



LUND UNIVERSITY
School of Economics and Management

Department of Business administration

FEKH99

Entrepreneurship and Innovation Management

Spring 2026

Navigating Customer Need Uncertainty in Early Stage SaaS Startups

An Exploratory Study of How Founders Identify, Interpret and Act on Customer Needs

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Sammanfattning

Titel: Att Navigera Kundbehovsosäkerhet i Tidiga SaaS-Startups

Seminariedatum: 4 juni, 2026

Ämne/kurs: FEKH99, Examensarbete i entreprenörskap och innovation på kandidatnivå. 15 högskolepoäng

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Fem nyckelord: Knightiansk osäkerhet, Effektuation, Kundvalidering, Latenta behov, Lean Startup

Forskningsfråga: Hur navigerar grundare av SaaS-startups osäkerhet kring kundbehov under tidig produktutveckling?

Syfte: Syftet med studien är att undersöka hur grundare av tidiga SaaS-startups navigerar osäkerhet kring kundbehov under tidig produktutveckling, med särskilt fokus på hur grundare identifierar, tolkar och agerar på oklar kundbehovsinformation i situationer där dessa behov ännu inte är fullt formulerade eller kända.

Metod: Studien bygger på en kvalitativ flerfallsstudie med ett abduktivt angreppssätt. Empiriskt material samlades in genom semistrukturerade intervjuer med sex grundare från fyra svenska B2B SaaS-företag i tidig fas. Materialet analyserades genom tematisk analys med utgångspunkt i studiens teoretiska ramverk.

Teoretiska perspektiv: Studien integrerar fyra teoretiska perspektiv: Knightian uncertainty som grund för förståelsen av äkta osäkerhet, effectuation theory som beskriver entreprenöriellt beslutsfattande under osäkerhet, distinktionen mellan uttryckta och latenta kundbehov, samt Lean Startup-metodologin för kundvalidering. Dessa integreras i ett analytiskt ramverk, the Uncertainty Alignment Model (UAM).

Resultat: Grundarna navigerade inte osäkerheten genom strukturerade experiment eller färdiga planer. Istället utgick de från vad de redan hade, sin egen erfarenhet och sina nätverk, och lät produktriktningen växa fram genom löpande kundkontakt. Att fråga kunder direkt vad de ville ha gav sällan användbara svar, eftersom behoven var sådana som kunderna själva ännu inte kunde formulera. De mest värdefulla insikterna kom istället från observation och från själva byggandet. Vad kunderna behövde förändras också över tid, vilket innebar att grundarna kontinuerligt behövde justera sitt sätt att validera snarare än att hålla fast vid ett enda tillvägagångssätt.

Slutsats: Grundarna navigerade kundbehovsosäkerhet genom effektiv logik och relationsbaserad validering snarare än strukturerade experiment. Eftersom behoven i stor utsträckning var latenta gav de direkta kundfrågorna sällan användbara svar, och de mest värdefulla insikterna uppstod istället genom observation och själva byggandet. Distinktionen mellan uttryckta och latenta behov visade sig vara dynamisk, vilket innebar att grundarna kontinuerligt behövde anpassa sin valideringslogik i takt med att behoven förändrades.

Abstract

Title: Navigating Customer Need Uncertainty in Early Stage SaaS Startups

Seminar date: 4 June, 2026

Course: FEKH99, Bachelor Degree Project in Entrepreneurship and Innovation

Management, Business administration, Undergraduate level, 15 University Credit Points

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Key words: Knightian uncertainty, effectuation, customer validation, latent needs, lean startup

Research question: How do SaaS startup founders navigate uncertainty about customer needs in early product development?

Purpose: To examine how SaaS startup founders navigate uncertainty about customer needs in early product development, with particular focus on how founders identify, interpret and act upon uncertain customer need information in situations where those needs are not yet fully formulated or known.

Methodology: A qualitative multiple case study with an abductive approach. Empirical material was collected through semi-structured interviews with six founders across four Swedish B2B SaaS companies in early stages of development and analysed through thematic analysis guided by the study's theoretical framework.

