excessive emphasis on the '*first customer ship date'*, thinking that this would refer to the date the product's building is completed, disregarding the whole process of '*Customer Discovery'*.

In other words, the Product Development model focuses too much on execution and following a detailed business plan – like an execution-oriented process – emphasizing meeting numbers, instead of embracing learning and discovery. Fundamental steps, especially in the early stages of a startup, where any activity not oriented toward getting to know potential customers and their problems would be referred to as a waste of effort and time.

In other words, no hypothesis about who the customer is or what they actually want is tested until it is too late to cheaply act on the answer and any step backward is seen as a failure rather than a source of learning. It is precisely this gap that gave rise to what Blank (2006) calls the **Customer Development Model** - not a replacement for product development, but a parallel, iterative process meant to validate customers and markets in step with it (detailed in Customer Development' section below).

Furthermore, a crucial issue and key aspect ignored is that not all startups are the same. According to Blank (2006) startups fall into four main categories:

1. Introducing a new product into an existing market

2. Introducing a new product into a new market
3. Introducing a new product into an existing market and trying to resegment that market as a low-cost entrant
4. Introducing a new product into an existing market and trying to resegment that market as a niche entrant

The majority of existing models are not made for startups navigating unknown markets. Therefore, startups are unable to predict whether their products or services will be used or not; consequently, it is impossible to determine any marketing or sales strategy or even a business plan.

Blank's critique, however, is only one entry point into a broader shift in how startups have come to approach validation.

Between the 1980s and the 2010s, several methods have been outlined by Bortolini et al. (2021), before or concurrent with the emergence of **Lean Startup**. The authors shared some core principles: instead of following a fixed plan based on past experiences, startup planning should focus on incremental testing of testable, specific assumptions. Milestone planning (Block & MacMillan, 1985, cited in Bortolini et al., 2021) suggested that ventures should be organized around key events rather than strict calendar dates. Critical assumption planning (Sykes & Dunham, 1995, cited in Bortolini et al., 2021) emphasized that the identification and testing of uncertain assumptions should come first, in order to minimize risk per dollar.

In addition, **discovery-driven planning** (McGrath & MacMillan, 1995, as referenced in Bortolini et al., 2021) highlighted that resource allocation and the accomplishment of defined milestones are linked to each other, allowing plans to adapt as learning progressed. Moreover, the **probe-and-learn approach** (Lynn et al., 1996, as cited in Bortolini et al., 2021) concerned launching incomplete products to collect feedback and mitigate risks early on, before investing in full development.

A common fundamental aspect that these methods share is that a startup must convert untested beliefs about its business model into testable hypotheses, as well as take advantage of customers' and the market's feedback to evolve in the right direction, rather than executing a plan or overlooking important statements (Silva et al., 2020). This is what, at a later stage,

has been validated and formalized in the Lean Startup literature and represented by the **Build-Measure-Learn loop**. In addition, Silva et al. (2020) described this process as the method through which a venture carries out assumption formulation, testable experiment design and business model adjustment according to continuous learning and observation.

Nevertheless, customer feedback has been flagged as a hazardous source of validation by the recent literature. Felin et al. (2020), in fact, argue that as long as experimentation is guided by a defined and articulated theory that explains why ventures should work in the first place, it can lead to valuable learning. The absence of such directions could lead entrepreneurs to choose the easiest and incremental ideas instead of actual innovative ones.

In conclusion, it is possible to identify two crucial stances: validation as an iterative, rapid connection with the customer and validation as an articulated, methodical theory. The two are not mutually exclusive and will be analyzed more deeply in the following dedicated sections: Customer Development and Lean Startup.

Customer Development

In the previous section, it was analyzed why the Product Development Model leads to startup failure – as it completely disregards how to discover and connect with the customer - and examined iterative planning methods that emerged sequentially. Now the thesis will inspect Blank's model (2006): the **Customer Development Model**. The author explains that he wants to introduce a concurrent process alongside the Product Development one and does not want to replace it or propose a single alternative technique among several. Blank explains, in fact, that in his opinion, the reason why every new product introduced in the market ended up failing was not due to the inability to build the product, but because a process dedicated to validating and discovering a market for it before committing any resource to sales and marketing implementation was lacking. This discovery was also confirmed in The Startup Owner's Manual by Blank and Dorf (2012), in which they reaffirm the main claim: a startup's initial business model cannot be built on a defined quantity to execute, but instead it should focus on a set of untested assumptions that need to be verified.

Furthermore, Blank's model presents four sequential steps: Customer Discovery, Customer Validation, Customer Creation and Company Building.

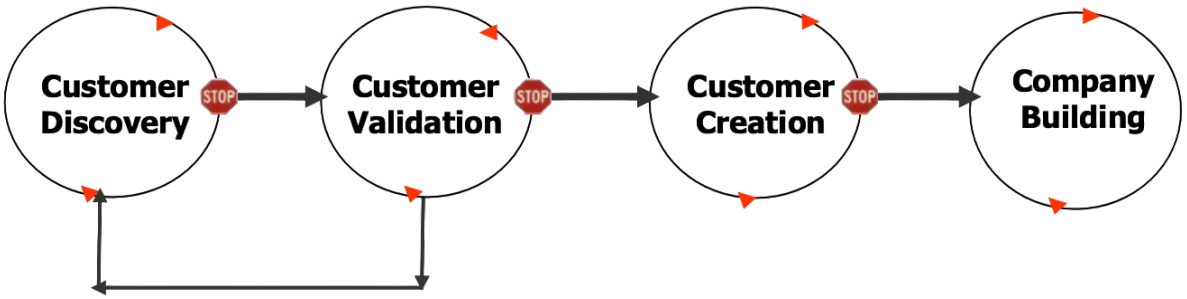


Figure 2b: ***The Customer Development Process*** *described by Steve Blank (2006)*

It is noticeable that there is an evident distinction between this new diagram and the one analyzed in the Product Development model. This time, there are not fixed stages that need to be completed one at a time to move on to the next one; effectively, Blank (2006) depicts each step as a circular, independent loop. An underlying implication is that when applying this model, as opposed to the functioning of the Product Development model, startups need to repeat a step until the hypothesis holds up whenever they fail to validate an assumption, thereby preventing the progress of the venture anyway and keeping the team stuck in a loop.

Examining the Customer Development Process, **Customer Discovery** is the first step, which concerns assessing the problem that founders believe is important for a specific group of customers and therefore worth solving. Hence, finding out who exactly the target audience is. Moving on, there is **Customer Validation**, which helps the company evaluate whether they can rely on that customer group and convert them into a repeatable, scalable sales process before making heavy investments for growth purposes. Further, only when the venture accomplishes proving the repeatability and that is oriented towards the generation of end-user demand at scale, it can move to the following step: **Customer Creation**. To conclude, the final step, **Company Building**, represents the turning point at which the organization turns to a structure built around efficient execution, from one focused on learning and discovery.

An additional distinctive aspect recognized by Blank concerning the Customer Discovery stage is that customers are worth listening to. The author classifies potential customers according to a scale of **problem awareness**: starting from the ones unaware of having a problem at all, followed by those who recognize the problem but have not done anything about it, to those who are actively looking for a solution, and lastly, those who have put together a temporary, improvised workaround and have the budget to pay for a proper solution. Blank defines the customers at this final stage - those who have an urgent, already-monetized need – as '*earlyvangelists*', which are organizations or individuals inclined to utilize an unproven and unfinished product, as their actual situation of doing nothing is already a more expensive alternative. Blank considers the feedback from this actual narrow group as the meaningful indicator at the beginning of Customer Discovery, pushing aside the feedback from a representative cross-section of the prospective mainstream market.

Market type was mentioned previously when discussing the inaccurate one-size-fits-all planning, and now the thesis will address it again as an aftermath of the Customer Development approach. In particular, the Market Type changes everything: from the evaluation of customers' needs and the customer adoption rate, to product positioning, market size, and product launch, as shown in the table below.

In an existing market, startups offer products with superior performance compared to the ones already exchanged in the market. However, luckily, the market and customer base are known and competitors define the market. In fact, competition is all about products and product features. The main role of Customer Discovery is not much about figuring whether a need exists or not, but rather establishing why a particular product fulfills it better compared to the ones already known by customers. On the contrary, in a new market, customers do not have any products or competitors to compare with – more in detail, the main competitor here is usually the non-consumption itself; thereby, customers' only viable option is simply coping without any solution or leaning on whatever improvised alternative they came up with, resonating with the 'earlyvangelist' profile mentioned above.

Therefore, the difficulty in this scenario is less about competitive positioning than about converting an unrecognized, latent need into a detected one, a slow and critical mission to forecast by nature. The other two categories both regard resegmenting an existing market, instead of entering or creating one from scratch. **Low-cost resegmentation** aims to address

customers of an existing market, at the lower end of it, that are willing to accept an inferior performance in exchange for a significantly reduced price. On the other hand, **niche resegmentation** determines a specific segment of an existing market to target, and the fact that the group feels a distinct need, justifies the provision of a product moulded differently, even if this means putting a premium price or offering a product with weak performance on attributes undervalued by the segment considered (Blank, 2006).

Customers	Market	Sales	Finance
Needs	Market Size	Distribution channel	On going capital
Adoption Rate	Cost of entry	Margins	Time to profitability
Problem Recognition	Launch Type	Sales cycle	
Positioning	Competitive Barriers		

*Table 2a: **What Market Type affects** (S. Blank, 2006)*

A crucial point argued by Blank (2006) is that this distinction is both descriptive and consequential throughout every dimension of a startup's initial decisions. In an **existing market,** customers already recognize the problem they face; therefore, their already-recognized needs tend to follow a relatively faster and predictable trajectory. Consequently, competition is merely based on the product, and the major risk is not much related to the failure of the market's materialization, but, in reality, is mainly connected to entrenched key players.

In relation to **re-segmented markets**, regardless of whether these are embarked on a cost or niche basis, customers already exist; even so, the problem is the ability to convince them that either price or a reduced set of needs justifies the variation of their current offering, still with

the risk that incumbents respond to it or that the resegmentation strategy won't be met. Conversely, there is a completely different situation when talking about utterly **new markets**. In fact, in this case, the customer base is not defined yet, hence, it cannot be examined. There are no established rules for competition to work on; whether it will be adopted or not depends on the ability to persuade a sufficiently large group of potential users that the problem is worth solving. This process might take considerably longer and requires finding investors willing to fund an extended period without a guaranteed demand.

All these differences reach beyond customer-oriented activities to a startup's financing and sales effort arrangement, given that a venture in an existing market has the possibility to plan its profitability in a relatively shorter and calculable timeline, whereas a venture operating in a new market cannot and has to structure its finances and organize itself around a less predictable, longer path to achieve the same goal (Blank, 2006).

	Existing Market	Resegmented Markets	New Market
Customers	Existing	Existing	New/New Usage
Customer Needs	Performance	1. Cost 2. Perceived need	Simplicity & convenience
Performance	Better/faster	1. Good enough at the low end 2. Good enough for new niche	Low in "traditional attributes" improved by new customer metrics
Competition	Existing Incumbents	Existing Incumbents	Non-consumption/other startuos
Risks	Existing Incumbents	1. Existing incumbents 2. Niche strategy fails	Market adoption

*Table 2b - **Market Type Characteristics** (S. Blank, 2006)*

Blank, in his writings, to better explain this dimension, decides to illustrate the case of two ventures led by the same founders that offer comparable products launched under different market conditions, three years apart: Palm and Handspring. First, Handspring enters a well-established market of Personal Digital Assistants in 1999 and, by emphasizing why its products outperformed known competitors, could succeed. On the other hand, Palm, in 1996, did not have such an established market to turn to, and in order to acquire any competitive

positioning, needed to establish what a Personal Digital Assistant was. Blank demonstrates, in fact, that applying one venture's Customer Development approach to the other wouldn't have worked for either of the two, stressing as well that Market Type is not a negotiable classification, but an element that is able to reshape even what Customer Discovery tries to establish.

More recent empirical studies offer an observation-based, complementary analysis on the functioning of such dynamics among the founding teams. Eesley et al. (2023), after conducting qualitative interviews with startup founders, discovered that founders tend to be more involved in customer-facing activities in the earliest stages of a venture, and their involvement diminishes gradually once formal sales processes start to grow. A pattern consistent with Blank's emphasis on founders when it comes to driving Customer Discovery, rather than recruited specialists. Additionally, the interviews suggest that initial customers tend to be found by founders through existing personal and professional networks, instead of a systematic search described by Blank; and that in practice, Product Development and Customer Development act more as an ongoing process that constantly influence each other, rather than separate, back-to-back phases.

This last aspect connects to a broader precaution mentioned in the literature, regarding the informality embedded in Blank's language used for "hypothesis" and "testing". In York and Danes' (2014) article, the two authors remark that Customer Discovery's hypotheses testing barely resembles hypotheses testing done in a scientific or formal statistical sense, drawing instead on relatively unstructured conversation between customers that could be exposed to documented decision-making biases. Among these, there are the **selection bias** approached by founders, confirmation bias about answers' interpretation ambiguity, and overconfidence in founders' initial assumptions. Additionally, Felin et al. (2020) highlight a different matter concerning customer feedback untethered by theory, pointing instead in another correlated direction: as alone it would not be sufficient, "*getting out of the building*" is a necessary condition to validate learning.

Everything considered, the Customer Development Model designed by Blank provides both a philosophical stance – startup founders should in fact look for a business model since the beginning, rather than implementing a presumed one - and introduces plenty of specific vocabulary drawn upon by frameworks and further formalized later on – such as Market Type, earlyvangelists, getting-out-of-the-building. The model has an iterative, non-linear structure that carries economic and conceptual implications. Also, the predefined outline, instead of committing a venture to scale until it proves a business model, maintains it by cycling through low-cost validation, an area based on resource conservation that will be defined more explicitly by the Lean Startup methodology. This model is the exact one, alongside Agile Engineering practices, that the Lean Startup stream (Silva et al., 2020) – analyzed in more depth in the following section – uses as its baseline.

Lean Startup

Ries (2011), drawing on the Customer Development Model discussed previously, proposed a wider overview that named **Lean Startup**. The model owes its labeling origin to lean manufacturing, more precisely to **the Toyota Production System (TPS),** whose principles had already been generalized by Krafcik decades earlier with the term '*Lean'* (as cited in Bortolini et al., 2021). As stated by Bortolini et al. (2021), the Toyota Production System was built upon four core principles. First, deliver to customers exactly what they asked for, in the quantity they asked for, and whenever they want it. Second, people must be treated as the most valuable resource in the organization. Third, pursue incremental, continuous improvement, making sure that everyone is engaged. Lastly, guarantee a solid operational focus. Keeping this in mind, Ries (2011) wants to implement this logic in the startup context. Similarly to the Toyota Production System, which aims to produce only what customers are willing to pay for and eliminate manufacturing waste, Lean Startup seeks to stop the waste of building products, features, or whole companies that no one needs.

Toyota Production System (TPS) principle	Lean Startup
Deliver what the customer wants, when and in the quantity required	Build a Minimum Viable Product (MVP) and learn what customers actually want through early customer interaction and validation.
People are the most valuable resource	Entrepreneurs and teams are central to validated learning, using their knowledge and capabilities to formulate hypotheses, conduct experiments and make decisions.
Pursue continuous, incremental improvement with everyone involved	Build–Measure–Learn (BML) and iterative experimentation, continuously improving the product or business model based on evidence and learning.
Maintain a strong operational focus	Focus resources on validated learning and eliminating waste, avoiding investment in products, features or activities that do not create customer value.

*Table 2c – **TPS Principles vs. Lean Startup**, adapted from Bortolini et al. (2021) and Ghezzi and Cavallo (2018)*

Notwithstanding the connection between TPS and Lean Startup, we cannot simply imply there is an automatic transfer of manufacturing practices to startups. On the contrary, Lean Startup adjusts the underlying logic of waste reduction, continuous improvement and customer value to a highly uncertain and experimental environment.

In the above-discussed Blank's contribution, the thesis already mentioned his formulation of a '***startup'***; however, this time, Ries (2011) frames it more sharply: he defines a startup as "a human institution designed to create a new product or service under conditions of extreme uncertainty" (Ries, 2011). As a result, based on this definition, he articulates the Lean Startup method, which comprises five principles. The first one states that **entrepreneurs are everywhere,** meaning that anyone operating under conditions of uncertainty – regardless of the sector or size of the company– qualifies as an entrepreneur. The second defines **entrepreneurship as management**, implying that startups cannot run under a scaled-down version of corporate management and require a distinct managerial approach suited to the level of uncertainty they face. Following, the third labels **validated learning** as the idea that a startup's real output is neither a product nor revenue, but, in truth, empirically demonstrated knowledge about how to build a sustainable business. Moving on, the fourth is about the

operational loop through which learning is produced: **Build-Measure-Learn**. Finally, the fifth defines **innovative accounting** as a way of tracking progress and holding teams accountable even when traditional financial metrics are lacking.

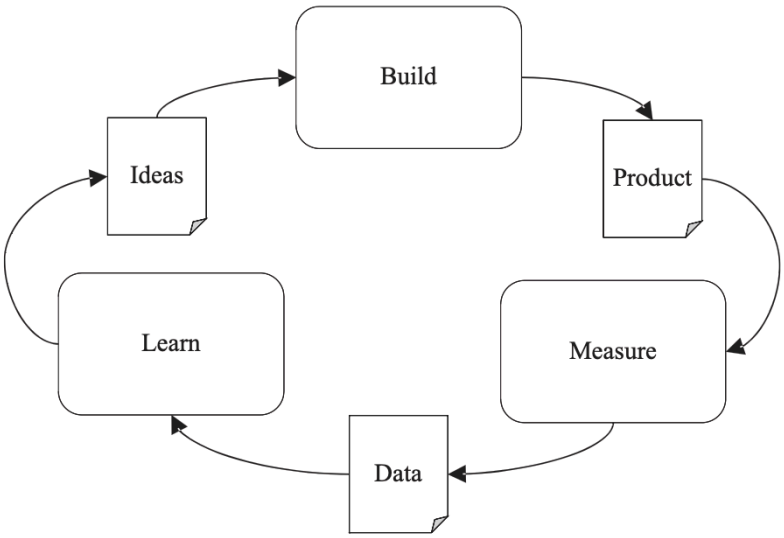


Figure 2c: ***Build-Measure-Learn Process***

The third and fourth principles can be operationalized together by executing the Build-Measure-Learn loop. Diving more deeply into the logic, a startup first formulates a hypothesis, then builds the minimum artefact needed to test it, then again measures the resulting data and lastly, based on that measurement, decides whether to persist on the current path or change direction. As mentioned explicitly by Ries (2011), when analyzing the sequence more carefully, the more accurate way to describe it would be '*Learn-Build-Measure'*, given the fact that every scientific inquiry emerges from a question rather than a product. Anyhow, the choice of the three-word acronym ordering is merely retained for its mnemonic clarity.

Back to the Lean methodology presented by the author, Ries (2011) unfolds the constituting activities of the Build-Measure-Learn process and describes each activity: starting from the **ideation step** - "*Building the business vision*" – during which the creative process takes place by designing the business model that entrepreneurs desire and generating ideas; the **hypothesis and business model formulation step**, needed to define how customers' value will be delivered, and generate ideas through the formalization of implicit or explicit

assumptions considered doubtful or uncertain that regard some dimensions of the business model; the **experiment building step**, in which the entrepreneur or researcher manipulate controlled variables, and record the variations of dependent variables to test business model hypotheses through experiments (a/b tests, MVP, launch pages, qualitative interviews,…); continuing with the **result measurement step**, during which the entrepreneur, through statistical tools and data analysis, monitors and measures experimentation results and compare them with the hypotheses stipulated earlier; ending with the learning phase, that encompasses experiments execution to reject or accept hypotheses.

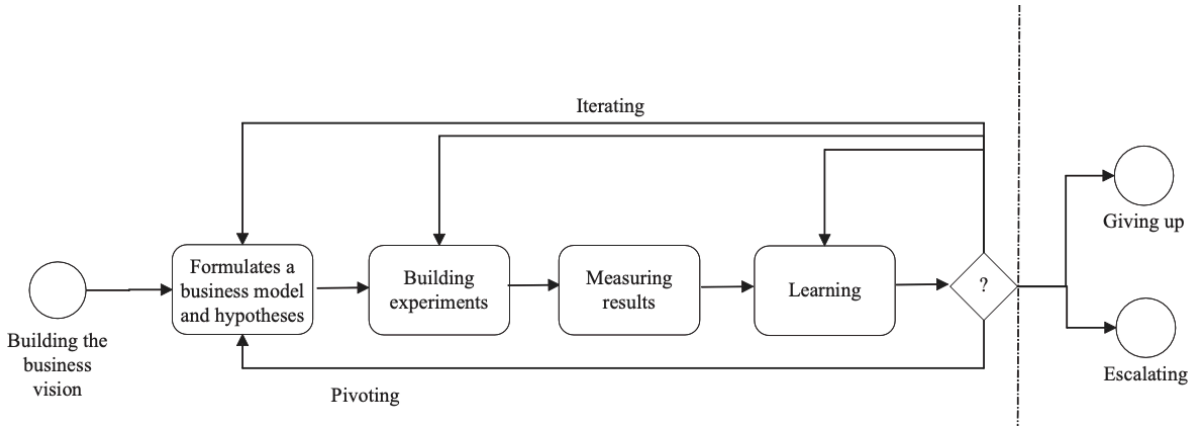


Figure 2d: ***Lean Startup Process***

This last step, the actual '**validated learning'**, is ulteriorly subdivided into four categories: pivoting, iterating, escalating and giving up. The first one, **pivoting**, allows the formulation of new hypotheses and their validation by means of additional experiments, to radically change one or more dimensions of the business model (Blank and Dorf, 2012). **Iterating** encourages business model transformations or product alterations to enable novel hypotheses testing. Furthermore, iterations usually have a positive meaning, as they signal moving toward a viable business model (Blank and Dorf, 2012). Whenever entrepreneurs presume to have found a suitable business model, **escalating** occurs, meaning that further investments in the business are made to develop a functioning organization based on it and achieve economies of scale (Blank and Dorf, 2012). **Giving up**, on the other hand, takes place when experiments and tests indicate that a sustainable business model cannot be accomplished through the established business model (Blank and Dorf, 2012).

A fundamental aspect of Ries's loop is the so-called '***leap-of-faith assumptions'***: the very little-tested, riskiest beliefs on which a business depends, more precisely the value hypotheses (whether the product genuinely delivers value once the customer is using it) and the growth hypotheses (the way customers will discover the product). In addition, it is possible to consider learning valid – what, in fact, we call "validated-learning" – only when it is supported by empirical evidence gathered directly from potential or real users, instead of unsupported optimism or internal team consensus (Ries, 2011).

The quickest and cheapest way to run this loop is using an artefact: the **Minimum Viable Product (MVP),** defined by Ries (2011) as the version of a product that enables a full iteration of the Build-Measure-Learn loop with the least amount of effort and the shortest development time. Essentially, the MVP, by definition, is not the simplest version of a product, nor the premature version of the final offering; in truth, it is whatever experiment ensures testing in the most efficient way the riskiest assumptions at that moment. The author demonstrates this with the help of a spectrum of MVP formats, later systematized in the broader Lean Startup philosophy: the concierge MVP, exemplified by Food on the Table, where the service was manually delivered by the founders to a single customer before developing any automation, showing what customers truly value; and the video MVP, exemplified by Dropbox, where the entirely built product was substituted by a demonstration video, in order to gauge demand before any creation had occurred.

As mentioned before, standard accounting is not suitable to evaluate entrepreneurs working in unpredictable environments where milestones are difficult to forecast, such as startups. A new type of accounting has been developed explicitly for disruptive innovation: **innovation accounting.** This novel discipline allows startups to demonstrate they are working to develop a sustainable business, and it introduces a measurement domain that maintains the iterative process objective. Innovation accounting stretches in three steps: first, the company's current status is clearly determined by using an MVP. Second, the startup, after several attempts of product improvements and micro changes, will be able to tune its engine's baseline toward the ideal and reach a decision point, reaching the third step: pivot or persevere. An effective and appropriate learning will help the company make some real progress and get closer to the ideal, meaning it is worth continuing. If this is not the case, the management team must

recognize that a serious change is needed and that the current product strategy has to be revised. A company that pivots has to restart the process all over again and establish a new baseline. On the other hand, a successful pivot is characterized by higher levels of productivity of such engine-tuning activities after the pivot.

Moreover, Ries (2011) makes a distinction between **actionable metrics** – which isolate cause-and-effect relationships and enable teams to assess whether specific results have been produced by specific changes – and **vanity metrics**, namely cumulative figures like total revenues or users, that most of the time look promising and encouraging regardless of whether there is an actual improvement of the business considered or not. The author demonstrates this using IMVU's board data, showing how an unchanged, flat conversion rate was concealed by a rising cumulative growth curve once users were segmented into cohorts. The company was able to recognize that no progress towards a sustainable business had been made, despite the months spent making product adjustments, only when the cohort-based view was adopted.

As outlined before, Ries (2011) points to pivot as the appropriate response whenever a metric, despite the genuine efforts to improve, fails to move closer to the intended direction. Meaning that a structured course of action must be determined to test new key assumptions regarding the strategy, products or growth engine, while preserving the vision entrenched in the company. He lays down some pivot typologies – such as customer segment, zoom-in, zoom-out, platform, customer need, value capture, technology pivots, business architecture, engine of growth and channel – and redesigns a startup's path not solely as months of residual cash, but how many pivots the company can still perform before running out of cash.

Considering its stance within the wider literature, the Lean Startup movement is generally considered not as a completely novel invention, but rather as an overview of prior streams. In their paper, Silva et al. (2020) explain how it rests on two fundamental underpinnings, appointed by Ries himself: **Agile Methodologies (AM),** delineated as an incremental, iterative approach for software development steered toward adaptive planning and rapid response to change, and Blank's Customer Development, discussed in the prior section.