Theoretical perspectives: The study integrates four theoretical perspectives: Knightian uncertainty as the foundation for understanding genuine unpredictability, effectuation theory describing entrepreneurial decision-making under uncertainty, the expressed-latent needs distinction and Lean Startup methodology for customer validation. These are integrated into an integrative analytical construct, the UAM

Result: Founders did not navigate uncertainty by running structured experiments or following a predefined plan. Instead they started from what they already had, their own experience and networks and let product direction emerge through ongoing customer contact. Asking customers directly what they wanted rarely produced useful answers, because the needs founders were trying to uncover were ones customers themselves could not yet articulate. The most valuable insights came from observation and from the act of building itself. What customers needed also changed over time, meaning founders had to continuously adjust how they validated rather than settling on one approach from the start.

Conclusions: Founders navigated customer need uncertainty primarily through effectual rather than causal logic and through relational rather than experimental validation. Direct customer feedback proved consistently insufficient because the needs at issue were largely latent and therefore inaccessible through direct questioning. The most consequential learning arrived instead through observation, co-creation and the act of building itself. The expressed-latent distinction operated as a dynamic rather than fixed classification, meaning founders had to continuously renegotiate their validation approach as needs evolved through interaction.

Acknowledgements

We would like to thank the founders who gave their time to participate in this study. Their willingness to speak openly about the uncertainties and decisions of early-stage product development made this research possible and their accounts have given us insights that no textbook could have provided.

We also want to thank our supervisor, Joakim Winborg, for his guidance throughout the process. His feedback has sharpened our thinking at several critical moments and pushed us to be more precise in both our theoretical framing and our analysis.

Place: Lund

Date: June 1, 2026



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Definitions

Startup

When referring to startups in this study, the term follows Eric Ries (2011), who defines a startup as a human institution designed to create a new product or service under conditions of extreme uncertainty. This definition emphasizes uncertainty as the defining characteristic rather than firm size or age. In line with Steve Blank (2013), startups are further understood as temporary organizations searching for a repeatable and scalable business model.

Software-as-a-Service (SaaS)

Software-as-a-Service (SaaS) refers to a software delivery model where applications are provided via the internet as a service rather than installed locally on user devices (Mäkilä et al., 2010). Typical characteristics include browser based access, shared infrastructure across multiple users and subscription based pricing. In this study, SaaS startups are treated as a specific context where rapid iteration cycles and continuous customer interaction are central to product development.

Uncertainty

Uncertainty refers to situations in which outcomes cannot be predicted or assigned probabilities. Following Frank Knight (1921), a distinction is made between risk, where probabilities are known and uncertainty, where they are not. In this study, uncertainty primarily concerns founders' lack of knowledge regarding customer needs and how customers will respond to potential solutions in early product development.

Customer Needs

Customer needs refer to the problems or desires that a product aims to address. Following Dorothy Leonard and Jeffrey Rayport (1997), a distinction is made between expressed needs, which customers are aware of and can articulate and latent needs, which customers may have but are unable to express. This study adopts this distinction to analyze how founders identify and interpret customer needs under uncertainty.

Customer Validation

Customer validation refers to the process through which founders test assumptions about customer needs through empirical interaction with potential users. Drawing on Eric Ries (2011), customer validation is understood as an iterative process involving building, testing and learning from customer feedback. In this study, customer validation is treated as a practical approach used by founders to reduce uncertainty about customer needs.

Effectuation

Effectuation refers to a decision making logic in which entrepreneurs start from available means, such as their knowledge, resources and networks and allow goals to emerge over time rather than pursuing predefined objectives. As developed by Saras Sarasvathy (2001), effectuation is particularly relevant in uncertain environments where predicting the future is difficult. In this study, effectuation is used to understand how founders reason and act when customer needs are unclear.

Early stage Product Development

Early stage product development refers to the phase in which a product is conceptualized, developed and iteratively refined before achieving product-market-fit (Blank, 2013). This phase is characterized by high uncertainty, limited information and ongoing experimentation (Ries, 2011). In this study, the focus is on how founders make decisions and interpret customer needs during this stage.

1. Introduction

1.1 Background

Low code tools, cloud infrastructure and SaaS models have made it possible for almost anyone to build and launch a product (Onyeagusi & Onyeagusi, 2025), yet this accessibility sharpens rather than resolves a fundamental challenge: founders must still decide what to build before they know what customers need (Blank, 2013).

The SaaS business model is built around subscription-based pricing and recurring access rather than one-time licensing (Mäkilä et al., 2010), making continuous customer value central to the model's viability. Because SaaS companies deliver software through continuous updates and iterative development, this creates close and recurring interactions between company and user (Ojala & Tyrväinen, 2011), making early stage SaaS startups a particularly relevant context in which to study how founders handle uncertainty around customer needs. Sweden's rapidly expanding digital market, with IT services projected to grow from USD 15.2 billion in 2024 to USD 20.3 billion by 2029 (National Board of Trade Sweden, 2024), makes the challenge of navigating customer need uncertainty in this context increasingly consequential for founders operating within it.

Founders in this context operate under what Knight (1921) termed true uncertainty: outcomes are not merely risky but genuinely unpredictable. This manifests as not knowing which customer needs exist, which matter and which the product should address. The difficulty deepens because customer needs are not always visible, some can be articulated directly, while others remain latent until a solution brings them into view (Leonard & Rayport, 1997). Founders thus navigate a double bind: information is scarce and customers themselves may not know what they want. Practitioners have responded with frameworks for customer validation such as the Lean Startup (Ries, 2011), while researchers have examined how entrepreneurs reason under uncertainty through effectuation (Sarasvathy, 2001).

How these two bodies of literature relate in actual founder practice and whether they are sufficient when customer needs cannot yet be articulated, remains an open empirical question.

1.2 Problem Discussion

Empirical knowledge of how founders actually navigate customer need uncertainty remains limited (Bocken & Snihur, 2020). Practitioner frameworks such as Lean Startup (Ries, 2011) and Customer Development (Blank, 2005) prescribe what founders should do, but say considerably less about how founders reason and act when customers themselves cannot articulate what they need (Frederiksen & Brem, 2017). The connection between effectual reasoning and customer validation practices, two bodies of literature with evident complementarity, remains largely conceptual and has not been examined empirically in the SaaS context (Ghezzi, 2019). As a result, founders making product decisions under these conditions lack guidance grounded in how peers actually reason, rather than how prescriptive frameworks assume they should reason. This gap is particularly consequential at the early stage, when uncertainty is highest, information most scarce and the decisions taken shape the entire subsequent trajectory of the firm (Shepherd & Gruber, 2021; Blank, 2013).

In SaaS contexts, the cost of misreading customer needs is compounded by the subscription model: unlike one-time licensing, the model depends on customers continuously perceiving sufficient value to renew (Mäkilä et al., 2010), meaning misalignment between product and need generates recurring rather than one-time revenue loss.

1.3 Purpose and Research Question

The purpose of this study is to examine how SaaS startup founders navigate uncertainty about customer needs in early product development, with particular focus on how founders identify, interpret and act upon uncertain customer need information in situations where those needs are not yet fully formulated or known. This study aims to address that gap by generating empirical insight into how identification, interpretation and action occur in practice and by examining how theoretical perspectives on entrepreneurial decision making and customer validation relate to one another in actual startup contexts.

The study is guided by the following research question:

How do SaaS startup founders navigate uncertainty about customer needs in early product development?

In doing so, the study enables researchers to assess whether effectual reasoning and customer validation frameworks describe, contradict, or complement each other in actual founder practice, a question that existing normative treatments cannot answer and enables founders to evaluate whether the validation logic they apply is suited to the type of uncertainty they face.

1.4 Delimitations

This study is delimited to a qualitative case study of four Swedish B2B SaaS companies operating before or in proximity to product market fit, focusing exclusively on the founders' perspective, as founders bear primary responsibility for the product decisions this study examines. Other stakeholders' views, such as those of customers, investors, or employees, are not included, nor are broader aspects of startup operations such as financing decisions, organisational structure, or growth, unless directly related to how founders navigate uncertainty about customer needs.

2. Theoretical Framework

2.1 Uncertainty in Early stage Startups

Early stage founders make product decisions without reliable information about markets, customers, or competitors. Knight (1921) draws a foundational distinction between risk, where probabilities can be estimated from prior data and true uncertainty, where outcomes cannot be meaningfully predicted or quantified and it is this latter condition that characterises early stage product development.

McMullen and Shepherd (2006) formalise this by arguing that entrepreneurial action arises when perceived uncertainty is high enough to create doubt yet low enough to permit action, requiring founders to balance acting on limited information against the consequences of acting incorrectly.