Their review highlights how Agile Methodologies contribute to incremental building and iterative discipline, while overlooking who should be tested or even how customers should be identified in the first place. Alternatively, Customer Development fills exactly this gap, as it does not guide entrepreneurs to validate merely the product, but, in fact, validate the whole business model, referring to real customers, since the early stages (Silva et al., 2020). Given the evident overlap, later contributions have grouped more and more Lean Startup and Customer Development under the same umbrella name, "*Lean Startup Approaches*" (Ghezzi & Cavallo, 2018, as cited in Silva et al., 2020). The positioning is further emphasized by Bortolini et al. (2021), arguing that Lean Startup can be seen as an operational inheritor of the Learning School of strategy by Mintzberg as well (as cited in Bortolini et al., 2021), which affirms that strategy emerges from experimentation and not from deliberate upfront planning, and shares considerable conceptual ground with effectuations (Sarasvathy, 2001, as cited in Bortolini et al., 2021) and entrepreneurial bricolage (Baker & Nelson, 2005, as cited in Bortolini et al., 2021), two theories that similarly push further working with available means under conditions of uncertainty, instead of working with predetermined, fixed goals. Nonetheless, as remarked by Bortolini et al. (2021), Ries's message does not explicitly engage much with these prior philosophies, which, they imply, might partially explain why, although it has a substantial influence among practitioners, Lean Startup's academic standing has stood relatively unsettled (Ghezzi & Cavallo, 2018, as cited in Silva et al., 2020).

Notwithstanding this unsettled academic standing, adopting the Lean Startup approach offers some benefits, as empirical, practitioner-oriented research has shown. In Silva et al. (2020) paper, to synthesize the findings reported by Ghezzi (2018, as cited in Silva et al., 2020), digital startups that implement the Lean Startup model have been shown to benefit from a reduction in costs and time required when testing the venture, as well as more effective pivoting and validation of business model parameters, closer alignment between customer needs and business ideas, viable alternatives to traditional methods to protect intellectual property, and easier access to financial cycles. Ghezzi and Cavallo (2018, as cited in Silva et al., 2020) further observe, in a related contribution, that Lean Startup can help digital startups, especially during the early stages, to manage tensions between the exploitation of scarce resources already available to the venture and their recombination into novel, original ones. Thanks to these findings, it is possible to better understand why, despite what is discussed by

the theoretical reservations below, Lean Startup still represents the main reference framework for entrepreneurs in practice.

A critical thread has developed from this unsettled academic standing. Contested by Felin et al. (2020), **lean manufacturing principles**, in their opinion, are not completely appropriate for the startup context, given that lean production techniques were originally designed to drive continuous, incremental improvement of already-existing products and processes, while startups that are able to generate considerable value usually pursue discontinuous, unprecedented offerings instead of incremental refinements. Practitioners conducted survey-based research on this shared concern: Yordanova (2018, as cited in Silva et al., 2020) reports that Lean Startup, and its underlying principle of involving early users, is usually perceived by professionals working in innovation management and product development as an obstruction to breakthrough innovation, warning that the methodology is often adopted by companies without thoroughly weighing its trade-offs.

Similarly, the Lean Startup's heavy reliance on rapid customer feedback as the primary source of validation is highly controversial. The main concern pointed out by Felin et al. (2020) concerns **customers' doubtful reliability** as a source of insight, especially for genuinely novel products that customers cannot even imagine desiring. They address the **disk-drive industry**, where existing customers' stated preferences were carefully investigated and contributed to the disruption of an established incumbent by a new entrant offering something customers did not ask for (Christensen, 1997, as cited in Felin et al., 2020). The customer-facing tools promoted by the Lean Startup, discussed in the paper, are ideal for the refinement of incremental products, but poorly fit the identification of breakthrough opportunities. A further critique mentioned in this reading focuses on the **Business Model Canvas**, which, alongside the Lean Startup, is frequently used to structure the Build-Measure-Learn loop. In particular, the authors argue that its comprehensiveness hinders it, since the attempt to map every single element of the business model is not, in itself, helpful in generating the one genuine hypothesis worth testing for the entrepreneur (Felin et al., 2020).

Felin, Gambardella, Novelli and Zenger (2024) echoed this critique in a subsequent contribution, formalizing it in a direct contrast between what they name the "*Lean*" and the "*Theory-Based*" views of startup validation. From their understanding, Lean Startup assumes

that entrepreneurs suffer from bounded rationality and that the main issue that needs to be solved is the information asymmetry between customers and founders, an asymmetry that should be bridged by rapid customer contact. In their reading, they also offer a theory-based alternative, which instead emphasizes generative rationality: as they explain, instead of considering customers the primary source of missing information, entrepreneurs are spurred to develop a coherent, falsifiable theory explaining why their venture should create value and verify the specific assumptions embedded in that theory - with the help of customers, suppliers, technical feasibility checks or other types of evidence - before scaling. A practical tool implemented to operationalize this alternative is proposed by Felin et al. (2024): the "**Value Lab**", perceived as a theory-based counterpart to Ries's MVP. Through this tool, entrepreneurs are guided across three structured conversations. Firstly, articulate divergent or skeptical beliefs that differentiate their venture from the prevailing industry assumptions. Secondly, entrepreneurs need to translate these beliefs into a well-defined problem, along with the set of subproblems that need to be resolved to guarantee the belief's authenticity. Thirdly, the resulting causal logic must be expressed as an explicit if-then statement that connects the venture's theory of value to concrete actions (partnerships, resource acquisition, experiments, …) needed to verify it. Instead of considering customer interviews as the primary option for validation, Value Lab addresses the choice of validation method as contingent on the specific subproblem being tested, which likewise might involve resource providers, suppliers or technical experts.

Randomized controlled trials (Camuffo et al., 2019, as cited in Felin et al., 2024) are reported as evidence by Felin et al. (2024), to prove that entrepreneurs who have been trained on this theory-first approach tended to cease unpromising ideas earlier and to pivot towards more oriented paths, compared to entrepreneurs who leaned on more conventional approaches. This is interpreted as proof that Lean Startup's customer-feedback loop, if implemented without an explicit underlying theory, could lead to delays rather than supporting accelerated learning.

York and Danes (2014) conducted a complementary and more behaviorally focused critique, setting aside theoretical assumptions on Lean Startup, prioritizing how its hypotheses testing is carried out in practice. The two recognize that the informal conversations among customers used by entrepreneurs to test assumptions carry only a loose resemblance to hypotheses

testing, from a formal statistical stance, and remain vulnerable to several well-grounded decision-making biases. In more detail, **selection bias**, in other words, when entrepreneurs unconsciously gravitate toward familiar or friendly feedback sources; confirmation bias, which occurs whenever ambiguous answers are interpreted as validating pre-existing beliefs; and overconfidence bias, which founders experience when they overweight their own early conclusions' reliability. Referring to the distinction between intuitive, fast **System 1 thinking** and more deliberate, slower **System 2 thinking** (Stanovich & West, 2000, as cited in York & Danes, 2014), York and Danes (2014) discuss how the emphasis on speed encompassed by the Lean Startup could accidentally favor System 1 judgment, exactly in the moment when it is least reliable. They also argue that deliberate bias-mitigation and structured team review should be built into the customer-discovery process, rather than assuming they occur automatically.

Everything considered, all these critiques do not completely reject Lean Startup, but, in reality, narrow down the conditions under which it can be expected to perform well. From Ries's original synthesis and the debate generated by it, emerges a method with a main central ambition: replacing static long business plans with short, falsifiable cycles of experimentation. A method widely agreed across the literature, despite scholars objecting to what, precisely, should tie those experiments: rapid customer contact, as suggested by Ries and the broader Lean Startup Approaches literature, or theory-driven, explicit hypotheses, as a more novel theory-based view intends. In any case, the true end line of both sides converges toward the same validated direction: what the market is willing to pay for and what a startup builds should match – the condition that will be analyzed in more depth in the following section (*Product-Market Fit*).

Product-Market Fit

The alignment toward a validated match between what the market is willing to pay for and what a startup builds, as discussed at the end of the previous section, is exactly what practitioners have labelled '***Product-Market Fit'*** (**PMF**). Marc Andreessen, a venture capitalist, was the one who popularized the term, defining it as the stage at which a startup

finds itself in a strong market with a product that satisfies the market's needs. He was also the one who dared to argue that achieving this state is actually '*the only thing that matters'* for a startup's future (Andreessen, 2007). Andreessen's approach rests on three interacting components - the value of the founding team, the caliber of the product and the growth and size of the addressable market - as well as on the corollary underpinned by the venture capitalist Andy Rachleff, who claims that holding a strong market influences a startup's success or failure regardless of product quality or team; however, a weak market can jeopardize even a brilliant product and team (Rachleff, as cited in Andreessen, 2007).

Notwithstanding its lasting and significant influence on the way entrepreneurs and investors approach startup success, this formulation arose as a critique of the industry, rather than a peer-reviewed academic notion, and was widely spread around without prior formal empirical or theoretical scrutiny.

The Product-Market Fit notion defined by practitioners connects with Blank's Customer Development Model previously discussed in this chapter. Overall and Wise (2015) suggest that the moment when a startup reaches Product-Market Fit resonates with the shift from Blank's Customer Validation to Customer Creation stages, given that a venture can affirm to have achieved it only after demonstrating it has a repeatable and scalable path to customers, given that a single successful sale is not enough, and consequently can switch its focus from discovery to growth. Drawing on their paper, it is possible to assert that Product-Market Fit is not a separate or subsequently inserted concept into Customer Development, but rather a specific result that the Customer Discovery and Customer Validation stages are tailored to develop.

The strategic management literature offers a related and rigorously tested construct, namely the definition of '***fit'*** between a venture's product-market strategy and its business model. Referring to Zott and Amit (2008) research, the two elements are outlined as conceptually distinct. In particular, **product-market strategy** addresses the way a firm positions itself against rivals through cost leadership, differentiation, or timing of market entry. On the contrary, the **business model** concerns the structural template of a venture's transactions with

partners, customers and suppliers, trying to interface product markets and factors. The two authors, resting upon the resource-based standpoint on the firm and on contingency theory, elaborated and empirically tested a model through a sample of new public firms, discovering that business models centered on novelty (such as new ways of organizing exchanges among transaction participants) improve firm performance, evaluated as the market value of a firm's equity, expressly when it is combined with a cost leadership strategy, a differentiation strategy or early market entry. Zott and Amit's (2008) main conclusion delineates how business model and product-market strategy work as complements rather than substitutes; in fact, firms that successfully match these two dimensions are more likely to outperform firms that do not.

In order to better illustrate this distinction, Zott and Amit (2008) make a comparison between firms that share the same product-market strategy but have different business model designs, and firms that share the same business model position but differ in strategy. For instance, examining Priceline and NetBank, the two both pursued a **cost leadership strategy**; however, Priceline built its business model around a **completely new transaction mechanism** – a reverse auction that gave customers the possibility to name their own price. On the other hand, NetBank centered its business model on **efficiency**, leading to a reduction in transaction and search costs for an otherwise conventional online banking service. Alternatively, Multex and Didax both adopted the differentiation strategy while pursuing distinct business models. Multex's model, in fact, was built around efficiency, centered on fast, low-friction distribution of financial information to a wide client base. Whereas Didax's was centered on novelty, bringing together participants that were not connected before around a community-based value proposition. Such examples highlight that firms pursuing a similar competitive strategy, or addressing customers with similar needs, can nonetheless adopt substantially different business model structures, and that this structural choice does affect performance.

This argument sits, according to Zott and Amit (2008), within a broader school tradition related to the fit between organizational structure and strategy, resting its origins in the conventional study conducted by Chandler (1962, as cited in Zott & Amit, 2008) of how changes in administrative structure followed changes in corporate diversification strategy among large American corporations. This prior literature focused primarily on a firm's internal administrative arrangement, whereas the two authors extended the inquiry to how a

firm’s boundary-spanning transactions with partners, customers, and suppliers are structured, - meaning to the business model itself – claiming that, even if less explored, it equally represents a consequential structural dimension.

It is worth mentioning that not each pairing hypothesized by Zott and Amit (2008) was empirically confirmed. In particular, while novelty-centered business models experienced a positive interplay with differentiation, cost leadership, and early market entrance, as expected, efficiency-centered business models’ data did not show the complementary relationship with a cost leadership strategy as hypothesized. This nuance emphasizes that, despite being a valuable construct, the ‘fit’ between strategy and business model is not guaranteed or automatic just by simply pairing intuitively compatible elements, it still represents an empirical topic endemic to the context.

A consideration worth stressing regards how Zott and Amit’s notion of ‘***fit’*** differs from the ‘Product-Market Fit’ construct defined by practitioners, which has been discussed above. Zott and Amit's construct refers to the alignment between product-market strategy and business model, rather than the customer-facing issue of whether a product satisfies a given market. However, there is a significant underlying assumption that the two authors share, which is the fact that the relationship between what a firm offers and how it is structured to deliver it is not incidental to performance, but in fact, a condition that shapes performance, and that should be actively managed and assessed, instead of being assumed.

Furthermore, some recent writings have attempted to formalize the practitioner notion of Product-Market Fit in quantitative terms. Bogdanov (2025), for instance, examined the case of a startup working in the German water-treatment sector by applying a logistic regression to test how factors such as the intensity and quality of customer development activity, access to reliable suppliers and regulatory constraints on founders affect the probability of achieving Product-Market Fit. The study found that customer development intensity and quality, together with access to suppliers, were associated with a significantly higher likelihood of Product-Market Fit, whereas regulatory and legal constraints on founders were associated with a significantly lower one. In this context, the author also evaluates Germany's regulatory

environment - which, in some cases, constrains non-resident founders from formally registering a business - as unfavorable compared to jurisdictions like Estonia or the Netherlands, where this friction has been reduced by mechanisms such as e-residency and streamlined incorporation. This implication shows that not only internal weaknesses connected to the venture's customer development or market understanding can constrain the achievement of Product-Market Fit, but also the regulatory and institutional conditions, which lie widely outside the founder's control.

Whereas this research's approach can be defined as less established and comparatively exploratory, compared to the strategic management literature previously mentioned, it represents evidence of the broader ongoing effort within the field to shift the Product-Market Fit's judgement from being intuitive and largely qualitative, toward a more testable and measurable construct.

Considering both threads – the construct of Product-Market Fit derived from practitioners and the more formally modeled concept of strategic fit – the two rest on the same underlying idea from different standpoints: a startup's prospect does not purely rely on the product alone, nor on the market itself, but rather on the alignment between the two, despite how that alignment is measured or defined.

Ultimately, the whole chapter has mapped out a consistent argument across all its constituent sections. **Startups** substantially differ from **established firms** as they operate under conditions of extreme uncertainty, instead of tracing and executing a repeatable, known business model ('*Startups and Established Firms'* and '*Startups & Uncertainty'*); such uncertainty leads startups to have as their central task not efficient execution, but **validated learning** about their business model and their customers ('*Startup Validation'*). This task is formalized into an iterative, structured process by Blank's **Customer Development Model**, which is geared around customers' discovery and validation before scaling ('*Customer Development'*). On the other hand, the **Lean Startup Model** proposed by Ries integrated this process, through Agile Methodologies, into an operational discipline, the so-called 'Build-Measure-Learn' loop, providing a quick and cheap way to test business model hypotheses, while simultaneously raising sustained academic critique related to its assumption about

bounded rationality, customer feedback and its appropriateness for breakthrough, rather than incremental innovation (‘*Lean Startup’*).

All these accounts considered, starting from Blank’s earliest formulation and so on, the final target each process aims for is the same: a validated state in which a product satisfies a specific market, scalably and repeatably. In the practitioner literature, this state has come to be known as **Product-Market Fit**. Furthermore, despite the comparatively limited formal academic literature that addresses Product-Market Fit as a distinct construct, related work on the fit between strategy and business model proposes a similar rigorously tested counterpart, claiming that the ‘match’ pursued by startups is not simply an intuitive judgment, but rather a modulable and measurable condition.

The following chapters draw directly on this foundation; however, they shift register from theoretical synthesis to operational practice. Chapter 3 implements a practitioner-developed framework - used throughout this thesis - to define, validate and measure this ‘*alignment*’, starting with the definition and structural account of Product-Market Fit – comprehending how it manifests through observable signals and the archetypal patterns startups exhibit on the path towards it – before switching to the validation and experimentation process that startups undertake in practice. Additionally, the chapter will address how Product-Market Fit, once approached, can be evaluated and measured through actual indicators and metrics. Lastly, it examines everything that the startup goes through once it reaches the ‘*fit’*: how it scales the business built around it.

3. Product-Market Fit in a Practical Perspective

3.1 Validation Process toward Product-Market Fit

Product-Market Fit: From Concept to Operationalization

The thesis examined **Product-Market Fit** mainly from a theoretical perspective so far, placing it in the strand of the broader literature on startups, customer development, uncertainty, validation, and Lean Startup. As explained, Product-Market Fit is considered achieved once a startup's offering is aligned with a sufficiently attractive market and is able to satisfy its targeted customers' needs. Meaning that such construct constitutes a crucial point of convergence between a startup's value proposition and market demand. Product-Market Fit represents a key concept in startups and innovation, critical for scaling, for reaching success, and for building something users need, use, and value.

However, shifting from this conceptual perspective to the **practical application** of Product-Market Fit often raises a further issue: '*How can a startup identify Product-Market Fit emergence, and how can it progressively identify whether Product-Market Fit's required conditions are being achieved?'.* This is a key question, especially considering the fact that Product-Market Fit generally cannot be recognized through a single metric or observation. On the contrary, it emerges from combining market response, customer behavior, business performance, and product usage.

Consequently, the practitioner-oriented literature has developed several frameworks and operational approaches to translate Product-Market Fit into a more actionable and observable goal. These frameworks embed the theoretical foundation analyzed in the previous chapter by converting the abstract notion of '***fit'*** into an actionable set of conditions, stages, signals and validation activities. Therefore, this chapter will dive deeper with a practical analysis, resting

primarily on practitioner contributions to investigate how Product-Market Fit can be recognized, validated, and progressively intensified.

The sources examined complement practitioners' frameworks such as the one proposed by Chris Tottman, Michael Ho, Burak Büyükdemir, Ruben Dominguez Ibar, the Board of Innovation, Paweł Huryn and other startup-oriented organizations and authors. From this stance, Product-market Fit cannot be simply narrowed down to the successful launch of a startup product, but rather it can be interpreted as the outcome of a progressive process that startups embark on to increasingly align customer problems, value creation and market demand.

Referring to the practitioner literature, I consequently conducted this analysis, following the '***Product-Market Fit journey'*** structure by linking several interconnected stages, starting off with the definition of value proposition and identification of assumptions, moving onto the formulation of hypotheses, experimentation, pretotyping and MVP (Minimum Viable Product) development, customer feedback and Product-Market Fit validation. Once a startup reaches a sufficiently satisfying level of '*fit'*, customer retention, market pull and eventually scalable growth become viable options for it.

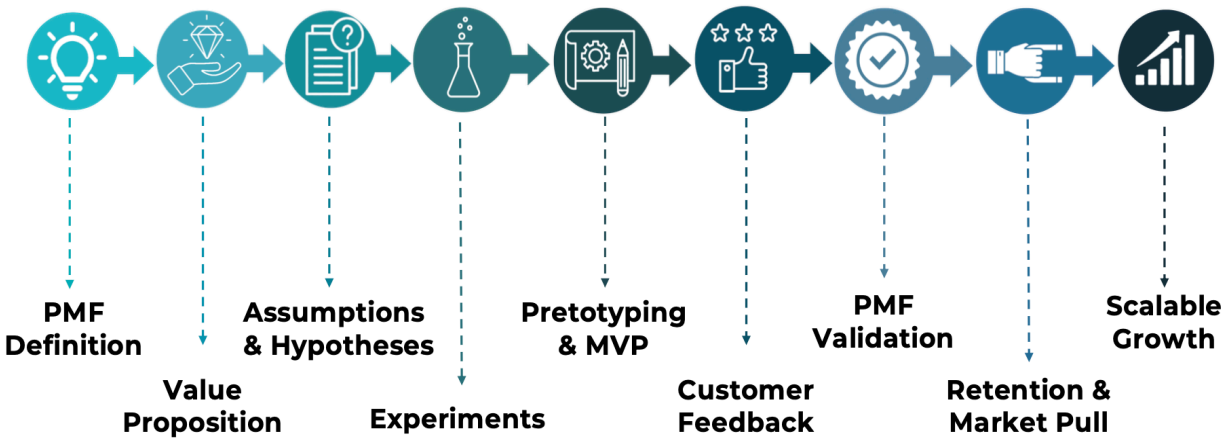


*Figure 3.1a – **Product-Market Fit Journey***

From Problem-Solution Fit to Product-Market Fit

In addition, throughout the startup development process, it is possible to encounter other forms of '*fit'* that must be distinguished from Product-Market Fit. In particular, the practitioner-framework reviewed highlights the divergence between **Problem-Solution Fit (PSF), Product-Market Fit and Go-To-Market (GTM) Fit**. These notions help a startup to answer some questions that arise when it progresses from determining a valuable issue to establishing a repeatable growth system (Ho & Büyükdemir, 2025).

Problem-Solution Fit regards the appropriateness of the proposed solution in addressing the identified problem that customers consider relevant and valuable. Therefore, the main question, at this point, is whether the proposed solution will hold enough value from the customers' perspective. On the other hand, **Product-Market Fit** goes one step further and ponders whether the market in which the product is positioned is suitable or not and whether the startup is able to repeatedly deliver enough value to customers. Finally, **Go-To-Market Fit** considers whether the startup is capable of consistently reaching the targeted Ideal Customer Profile (ICP) and transforming that grasp into repeatable sales. Differentiating between these concepts is crucial, as obtaining proof of customer interest does not always imply the achievement of Product-Market Fit. (Dominguez Ibar, 2025b). Likewise, it would not be correct to automatically assume that the underlying product-market relationship is appropriate, just because of the acquisition of customers. Consequently, Product-Market Fit does not merely represent the existence of an attractive product or early market traction, rather, it indicates the state of alignment between customer value and repeatable demand and retention (Ho & Büyükdemir, 2025).

The Product-Market Fit Journey

Therefore, it is possible to define Product-Market Fit as the result of a progressive learning process, instead of an isolated event. As mentioned above, the considered '***Product-Market Fit journey'*** goes from value proposition and assumptions to Product-Market Fit validation, eventually reaching scalable growth, retention and market pull. Such perspective changes the role of product development as well. The final goal is to progressively reduce the uncertainty related to a product's adaptability to solve a meaningful problem and create sufficient value

for a specific customer segment, and not simply increase the number of features incorporated into a product. Thereby, experimentation becomes the principal mechanism through which startups learn whether assumptions are supported by evidence or whether they require some adjustments.

Value Proposition

The **value proposition** is a fundamental element in this process, since it is not possible to separate Product-Market Fit from the value perceived by the target customer. A product can be technically functional without necessarily reaching a meaningful market fit. What matters the most, as mentioned before, is finding a solution that possibly addresses a relevant customer problem and carries, at the same time, a sufficiently strong perceived value compared to the alternatives available in the market.

From an operational stance, the startup, for the development of the value proposition, must clarify some key aspects: **who** the targeted customer is, **which** problem is being addressed, **what** value is created, **how** the problem is solved, **why** the proposed solution is superior to already existing alternatives, and **why** the solution is relevant at a specific point in time (Ho & Büyükdemir, 2025).

At the beginning of the startup journey, all these questions should not be considered as consolidated facts, instead, they represent assumptions that require validation. Some elements, such as perceived value, customer needs, willingness to pay, and willingness to adopt, might initially be uncertain; hence, customer interactions and experimentation will be crucial for the progressive evolution of the value proposition itself.

Readiness to Scale and Paths to Product-Market Fit

In addition, practitioner-oriented literature approaches another critical juncture: determining the optimal moment for a startup to move from validation to scaling. The framework provides the so-called "*1-3-10 rule*", which affirms that a business element can be defined as

repeatable only when it achieves approximately ten consistent, reproducible iterations, rather than only after one or three times; whereas a system can be defined as **scalable** only upon being able to bear exponential user growth – growing from about ten to one thousand and ultimately to one million users – without a corresponding increase in costs, resources or operational effort.

Drawing on this implication, in the practitioner material it is possible to identify as well a pragmatic criterion for Product-Market Fit validation: instead of requiring universal repeatability and scalability across all business dimensions, its achievement needs only partial attainment, in particular, at least one element from the Product row (top), one from the Market row (middle), and the first three elements of the Fit row (Find, Win, Deliver), hence validating that the startup's critical activities are working (Ho, 2025).

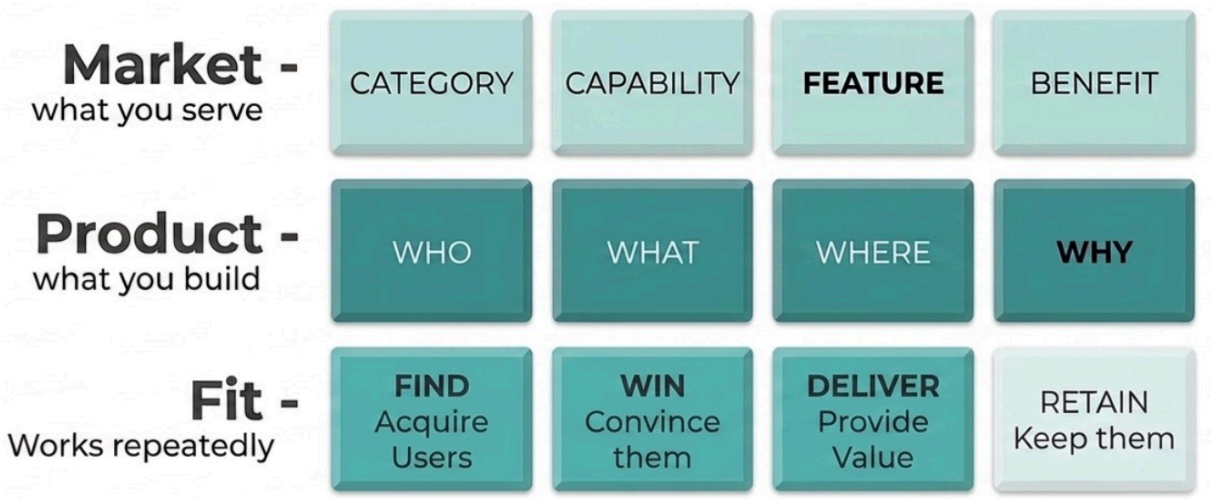


Figure 3.1b – ***Product-Market Fit Minimum Elements***

This threshold-based conceptualization aligns with the non-binary interpretation of Product-Market Fit discussed previously, implying that assessing scaling readiness should similarly adopt an incremental approach, instead of relying upon a single qualifying event.