Shane and Venkataraman (2000) position this dynamic at the centre of entrepreneurship as a field of inquiry, observing that the discipline concerns itself precisely with how, by whom and with what consequences opportunities are discovered and exploited under conditions of uncertainty. Together, these contributions establish that uncertainty is not a marginal obstacle to entrepreneurship but the constitutive condition under which entrepreneurial decision making occurs.

Founders face a particularly demanding form of this uncertainty when attempting to understand customer needs. Von Hippel (1986) demonstrates that customers frequently cannot articulate needs for novel products because they lack the experience that would make those needs visible, meaning product decisions rest largely on assumptions that resist straightforward testing. McMullen and Shepherd (2006) deepen this by arguing that uncertainty is not merely about missing information but about the nature of available information: when customer signals are ambiguous, founders must interpret and construct meaning rather than simply collect data, a challenge qualitatively different from ordinary market risk.

This interpretive challenge is especially pronounced in SaaS contexts. Ojala and Tyrväinen (2011) observe that SaaS business models generate continuous streams of user interaction data, yet translating that data into reliable insight about underlying needs requires active interpretive effort from founders. The availability of data does not by itself resolve uncertainty; it may even amplify interpretive demands by introducing ambiguous signals that require judgement to decode.

2.2 Customer Needs

A critical distinction for analysing how founders interpret customer signals is the difference between expressed needs, which customers can articulate directly and latent needs, which exist but remain unrecognised or unarticulated by the customer. The nature of the uncertainty founders face, whether needs are expressed or latent, determines which learning strategies are appropriate and whether founders' chosen practices are methodologically suited to the challenge they confront.

Slater and Narver (1998) distinguish a reactive, customer led approach that addresses explicitly stated preferences from a proactive, market oriented approach that seeks to satisfy needs customers have not yet articulated, arguing the latter generates more robust competitive advantage. They also caution that a pure customer led orientation carries the risk of incremental innovation: customers tend to request improvements to what they already know rather than identify genuinely new solutions, meaning exclusive reliance on expressed signals may systematically underestimate the space of valuable opportunities.

Surfacing latent needs requires active interpretive methods that go beyond asking customers what they want. Direct observation of customer behaviour in context offers one such approach, since actions reveal unarticulated needs that customers themselves cannot report (Leonard & Rayport, 1997). Early engagement with lead users, individuals whose present needs foreshadow broader market trends, provides another access point, offering signals about emerging needs that conventional market research cannot surface (Von Hippel, 1986). A founder who asks users what they want may receive accurate reports of expressed preferences while remaining blind to latent needs, while a founder who relies solely on observation risks misreading behaviour and building solutions for needs that users do not actually hold.

This tension between responsiveness to what users say and attentiveness to what users do constitutes a core analytical problem that this study explores empirically.

2.3 Effectuation: Decision Making under Uncertainty

Founders navigating genuine uncertainty cannot rely on predicted outcomes or market forecasts that do not yet exist. Instead, they draw on what is already available: their existing knowledge, networks and resources (Sarasvathy, 2001; Read et al., 2009). Sarasvathy (2001) calls this the bird-in-hand principle and for SaaS founders it has direct practical consequences: when no reliable customer data exists, the founder's personal network becomes the primary signal source for emerging needs.

Decisions are further governed by affordable loss rather than expected return, meaning founders

commit only what they can afford to lose, which allows them to act and learn without requiring validated market knowledge upfront.

Founders also learn through action rather than through planning. In uncertain environments, iterative experimentation replaces analytical prediction as the primary mode of knowledge generation (Read et al., 2009; Chandler et al., 2011). This is particularly consequential when customer needs are latent: because no prior market exists to analyse, founders cannot plan their way to an understanding of what customers need. They must instead act, observe the response and allow understanding to emerge through repeated interaction. Chandler et al. (2011) show empirically that effectual and causal logics coexist in entrepreneurial processes, with effectual action becoming more appropriate as uncertainty increases.

A third dimension of effectuation concerns how founders build markets rather than merely enter them. Through what Sarasvathy (2001) terms the crazy-quilt principle, founders actively co-create with early customers, partners and stakeholders, allowing goals and product directions to emerge from those relationships rather than being fixed in advance. Sarasvathy and Dew (2005) extend this by showing that customer needs themselves can be shaped through interaction: rather than discovering pre existing latent needs, founders and customers jointly construct an understanding of what the product should address. Fisher (2012) confirms this in practice, finding that effectual entrepreneurs treat uncertainty not as an obstacle to reduce but as the condition that makes new market creation possible.