Moreover, an additional question is addressed in a supplementary framework: rather than determining the temporal readiness (*when*) for scaling, it examines *where* it originates from. Based on the framework, it is possible to identify eight distinct starting points related to Product-Market Fit, each one associated with a different central question, thus corresponding to a different validation methodology.

Path	Starting Point	Main Question	Example	Best For
Customer Focus	Persona	*"Who do I want to help?"*	Canva	Consumer pain points
Business Focus	Industry	*"Which company type?"*	Procore	Vertical SaaS
Functional Path	Use case	*"What task can improve?"*	Loom	Productivity tools
Problem Solver	Pain point	*"What problem must be solved?"*	Calendly	Clear frustrations
Category Disruptor	Existing category	*"What can be reinvented?"*	Uber	Market disruption
New Technology	New tech	*"What can this technology unlock?"*	OpenAI	Deep tech / AI
New Ability	New capability	*"What becomes possible now?"*	Jasper	AI enablement
Reverse Engineer	Desired outcome	*"What outcome do people want?"*	Tesla	Visionary products

*Table 3.1a - **Eight Paths to Product-Market Fit** (Sahil S., 2025)*

This typological table is crucial as it proves that Product-Market Fit achievement does not follow a universal sequential pathway. Rather, the startup's departure point – including a customer segment, a technology, an industry, use case specification or an envisioned outcome – essentially determines the prioritization and salience of validation questions throughout the nascent stages illustrated in this chapter.

Recognizing Product-Market Fit

Defining the concept of Product-Market Fit as the **alignment** between **product** and **market** does not make it any easier to actually identify when such alignment is achieved.

In order to establish the existence of Product-Market Fit, startups cannot rely on a single indicator. In fact, looking for multiple reinforcing signals would be the best choice according to practitioners, in particular demand, sales, market response, behaviours and internal organizational dynamics.

This is coherent with the fact that Product-Market Fit should not be judged as a binary condition. Something that startups must keep in mind is that there probably won't be a direct shift from '*no Product-Market Fit'* to '*Product-Market Fit'*; instead, they are more likely to experience different degrees of '*fit'* as they progressively develop their customer base, product and market position. Majd Alaily's framework identifies four levels of Product-Market Fit: **Nascent**, **Developing**, **Strong** and **Extreme**. The first stage is characterized by early users and an immature product. In the second one, there is an increase in engagement and first paying customers. In the third level, startups experience retention, growth and market pull. The last and fourth level outlines a critical customer problem combined with repeatability, strong scalability and efficiency (Alaily, 2025).

This leveled interpretation implies that Product-Market Fit evaluation should rely on progressive evidence and trends, instead of depending on the achievement of one predetermined threshold.

Looking more closely at the relationship between a product and its market, it is possible to affirm that it may differ across customer segments, it can evolve over time, and it can also deteriorate if customer needs, market dynamics, or competitive conditions change. Therefore, several complementary signals must be observed to recognize Product-Market Fit, rather than solely relying on one numerical metric.

Product-Market Fit Signals

Among the **observable signs**, there is the change in the **relationship** between the **startup** and its **customers**. Whenever strong market fit is missing, a substantial active effort from the startup is required to acquire customers. Nonetheless, as Product-Market Fit strengthens, demand increasingly becomes ***pull-driven***: rather than being constantly persuaded to adopt the product, customers actively look for it. This differentiation is fundamental as it suggests a shift from startup-driven acquisition toward market-driven demand.

Another correlated signal is the rise of **customer-led acquisition**. Every time existing users voluntarily recommend, share and defend a product, they start to contribute to the acquisition

of new customers. This behaviour implies that the offering's perceived value extends beyond the simple adoption and may lead to organic word-of-mouth growth.

In addition, **retention** is another crucial signal. Startups approaching Product-Market Fit, rather than merely attracting users, must keep track of users returning and progressively increase their engagement with the product. The framework, in fact, associated Product-Market Fit with retention's stabilization and the emergence of users more and more engaged - the so-called '*power-users'* (Dominguez Ibar & Büyükdemir, 2025).

Furthermore, the article's framework discusses a widely known qualitative approach used to assess Product-Market Fit: **The Disappointment Test**. This test asks customers how they would feel if they no longer had the possibility to use the product. As the practitioner shows, the most commonly referenced benchmark is that Product-Market Fit might be recognized when the percentage of respondents who state they would be '*very disappointed'* exceeds 40%. However, this threshold alone should not be interpreted as a sufficient or universal condition for Product-Market Fit. It should actually be considered a piece of evidence to examine alongside behavioural, market and commercial signals. It is very important to point out this distinction, given the context-dependence of Product-Market Fit, which cannot be reduced to a sole single numerical threshold (Dominguez Ibar & Büyükdemir, 2025).

Furthermore, apart from the aforementioned signals, the framework illustrates further indicators that must be monitored. As Product-Market Fit consolidates, sales cycle duration starts to contract, the startup's pricing power progressively enhances, and the customer organization's budget availability rises. Leading, thereby, to a transition from effortful to comparatively frictionless sales dynamics (Dominguez Ibar & Büyükdemir, 2025).

Similarly, another signal addresses the nature of customer support interactions: users start to ask more and more about the product's supplementary functionalities, rather than making basic troubleshooting questions, demonstrating user adoption's transition from elementary operational utility toward deliberate active exploration of value.

Concurrently, market-level validation becomes more evident: the startup's approach starts to be replicated by competitors, as well as increased unsolicited partnership offers signal that the startup approach has achieved recognition as a real standard for problem resolution. This maturity manifests at an internal level through an enhanced team alignment focused on customers' imperatives, resulting in diminished internal deliberation over feature

prioritization and a more resolute, quicker decision-making process. In addition, practitioners highlight how this point leaves little room for interpretation once achieved. The organizational focus, in fact, pivots from "*how do we acquire users?*" to "*how do we* scale?" reflecting a reversal-demand shift from something that startups must actively manufacture to something that organically drives growth (Dominguez Ibar & Büyükdemir, 2025).

Product-Market Fit Myths

In addition to the positive signals analyzed previously, practitioners also discuss several common pitfalls and misconceptions from which founders could be misled to assume Product-Market Fit has been achieved when in reality, it has not, or they might pursue it wrongly.

The most common ones include: believing that developing a good product would automatically lead to demand generation ("*if we build it, they will come*"); mistaking early growth for Product-Market Fit; treating a pivot as a failure, rather than a valid response to market feedback; assuming that Product-Market Fit would come as a sudden breakthrough, rather than a gradual process; treating Product-Market Fit as a mere achievement related to products, ignoring market and business realities; presuming that customer engagement becomes superfluous once the product has been created; attempting multiple unrelated problems resolution at the same time instead of prioritizing only one; scaling the business before Product-Market Fit actual accomplishment; believing that Product-Market Fit is a permanent state once achieved; assuming that '*fit'* can be reached even just by performing marketing activities alone, instead of functioning as an amplification mechanism for already existing conditions (Tottman, 2026b).

In the end, all these misconceptions collectively consolidate a key argument: Product-Market Fit constitutes neither a spontaneous phenomenon nor an irreversible outcome emerging upon product creation and marketing, but rather as the consequent result of a deliberate, perpetually monitored validation process.

Product-Market Fit Archetypes

After examining how Product-Market Fit signals provide startups with indicators of whether a strong product-market relationship is being developed or not. On the other hand, when talking about **Product-Market Fit Archetypes**, these consider the type of market problem a startup is attempting to solve; therefore, they provide a complementary perspective. Practitioners' articles, analyzed through this thesis, identify three main Product-Market Fit archetypes: Hair on Fire, Hard Fact and Future Vision. Archetypes are mainly distinguished based on the customer's perception of the problem, as well as the cognitive or behavioural barrier that the startup has to overcome (Tottman, 2025).

Existing behaviour, customer awareness and the effort required to generate adoption are the main elements that distinguish each archetype from one another. Firstly, a **Hair on Fire market** is characterized by customers who already recognize the presence of an urgent problem and actively try to find a solution to it. Secondly, a **Hard Fact market** is characterized by customers who, even though they recognize the problem, have become accustomed to existing alternatives or legacy solutions, making behavioural change a big challenge. To conclude, in a **Future Vision market**, the problem might not be recognized by customers, or they might not understand the proposed solution, forcing the startup to provide a new interpretation of what is possible, beyond the mere product value.

Hair on Fire

The first archetype is **Hair on Fire** and it represents the most immediately recognizable form of market demand. As mentioned before, in a market like this, customers experience an urgent problem and actively seek to solve it. Startups' main challenge in this scenario is actually not convincing customers of the problem's existence, but rather proving why their solution should be preferred over the competitors' solutions. Therefore, startups should offer a sufficiently differentiated value proposition to create customer preference, instead of merely generating incremental improvement (Tottman, 2025).

Competitive noise is the main obstacle in this form of market. Considering that customers are already aware of the problem and are already seeking a solution, startups entering this market have to keep in mind that there might already be available alternative products or services. Therefore, the goal will be to generate a value proposition focused on providing the best-in-class solution that stands out from the existing workarounds. The practitioner framework analysis indicates being 'out-competed' as one of the main reasons for failure for this archetype, stressing the importance of differentiation, instead of settling on being marginally better compared to competitors. The main challenge that a startup should overcome would then be competitive positioning and not problem awareness. As discussed, customers are already educated on why the problem matters. What they actually need is a reason to choose the proposed solution, strong enough to prefer it over the already known alternatives. Meaning that the value proposition's distinctiveness and quality become fundamental aspects. Whether a startup achieves Product-Market Fit or not depends on its ability to generate a meaningful preference among users, regardless of how strong and immediate the market demand is.

All considered, a startup in a Hair on Fire market cannot simply focus on whether a customer is willing to solve the problem, but must understand whether the proposed solution is sufficiently valuable and differentiated to modify their usage or purchasing behaviours. Thus, customers' active looking for a solution, preference over competing options, and product adoption should encourage the progressive emergence of evidence of Product-Market Fit's presence in this archetype. To summarize, the framework identifies being different, rather than merely better, as the winning ingredient for the Hair on Fire archetype.

Hard Fact

The second archetype is **Hard Fact** and presents a different issue. In this case, customers usually are aware of the problem; however, they have already accepted it as part of their daily activities. Consequently, they might be comfortable with their established routines, workarounds or legacy solutions, and are not actively looking for alternatives. In order to translate the latent demand into adoption, startups need to overcome behavioural inertia. Hence, the central challenge consists in demonstrating that changing behaviour is worthwhile.

The product offered must generate a sufficiently strong ‘aha’ moment through the solution of a problem that customers previously considered unavoidable, difficult, or not worth addressing. Insufficiently convincing solutions or problems perceived as not important enough generally represent the main failure typologies for this form of archetype (Tottman, 2025).

The main characteristic of the Hard Fact archetype is latent or hidden demand. As previously explained, despite the acknowledgement of a problem, customers’ current behaviours may prevent them from actively looking for a new solution. If available alternatives and legacy solutions are deeply embedded in everyday habits, the status quo appears acceptable even when it is not the optimal state. Consequently, overcoming both the practical and psychological inertia associated with existing routines becomes a great problem for startups. In the framework, the practitioner suggests that the main challenge is the ability to convince users to change behaviours and established habits.

This implication will therefore affect the value proposition’s definition. Startups cannot simply offer an alternative solution; they should rather demonstrate that there actually is a substantially better way to solve the already recognized problem. It is possible to state then that a startup should offer a product with a sufficiently compelling improvement to justify the risk, the effort or the inconvenience connected with the modification of established behaviours. Hence, the aim of the value proposition will be solving a problem that customers have probably previously judged as unsolvable or unavoidable.

Hard Fact archetype’s main risk is that startups may overestimate the importance of the problem. In fact, creating a technically superior solution does not automatically imply that customers will perceive it as sufficiently valuable to abandon their existing behaviours. For this reason, in the practitioner framework, a not sufficiently convincing solution and a not important enough problem to solve are identified as the two possible modalities of failure. Startups will be able to overcome this challenge by creating a strong customer ‘aha’ moment through clear messaging and delivery of concrete value.

It is possible to state that this archetype needs to pay particular attention to customer behaviour. Wondering whether the customer acknowledges the presence of a problem or not is

not enough; startups must understand whether customers are willing to change their current habits or not. Some crucial questions will therefore be: figuring out if the user relies on workarounds, if there are legacy or established solutions, if customers are willing to change what they currently do, and if the product can lead to the establishment of a completely new behavior.

Future Vision

Conversely from the two archetypes discussed above, **Future Vision** represents a different form of Product-Market Fit. In this case, the startup will face a different challenge: customers have not recognized the problem yet. Consequently, the proposed solution might not be perceived as needed by potential users. Hence, characteristics of the customer mindset will be skepticism or disbelief - the '*Yeah, right'* way of thinking – towards the new suggested method to solve a problem or the problem itself. Therefore, it is not possible to reduce the central challenge to the mere demonstration that the solution found is superior to the existing workarounds, but to encourage customers to change their beliefs (Tottman, 2025).

Opposite to the Hair on Fire archetype, in which customers actively try to find a solution, and opposite to the Hard Fact archetype, in which customers acknowledge a problem and accept it as normal, this archetype experiences a lack of established demand. Thus, the Future Vision markets might not exist or be insufficiently developed. In this case, a challenge for startups will definitely be the resistance that customers may oppose even before they actually consider and evaluate the product. This is why startups must portray their future vision in a clear, understandable manner to potential customers and make sure they believe in it.

For what regards the value proposition, this archetype is linked to the development of a new paradigm. Improving an established solution does not have to be the main objective; however, startups should show a completely new way of creating value or addressing a need. The practitioner market identifies pursuing the wrong path to achieve the envisioned future as the main mode of failure. Consequently, making sure that the proposed future is tangible and credible enough – what the article defines as '*making sci-fi a reality*'- is the correct way to overcome this issue.

Future Vision archetype highlights a central characteristic of Product-Market Fit: startups cannot assume that there is always an existing customer demand prior to the product. There is the possibility that startups may attempt to introduce a novel solution with which users will have limited prior experience, hence, they have a limited capability of expressing their needs. Opportunities should not be considered invalid just because there is not an immediate demand for it. Nonetheless, founders must not confuse their own vision of the promising future as evidence that users will actually adopt it. For this reason, the systematic validation of the novel proposition is fundamental.

This implication leads us to the following stage of the Product-Market Fit process. Regardless of which archetype the startup is operating in, the underlying business idea and the value proposition hold several assumptions about problems, solutions, customers and markets - **assumptions** that cannot automatically be considered mere facts. They must be prioritized, made explicit and progressively put against evidence. To conclude, **validation** represents the bridge between the formulated business idea and the evidence needed to support it.

From Assumptions to Hypothesis

Validation as a Process of Evidence Generation

Validation can be defined as the process of gathering evidence and learning about a business idea through experimentation and user testing to support faster, less risky, and more informed decisions.

Validation is important, especially for startups, as they take decisions under conditions of uncertainty and limited resource availability. It also allows entrepreneurs to progressively gather evidence and use it to make informed decisions, rather than committing substantial resources to the entire development of a product and pondering its market response only after its launch. The goal is not reduced to the mere determination of whether a product is successful or not; it is to learn which elements of the business proposition need to be reconsidered and which are supported by evidence.

This approach signals a shift from the traditional waterfall approach towards a more iterative one: the **Lean approach**. The **waterfall model**, presented in the practitioner framework, assumes that customer requirements can be identified before the product is developed. Therefore, startups can commit a substantial number of resources to planning, developing, and designing the product before getting meaningful market feedback. Since validation occurs prior to the final stages, there are limited chances for iteration and probably high costs in the case the underlying business proposition turns out incorrect.

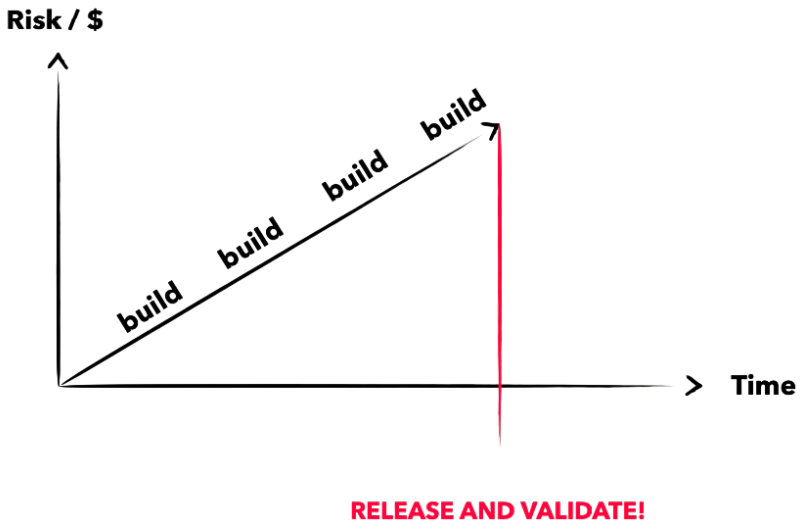


*Figure 3.1c – **Waterfall Approach** by Board of Innovation*

Alternatively, the **Lean approach** introduces several validation checkpoints throughout the entire development process. This way, hypotheses and single assumptions are progressively verified with experiments, instead of validating the entire business proposition only at the end. Consequently, resources can be incrementally allocated as evidence is collected. The Lean model's characteristics, as mentioned in the article, are: multiple iterations, repeated validation checkpoints, lower risk, and progressive investment after hypotheses validation (Board of Innovation, 2019).

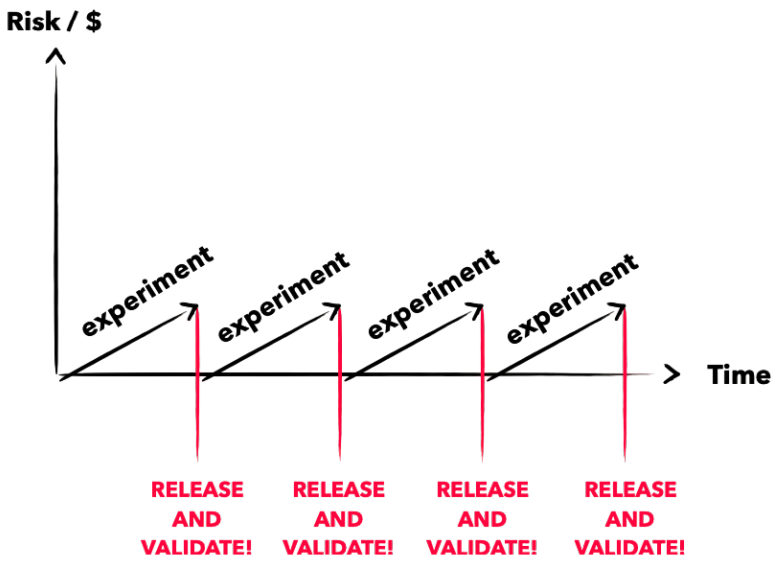


*Figure 3.1d – **Lean Approach** by Board of Innovation*

Differentiating between the two approaches is crucial for the startup. In the startup context, uncertainty is high, and heavy investments are required before testing assumptions; however, this may lead to significant waste of resources. Conversely, through an iterative validation model, startups can detect tricky assumptions early on and consequently adjust their direction before committing substantial resources.

From Assumptions to Hypotheses

The first step of the process is the identification of the **assumptions** on which the business idea is based. A startup's value proposition contains, by nature, beliefs on customer needs, the value created by the solutions, the problems addressed and the expected customer behaviours. Even if these beliefs may seem reasonable at the beginning, they remain uncertain until evidence supports them.

Before moving on, it must be clarified the difference between assumptions and hypotheses. **Assumptions** are defined as beliefs made without enough evidence, generally based on previous knowledge, intuition or expectations about market or customer behavior. On the other hand, **hypotheses** turn these beliefs into testable and explicit statements that indicate a particular outcome and consequently can be examined through experiments. Hypotheses are

described, in the practitioner framework analyzed, as statements that must be actionable and measurable, usually expressed by the '*if-then'* structure that renders explicit the relationship between an action and an outcome (Board of Innovation, 2019).

For example, at the beginning, a startup might presume that customers are willing to pay for their proposed solution. On its own, this statement is too generic to actually constitute a useful test. However, it can be turned into a hypothesis such as: a specific portion of the targeted customer segment will express their willingness to pay a defined price if the proposed solution addresses a customer problem considered sufficiently important. Such an example offers the foundations to establish an experiment, identify a suitable user group, and define measurable criteria to evaluate the outcome. Consequently, it is possible to represent the transformation like this:



This sequence is fundamental to operationalize Product-Market Fit as it transforms what initially is considered a belief into something that can be consistently investigated. **Structured validation approaches** enable hypotheses testing through several typologies of experiments, including landing pages, interviews, and MVPs, as the practitioner framework highlights (Huryn, 2024).

Another important distinction is the one between research activities and validation experiments. On one side, there are observations, interviews, analytics, and other research activities that can produce insights and information. On the other hand, experiments are useful validation tools to verify determinate hypotheses or assumptions and lead to **evidence-based decision-making** (Huryn, 2024)**.**

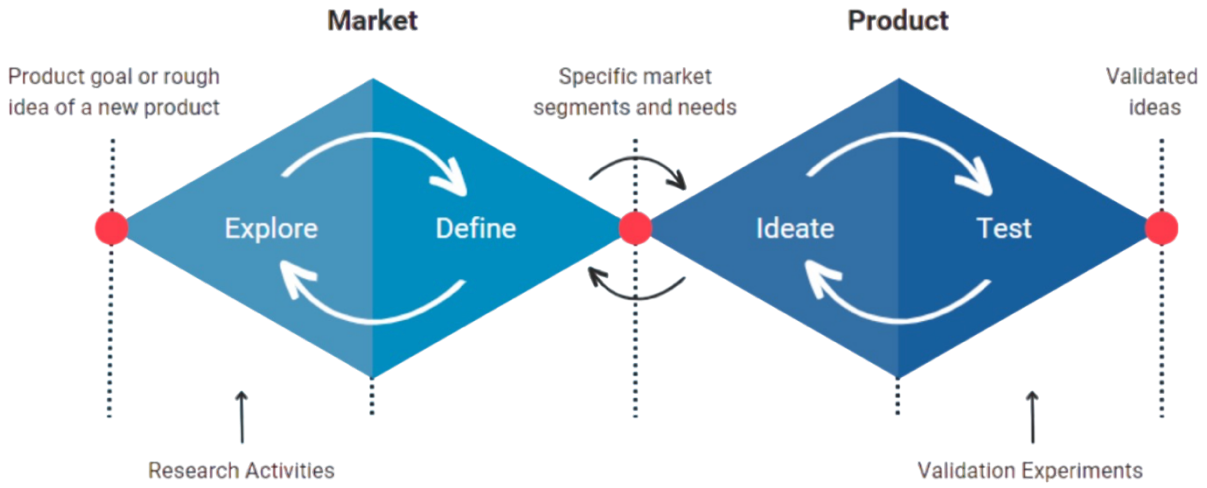


*Figure 3.1e – **From Assumptions to Hypothesis** by P. Huryn (2024)*

The Three-Step Validation Process

Once assumptions have been defined, the Validation process can start. This process divides into three main steps: **1)** defining the focus and the learning goal, **2)** mapping out and prioritizing assumptions**, 3)** selecting and designing the appropriate experiments.



*Figure 3.1f - **Three-Step Validation Process***

Step 1 – Define the Focus and Learning Goal

In the first step, the startup needs to establish what it is trying to validate or learn. Rather than starting by selecting the methods or tools to employ, experiments should begin by defining the uncertainty the startup wants to reduce and specifying which business proposition element needs evidence. The framework highlights how experimentation's main goal is to **accelerate**

learning by interacting with real customers. Therefore, before conducting the test, the startup should establish what it desires to learn.

Depending on the innovation process' stage, it is possible to determine the appropriate validation target. Various elements of the business proposition may need to be tested; among these there are: **problem**, hence understanding if the established problem is relevant enough to customers; **solution**, whether customers are willing to pay and whether the proposed solution addresses the problem; **features**, meaning which features contribute to enhance customer value; **business model**, thus, establishing whether the proposed solution is economically viable or not; pricing, figuring out if the pricing logic is appropriate for the offering.

Consequently, the learning goals established set the basis to select the appropriate experiment. For example, a startup attempting to determine if a problem exists needs a different form of evidence compared to one attempting to determine whether a customer is willing to pay for a solution.

Step 2 – Map and Prioritize Assumptions

Once the validation focus has been established, it is possible to move to the second step: **mapping out assumptions** underlying the business idea and prioritizing the ones that need to be tested. Considering that not all assumptions hold the same level of risk or uncertainty, there is no specific order in which they must be tested. The practitioner framework suggests subdividing assumptions into different categories according to four dimensions: 1) **desirability**, understanding whether a user/customer desires or values the solution; 2) **feasibility**, which concerns the technical and practical realization of the proposed solution; 3) **viability**, addresses the economic sustainability of the business model; 4) **corporate fit**, thus, if the idea is consistent with the broader strategic context (Board of Innovation, 2019).