2.4 Customer Validation: Lean Startup

The Lean Startup methodology (Ries, 2011), building on Blank's (2005) Customer Development model, reframes early stage product development as empirical inquiry. Its core mechanism is the Build Measure Learn feedback loop: founders build a Minimum Viable Product (MVP), measure customer responses and learn whether to pivot or persevere. Blank (2013) positions customer needs as hypotheses to be tested through direct interaction before committing resources to full development. The practical logic of both frameworks is causal in structure: founders specify an assumption, design a test, collect data and revise the assumption accordingly.

Frederiksen and Brem (2017) examine this relationship directly, finding that many of Ries' prescriptions are consistent with effectuation theory but that the frameworks differ in the degree of deliberateness and structure they impose on learning, a tension that the present study is positioned to examine in practice. Stevenson et al. (2024) provide the first comprehensive scholarly treatment of the MVP as a theoretical construct, defining it as a product representation with limited features deployed for the purpose of learning about solution value through experimentation. They identify three

dimensions of variation, namely aesthetic, functional and symbolic realism and note associated risks including appropriation risk, where competitors learn from a public MVP and reputation risk, where an incomplete product damages credibility with early customers. These risks are particularly relevant for SaaS founders, who must balance the speed of early learning against the reputational consequences of releasing an underdeveloped product to a professional user base.

Previous research highlights a distinction between exploratory forms of customer learning aimed at uncovering needs and more structured forms of experimentation used to validate predefined assumptions and refine products over time (Blank, 2005; Ries, 2011; Frederiksen & Brem, 2017). This distinction between exploratory and confirmatory validation is analytically useful because it maps onto the expressed latent needs distinction developed in section 2.2: exploratory methods are better suited to surfacing latent needs, while confirmatory methods are better suited to verifying expressed ones.

Frederiksen and Brem (2017) raise a structural concern that cuts deeper: the Build Measure Learn loop assumes customers can provide meaningful feedback when shown a prototype, yet this assumption breaks down when needs are latent rather than expressed. If a customer cannot yet conceive of a need, exposure to an MVP will not reliably reveal whether that need exists. This limitation points to a fundamental tension within customer validation: MVP based testing is well suited to verifying expressed needs but less effective at surfacing latent ones, which require the observation, inference and co-creation described by Von Hippel (1986) and Leonard and Rayport (1997). Neither framework specifies how founders should handle situations where customers themselves cannot yet formulate their needs and it is precisely this gap that the present study examines empirically.

2.5 Theoretical Synthesis - The Uncertainty Alignment Model

The Uncertainty Alignment Model (UAM) is an integrative analytical construct rather than a new theory, built from four established bodies of literature to address what the research question requires: not merely describing what founders do, but evaluating whether what they do is aligned with the uncertainty they face. A framework capturing only decision logic cannot evaluate whether that logic was suited to the uncertainty present. A framework capturing only validation practice cannot explain the reasoning behind it. A framework identifying only uncertainty types cannot assess what founders did in response.

A central insight emerging from this integration is that expressed and latent needs call for different decision logics and validation approaches. Expressed needs permit causal reasoning and structured hypothesis testing (Ries, 2011; Blank, 2005). Latent needs render causal logic insufficient, making

effectual reasoning through interaction, observation and co-creation more appropriate (Sarasvathy, 2001; Frederiksen and Brem, 2017). This mapping is not deterministic; founders may combine or shift between logics (Chandler et al., 2011; Fisher, 2012), but it provides the analytical baseline against which founder behaviour is evaluated.

As illustrated in Figure 1, the UAM operationalises this through three analytical concepts applied simultaneously to each founder account. Uncertainty type asks whether the customer could articulate the problem or whether the founder needed to infer a need not yet formulated, capturing how founders constructed meaning from ambiguous signals (McMullen and Shepherd, 2006). Decision logic asks whether the founder started from a predefined goal and tested hypotheses toward it, or started from available means and allowed goals to emerge through interaction (Fisher, 2012). Validation practice asks whether the method chosen was suited to the type of need present, drawing on the distinction between exploratory learning aimed at surfacing latent needs, including through lead user engagement and observational co-creation and structured experimentation aimed at validating expressed ones (Blank, 2005; Ries, 2011; Frederiksen and Brem, 2017; Von Hippel, 1986; Stevenson et al., 2024).