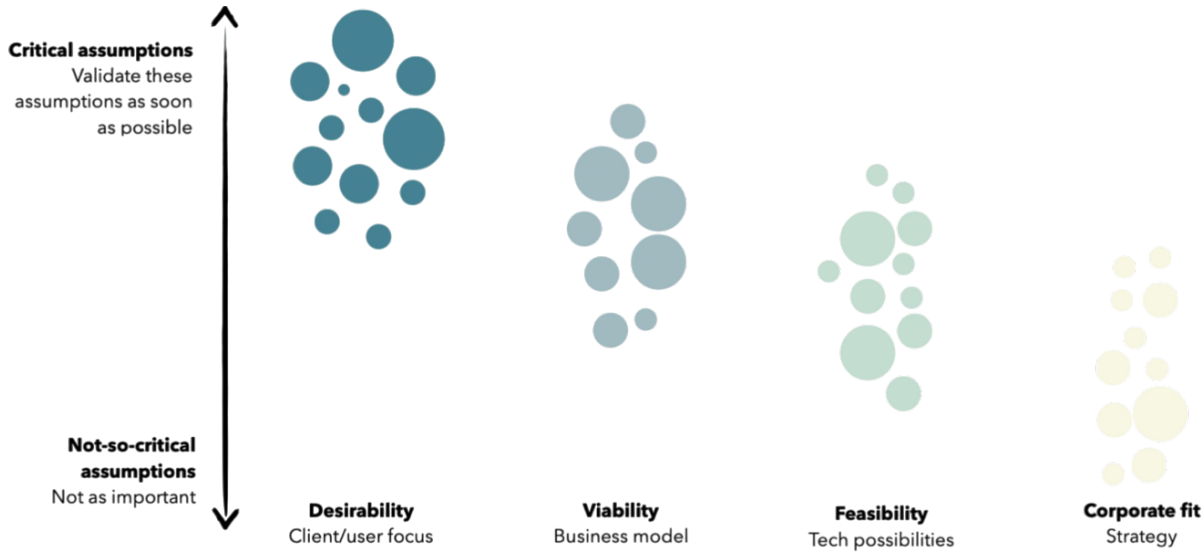


*Figure 3.1g – **Mapping Out Assumptions** by Board of Innovation*

Categorizing assumptions provides a structured basis for prioritization and helps startups make the source of uncertainty visible. In particular, the framework emphasizes assumptions concerning desirability and user needs, as they directly influence whether the proposed solution will be considered valuable by the market or not. For this reason, high-priority assumptions must be addressed before less critical ones, allowing startups to allocate their limited resources to uncertainties that are essential to successfully make the idea viable.

This activity can be supported by the implementation of the **Assumption Mapper** by structuring assumptions, enhancing key risks' visibility, and supporting the team in identifying which assumptions have priority for validation. The whole process consists of setting up a mapping framework, identifying assumptions related to the business idea, prioritizing the most critical ones, and then testing them systematically (Board of Innovation, 2019).



*Figure 3.1h – **Assumption Mapper** by Board of Innovation*

Afterwards, after completing all these steps, the assumptions that have been identified as the most critical ones, they can be translated into testable hypotheses. Therefore, this leads to the creation of the needed connection between the uncertainty indicated in the previous step and the experiment, and subsequently generates evidence.

Step 3 – Choose and Design the Relevant Experiment

Finally, it is possible to move forward to the third step, necessary to **select** and **design** the most appropriate **experiment** to test the prioritized hypotheses. After defining what it wants to learn, mapping out assumptions, and formulating the main hypotheses, the startup can establish the experiment that is most suitable to generate the evidence needed.

Selecting the experiment must follow the hypotheses, not the other way around. Various experiments can lead to various types of **evidence** and may differ in terms of the resources needed, the types of customer behaviours observed, and the degree of commitment they might

reveal. For example, a low-cost experiment could be appropriate to understand if customers are initially interested in the value proposition, whereas a more developed prototype might be needed to test users' interactions with a solution. Rather than identifying the most sophisticated experiment, startups should opt for the simplest one that allows them to generate evidence sufficiently relevant for the hypothesis being investigated (Board of Innovation, 2019).

It is worth mentioning that, upon applying this approach, there is a distinction between two broad experiment categories. Starting with generative experiments, which are qualitative, exploratory, and have an open-ended character; they support startups in problem identification and address the key question '*what should we build*?'. On the contrary, evaluative experiments are quantitative, measurable, and driven by hypotheses; their main objective is testing whether a proposed offer really works.

Startups generally shift progressively from generative to evaluative experiments throughout the validation journey: the former typology assists early establishment of the problem space, whereas the latter type subsequently tests whether a determinate proposed solution could lead to Product-Market Fit achievement (Huryn, 2023).

Therefore, the experiment selection should be established upon a few criteria that transcend the hypothesis itself. Additionally, every experiment embodies different advantages and limitations that must be evaluated against determinate learning objectives (this criterion will be further analyzed, method by method, later). Moreover, the selection process must take into consideration instrumental and platform-based resources available for experimental execution. Furthermore, the startup has to select the metrics that will be implemented to comprehend the outcome in advance, indicating the degree of customer interest or commitment the experiment is designed to capture.

Beyond these criteria, startups need to take into account the validation target – whether the solution, the problem, the specific feature, the pricing, or the business model, as discussed previously – as well as the environment within which the experiment will be executed, given that some experiments can be run in determinate contexts only, for instance in B2B rather than B2C settings (Board of Innovation, 2019).

The practitioner framework provides, to support this process, an **Experiment Card** as well. A tool designed to structure this last step, which helps define the main variables to test, establish the aim of the experiments, and define measurable success criteria before actually conducting the experiment. This way, it is possible to directly connect the assumption under investigation with the chosen experiment and hypotheses, the expected evidence, and the target group (Board of Innovation, 2019).



*Figure 3.1i - **Experiment Card** (Board of Innovation)*

Establishing the success criteria beforehand is fundamental, as it helps reduce the risk of interpreting the outcome of the experiment according to subjective expectations after conducting the test. Nonetheless, the startup can compare the results observed with predetermined criteria and establish whether a hypothesis is sufficiently supported, whether additional tests are needed, or whether the underlying assumption should be considered again, based on the evidence. Experimentation cannot be simply defined as a mechanism to collect information, it actually represents a solid base to make **evidence-based decisions**.

In fact, first the experiment is designed according to the learning objectives and hypotheses, then it is executed with the relevant target group, and the resulting evidence is compared with the success criteria already established.

Consequently, it is possible to define the whole as a cycle of designing, executing, evaluating, and deciding, in which the outcome informs the startup whether it should continue with the current approach, refine the experiment, or adjust its direction.

Thereby, the **validation logic** can be represented like this:

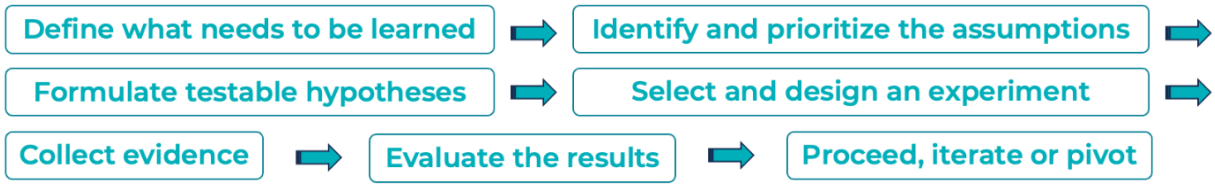


*Figure 3.1j – **Validation Process Sequence Extended***

Since validation does not always result in a simple '*yes*' or '*no*' answer, this iterative structure becomes a crucial element. In fact, evidence helps define whether an assumption should be retained, refined or rejected, therefore informing the next iteration of the startup's business model or value proposition. The sequence above emphasizes that experimentation is part of a **continuous learning process**, rather than an isolated activity. Each uncertainty is addressed by a specific experiment and generates evidence that impacts the formulation of the following hypotheses and the design of subsequent experiments. This is why progressively accumulated evidence enables startups to diminish uncertainty and simultaneously limit the number of resources allocated to assumptions that have not been validated yet.

Experimentation and Types of Risk

Once the startup has defined the experiment, it has to consider the **type of risk** or **uncertainty** it wants to investigate. As different assumptions address different aspects of the proposed business proposition, they necessitate different typologies of evidence. The four dimensions

that can be addressed with experimentation must be differentiated: desirability, usability, feasibility and viability.

The first one, **desirability**, regards customers or users who really desire and value the proposed solution. Consequently, it addresses the presence, as well as the strength of customer demand, and it can ultimately be defined a key dimension of Product-Market Fit. The second one, **usability**, is related to the users' ability and willingness to actually use the proposed solution and evaluate whether the interaction with the product creates friction. Moreover, **feasibility** concerns the proposed solution's practical and technical feasibility of being developed and delivered. The last one, **viability**, instead, refers to the economic sustainability of the underlying solution and its ability to create a sustainable business model (Huryn, 2023). This classification differs from the one utilized in the Assumption Mapper (Board of Innovation, 2019): both include desirability, feasibility, and viability; however, usability is mentioned only in the experiment-oriented classification, whereas corporate fit is mentioned only in the assumption-oriented one.

These dimensions prove, once again, that reducing validation to one single question - '*Does the customer like this product*?' – would be inappropriate. For instance, a startup could detect a strong customer need, but still face technical constraints that impede the effective solution delivery, or it may develop a product that is technically feasible, but still considered not valuable enough. Thereby, different sources of uncertainty must progressively be addressed at each **development stage** according to the **degree of criticality of assumptions**.

3.2 Experimentation Process toward Product-Market Fit

Pretotyping: Testing Demand Before Building

Establishing whether potential users effectively want the proposed solution prevents startups from investing substantial resources in the development of a prototype or an entire product (Tottman, 2026a). In order to do so, startups can implement pretotyping. **Pretotyping** finds its foundations on the possibility of testing demand availing of a simulation or a simplified representation of the product before committing resources to its full development. The first

question that must be answered in the early stages, even before examining the product's technical feasibility, is whether people desire the product.

This implication is what distinguishes **pretotyping** from **prototyping**. The first one has as its main objective analyzing demand and desirability, while the second generally focuses on investigating how a proposed solution can be used and developed. Consequently, if the pretotype is extremely simple, this may not hold the actual technological infrastructure of the product.

What matters the most is being able to generate evidence about customer behaviors and interest before investing substantial resources.

The pretotyping process can be subdivided into five activities: 1) determining the main **assumption**, 2) generating a simple test, 3) establishing the hypothesis, 4) conducting a **real-world test**, 5) **iterating** based on the results. The main objective is translating an uncertain belief into a **testable proposition** to generate the **evidence** needed to decide whether to increase the investment level; therefore, the whole process is coherent with the broader Lean validation logic discussed above (Tottman, 2026a).

If the central uncertainty regards whether the proposed solution will be effectively used, adopted or paid for by customers, then pretotyping becomes extremely relevant. Pretotyping gives startups the chance to investigate demand by diminishing the effort required when running the first test, while the idea is still flexible enough to be modified. Thereby, it can be considered a mechanism that bridges the formulation of hypotheses and the development of more sophisticated prototypes or minimum viable products.

Experiment Categories

Once key hypotheses have been established, it is possible to move to the following step: select an appropriate **experiment** able to generate **evidence** that supports or rejects it. As previously mentioned, different types of experimentation correspond to different types of hypotheses, as startups need to define the relevance of the problem, the solution's desirability, the

attractiveness of pre-defined features, the business model viability or the suitability of the pricing model. For this reason, the experiment selection should be based on the explicit uncertainty that must be reduced, instead of being driven by the popularity or availability of a specific testing method.

According to the practitioner framework considered in this thesis, **validation experiments** can be classified based on the form of evidence that they intend to generate for the development stage at which they are implemented. Moreover, it is possible to distinguish five different experiment categories: Market Engagement, Minimal Products, Feasibility Prototypes, User Prototypes and Experiments in Production. All these range from relatively modest approaches to test the market interest at the beginning to real-world experiments through functionalities or products (Huryn, 2023).

Market Engagement

The focus of this first category of experiments is understanding the **market's reaction** and response to a product **idea**, before committing significant resources to its development. Tests conducted through Market Engagement experiments aim at verifying elements of the value proposition, users' interest, messaging, and even willingness to pay. Consequently, they can provide evidence in the early stages regarding potential customers' level of interest and whether this will be sufficient to engage them with the proposed solution. The practitioner framework offers a useful approach: **XYZ hypotheses**, defined as '*at least X% of Y will do Z'*, converting the expected market response into an observable behaviour. For instance, it is possible to consider sign-ups, conversion rate, clicks and payments as relevant metrics.

Market Engagement experiments are very helpful in the first stages as they enable startups to verify demand without immediately committing to the entire product development. For example, the proposed value proposition can be communicated through an advertising campaign, an explainer video, or a landing page, while analyzing if potential users are actually taking action. The consequential evidence generated is not merely the result of customers' wants; it also demonstrates what they concretely do in response to the proposed offering (Huryn, 2023).

This is exemplified by the Buffer case – as presented in the practitioner material analysed in this thesis[2] - a social media management platform, for which the founders decided, before any code was generated, to develop a basic landing page illustrating the product and keep track of clicks on the product and the pricing pages. Doing so, they were able to validate market interest and collect and detect initial signals of willingness to pay about various pricing ranges, elaborating simultaneously a list of potential high-value customers (the same case will be analyzed in more detail under Method 17 – Landing Page, in the dedicated section '*Experiment Methods'*) (Huryn, 2023).

[2] The case examples and their categorization are synthesized by the author from the practitioner material analysed in the PMF resource review.

Sub-category	Technique	Goal	How it works	Key Metrics	Strength
Campaign Experiments	Email Campaign	Test messaging & value proposition	Send targeted emails with a CTA	Open rate / CTR	Medium
Campaign Experiments	Paid Ads	Test demand & cost efficiency	Run ads to target audience	CPC / Conversion	High
Campaign Experiments	Social Media	Test engagement & interest	Post content/campaigns	Likes/Shares/Comments/Clicks	Low-Medium
Campaign Experiments	Landing Page	Validate interest & collect leads	Create page + CTA	Sign-ups / Bounce rate / Conversion rate	High
Campaign Experiments	Fake Door	Test interest & demand	Show product as available though it doesn't exist	Clicks / Sign-ups	Medium
Campaign Experiments	Pre-orders	Validate willingness to pay	Users pay before the product exists	Number of pre-orders / Revenue	High
Campaign Experiments	Letter of Intent	Validate serious B2B demand	Customers sign a non-binding agreement	Number of signed LOIs	High
Campaign Experiments	Facade	Test perceived availability	Simulate a scalable product/service	Interest / Inquiries	Medium
Campaign Experiments	Pinocchio	Explore personal usage	Founders pretend to use the product themselves	Personal insights	Low
Campaign Experiments	Explainer Video	Test understanding & appeal	Show how the product works via video	Views / Engagement / Sign-ups	Medium
Campaign Experiments	Crowdfunding	Validate demand & secure funding	Launch product on a crowdfunding platform	Funds raised / Backers	High
Campaign Experiments	Provincial	Test in a small market	Launch in a limited geography/segment	Sales / Adoption	High
Campaign Experiments	One-Night Stand	Test short-term demand	Temporary launch (pop-up/short event)	Sales / Traffic	High
Campaign Experiments	Infiltrator	Test via existing channels	Place product in another store/platform	Purchases / Interest	High

*Table 3.2a — **Market Engagement sub-techniques** (Synthesis based on Huryn, 2023, and practitioner material analysed in the PMF resource review).*

Minimal Products

Once startups are done testing initial market interest, they can, through **Minimal Products** experiments, test whether a limited experience with the product can **deliver value** to customers. This way, startups can simply provide strictly necessary elements to investigate a specific hypothesis, instead of developing the entire product. Additionally, the framework analyzed offers, for this category, different approaches like concierge solutions, Wizard of Oz experiments, piecemeal products, and single-feature products. What all these have in common is that they all attempt to deliver enough value to customers while trying to reduce the development effort.

Thereby, the goal of Minimal Products experiments, rather than merely to produce something quickly, is finding the perfect balance between resource efficiency, speed and realism. If a full-scale or automated development requires an excessive number of resources at a stage where the considered assumptions are still uncertain, startups can opt for partially simulated or manual solutions. To learn which aspect of the proposition supports value creation, before increasing the product complexity, a startup must observe retention, satisfaction, actual usage or adoption (Huryn, 2023).

Technique	Goal	How it works	Key Metrics	Strenght
Piecemeal	Validate value quickly	Combine existing tools to simulate the product experience	Task completion / User feedback	Medium
Concierge	Understand user needs deeply	Deliver the service manually to users	Retention / Satisfaction	High
Wizard of Oz	Test demand for automation	Simulate automation with humans behind the scenes	Usage / Engagement	High
Single-feature product	Validate core value proposition	Build only one key feature solving a specific problem	Adoption / Usage frequency	High

*Table 3.2b – **Minimal Product sub-techniques** (Synthesis based on Huryn, 2023, and practitioner material analysed in the PMF resource review).*

This logic is illustrated by the Groupon case[3]: founders initially, instead of creating a complex platform, posted deals on a basic website and executed manual distributions of coupons through emails. Although the system was not automatic, users were still able to experience the core value proposition, thereby enabling demand validation for group-buying offers before investing in its full development (Huryn, 2023).



*Figure 3.2a - **Product Validation Cheat Sheet,** Minimal Product* (Huryn, 2023)

Feasibility Prototypes

The thesis started by examining Market Engagement and Minimal Product experiments, which focus on investigating customer value and interest. On the other hand, **Feasibility experiments** primarily analyze questions regarding whether a particular integration is possible, whether a technology works, or whether a system can achieve the performance requested. In fact, Feasibility Prototypes' priority is evaluating the **technical** and **practical feasibility** of the proposed **solution**. Furthermore, it is important to differentiate between spike tests, which focus on specific technical uncertainty using quick prototypes, and digital

[3] The case examples and their categorization are synthesized by the author from the practitioner material analysed in the PMF resource review.

twins, which represent real-world system and scenario simulations, before actually implementing them.

What matters most about this category is the ability to reduce technical risk before excessive resources are allocated to full development. Even if customers consider the proposed solution attractive, this may still present operational, technological, or scalability constraints.

Technique	Goal	How it works	Key Metrics	Strenght
Spike	Test technical feasibility	Build a quick, rough prototype to answer a specific technical question	Success/failure of implementation	Medium
Digital Twin	Simulate real-world system behavior	Create a virtual model to test scenarios before real deployment	Performance / accuracy of simulation	High

*Table 3.2c – **Feasibility Prototype sub-techniques** (Synthesis based on Huryn, 2023, and practitioner material analysed in the PMF resource review).*

Therefore, the investigation of such constraints can be conducted through the implementation of feasibility prototypes. In the practitioner framework, this logic is represented by the 'Stripe' case, which employed, at an early stage, technical prototypes to test the effective and reliable functioning of payment integrations, avoiding enterprise-level systems' complexity (Huryn, 2023).

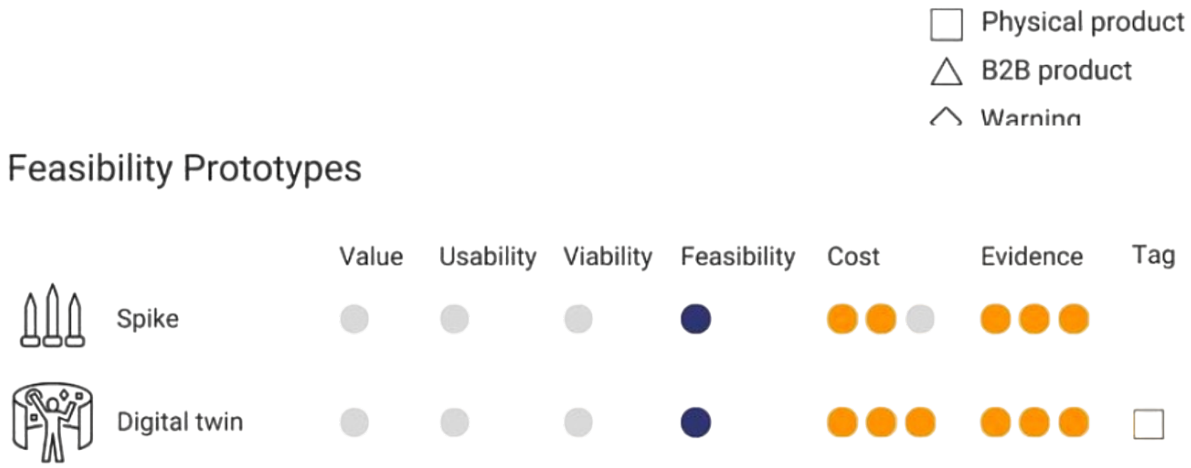


*Figure 3.2b – **Product Validation Cheat Sheet**, Feasibility Prototypes by P. Huryn*

User Prototypes

User Prototypes focus on testing the **understanding** and **engagement** of the proposed offer by customers. There are different forms of experiments in this category, from low-fidelity representations, such as wireframes, to higher-fidelity interactive prototypes. The main goal is to detect usability problems, friction and user confusion before completely developing the product. As highlighted in the framework, specific user tasks can be implemented by startups to test these prototypes; additionally, qualitative observations and quantitative measures, such as conversion or task completion, can be combined through the resulting evidence. It is worth mentioning that a prototype itself cannot be considered an experiment. In fact, it is possible to use a clickable prototype as a tool for experiments when employed to investigate a specific hypothesis with users. Users, for instance, might need to complete a task using the prototype, whereas their interactions will be observed. This gives the startup the chance to verify whether users understand the experience offered and detect the origin of constraints, thus enabling iteration opportunities before making investments in full development (Huryn, 2023).

Technique	Goal	How it works	Key Metrics	Strenght
Task-based testing	Identify usability issues	Give users a task and observe how they complete it	Task success rate / Completion time	High
First-click testing	Test interface intuitiveness	Track where users click first when given a task	First-click accuracy	Medium
Ask-what-would-happen	Understand user expectations	Users describe what they think will happen next	Clarity of responses/expectations	Low
Card sorting	Validate information architecture	Users group content/features logically	Categorization accuracy	Medium
5-second test	Test clarity & messaging	Show a design briefly, ask what users recall	Recall rate / message retention	Medium
Storyboarding	Validate concept understanding	Show the flow of product usage via sketchesTest multiple prototype versions with different users	User understanding / feedback	Low
Prototype A/B testing	Compare design alternatives	Users verbalize thoughts while using the prototype	Preference / conversion	High
Thinking aloud	Understand user reasoning	Users verbalize thoughts while using the prototype	Qualitative insights / pain points	High

*Table 3.2d – **User Prototype sub-techniques** (Synthesis based on Huryn, 2023, and practitioner material analysed in the PMF resource review).*

The Dropbox case offers a clear illustration of this logic[4]: the founder, rather than immediately building the file-syncing product, decided to generate a short demo video demonstrating and explaining the service's functioning, and subsequently publish it online alongside a signup link. This way, the company received thousands of users' signups overnight for a not-yet-existing product. However, the experiment, rather than testing usability of the actual interface, mainly validated the concept's demand and comprehension (the case is revisited as well under Method 18 – Explainer Videos, in the dedicated section '*Experiment Methods'*) (Huryn, 2023).

[4] The case examples and their categorization are synthesized by the author from the practitioner material analysed in the PMF resource review.



*Figure 3.2c – **Product Validation Cheat Sheet**, User Prototypes by P. Huryn*

Experiments in Production

The last category, **Experiments in Production**, **tests** the proposition in a **real-world context** with **actual users**. The **behavioural evidence** provided by these experiments is generated in settings that reflect real marketplace conditions, making them extremely helpful for optimization and decision-making once a product is developed enough.

Furthermore, the key areas of investigation addressed in the practitioner framework are feature adoption, conversion and user behaviour. Alternatively, it also highlights how the availability of sufficient user data enables the generation of high-confidence evidence through **A/B testing**.

Examples mentioned by the framework include 404 tests, A/B tests, feature stubs, and multivariate tests. Users' interest in a specific feature that has not been developed yet can be measured through a feature stub by giving users a placeholder. In addition, a 404 test is very useful when investigating whether users try to access a feature that does not exist yet. Likewise, when alternative versions of an experience must be compared, startups should use A/B tests and multivariate tests, through which they can measure their relative performance with indicators like engagement or conversion (Huryn, 2023).

Production Experiment can be exemplified through the case of Uber's[5] first launch in San Francisco: founders were able to test key assumptions on demand, operational processes, and pricing, thus conducting a controlled market experiment by operating with real drivers and paying customers in a limited geographic area, which allowed the company to collect evidence of the business model's scalability potential (Huryn, 2023).

Technique	Goal	How it works	Key Metrics	Strenght
Feature Stub	Measure interest in a feature	Add a "coming soon" feature and track interactions	Clicks / feature interest rate	Medium
404 Test	Test demand for a non-existing idea	Add a link to a non-existing feature → error/message	Clicks / attempts to access	Medium
A/B Test	Optimize performance	Compare two versions with real users	Conversion rate / engagement	High
Multivariate Test	Optimize multiple variables	Test multiple variations simultaneously	Conversion rate per variation	High

*Table 3.2e – **Production Experiment sub-techniques** (Synthesis based on Huryn, 2023, and practitioner material analysed in the PMF resource review).*

Tools for Experimentation

Startups, to run experiments, can rely on different **tools** to **run experiments** that help them communicate, represent, measure, or simulate various aspects of the proposed offer.

Different tools can be identified according to the specific type of experiment considered. Among these, it is possible to find product brochures, 3D printing, clickable user prototypes, heat mapping, virtual reality product simulations, and UX test automation.

Whenever a startup needs an interactive representation of a digital product or feature, it can use a **clickable user prototype**, which will simultaneously allow stakeholders and users to navigate through the experience offered, without requiring full functionality. *Balsamiq* and

[5] The case examples and their categorization are synthesized by the author from the practitioner material analysed in the PMF resource review.

Miro are, for example, tools that can be utilized for lower-fidelity prototypes. On the other hand, for a higher-fidelity clickable prototype, *Figma* is more appropriate. Additionally, as all these tools can test changes even before development begins, they allow startups to run quick iterations.

A **product brochure** is the perfect solution for products that lean toward a more tangible representation, as it allows startups to communicate benefits, the value proposition, and capabilities of an offering more easily. On the other hand, if a product requires a more detailed and technical presentation, data sheets are the best option, as they enable stakeholders to have a deeper understanding of the product. Whenever it is not possible to demonstrate the product itself, but its characteristics must be communicated to decision-makers or potential users, then all these tools become essential.

Furthermore, **3D printing** is optimal for physical products that require quick creation and modification of physical prototypes. Startups can benefit from it, as they can transform digital designs into tangible objects quite quickly and assess some aspects through it, such as appearance, physical interaction, and scale.

Likewise, products with spatial attributes require an immersive representation that can be done through **VR product simulation**, which allows customers to interact with a simulated setting before fully developing the physical offering (Huryn, 2023).

Lastly, user behaviour collection and analysis can be supported by the implementation of UX testing and heat mapping. **UX testing** platforms enables partial automation of the testing process and facilitate the recruitment and management of participants. While **heat maps** help identify which aspects of a prototype get more attention or detect which areas show more constraints throughout the user experience (Board of Innovation, n.d.). The practitioner framework indicates some tools, such as Microsoft Clarity, Maze, Optimal Workshop and Hotjar, as perfect alternatives to support such activities (Huryn, 2023).

Nevertheless, these tools cannot be defined as experiments themselves; they, in fact, represent enablers of experiments. Their main task is to support the creation of the selected experiment’s representation, interaction, or measurement mechanism. Therefore, these tools

still depend on the **learning objective** and **hypothesis selected** throughout the validation process.

Minimum Viable Product

The **Minimum Viable Product** represents a key element of the experimentation process as it constitutes a practical mechanism that allows startups to test assumptions with real users and limit the resources allocated to development (Burris, 2025).

According to the practitioner framework considered in this thesis, MVP cannot be described as the mere number of features requested to launch a functioning product. It actually should be built upon the assumptions that must be tested and the learning level that a startup hopes to achieve.

The MVP can be defined as the simplest version of a product designed to validate assumptions through real user interactions. MVP is designed to test product hypotheses with minimal resources, accelerate learning, validate real user behaviour, and reduce risk and waste. Consequently, rather than maximizing the number of features in the first version, the main goal is minimizing excessive development effort while maximizing learning.

This implication also explains why an MVP's central scope cannot be defined without considering the hypothesis being tested. It might be difficult to understand which element of a product could have led to the observed results if it contains too many features; however, communication might fail to deliver the value proposition or offer an actual meaningful experience to users if a product is excessively simplified. Therefore, as emphasized in the practitioner article, it is important to avoid unnecessary features and excessive development effort and remain focused on the core value proposition.

Therefore, MVP should not be seen as an end product, but as a means to an end: its purpose is to inform future interaction through the learning it generates. MVP, in fact, connects **experimentation** and **Product-Market Fit**: a startup first tests key assumptions, builds a minimum solution, measures feedback and user behaviour, and keeps improving the offer. The expected outcome, thereby, will be a more and more enhanced evidence of user demand, willingness to pay, and retention (Burris, 2025).

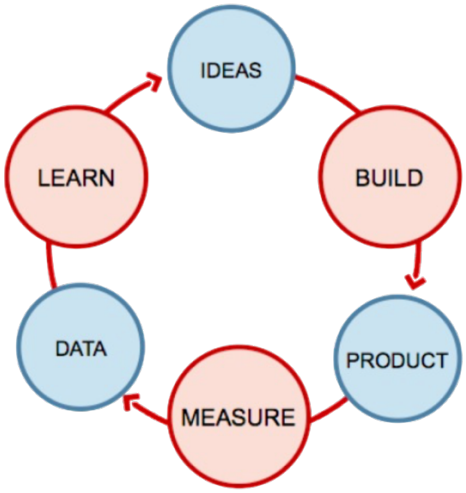


*Figure 3.2d – **Build, Measure, Learn Process** by M. Burris*

This consideration helps us clarify the relationship between Minimum Viable Product and Product-Market Fit. On one side, there is an **MVP** that represents an early-stage experimental tool, whereas **Product-Market Fit** consists of a validated state where strong market demand is being satisfied by a product in a repeatable and scalable way. Consequently, individual assumptions or elements of the business proposition can be validated by an MVP. Conversely, Product-Market Fit necessitates proof of the whole system's capability of consistently creating value for customers, while supporting scalable growth (Burris, 2025).

Among the different types of MVPs identified by the practitioner framework, there are mock-ups, wireframes, concierge solutions, landing pages, single-feature MVPs, pre-sales, Wizard of Oz solutions, Letter of Intent, bare-bones MVPs and crowdfunding. Despite the substantial divergence between all these forms, with regard to their level of development and customer commitment, they all have the common objective of creating evidence about determinate assumptions before the startup proceeds to the complete development of a product (Burris, 2025).

Lastly, it is useful to compare directly the two concepts just discussed, MVP and Product-Market Fit, considering the two are frequently conflated in practice. Table 3.2f summarizes the key distinctions between them (Burris, 2025).

	MVP	PMF
Definition	The **simplest version** of a product that allows you to **test assumptions** with **real users**	The state where a product successfully satisfies a strong market demand in a **repeatable and scalable way**
What it represents	Tool for learning	Goal / Validated Outcome
Process View	Helps you **test hypotheses**	Reached when those hypotheses are **validated consistently**
Stage	*Early*-stage tool	*Later*-stage outcome
Nature	Experimental	Validated System
Focus	Focus on learning	Focus on scaling
Product State	Incomplete product	Market-validated system
Demand	Uncertain demand	Proven demand
Connection to Users	Tests: **Win à** Do users want it? **Deliver à** Does it create value?	Requires: **Find à** scalable acquisition **Retain à** strong retention
What it Does	Validates *parts* of the system	Validates the *entire* system

*Table 3.2f – **MVP vs. Product-Market Fit** (Burris, 2025)*

Experiment Methods

Once the main experiment categories and MVP's role within the validation process have been clarified, it is possible to examine the several individual methods that startups have access to. The practitioner source shows **24 different experiment methods** concerning various **stages** of the **validation journey** (Board of Innovation, 2019). They cover **exploratory approaches**, which support entrepreneurs trying to understand existing problems and customer needs, as well as methods that are more behaviourally demanding, which investigate real usage, willingness to pay, and market demand.

Methods can be categorized according to three different **stages**: Problem Exploration, Solution Validation and Market Validation. Such classification demonstrates the increasing progression from understanding the problem to testing the proposed offering and lastly to generating evidence of the actual market demand and customer retention.

Problem Exploration

1 - Learning from Failures – “Picnic in the Graveyard”

The first method is called ‘**Picnic in the Grave**yard’. It can be defined as an investigation of the previous failures within the respective industry and identification of the causes that led to the unsuccessful outcome of products, services or initiatives. This method does not test a predetermined hypothesis; it is actually mainly a generative method whose main objective is analyzing previous attempts to generate insights. This allows entrepreneurs to conduct investigations of failed products, examining their weaknesses and, if possible, reaching out to people responsible for these initiatives to find out the reasons that caused them.

To better explain this method, the practitioner material analyzes the *Vuzix* case, a firm based in New York providing AR solutions, that for years attempted to address some limitations of the promising ‘Google Glass’ product, which led to its failure. Through this example, it is possible to understand how analyzing previous unsuccessful products can show pain points that have not been resolved and new opportunities for differentiation. In particular, they offered a larger display and a different design, compared to competitors that focused on narrower use cases, like sports eyewear or cycling. This positioning discloses an important lesson: founders should examine previous success and failure cases before committing to full development, to not repeat the same mistakes.

To conclude, ‘Picnic in the Graveyard’ supports startups in avoiding repeating the same mistakes once again and helps identify a starting point to detect problems that should be inspected further (Board of Innovation, 2019)

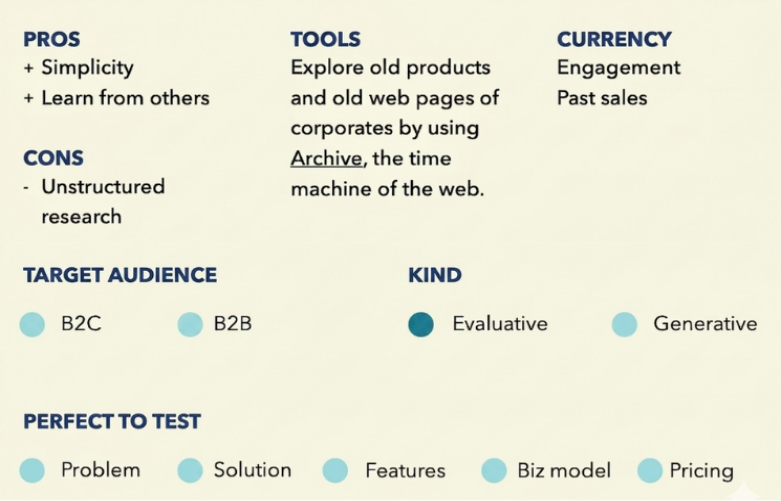


*Figure 3.2e- **Picnic in the Graveyard**'s core features*

2 - Existing Data

This second method, **Existing Data**, concerns secondary research. This type of research refers to the use of already available information, including internet sources, articles, research studies, and previous datasets. Secondary information is very useful for startups to determine market trends, strengthen insights generated with primary research, and understand unfamiliar markets. Nonetheless, the framework analyzed in this thesis emphasizes that existing data should not be considered substitutes for direct user interactions (Board of Innovation, 2019).

This method is demonstrated through the *Netflix* case, which shows it is possible to reduce uncertainty before committing to significant investments using behavioural data. Netflix was able to identify patterns supporting investments in original content by examining genre preferences, actor popularity, viewing histories, and completion rates. Existing Data, thereby, illustrated how potential opportunities can be revealed through existing information before further committing resources by examining patterns that reveal strong demand for a political drama which had as protagonist Kevin Spacey and was directed by David Fincher, the show now known as 'House of Cards'. This analysis decreased the level of uncertainty before investing in production, supporting financial commitment ahead of release (Board of Innovation, 2019).



*Figure 3.2f – **Existing Data**'s core features*

3 - Generative Session

Generative Sessions encompass qualitative research activities aimed at providing a deeper understanding of users, their habits, problems and contextual environment. What differentiates this method from evaluative experiments, these do not necessarily start with a specific hypothesis. In this case, clear research objectives are set by the researcher, who also implements observations and open questions to better understand customers' motivations, experiences and behaviors.

Worth noting about this approach is that the method's quality does not rely simply on conducting the session, but hinges on analyzing and synthesizing the information gathered as well. The example chosen by the practitioner here involves *HU University of Applied Sciences Utrecht*, which redesigned its website and simultaneously implemented generative sessions to identify latent needs and wants of potential students. Involved participants in practical exercises generated insights supporting the decision-making processes, which subsequently informed the website's redesign. This confirms once again that effective user research requires transcending surface-level observations to actually capture authentic user cognition, preferences and emotions (Board of Innovation, 2019).



*Figure 3.2g – **Generative Session**'s core features*

4 - Customer Interviews

Customer Interviews are adopted to understand whether a startup is solving a significant issue or addressing a real customer need. Additionally, it is possible to employ them to investigate whether a proposed solution appeals to potential users. The practitioner source notes how Customer Interviews, rather than being primarily addressed as sales presentations, should be exploratory. Through them, entrepreneurs are able to directly ask customers, based on their personal experience, to evaluate, describe, and prioritize problems that they believe are being addressed.

Part of Customer Interviews' value lies in the possibility of generating learning even in situations in which the underlying assumption proves wrong. If a startup understands that a problem reveals to be less meaningful than expected, the resulting observation may still present pain points or opportunities to adjust the proposition. Consequently, interviews can equally support validation and the identification of the right path to follow for future iteration.

The method is further explained through the *Niko* case, which uses Customer Interviews to analyze smart-home technology solutions' potential to safeguard its leadership switchgear positioning in the Belgian market. The company, in fact, interviewed potential users to investigate their behaviours, everyday experiences, and interest in smart-home solutions. Doing so, they were able to collect significant insights regarding important customer groups

and their attitudes, supporting the identification of opportunities and a deeper understanding of the proposed solution's possible future setting (Board of Innovation, 2019).

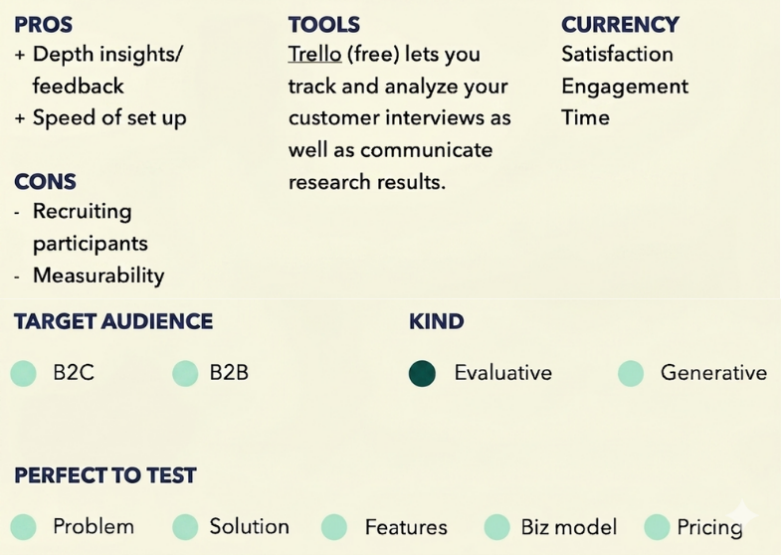


*Figure 3.2h – **Customer Interview**'s core features*

Solution Validation

5 - Comprehension Test

In order to investigate whether the proposed value proposition is conveyed to potential customers in the way the startup intended, entrepreneurs should use **Comprehension Tests**. A test involves exposing users to a short description of the proposition for a limited period of time and later asking them to rephrase and explain it in their own words. The outcome will demonstrate whether the desired message is being transmitted clearly.

The practitioner source better explains this method by analyzing the *Walmart* case. Before choosing '*Save money. Live Better'* as their value proposition, the company tested out multiple different formulations. After briefly showing the proposition to participants, the company selected the one based on the degree to which their descriptions aligned with the intended message. Thereby, Comprehension Tests, rather than checking actual product usage, inspect comprehension and communication (Board of Innovation, 2019).

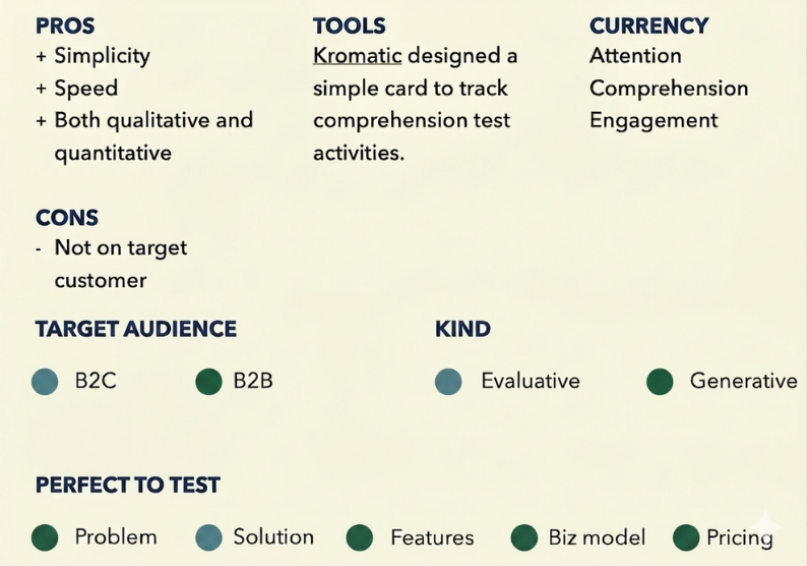


*Figure 3.2i – **Comprehension Test**'s core features*

6 - Feature Prioritization / Feature Sorting Cards

Feature Sorting Cards, as referred to in the material analyzed, is commonly known as Feature Prioritization. It is very useful for establishing which product characteristics target users consider the most important. Participants are asked to organize a set of cards, created based on a list of different priorities or features, according to their mental models or preferences. This way, entrepreneurs can understand, by examining the resulting patterns, which element is considered most valuable by customers and how they imagine the final solution to be structured.

This approach is illustrated through the *Haelvoet* example, an 80-years company working in the hospital and nursing-home furniture industry. To identify the key features, the company asked care providers, nurses and purchasing managers to prioritize potential sensors for a new smart bed. The interviews led to the identification of the three main features, in particular integrated scales, out-of-bed detection, and automatic under-bed lighting. This method supports startups in feature selection and minimizes the risk of committing resources to functionalities that customers may not value (Board of Innovation, 2019).

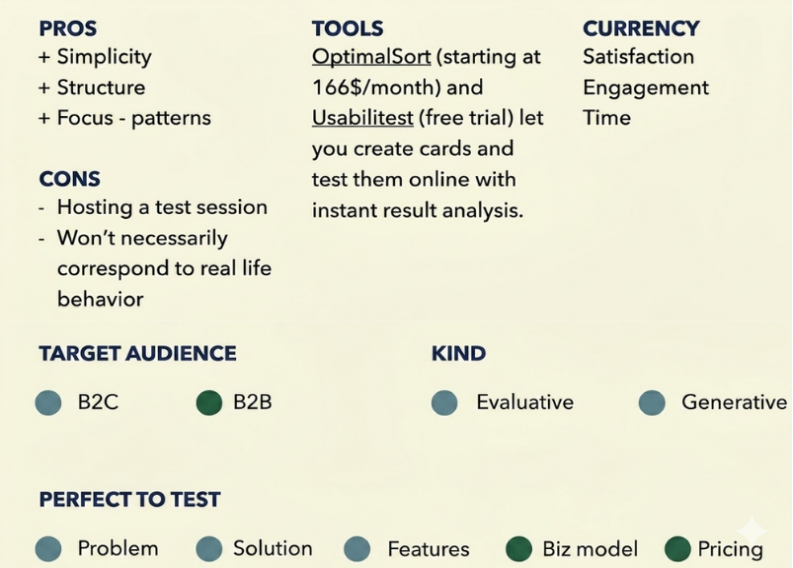


*Figure 3.2j – **Feature Sorting Cards'** core features*

7 – Wireframes

Wireframes can be employed to generate a simple visual representation of a digital product and to investigate the usability and structure of a proposed experience before investing in its development. They can be defined as a limited simulation of the intended solution's structure, which is supposed to allow users' interactions, while enabling entrepreneurs to determine which elements appear unclear or unintuitive.

The source emphasizes the simplicity and cost-effectiveness of wireframes. However, it also notes that this method offers less compelling evidence compared to more sophisticated testing forms. Nonetheless, a key characteristic of wireframes lies in the identification of usability and structural problems at early stages, allowing startups to carry out modifications before they become too expensive. Therefore, this method could be transformed into more interactive prototypes as the proposition becomes clearer.

The practitioner material shows how *Airbnb* used low-fidelity wireframes to explore the first version of a digital booking and hosting experience. The company observed potential customers as they completed specific tasks and created low-fidelity representations of the booking process, while researchers monitored the task's completion rate, comprehension, and navigation errors. This allowed Airbnb to detect navigation and usability issues and areas of

confusion early on, before proceeding to further develop and design the service (Board of Innovation, 2019).

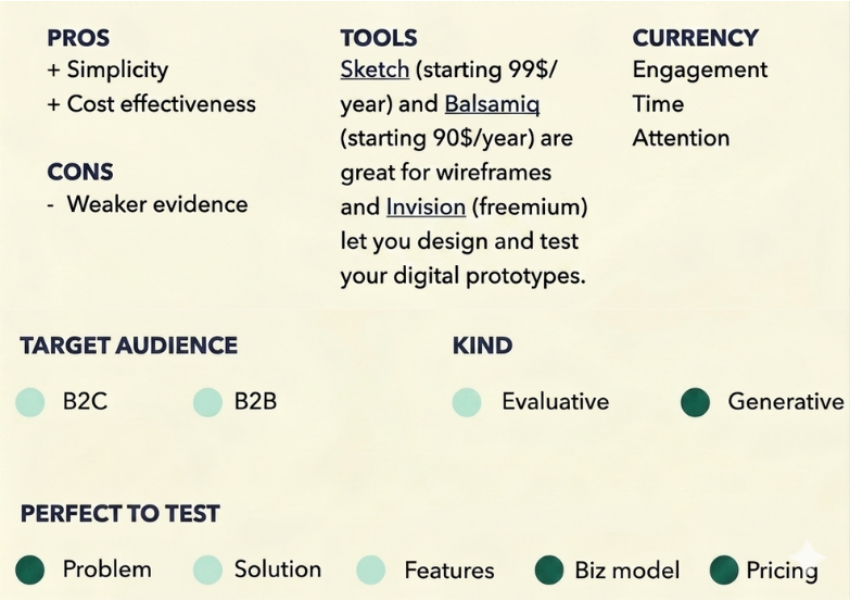


*Figure 3.2k – **Wireframes'** core features*

8 - App Mockups

Startups that require a tappable or clickable representation of a digital service or application can implement **App Mockups** before allocating resources to its full development. Entrepreneurs are able to check interactions and detect usability or desirability constraints before initiating coding by enabling users' navigation in a selected flow, which could be a home page or a sign-up process.

The *N26* example mentioned in the practitioner material shows how accounts, spending analytics flows, and card management can be simulated through clickable mock-ups. The resulting evidence from users' interactions will address satisfaction, task completion, usability and feature desirability, which will support friction identification and onboarding experience refinement before investing in full new mobile banking feature development (Board of Innovation, 2019).

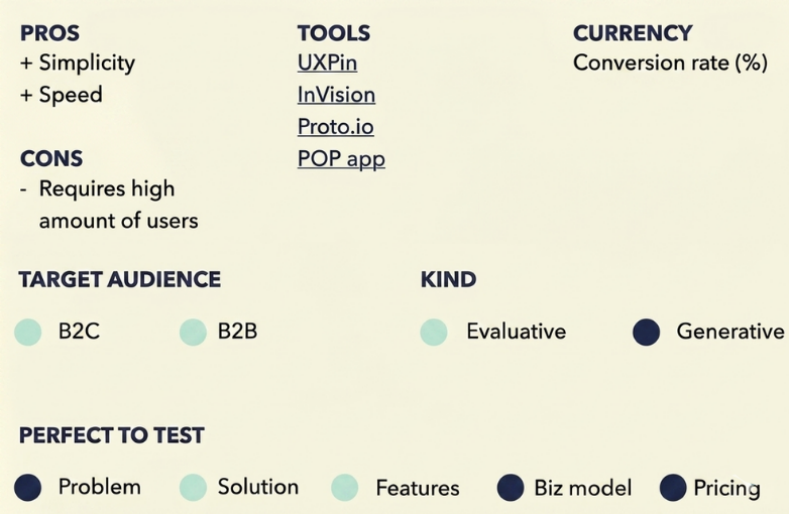


*Figure 3.2l – **App Mock-up**'s core features*

9 – Physical Prototype

Physical Prototypes are tangible representations of the proposed offer with which users can interact. Instead of developing the product according to final product standards, the prototype can be constructed and extremely simplified using already available materials. The manufactured prototype will be employed to investigate the proposed solution's functionality, usability, and experience before committing resources to its entire production.

Dyson case is the example illustrated in the practitioner source, which highlights the development of 5,127 low- and medium-fidelity physical prototypes to test various aspects of its cyclonic vacuum cleaner, including reliability, usability, performance, and airflow at each iteration. The ongoing prototyping process ultimately enabled the company to detect issues early on and continuously improve the proposed offer through multiple iterations, resulting in the successful launch in the market of a differentiated final product (Board of Innovation, 2019).



*Figure 3.2m – **Physical Prototype**'s core features*

10 – Single-Feature MVP

An MVP focusing on a single important feature is the key aspect of a Single-Feature MVP. A **Single-Feature MVP** allows startups to generate clear evidence concerning whether a determinate element creates value for customers by isolating the core features associated with the hypotheses. In fact, its goal is to prevent the existence of multiple features that might hinder the interpretation of experimental results.

In the source, this method is demonstrated through *Tinder*, which now accounts for over 20 billion matches, and based its early proposition on a simple, deliberate feature: the binary swipe left or right mechanism, eventually leading to a match if both parties liked each other. Such logic shows that an MVP, rather than focusing on the entire product production, can be centered only on the features that are most related to the investigated hypothesis (Board of Innovation, 2019).

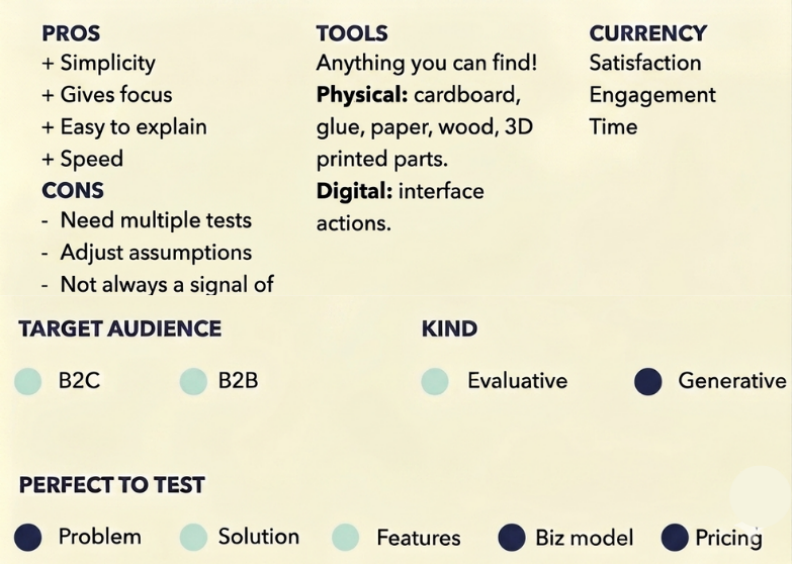


*Figure 3.2n - **Single Feature MVP**'s core features*

11 – Bare Bones MVP

A working version of a product can be created by employing a **Bare-Bones MVP**, which leverages the startup's available resources. Additionally, it offers more functionality than a Single-Feature MVP while still deliberately staying within its limited scope. The objective of a Bare-Bones MVP is to get potential users to test the product and, if necessary, test their willingness to engage with or pay for the proposed offer before proceeding to its complete production.