The three concepts function as overlapping lenses rather than mutually exclusive categories. A founder may employ effectual logic while simultaneously using structured validation tools, or apply MVP testing in ways that presuppose expressed needs when the actual challenge involves latent ones. These are precisely the mismatches the UAM is designed to surface, treated not as founder errors but as empirical findings that reveal how founders navigate the limitations of available frameworks under genuine customer need uncertainty.

As an analytically constructed framework, the UAM carries three structural limitations. Uncertainty type is treated as a classifiable input, yet needs may shift as development unfolds rather than remain fixed (Sarasvathy and Dew, 2005). The three dimensions are presented as separable, but decision logic and validation practice may co-evolve through the same interactions in practice (Fisher, 2012; Chandler et al., 2011). Finally, the model surfaces mismatches at the level of method choice more effectively than at the level of uncertainty diagnosis, where consequential interpretive errors can occur before any method is selected (McMullen and Shepherd, 2006). These limitations define the boundaries within which its findings should be interpreted.

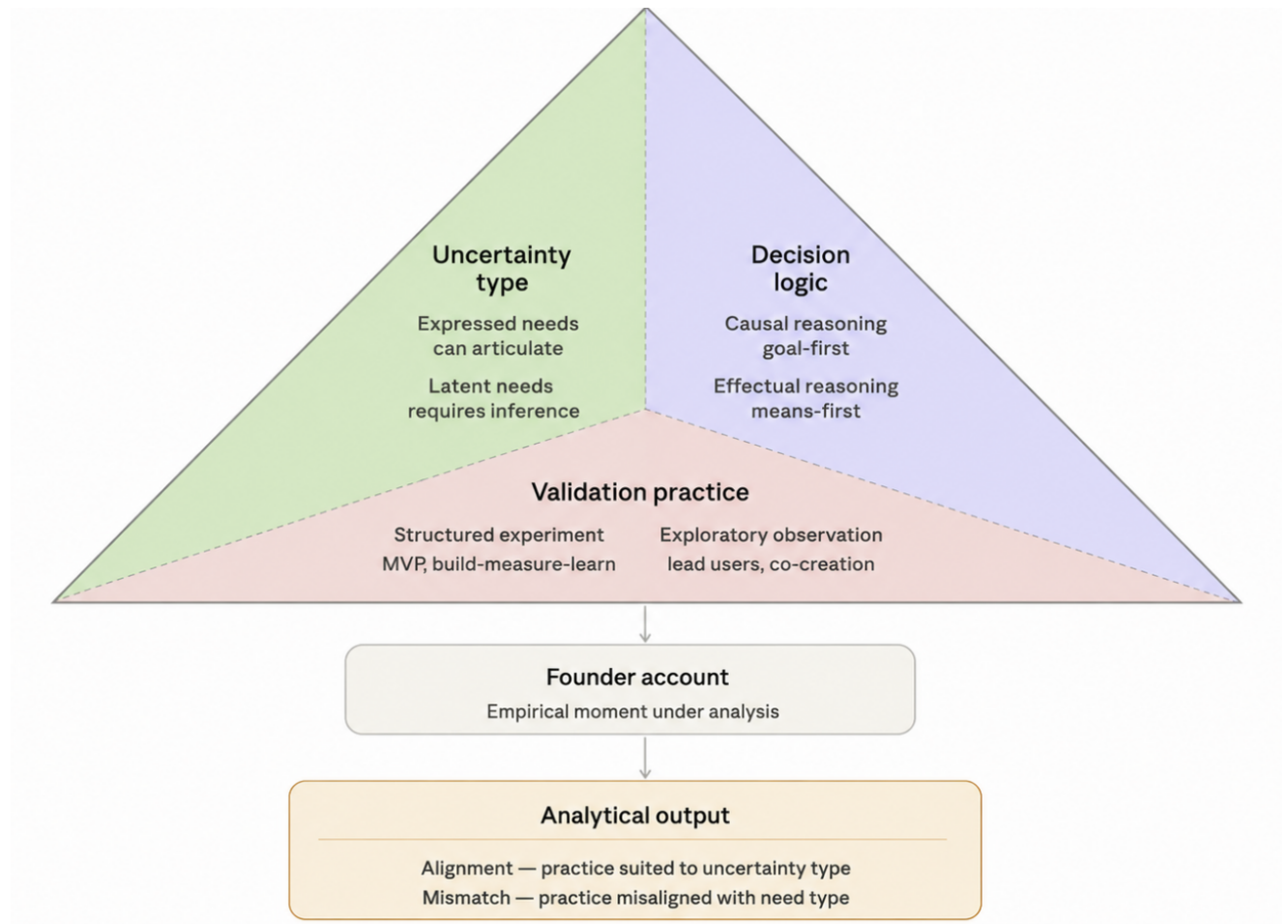


Figure 1. The Uncertainty Alignment Model (UAM). Own construction based on Knight (1921), McMullen and Shepherd (2006), Sarasvathy (2001), Slater and Narver (1998), Von Hippel (1986), Leonard and Rayport (1997), Ries (2011), Blank (2005), Frederiksen and Brem (2017), and Stevenson et al. (2024).

3. Method

3.1 Research Approach

This study is based on a qualitative research design with an explorative approach, appropriate when the purpose is to understand how individuals interpret and act in complex situations rather than measuring variables or testing hypotheses (Bryman & Bell, 2024, pp. 61-65). The approach is abductive: the UAM dimensions guided initial coding, while interpretation moved continuously between theory and data as unexpected patterns emerged, consistent with the study's interpretivist stance (Bryman & Bell, 2024, pp. 42-43).

The study is based on an interpretivist view of knowledge, where reality is understood as socially constructed through individuals' perception and actions (Bryman & Bell, 2024, pp. 48-51). This is especially relevant as the study aims to understand how founders interpret and act upon uncertain information about customer needs, meaning that their decision-making is treated as inherently subjective and situational.