The main characteristic is always ensuring a sufficient level of functionality that creates meaningful learning, while avoiding commitment to unnecessary features. This way, startups have the possibility to gain behavioural feedback and understand which elements of the proposition they should strengthen (Board of Innovation, 2019).

Psykler, a customer-intelligence platform dedicated to psychometric profiling, was the case illustrated in the practitioner material to better analyze the Bare-Bones MVP. The founders generated a simple prototype through Excel spreadsheets and macros to replicate the core functionalities of a customer-intelligence software to test and adjust core functionalities, instead of immediately investing in its full development. Keeping track of customers' engagement and pre-sales enabled the company to have a clear estimation of actual users' demand for the proposed solution before allocating resources for the software development. (Board of Innovation, 2019).

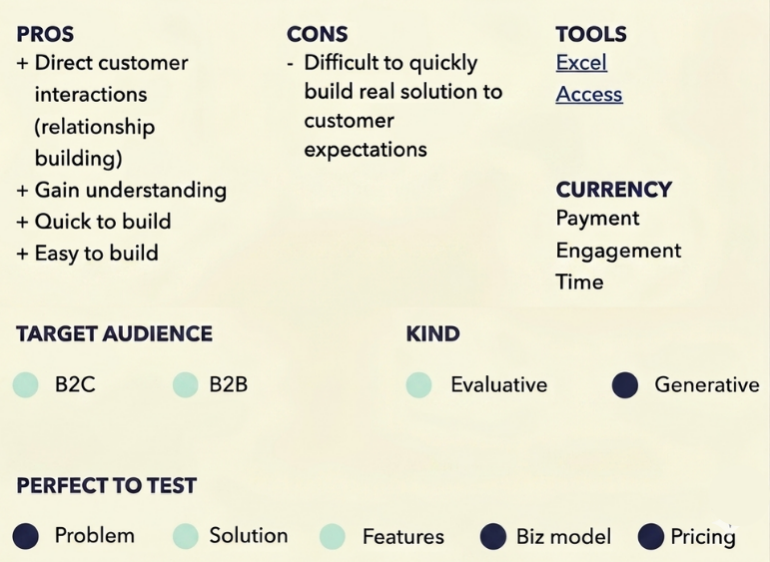


*Figure 3.2o – **Bare Bones MVP**'s core features*

12 - Product Simulation

As the name suggests, **Product Simulation** represents a simulated representation of a product or service that tests whether the proposed solution would act under different conditions. In this case, there is no need to create the whole product; a startup can simply generate a simulation able to reproduce the key features of the system or the experience. This aspect is fundamental when entrepreneurs, before investing in the entire implementation, need to answer operational, technical, or performance-related questions.

Therefore, Product Simulation enables the comparison between various scenarios and the identification of potential performance difficulties. Evidence can be gathered from decision-making simulation, reducing at the same time the risk and cost linked to the actual testing of the entire system.

The examined case of Johnson Screens – a manufacturer of industrial filters and architectural screens - illustrates that Product Simulation enables testing of technical performance before running physical tests. The company reproduced the airflow of an architectural radiator grille, designed for a skyscraper in New York. Through an eighteen-minute virtual test, they accurately gauged pressure drop and flow contours. The simulation's execution proved to be less expensive and less time-consuming compared to physical testing – which otherwise

would have cost between $7,000 and $15,000 and taken several months - and generated meaningful evidence regarding the product performance (Board of Innovation, 2019).

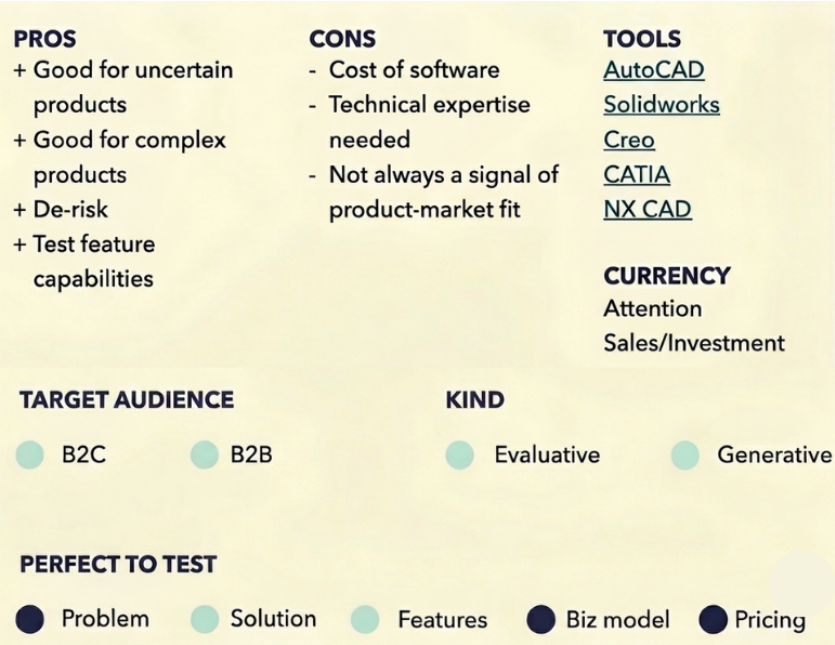


*Figure 3.2p – **Product Simulation**'s core features*

13 – Imposter Judo

Imposter Judo swiftly gauges market interest by showcasing the proposed solution in a manner that enables customer demand evaluation before investing in the product's full development. This approach assesses whether potential users are interested enough in the offer to justify its actual complete production. The method enables startups to test demand and maintain low development effort.

Imposter judo aligns with the overarching principle of gauging customer interest before committing to full production. The key principle is to detect behavioural signals early on to guide entrepreneurs in deciding whether to readjust or further develop the proposition.

The practitioner material exemplifies Imposter Judo through the *Zappos* case, which tested customers' willingness to purchase shoes online without actually owning any inventory. Zappos' founder decided to post pictures online of shoes available in local stores, rather than investing in stock-taking. The founder monitored sales volume and customer feedback to test demand before fully developing an online business infrastructure by checking the orders

placed online by users and then personally purchasing the shoes from the store and shipping them to the clients (Board of Innovation, 2019).

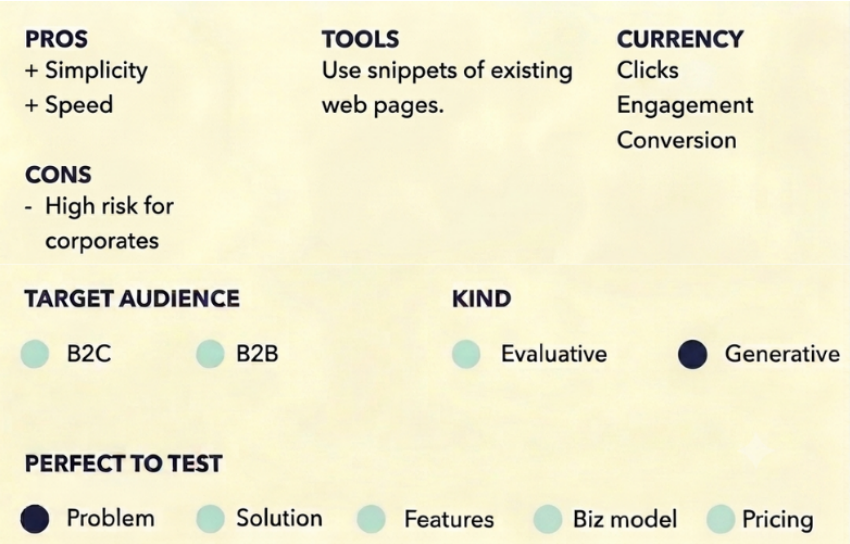


*Figure 3.2q – **Imposter Judo**'s core features*

14 – Concierge MVP

Concierge MVPs, instead of generating the infrastructure or automation needed to create a fully scalable solution, manually provide the proposed service. This approach allows startups to carry out the functionalities expected to be automated by the eventual product, while the team can investigate customers' interactions with the service and establish which aspects of the experience generate most value.

The method is very useful for truly understanding customers' needs before committing to full automation. Concierge MVP's manual process provides actual usage, satisfaction, and retention evidence, while enabling the establishment of which service's parts should be automated.

Concierge MVP's ability to test customers' willingness to rent dresses is demonstrated through the *Rent the Runway* case. The company, rather than immediately investing in full online service creation, invited female college students to try on dresses and provided the rental experience in person, an upgraded experience compared to a model offering exclusively an online service. Evidence of demand, therefore, was collected through the resulting customer behaviour, which showed that 34%, and afterward, 75%, of users involved rented a

dress, leading to the consequent MVP validation, which resulted in 5% of 1,000 women on a mailing list renting dresses from a PDF sent through email. Founders, thereby, were able to determine the level of appeal of the proposed value proposition before further developing the solution (Board of Innovation, 2019).

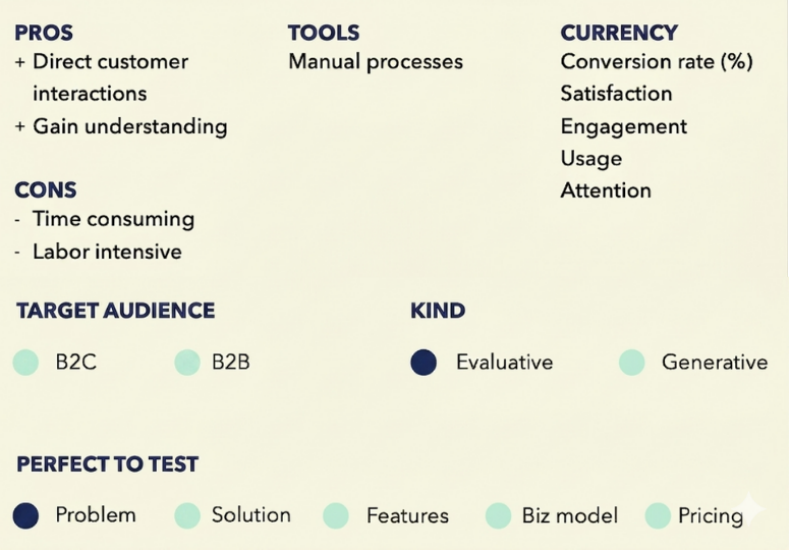


*Figure 3.2r – **Concierge MVP**'s core features*

15 – Wizard of Oz

Wizard of Oz is a simulation of an automated product, while in reality people are working behind it, actually performing the underlying processes. Users are deceived by an apparent functioning service and believe it is a developed product. This way, startups do not have to create an entire technical infrastructure and can examine user behaviour and automation demand before allocating resources to automation.

Furthermore, what truly differentiates the Concierge MVP and Wizard of Oz is the customer experience. The Wizard of Oz approach aims to simulate the experience of an automated solution while maintaining the manual backend process, in contrast to the more evident manual nature of the Concierge method.

The practitioner material illustrates how Wizard of Oz can reproduce what looks like an automated service when, in reality, activities are actually performed by physical people, through the *Aardvark* case. The company allowed users to submit questions on a platform

apparently automated, not knowing that real employees were routing each question to dedicated experts and subsequently sending back the answer. This mechanism enabled the company to investigate user demand and engagement about the proposed solution and avoid committing to the full development of a ranking algorithm by measuring response rate, question volume, and engagement (Board of Innovation, 2019).

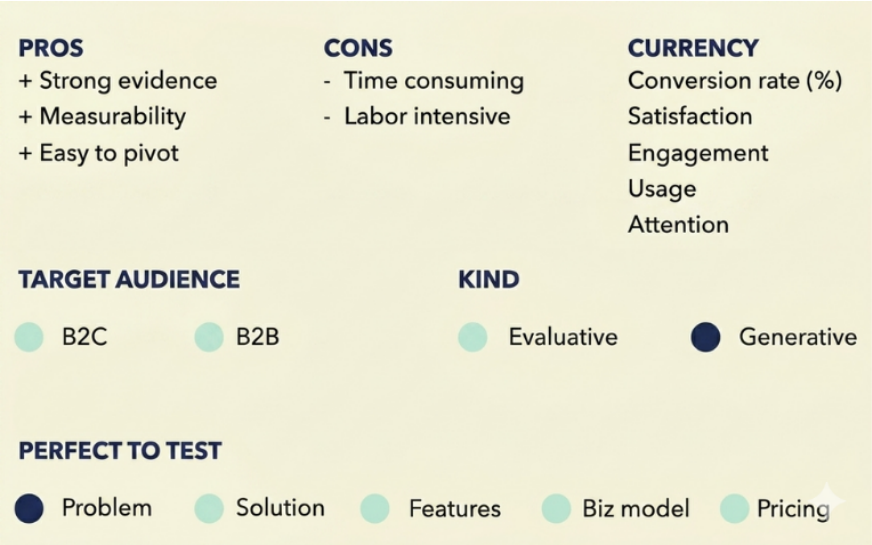


*Figure 3.2s – **Wizard of Oz MVP**'s core features*

16 – Process Simulation

A **Process Simulation**, before performing any practical modification in the environment, creates a process and tests different scenarios. It manipulates significant metrics, allowing organizations or startups to analyze possible consequences on factors, including resource requirements, staff efficiency and customer satisfaction.

The practitioner material illustrates this method through the example of *Geisinger Health System*, which evaluated the proposed food delivery service with a simulation throughout a complex network of eighteen inpatient units. The company tested various scenarios while examining the impact on patient satisfaction and resource requirements. Thereby, the method is very useful for what concerns process optimization and evidence-based decision-making, and it simultaneously delays real-environment experimentation (Board of Innovation, 2019).

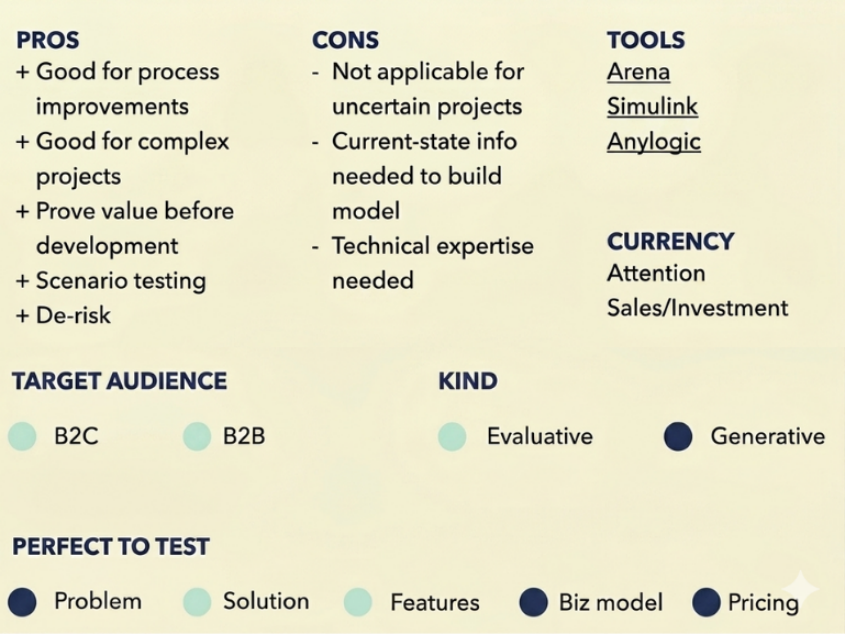


*Figure 3.2t – **Process Simulation**'s core features*

Market Validation

17 – Landing Page

Landing Page is a low-cost method to test potential customers' interest in the proposed value proposition. The offer is communicated through the page, which displays a call to action that could be a sign-up, request for additional information or payment, eliciting observable customer behaviour. This way it is possible to obtain market interest indicators early on, through the resulting clicks, sign-ups, payments, or conversion rate.

This approach is explained by the *Buffer* case, as in the practitioner material analyzed in this thesis. The company's founders, in fact, before committing to full-service development, created a simple landing page showcasing the projected product and tracked engagement with both the product and pricing pages. The experiment not only collected evidence of interest, but also generated a set of potential customers with whom the founders had the chance to interact later on (Board of Innovation, 2019).

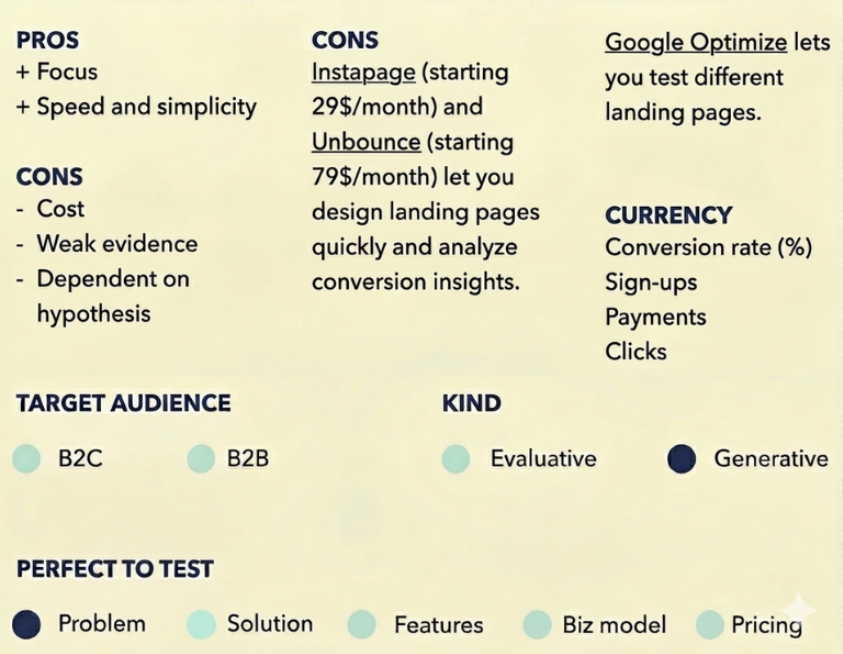


*Figure 3.2u – **Landing Page**'s core features*

18 – Explainer Video

Explainer Videos are the perfect option to demonstrate how a proposed service or product functions by utilizing a short visual display. The video deceives the audience, giving the impression of a working product, although the underlying proposition has not been entirely created. It can also be shared through other channels to test customers' interactions and understanding of the projected product, or it is possible to find it on a landing page as well.

The method is exemplified in the practitioner source through the *Dropbox* example. The little-known startup, in fact, placed a short video on its homepage in 2009 to show how the intended file-synchronization service would work, before its ultimate creation. The engagement generated by the experiment – around 30,000 views per day - led to evidence creation regarding the understanding and attractiveness of the concept, while minimizing uncertainty and sparking interest among prospective users before investing resources in its entire development (Board of Innovation, 2019).



*Figure 3.2v – **Explainer Video**'s core features*

19 – A/B Testing

In order to establish which version between two alternative interfaces, messages, offers, or products provides the higher performance on a specific metric, entrepreneurs can use **A/B Testing**. First, the audience will be divided according to the two options, then their behaviour is tracked using some indicators, including engagement, purchase rate and conversion. Consequently, it is possible to define this approach as evaluative and very useful for making a comparison between two different offerings or improving an already existing solution.

The experiment can be implemented to various elements, such as advertising, messages, landing pages, newsletter subject lines, product interfaces or pricing schemes. A/B testing method is illustrated by the practitioner through *NuFACE*, a company specialized in anti-aging skincare, which, after conducting an attentive analysis, found out that users, despite browsing for a long time, rarely ended up actually purchasing something. The company, therefore, decided to test a commercial incentive: offering free shipping for orders exceeding $75. This led to a significant increase in the number *of orders, roughly* by 90% for those getting the incentive, and a rise of 7.32% in the average order value, demonstrating A/B testing's ability to really isolate a single variable's effect (Board of Innovation, 2019).

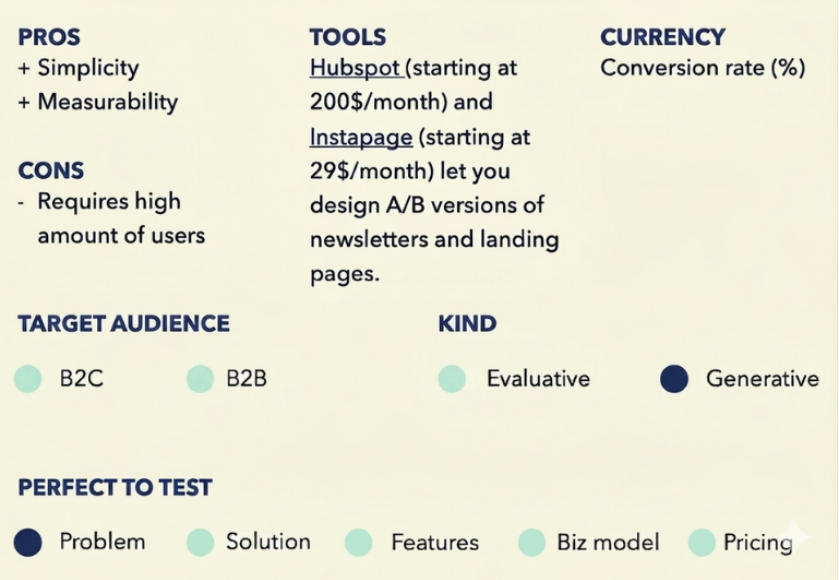


*Figure 3.2w – **A/B Testing**'s core features*

20 – Ad Campaign

An **Online Ad Campaign** exposes a selected target audience to different propositions or messages to test low-fidelity markets and simultaneously gauge how they would react to them. Startups can implement various platforms, including Google, LinkedIn, and Facebook, to address specific target groups and keep track of multiple metrics, such as conversions and click-through rates. The resulting evidence generates data on messaging, market response, demand, and sometimes even the cost of acquiring customers.

The method is exemplified by the *Dollar Shave Club* case, showing how an advertising campaign can generate significant evidence of market demand before creating substantial inventory or infrastructure. The subscription razor concept was communicated through a low-budget humorous campaign video on YouTube promoted through advertisements on Facebook, targeting men between 18 and 35 years old who showed interest in personal grooming. The company, within 48 hours, received 12,000 orders placed by users, who entered their payment details before even seeing or trying the product. This led to the generation of willingness to pay and demand evidence (Board of Innovation, 2019).



*Figure 3.2x – **Ad Campaign**'s core features*

21 – Co-Creation

In **Co-creation**, key customers, partners, or suppliers are asked to collaboratively generate a proposed offer. Especially in B2B contexts, in which markets might present just a few important organizations and individual user interactions offer meaningful insight, Co-Creation is fundamental. In order to better understand customer needs, objectives and limits, startups can involve them in the production process, establishing relationships with potential users as well.

The main advantages of this method are customer foresight, interest in contributing, concentration of customer knowledge, and building relationships with relevant stakeholders. The practitioner source demonstrates that co-creation enables the development of various concepts and minimizes development risk at the same time, while shortening the time needed to proceed to implementation, through the *Valmet* and *Sappi* example (Board of Innovation, 2019). Valmet is a 220-year-old Finnish leader in paper, automation, and board, while Sappi is one of its main suppliers. Analyzing the case in more detail, the program the two created enabled shortening the product development cycle from years to months. Some of the resulting concepts are still being developed and improved, measured by the number of concepts created and according to stakeholders' engagement from both companies.

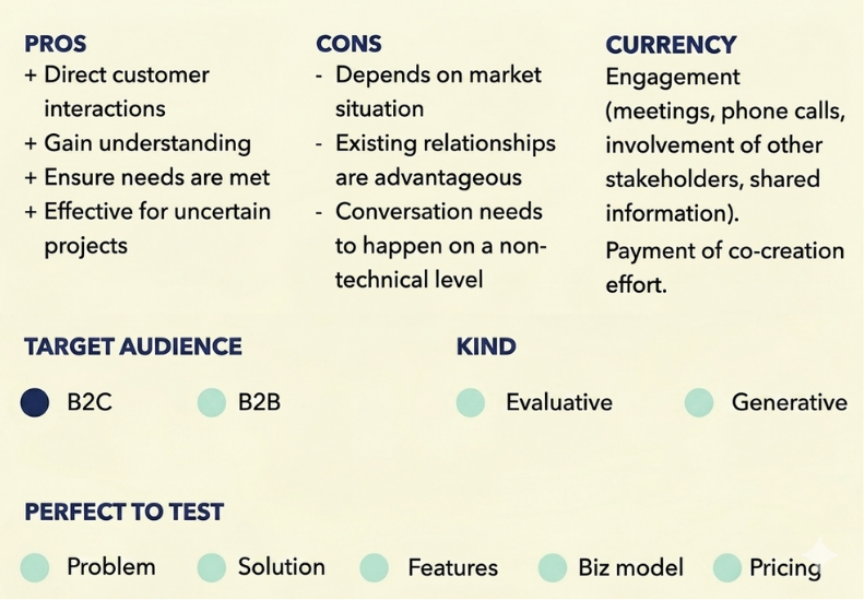


*Figure 3.2y – **Co-Creation**'s core features*

22 – Crowdfunding

Idea validation can be carried out through **Crowdfunding**, which asks potential users to financially support it before completing its production. Crowdfunding platforms allow startups to present their concepts and set a funding goal, determined by the number of supporters and the sum of pledged funds as metrics of market engagement and willingness to pay. Compared to mere declarative feedback, this method generated a superior demand signal, given the financial commitment requested from users.

The practitioner material illustrates the example of *Pebble Time's smartwatch*. The company's campaign on Kickstarter quickly raised significant funds - $20.3 million thanks to more than 75,000 supporters, breaking its previous fundraising record in a 48-hour time frame, with just the first million dollars collected in only 29 minutes. This generated evidence of demand and provided development resources (*Pebble's* intellectual property was later acquired by *Fitbit*).

In conclusion, crowdfunding combines financing and validation. Nonetheless, it is important to note that it is harder to use for non-consumer products and could lead to copycat risks (Board of Innovation, 2019).

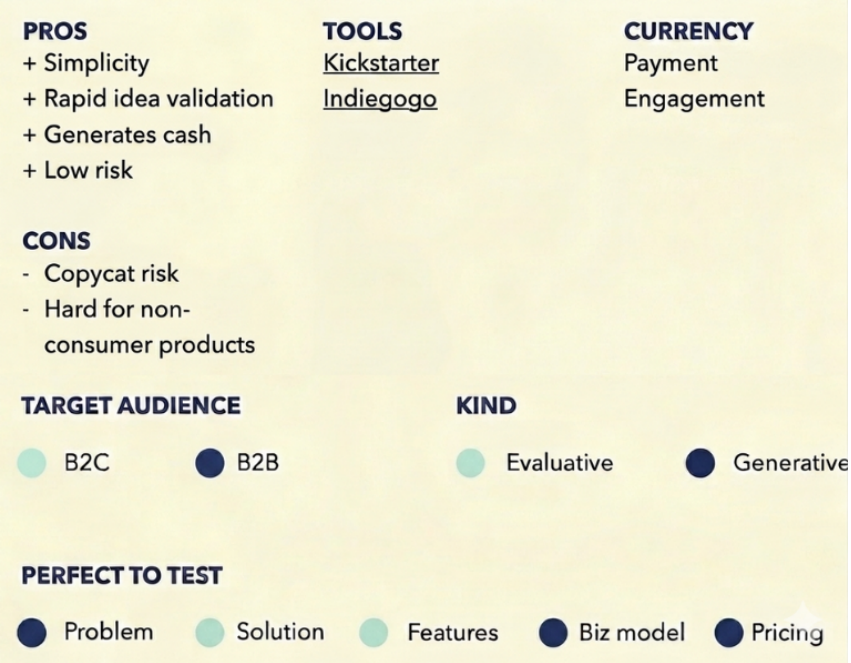


*Figure 3.2z – **Crowdfunding**'s core features*

23 – Pre-Sales

Pre-Sales requires potential users to commit to the payment of a product before it has been entirely created. Startups can implement pre-sales in direct customer interactions, or they can integrate a pre-order button on a landing page. The method gives immediate evidence of willingness to pay thanks to the actual placed payments, which represent a more meaningful commitment compared to mere sign-ups or interest.

Oculus VR is the case analyzed by the practitioner to describe the implementation of pre-order pages for some of its products – including *Oculus Touch, Oculus Go* and *Oculus Rift* - before investing in production, by offering consumers a shipping date and a fixed price. The company was able to test real demand through the number of registered pre-orders, supporting product requirements estimation. Pre-Sales, in addition to demand, enables early cash flows and raises a sense of exclusivity among early adopters (Board of Innovation, 2019).

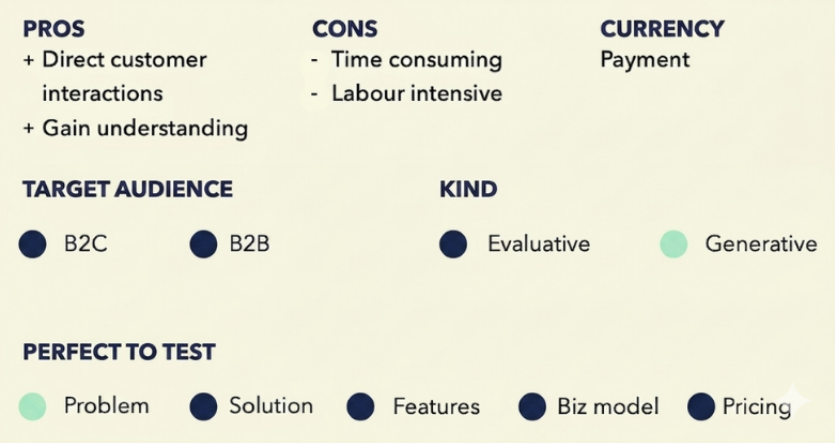


*Figure 3.2a1 – **Pre-Sales'** core features*

24 – Letter of Intent

Lastly, a **Letter of Intent (LOI)** investigates potential users' interest in buying the proposed offer. The method requires customers to sign a non-binding document to demonstrate their intention to buy under specific conditions.

Letters of Intent are useful in B2B settings, where decision-making often involves multiple stakeholders, and a higher commitment provides more meaningful evidence than mere verbal expressions of interest.

In the practitioner source, this method is exemplified through a *B2B SaaS startup*. The venture created Photoshop-made mockup screenshots of a not yet developed web app and offered them to prospective customers through warm interactions and cold outreach, before creating the real code. After three visits, potential users who showed actual interest had to sign a non-binding Letter of Intent. Consequently, employees started writing code and witnessed a ratio of positive to negative user responses after launch of around 10 to 1. In conclusion, the total number of signed LOIs, price sensitivity, and customer feedback gave evidence of real demand and supported the startup in deciding whether to proceed to development, as well as distinguish serious buyers from casual interest (Board of Innovation, 2019).

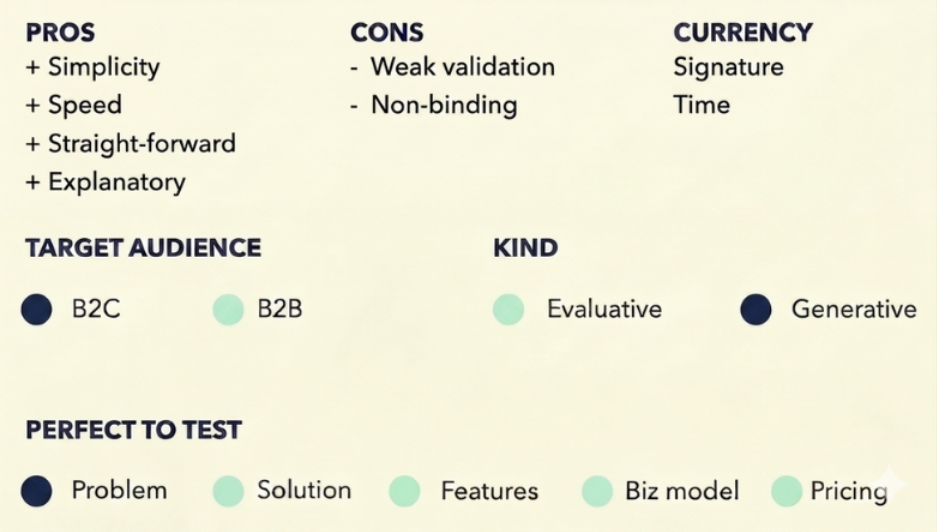


*Figure 3.2b1 – **Letter of Intent**'s core features*

From Individual Experiments to Product-Market Fit Assessment

The experiments explained above prove that, rather than representing a single event, **validation** is a **progressive process**.

Initial approaches can provide insights into issues and user needs, whereas future experiments test usability, desirability and feasibility of solutions, as well as market demand. As evidence collected becomes more and more consequential and behavioral, startups draw closer to actual customer interactions and financial commitments.

Nonetheless, Product-Market Fit may not have been achieved, even though individual hypotheses were validated. For instance, an experiment could show that a value proposition is conveyed clearly to users, that a group of customers is willing to pay or that a specific feature is attractive, even if the fact that the overall product persists in creating value in the market has not been verified yet.

Moreover, it is fundamental to distinguish the experimentation stage from the following Product-Market Fit evaluation and assessment stage, where the startup advances from individual hypothesis testing toward real product performance evaluation and system-wide validation. This shift is crucial to demonstrate that Product-Market Fit eventually does not only concern isolated customer interactions. A startup can establish whether evidence turns

into steady customer behaviour – such as activation, engagement, conversion and retention - once it has gathered enough evidence through experimentation.

The next stage of the Product-Market Fit process, therefore, centers on **metrics** and **indicators** that could support establishing whether the generated **evidence** aligns with a sustainable and strong **product-market relationship**.

3.3 Measuring and Achieving Product-Market Fit

In the previous section, the thesis analyzed the process startups go through to turn **assumptions** into **hypotheses** and collect step-by-step evidence by implementing **validation** and **experimentation**. Nonetheless, Product-Market Fit is not necessarily achieved once individual hypotheses have been validated. As mentioned in the previous section, customers may successfully understand a value proposition, and an experiment might confirm the attractiveness of a feature or the presence of willingness to pay among potential users; however, evidence that, in the end, the product will consistently generate value in the market may not have been demonstrated. The focus, thereby, must shift from validating individual assumptions to **evaluating** overall **product performance**.

Now, the measurement step is crucial. Startups have to investigate behavioural, business, and market evidence over time, instead of solely depending on individual customer responses or isolated experimental results. The main goal is to understand if the evidence resulting from experimentation converts into steady customer value and a firm product-market relationship.

The practitioner material examined offers various indicators, measurement approaches and evaluation dimensions to support such assessment.

A fundamental takeaway is that Product-Market Fit cannot be considered a single threshold achieved through a single metric. **Various metrics** capture different facets of the relationship between **product** and **market**. Among these, some can measure customer retention, others gauge conversion rate or word-of-mouth, other focus on economic viability, organizational readiness and even market response. In order to evaluate Product-Market Fit, therefore,

ventures need to integrate multiple indicators confirming it, which will be defined according to the specific features of the selected startup and market.

Product-Market Fit Indicators & Metrics

Once a startup has generated enough evidence regarding single assumptions, it requires a broader set of **indicators** to judge whether that evidence is being converted into a sustainable and repeatable source of value creation.

Analyzing various practitioner articles, it's possible to identify different interconnected categories of metrics, each one addressing different elements of the startup's performance.

The first category can be referred to as '***foundation metrics'***. Before evaluating its progress towards Product-Market Fit, a startup needs to define a reliable measurement infrastructure and establish baseline values, including user engagement (usually tracked by the ratio of Daily Active Users to Monthly Active Users, like the DAU/MAU ratio), customer acquisition cost, retention rate, revenue growth, customer lifetime value and churn rate. None of these indicators themselves can demonstrate the presence of '*fit'*. Instead, they represent quantitative groundwork upon which subsequent evaluation depends (Büyükdemir, 2025).

Drawing on this foundation, the second category regards **customer research** and **feedback**. Rather than simply analyzing behavioural data, this dimension investigates users' perception of the value provided by the product. As recommended by the practitioner framework, this can be supported through customer interviews and, more precisely, it suggests using the '*Sean Ellis Test'*, which asks customers how they would feel if they could no longer use the product. The test leads to a key benchmark, which the practitioner framework presents as a strong Product-Market Fit signal: a proportion of respondents exceeding 40%, indicating they would be '*very disappointed'* (Sean Ellis, 2024, as cited in Büyükdemir, 2025). This evaluation is coherent with the '*Disappointment Test'* discussed earlier in this chapter (Section 3.1), proving how this indicator appears in various practitioner frameworks as a widely cited, although partial, benchmark of Product-Market Fit.

Moreover, startups should implement a **Net Promoter Score** survey as well, for which the practitioner framework identifies a score above 50 as a positive signal, alongside a systematic, documented process for collecting promoter and detractor feedback (Büyükdemir, 2025).

The third category addresses **usage patterns**, meaning how users' relationship with the product evolves over time. In this case, among the key indicators there are week-over-week growth in terms of core-feature usage, an increasing average length of a session, a short time-to-value for new users, a daily-to-monthly active user ratio over 50%, and a return rate exceeding 60% within the targeted segment. All these metrics signal whether product usage is stabilizing and strengthening, instead of remaining occasional or superficial (Büyükdemir, 2025).

Growth indicators, covered by the fourth category, capture the extent to which demand is becoming increasingly self-sustaining. The *market pull*, discussed earlier in this chapter (Section 3.1), starts to manifest itself at an aggregate and measurable level when a startup generates evidence of organic growth, accounting for a significant share of total customer acquisition, a steady or declining customer acquisition cost, increasing word-of-mouth, shorter sales cycles, and improving conversion rates (Büyükdemir, 2025).

Lastly, the fifth category regards **financial health and revenue**, converting customer behaviour into signals of economic sustainability. The main metrics include monthly gross revenue churn below 2%, net revenue retention over 100%, a customer acquisition cost payback below twelve months, strengthening unit economics, and increasing expansion revenue (Büyükdemir, 2025).

Overall, these five categories demonstrate the reason why Product-Market Fit cannot be reduced to a mere single number. **Foundation metrics**, in fact, determine the measurement baseline; **customer research** and **feedback** address the perceived value; **usage patterns** capture behavioural depth; **growth indicators** assess organic demand; and **financial health** signals economic viability.

To support the discussion above, this table (Table 3.3a) defines the key metrics referenced throughout this section.

Metric	Definition
DAU (Daily Active Users)	Measures the stickiness of a product — how many users engage with it on a given day
CAC (Customer Acquisition Cost)	The total expense incurred to gain a new customer
LTV (Customer Lifetime Value)	The average revenue a single customer is predicted to generate over the duration of their account
Churn Rate	Also known as the rate of attrition; the rate at which customers stop doing business with a company
Sean Ellis Score	A single-question survey designed to gauge how many customers consider a product a "must-have," asking: "How would you feel if you could no longer use [product]?"
NPS (Net Promoter Score)	An index ranging from −100 to 100 that measures customers' willingness to recommend a company's product or service to others
TTV (Time to Value)	The time between a user's first interaction with a product and their first meaningful outcome
Organic Growth	The expansion a company achieves by increasing production and sales internally, without paid acquisition
Conversion Rate	A percentage typically used in digital marketing to evaluate the performance of website traffic, marketing campaigns, and conversions
NRR (Net Revenue Retention)	The cumulative total of retained, contracted, and expanded revenue over a set period (typically monthly or annually), calculated as total revenue minus revenue churn
CAC Payback	The number of months a company needs to recoup the initial cost of acquiring a new customer

*Table 3.3a – **Key metric definitions***

In the next sections, it will be examined how these indicators can first be structured into a broader evaluation system and subsequently translated into an ongoing method of Product-Market Fit measurement.

Product-Market Fit Evaluation System

The indicators discussed above mainly evaluate a startup's performance through quantitative dimensions. Nonetheless, metrics are not the only way to detect Product-Market Fit. It can also manifest in **qualitative changes** in a startup's external relationships and internal operations. These complementary dimensions are structured, in the practitioner source, into a broader system, further subdivided into six categories (Büyükdemir, 2025).

The first category addresses **market response**, thus not only direct customer relationships but also comprehending the general market environment's reactions to the startup's proposed solution. It is possible to identify among the most meaningful signals a competitive win rate above 50%, an increasing volume of inbound leads, growing partnership opportunities, emerging industry recognition, analyst interest or organic media, and the startup's increasing ability to attract talent. All these signals indicate a progressive increase in the startup's positioning visibility and credibility in its competitive context (Büyükdemir, 2025).

The second category regards **customer success**, which focuses on evaluating existing customers' relationship sustainability, instead of the acquisition of new ones. Indicators include a change in the type of support requests – from '*how can I use this'* to '*how can I make better use of this*' – a startup's customer success team that is capable of managing increasing support demand, a well-established customer health-scoring system, an implemented onboarding process, access to existing customers' references and documented success stories. Consequently, the shift in support interactions, mentioned in the previous section among Product-Market Fit signals as well, is translated into the change in support tickets, suggesting that the same organizational dynamic is being validated by fundamental customer success metrics (Büyükdemir, 2025).

In the third category, **product development** is the main focus; hence, analyzing the organization's technical priorities alignment with the market position. Key signals grouped in this class are an engineering team centered on scaling instead of exploratory development, feature requests coherent with the existing roadmap, a product vision well-documented,

platform stability exceeding 99.9%, a reasonable technical debt, and, if possible, increasing API adoption (Büyükdemir, 2025).

Moreover, **the fourth category addresses team alignment by evaluating the consistency of the whole organization's understanding of customers and the value proposition.** Relevant signals include an amply documented Ideal Customer Profile, periodic reports on Product-Market Fit progress, regular sharing of user feedback between teams, organization metrics accessible to every employee, and implementation of cross-functional activities uniquely oriented to strengthen fit (Büyükdemir, 2025).

A fifth category, regarding **documentation** and **process**, checks if the startup has actually started formalizing the practices that have been demonstrated successful, instead of depending upon informal and ad hoc methods. Among signals, relevant ones include the creation of a sales playbook, as well as a support playbook, a map of the customer journey, documents supporting the onboarding process, implemented analytics dashboards, and documented patterns of success (Büyükdemir, 2025).

Lastly, the sixth category focuses on **go-to-market strategy**, evaluating if a startup's approach to reaching the market is becoming repeatable and structured. Relevant signals include an echoing marketing message, an appropriate pricing strategy, an established channel strategy, a definite market positioning, an up-to-date competitive analysis, and a repeatable sales process. The last one is extremely important since it anticipates the distinction between Product-Market Fit and Go-To-Market, mentioned in the previous section as well (Büyükdemir, 2025).

Taken together, the six categories prove that to assess Product-Market Fit, startups cannot rely solely on customer-facing metrics. First, market response validates external credibility; then customer success and team alignment signal organizational consistency; product development attests technical sustainability; and documentation and go-to-market readiness indicate whether the startup is ready to translate emerging fit into a scalable, repeatable activity, which will be further addressed later.

This table (Table 3.3b) clarifies additional terms used in the categories above.

Term	Definition
Win Rate	The ratio of successful outcomes to the total number of opportunities
Inbound Sales	Customers who reach out on their own initiative (customer-driven) — typically due to content marketing, SEO, social media, events, or referrals, initiating contact through an online form or similar channel
ICP (Ideal Customer Profile)	A comprehensive tool outlining the qualitative and quantitative traits of a business's most valuable customers, guiding sales teams to prioritize high-value prospects and personalize outreach

*Table 3.3b - **Additional term definition***

Product-Market Fit Measurement

Once the indicators have been analyzed and the broader evaluation categories of Product-Market Fit have been considered, it is possible to evaluate whether startups can convert such evaluation into a **sustained measurement practice**, instead of a one-time evaluation.

The first aspect concerns regular monitoring of **warning signs**, as even if at a certain point there is a positive assessment of fit, its persistence is not guaranteed. Among the indicators that need more attention, there are diminishing engagement, rising customer acquisition cost, increasing customer churn, longer sales cycles, decreasing product usage, higher support ticket volume, difficulties in interpreting market feedback, and an increasingly evident team misalignment. In addition, startups that periodically track these warning signs are able to identify Product-Market Fit decline in advance, before more damaging results, including reduced revenue, make it more obvious (Büyükdemir, 2025).

In addition, apart from keeping warning signs monitored, the practitioner source suggests building measurement upon a **recurring review cycle**. Consequently, on a **monthly basis**, startups need to review relevant metrics, analyze product usage patterns, examine customer

feedback, verify team alignment, assess resource allocation, evaluate market response, analyze competition, and monitor growth trajectory.

On the other hand, on a **quarterly basis**, the review has to be more strategic, including an examination of customer segments, an evaluation of market positioning, assessment of the product roadmap consistency, a plan for resources, an analysis of the team's planning capacity, revision of the growth strategy, risk assessment, and financial projections (Büyükdemir, 2025). The distinction between operational checks carried out monthly and strategic review done quarterly aligns with the wider discussion elaborated throughout this section: Product-Market Fit does not represent a state to be validated only once, but a **relationship** that must be **constantly monitored** and, when necessary, recovered.

Once a startup starts to gather significant evidence of '*fit'*, it should also start broadening measurement to growth planning and risk management, gearing up for the transition addressed later. Some fundamental aspects include new customer segments, geographic extension, product line expansion, proximate market opportunities, strategy for partnerships, platform opportunities, and international matters, as well as ongoing practices to manage risk, including monitoring competitors, legal review, customer-concentration review, assessment of the technology stack, tracking market changes, and overseeing financial runway (Büyükdemir, 2025).

When these **signals align** positively, there are some additional **concrete actions** suggested by practitioners that entrepreneurs can implement: updating the company strategy, recording the identified success factors, planning operations to scale, revising financial projections, starting to plan market expansion, adjusting team structure, and updating investor materials (Büyükdemir, 2025).

Furthermore, alongside the **checklist-based approach**, three practitioner methods introduce a complementary and alternative measurement perspective compiled by Majd Alaily (2025), though each individual method was originally developed by a different source, as cited below.

The first, named '**Trifecta'**, assesses Product-Market Fit by appreciating the concurrent presence of high user retention, meaningful usage and non-trivial growth (Balfour, n.d., as cited in Alaily, 2025).

The second one concerns mapping a **retention curve** of returning users over time. Instead of a continuous decline, if the curve progressively flattens, it indicates a stable relationship between the product and at least part of its user base. Nonetheless, if the curve continues to fall toward zero, it denotes a lack of fit (Lenny's Newsletter, n.d., as cited in Alaily, 2025).

Finally, the third one corresponds to the **Sean Ellis Test** already analyzed in section 3.1, in this case referred to as a way to measure directly perceived indispensability: the test requires asking users whether they would be 'very disappointed' if the product ceased to exist, maintaining the same threshold of 40% (Ellis, 2024, as cited in Alaily, 2025).

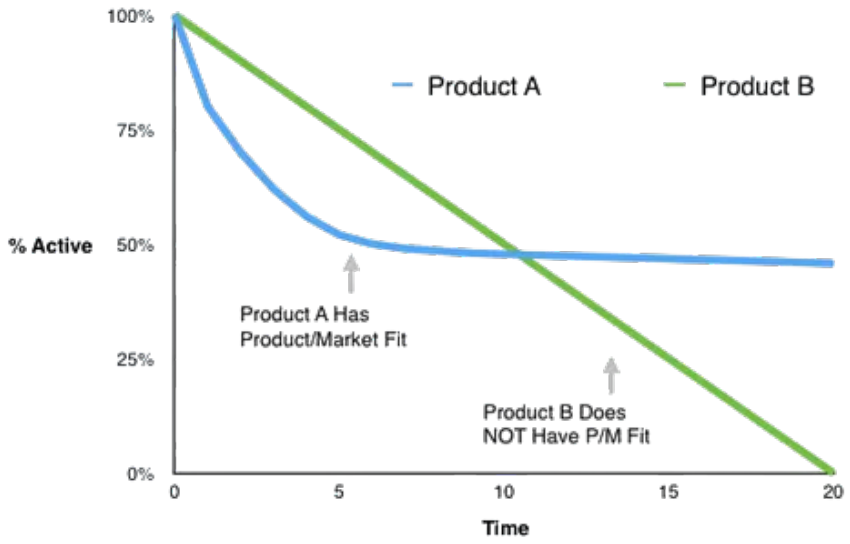


*Figure 3.3a - **Retention Curve** (L. Rachitsky)*

Taken together, all these measurement practices validate the subchapter's central argument: it is not possible to establish Product-Market Fit based on a single moment of observation or through a single test. The constant convergence of qualitative organizational signals, quantitative indicators, and recurring behavioral evidence, tested not only once but repeatedly over time, reveals Product-Market Fit.

3.4 Scalable Growth of Product-Market Fit

Market Size & TAM-SAM-SOM

After examining how startups recognize, validate and measure Product-Market Fit, the attention will be shifted to what happens when they reach a sufficient degree of '*fit*': the possibility of **scalable growth** of the business developed around it.

The first move towards it regards fully comprehending the actual size of the scope pursued by the startup, considering that validating a product-market relationship is meaningful at a strategic level only if the underlying market is extended enough to support constant growth.

In order to size the market, startups usually implement three progressively narrower measures.

First, the **Total Addressable Market (TAM),** which embodies the whole market demand existing for a specific product or service (Failory, 2025, as cited in Shah, 2025).

Following, the **Serviceable Addressable Market (SAM)** represents the portion of TAM that a startup can actually reach, based on its business model, product fit and geographic scope (Dominguez Ibar, 2025a).

Lastly, the **Serviceable Obtainable Market (SOM)** constitutes the most concrete and smallest subset, corresponding to the SAM share of a startup that can realistically seize within a given strategic and competitive context (Dominguez Ibar, 2025a).

The practitioner source highlights three main methods to calculate **TAM**.

Firstly, the **top-down approach** starts with research of the broader industry and step by step narrows down a large market to a specific addressable market for a startup.

On the other hand, the **bottom-up approach** is usually referred to as the most reliable and accurate, as it draws on first-hand data instead of secondary research, in fact, it multiplies the total number of potential customers of a given industry by the relevant product or service's average annual spending.

The last one is the **value-theory approach**, which assesses TAM based on the solution's value customers expect to obtain and their resulting willingness to pay. Additionally, it is very useful for startups introducing a completely new product in the market (Failory, 2025, as cited in Shah, 2025; Tottman, 2023).

When TAM has been established, it is possible to **estimate SAM** by shrinking the total market according to a startup's exact reach – for example, segments to which the product would be better delivered or the geographic location - whereas by applying a feasible market-penetration percentage to SAM (Dominguez Ibar, 2025a; Tottman, 2023) for a specific period, generally from one to three years, startups can calculate SOM (Shah, 2025; Tottman, 2023).

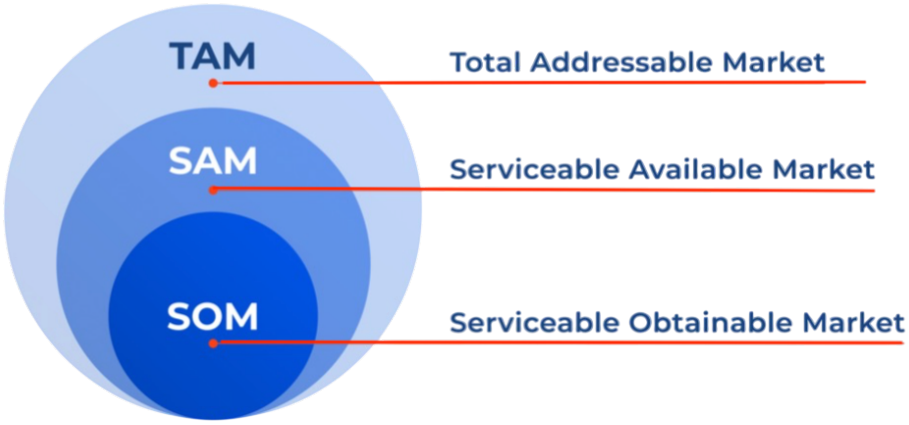


*Figure 3.4a - **Market Size** (C. Tottman)*

Furthermore, one of the practitioner sources offers a realistic illustration of such logic through the example of a project-management company targeting small and medium businesses, aiming at 200,000 potential customers with an average annual spending of $5,000, yielding a TAM of $1 billion; by reducing the target to 5,000 companies notably appropriate for the product, this yields $25 million SAM; in addition, aiming at seizing 5% within the first year, it yields a SOM, and consequently revenue target, of $1.25 million (Dominguez Ibar, 2025a).

Stage	Bases	Value
TAM	200,000 potential customers × $5,000 average annual spend	$1 billion
SAM	5,000 companies identified as strong-fit targets × $5,000	$25 million
SOM	5% penetration of SAM targeted in year one	$1.25 million

*Table 3.4a - **Worked TAM-SAM-SOM example** (Dominguez Ibar, 2025)*

Practitioners discuss calculating market size, but also emphasize the importance of monitoring **market penetration** over time. Market value can be estimated by multiplying the number of sales by the average sale value, providing an indication of the revenue generated and the potential for revenue growth as the business scales (Shah, 2025). Market penetration, instead, measures the proportion of the total addressable market captured by the startup. Market sizing's reliability also leans on the accuracy of the baseline data sources, which may include industry reports from established research firms, competitors' financial reports, government statistics, customer surveys, trade associations, and web or social media analytics (Tottman, 2023).

Furthermore, the practitioner source offers a baseline to calculate ***market size*** with a simple formula: it is calculated by multiplying the number of customers by the average revenue per customer. Two additional metrics can be integrated into this baseline: first, **market growth** rate, which expresses how quickly this addressable market is expanding, and **market share**, which indicates the proportion that a specific company has acquired of that market compared to its competitors, hence, that company's competitive position within that market (Tottman, 2023).

Lastly, the practitioner material emphasizes the various recurring **pitfalls** in market sizing that entrepreneurs must be warned about. Among these are: ignoring changes and market trends, overestimating market size, relying solely on secondary data, failing to correctly segment the market, and disregarding geographical limitations.

Moreover, it is highly suggested that startups, when introducing market size to investors, express a clear understanding of market segments and buyer personas, supported as well by visual aids, including graphs and charts, offering clear and data-backed assumptions, still being realistic, without exaggerating optimism, and openly demonstrate how market share will be acquired over time (Tottman, 2023).

This last aspect, in particular, will be further discussed in the next section, in which market size estimates will be implemented through actual horizontal and vertical growth strategies.

Horizontal vs Vertical Startups

Startups, after calculating the addressable market's size, must answer another relevant strategic question regarding the selection of the most appropriate way to **approach** that **market**, which could be by offering just one single product to a broad range of customer types (**Horizontal Strategy**) or by prioritizing a determinate industry vertical (**Vertical Strategy**).

Generally, horizontal startups tend to serve a large customer base with a relatively lower revenue per customer, whereas vertical startups target a smaller, more specific customer base at a comparatively higher level of revenue per customer (Ho, 2025a).

	Horizontal	Vertical
Customer base	Many customers	Fewer customers
Revenue per customer	Lower	High
Primary constraint	Go-to-market resources	Product resources
Example (from this section)	Slack	ServiceTitan

*Table 3.4b - **Horizontal vs. Vertical startup strategies** (Ho, 2025)*

The practitioner material, nonetheless, argues that, although both horizontal and vertical markets can, in theory, achieve a comparable total addressable market, the actual difference that distinguishes the two is limited, given that both are constrained by resource scarcity. **Horizontal startups**, in fact, generally deal with go-to-market resource constraints, while **Vertical startups** cope with product resource constraints (Ho, 2025a).

This tendency is better explained through two different cases.

The first, Slack, illustrates a horizontal startup aiming at 1.1 billion knowledge workers with an average annual spending per user of $90. This approximately reaches an addressable market of $100 billion. Nevertheless, the company was not initially able to engage the entire market at once, thus, it started with a $1 billion initial market of around 12 million tech workers at smaller companies, undertaking product-led growth before gradually expanding toward wider targets thanks to the introduction of a specialized sales team in 2016. This expansion allows the company to accomplish, by 2021, a revenue base through the combination of a high volume of lower-value customers ($541 million from 167,000 customers averaging $3,000 each) with a lower number of high-value accounts ($360 million from customers paying over $100,000 annually) (Ho, 2025a).

Conversely, ServiceTitan represents a vertical startup targeting 2.5 million home service companies with an average annual contract value of roughly $40,000, which likewise achieved a total addressable market of $100 billion. However, the company pursued this by performing vertical rather than horizontal expansion. It started in 2012 with an initial market of 200,000 plumbers (residential plumbing as the initial trade) at an annual contract value of $5,000, and gradually introduced new product lines over approximately a decade, through payments in 2017, marketing in 2019, and scheduling in 2022, to raise the average contract value to $40,000, while, at the same time, expanding horizontally through adjacent service trades, like HVAC, landscaping, and electrical (Ho, 2025a).

Although the two strategies present some differences, both examples are described through the same underlying logic, suggesting that a startup should establish an ambitious long-term vision and must break that vision down into an initial market according to the resources

available - typically within a range of $1 billion – before progressively expanding, regardless of whether horizontally, vertically, or by combining the two, while resources and proof of fit build up (Ho, 2025a). Alternatively, this progressive expansion approach depends on the go-to-market strategy chosen by the startup to reach each subsequent segment, representing the main topic of the next section as well.

Modern Go-To-Market Strategy (GTM 2.0)

Once it has been analyzed how startups can capture their market and structure their expansion horizontally or vertically, the last aspect regards the practical mechanisms that support startups in **reaching** their **target customers**.

The practitioner source indicates seven relevant **go-to-market motions**, each corresponding to a specific growth lever.

Inbound is driven by content creation aimed at generating leads. Alternatively, **outbound** draws on direct, cold outreach to prospects by email, social, phone or media. **Paid digital**, on the other hand, is based on media buying to seize the target audience's attention. Then, **community** focuses on creating content and engaging community members. Conversely, **partners** involve collaborating with compatible companies to gain sales benefits and mutual marketing. Account-based marketing, by contrast, focuses resources on high-value accounts through tailored and personalized campaigns. Finally, product-led growth prioritizes the development of a self-onboarding mechanism to enable users to drive value autonomously, avoiding overreliance on conventional sales processes. (Chawla, 2025).

Although these motions constitute a well-rooted categorization of go-to-market approaches, the practitioner source notes how, in reality, conventional channels cannot be regarded as effective as in the past. In particular, it highlights that **traditional channels** like search-engine optimization, generic product-led-growth loops, and paid advertising are progressively becoming expensive and high-priced, despite alternative approaches implemented by some AI-native companies, proved to deliver noticeably faster growth (NFX, 2025, as cited in Flor, 2025).

This transition originated from the depletion of five channels upon which the traditional playbook rests. In particular, search-engine optimization, generic product-led growth loops developed on in-product virality, paid advertising, outbound sales-led acquisition, and a high-customer-acquisition-cost (CAC) model upon substantial upfront capital expenditure in exchange for long-term payback.

In addition, in the practitioner material, it is emphasized how these channels are becoming more and more expensive and saturated due to five specific causes: an increase in acquisition costs given paid channels' efficiency reduction; the momentum generated through these channels has shown a decrease in speed and predictability; heightened competition intensity for the same keywords as well as advertisement placement; new entrants experience more difficulties accessing markets against incumbents disposing of higher budgets; and users have now become more fatigued and conscious of privacy issues, leading to a shared, higher perception of advertising and conventional PLG loops as intrusive.

Therefore, as the practitioner states, the cumulative effect manifests through slower growth, less sustainable business models, and higher costs (Flor, 2025).

This change is squared in three sequential "***GTM generations***". The **initial phase** was from 2000 to 2010 and focused on strategies that attract public relations and search-engine optimization (for instance, companies like TripAdvisor), now mostly exhausted. The **second phase** was from 2010 to 2020 and centered on network effects and built-in virality and is related to on-platform, product-led growth (exemplified by companies like Slack, Dropbox and Zoom), now reputed to be table stakes, and more and more affected by users' burnout. The **current phase** began approximately in 2020 and builds on activating external networks, including online communities, before embedding or migrating users to the startup's platform, connected with quick and capital-efficient growth (examples of such companies are Cursor and Midjourney) (NFX, 2025, as cited in Flor, 2025).

The practitioner material recognizes, across the third emerging generation, six practical tactics: **building in public** thanks to failures and lessons on social and professional platforms, and metrics shared by founders; **community-centric growth** through direct engagement with existing online communities; **self-service viral products** that ensure frictionless self-serve access and an immediate, tangible perception of value; a **prosumer-first approach**, which

pursues individual expert customers before targeting enterprise users; open-source foundations, which provide a free core product to develop a base of contributors before monetizing enterprise tiers or cloud; finally, **influencer marketing**, which reaches business-to-business contexts by establishing creator partnerships (NFX, 2025, as cited in Flor, 2025).

Moreover, the practitioner source, drawing upon these six tactics, provides a single organizational principle guiding the new generation of go-to-market strategy: which is that the combined effect of product and community outweighs the combined effects of advertising and sales (Product x Community > Ads x Sales).

The actual functioning of this dynamic depends on three necessary conditions: the product itself has to be shareable, the user must not experience friction throughout the experience, and the startup's communication must prioritize authenticity, instead of professionalism rhetoric. Operationalizing this principle, according to the practitioner material, encompasses a concrete checklist that must be executed: establishing the Ideal Customer Profile, both demographically and as a set of networks, incorporating shared loops directly into the product, focusing all the activities of a single community, always ensuring a constant publishing cadence, implementing self-serve pricing, and monitoring virality explicitly (Flor, 2025).

Considering both the emerging generational shift and the established go-to-market taxonomy, it becomes evident that reaching a target market is not a static process, but rather an exercise that must be constantly reassessed as channels become more saturated, mature, or are displaced by novel practices. This is a relevant consideration, especially for startups that, after achieving and evaluating Product-Market Fit, start to convert that '*fit'* into a **repeatable**, **scalable growth** within an expanding market.

In this section, the final stage of the trajectory outlined across this thesis has been analyzed: once organized, validated and measured Product-Market Fit, a startup has to deal with the specific challenge of translating that '*fit'* into scalable growth. Defining an accurate valuation of market size using the TAM-SAM-SOM framework gives startups the possibility to calibrate their realistic ambitions ahead of allocating resources.

In addition, choosing between horizontal and vertical growth strategies, as demonstrated through the opposing examples of Slack and ServiceTitan, further defines the progressive breakdown of such ambition into a sequence of achievable and resource-suitable steps.

In conclusion, the selection and evolution of go-to-market strategies defines the method through which those steps are realistically carried out, an ever-changing domain as established channels mature and novel, community-driven approaches emerge.

The entirety of these three dimensions proves that scaling cannot be defined as a natural or automatic response of reaching '*fit'*, but rather a clear set of **strategic decisions**, which must be addressed with the equal evidence-based rigor requested throughout the previous stages of the Product-Market Fit journey.

Comparative Synthesis: Academia vs Practice

The following table (Table 3.4c) synthesizes that both academic and practitioner perspectives about Product-Market Fit consider validation as the process reference point; however, they handle measurement in different ways: practitioners generate a heavy set of operational metrics, whereas academic literature on Product-Market Fit daily measurement is still underdeveloped by comparison.

Concept	Academic Perspective	Practitioner Perspective	Convergence / Divergence
Product-Market Fit Definition	Zott and Amit (2008): strategic "*fit*" among value proposition, business model, and target market; a theoretical and multidimensional construct.	Andreessen (2007): PMF as a binary state - "*being in a good market with a product capable of satisfying it*"; an operational and empirically recognizable concept.	**Convergence** on the core concept (Product-Market Fit); divergence regarding measurability: academia treats it as a construct, while practitioners view it as a threshold to be crossed.
Validation	Blank (2006): Customer Development; Sykes & Dunham (1995): critical assumptions; Felin et al. (2020, 2024): hypothesis-driven experimentation.	Assumption Mapper and Experiment Card; a catalog of 24 experimentation methods (Board of Innovation); three-step validation (learning objective, assumption mapping, experiment design).	**Strong convergence**: both traditions insist on explicit assumptions and testing with real customers before scaling.
Measurement	Bogdanov (2025): the intensity and quality of Customer Development increase the probability of PMF. Gap: a lack of academic literature on PMF as a measurable, day-to-day discipline.	Sean Ellis test (40% "*very disappointed*"); retention curve; "Trifecta" (retention, usage, growth); PMF levels and signals.	**Structural gap**: practitioners' output is richer and more detailed than academia's, which offers few tools for operational measurement.
Scalability	Zott and Amit (2008): the fit between the business model and the product-market strategy must hold up during the growth phase as well.	Market sizing (TAM-SAM-SOM); horizontal vs. vertical expansion; go-to-market and GTM 2.0.	**Methodological divergence**: academia remains at the level of principle (strategic coherence), while practitioners provide estimation methods and operational tactics.

*Table 3.4c - **Comparative Synthesis: Academia vs Practice***

4. Conclusion

The main objective of this thesis is to investigate **Product-Market Fit**, rather than as an abstract construct limited to theoretical discussion, as a condition that can be actively **operationalized**, **validated**, **measured** and **scaled** by startups.

This final chapter sets out to reassess the research problem and research questions outlined in the introduction, to sum up how each section contributed to addressing them, and to contemplate the drawbacks of this work and directions for future research.

In the introduction, some research problems regarding the fragmentation between Product-Market Fit's academic and practitioner-oriented perspectives have been identified: **academic literature** generally approaches the concept from a broader and more theoretical view, whereas the **practitioner approach** provides operational tools, metrics, experimentation methods, and frameworks for growth; however, rarely within a structure grounded in academic theory. This thesis examined four specific research questions resulting from this problem.

The first question addressed how Product-Market Fit could be **operationalized** by implementing **experimentation** and **validation processes** and a **strategic framework** for startups. This aspect is analyzed across the first two subchapters, which demonstrate that the theoretical foundations, defined in the second chapter – hence, startups' specific uncertainty, Blank's Customer Development Model and Ries's Lean Startup approach – can actually be translated into a practical operational sequence that goes from value proposition and assumption identification, across hypothesis formulation, to a structured, three-step validation process underpinned by pretotyping, categorized experiment types, specific tools, as well as a set of twenty-four dedicated experiment methods.

The second concerned the **common features**, **divergences** and **gaps** emerging from **academic literature** and **practitioner-oriented frameworks**. Throughout the thesis, it is possible to identify three recurring patterns. Firstly, a fundamental **similarity**: both traditions

converge toward the same underlying idea, defined in Chapter 2, according to which a startup's prospects depend on the alignment between product and market, rather than on either element in isolation, and both define the direction toward such alignment as intrinsically iterative. The two academic models of Customer Development and Lean Startup thereby reflect the *'test, measure, decide'* logic conceptually developed in Chapter 3.

Secondly, a **methodological divergence**: as illustrated through the strategic-fit research examined in Chapter 2, the academic literature supports accurate, formally moulded, and empirically tested concepts, while the practitioner frameworks discussed in Chapter 3, lean on practical, prescriptive heuristics – such as archetypes, signals, scoring thresholds and checklists – that are commonly implemented in reality, but rarely exposed to systematic empirical validation.

Thirdly, a **structural gap**: academic literature deals relatively poorly with Product-Market Fit as a daily, operational discipline, and it focuses instead on the broader processes – thus, uncertainty, validated learning, customer development – that encompass it, whereas practitioner literature deals significantly with operational aspects; however, it rarely places its frameworks within, or clearly tests them against, academic theory. This gap is exactly what this thesis attempts to address by reviewing the two traditions jointly, rather than dealing with them as separate bodies of knowledge.

The third research question discussed is which **metrics**, **tools** and **indicators** are most widely used and are most appropriate to **assess Product-Market Fit**. This is examined in the 3.3 subchapter by demonstrating that a single metric is not sufficient. In order to evaluate Product-Market Fit, startups must integrate foundation metrics, customer research and feedback, growth indicators, financial health, and usage patterns, a broader qualitative evaluation system encompassing customer success, team alignment, market response, product development, go-to-market readiness and documentation, and, additionally, an ongoing measurement discipline developed upon recurring review cycles, warning signs and complementary frameworks, including Trifecta, Sean Ellis test and the retention curve.

The fourth research question investigated how **existing** Product-Market Fit **notions** and **methodologies** may be combined into an **operational** and **visual framework** to support **startup development**. This thesis achieves this objective with an original synthesis diagram

(*Figure 4a*), illustrated at the end of this chapter, that strengthens the frameworks formulated across the thesis.

In more detail, such integration progressively develops across Chapter 3: the validation frameworks and the tools that constitute it, the experimentation methods, MVP and pretotyping practices that can be implemented to develop evidence, the multi-dimensional evaluation system and measurement methods, and lastly, the market sizing and go-to-market models, which altogether represent the operational underlying structure that startups can implement throughout the various development stages.

The above-mentioned **diagram** translates academic and practitioner material that is widely found and broadly agreed upon throughout the sources analyzed in this thesis into a **holistic visual reference**, designed to assist founders while navigating the subsequent **stages** of **validating**, **measuring**, and **scaling Product-Market Fit**.

Subchapter 3.4 expanded this operational approach further; rather than limiting it to the achievement of '*fit'* itself, it analyzed how startups convert validated Product-Market Fit into scalable growth by sizing the market (TAM-SAM-SOM), comparing horizontal and vertical expansion strategies, and progressing go-to-market approaches. Consequently, it shows that scaling also requires the same evidence-based rigor applied in the earlier validation stages.

Despite fragmented treatment of **Product-Market Fit** in academic and practitioner literature, this thesis demonstrates that it can be treated as an **actionable**, **coherent**, and **progressively measurable** condition when academic theory and practitioner frameworks are read *together*, rather than separately.

The main contribution this thesis attempted to generate lies in this integration: arranging a broad range of practitioner material that recurs widely and consistently across sources into a structure that operationalizes and reflects the theoretical foundations identified in the academic literature on startup validation and customer development.

It must be recognized that this work has several **limitations**. First of all, although it provides operational detail, the practitioner material essentially underlying Chapter 3 generally lacks

the methodological rigor and peer-review scrutiny that characterize academic sources; despite being widely referenced in practice, its frameworks rarely undergo systematic empirical validation.

Furthermore, representing a structured literature review, this thesis does not comprise empirical or primary data collection itself, and its conclusions draw on the synthesis of existing theoretical and practitioner sources, rather than authentic testing.

Finally, an additional aspect that must be considered is that these **practitioner sources** were obtained mainly through a single platform, *LinkedIn*, and then were chosen one by one, instead of being collected through a systematic or comprehensive sampling method, implying that the practitioner framework examined throughout Chapter 3 showcases the influence and visibility of certain authors within their professional networks, and not a mere overview representative of practitioners' Product-Market Fit perspective as a whole. Similarly significant frameworks, thereby, published on other platforms or by less active practitioners on this specific platform, may not be included in this thesis.

Moreover, since many contributors blend knowledge-sharing with personal branding or consulting efforts, the framework illustrated can be influenced, at least in part, by each author's professional stance, rather than constituting entirely impartial accounts of practice.

Further future research could rest on this work by empirically testing the frameworks examined across this thesis – for example, whether the identified archetypes, metrics, signals and indicators faithfully predict outcomes of the future startup's growth through a specific sample of ventures.

In addition to these theoretical and methodological contributions examined and included in this thesis, RQ4 converts methodologies and concepts analyzed across Chapters 2 and 3 into an operational and visual framework. The consequent *Figure 4a* symbolizes the final operational outcome as it organizes the **Validate, Measure, and Scale** stages of Product-Market Fit according to their academic foundations, their related practitioner tools and their evidence-based exit criteria that signal the transition from one stage to the following one, and

at the same time making evident the iterative logic that both traditions ascribe to the Product-Market Fit process.

Figure 4a is meant to be read stage by stage: each block matches the academic foundation of the considered stage with the practitioner tool needed to operationalize it and define the exit criteria that validate moving to the following stage – mentioned in this thesis synthesis – and the returning arrows indicate the iterative essence of the Product-Market Fit process explained throughout Chapters 2 and 3. Nonetheless, the figure should be considered as a synthesis of the existing theoretical and practitioner sources instead of a mere validated predictive model. In accordance with the limitations analyzed previously, the stages, tools, and exit criteria have not been tested empirically on a startups' sample, nor has it been assessed whether these can reliably predict a venture's progression toward Product-Market Fit and beyond for future research.

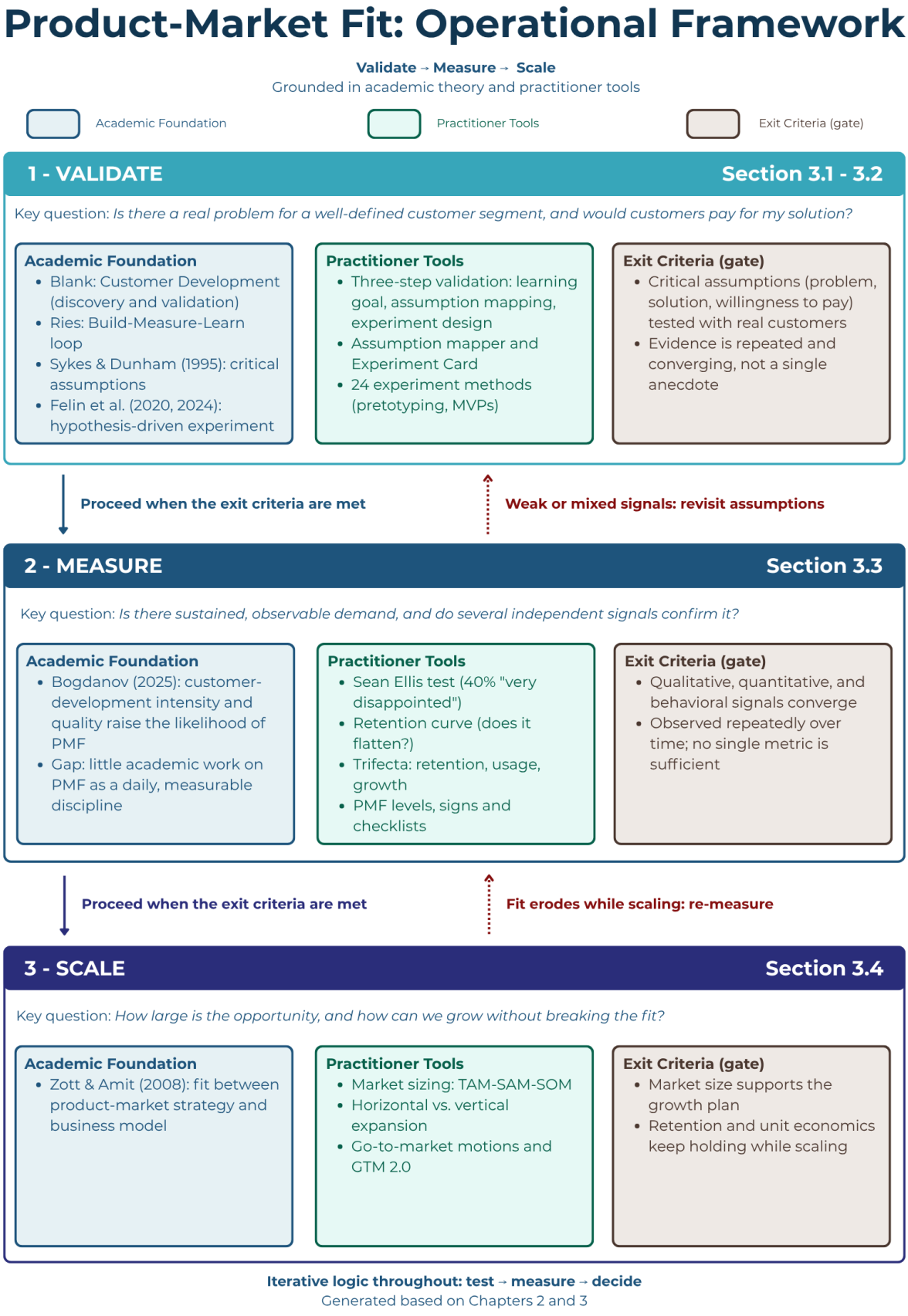


*Figure 4a - **Product-Market Fit: Operational Framework**. Framework elaborated with the support of Claude (Anthropic), revised and verified by me*

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5.4 Declaration on the Use of Artificial Intelligence (AI) Tools

I, the undersigned Miotto Sofia, 890020, enrolled at Ca' Foscari University in the Bachelor's/Master's Degree programme in Innovation & Marketing, author of the final paper/degree thesis '*Bridging Theory and Practice: Operationalizing Product-Market Fit in Startups'* under the supervision of Bagnoli Carlo aware of the penalties provided for by Article 76 of Presidential Decree No. 445 of 28 December 2000, and of the loss of benefits provided for by Article 75 of the same Consolidated Act in the event of false or misleading declarations, under my own personal responsibility pursuant to Articles 46 and 47 of Presidential Decree No. 445 of 28 December 2000,

DECLARE

that I have used generative artificial intelligence technologies to support various aspects of the research and writing of my final paper/degree thesis, specifically:

- ChatGPT-4, version released in March 2024;
- Claude Sonnet 4.5 (Anthropic)

The tools were used across the thesis' chapters for:

- revision and optimization of texts to improve clarity and coherence;
- verifying factual statements, citations, and examples against the original sources;
- optimizing diagrams created by me;
- supporting the format and location of bibliographic references.

The correctness, quality, and reliability of any information or texts generated were verified by comparing them with the original sources and according to my own judgment.

I FURTHER DECLARE

that all material generated by AI has been carefully verified, reviewed, and reworked by the author, who assumes full responsibility for the quality, accuracy, and scientific integrity of the work.