A multiple case study design is adopted as the research strategy, where each company constitutes an individual case and the founders serve as the informants whose accounts provide access to that case. This is appropriate when the aim is to study a contemporary phenomenon, how founders navigate customer need uncertainty, within its real world context rather than isolating variables under controlled conditions (Yin, 2018, pp. 15-18). For two of the four companies, two founders were interviewed, offering complementary perspectives on the same case rather than constituting separate cases. A multiple case design is particularly suitable here because it enables cross-case comparison across four companies operating in different SaaS contexts, drawing on six founder accounts, which strengthens the analytical basis without sacrificing the depth of individual accounts (Yin, 2018, pp. 63-68). Rather than seeking statistical generalisation, the logic of replication applies: each company is treated as a separate unit of analysis and patterns that appear consistently across cases carry greater analytical weight than those found in a single account (Yin, 2018, pp. 54-57).

3.2 Literature Selection

The theoretical material consists of peer reviewed scientific articles complemented with established theoretical frameworks in entrepreneurship, selected systematically through databases including Scopus, LUBsearch and Google Scholar using search terms such as 'startup', 'customer validation', 'uncertainty' and 'effectuation' (Bryman & Bell, 2024, pp. 111-113; Tranfield et al., 2003).

Peer-reviewed articles were prioritised, while foundational theoretical works were included regardless of publication year. A risk of selection bias exists, as the researchers' interpretation of relevance directly shapes what is included (Booth et al., 2016).

3.3 Sampling Strategy

Since the research question asks how SaaS startup founders navigate customer need uncertainty in early product development, the study requires informants with direct, first hand experience of that process. As established in the theoretical framework (see Chapter 2), the SaaS context is particularly relevant for studying customer need uncertainty given its iterative development cycles and the ongoing nature of validation work in early stage product development. A purposive sampling approach was therefore adopted, selecting informants on the basis of their capacity to provide empirically grounded accounts of how uncertainty is identified, interpreted and acted upon in practice (Bryman & Bell, 2024, pp. 358-360). Probabilistic sampling would be ill suited to this purpose, as the aim is analytical depth rather than statistical representativeness.

The study includes six informants across four SaaS companies, motivated by the pursuit of analytical coverage across the three UAM dimensions. For two companies, both founders were included, enabling within-company comparison of how the same uncertainty conditions were navigated from different vantage points. For the remaining two companies, a single founder was interviewed on the basis of direct involvement in early product development and customer validation. Data collection was guided by the principle of saturation, whereby each additional interview was assessed according to whether it extended or merely reinforced the patterns already observed. Across the later interviews, the core patterns associated with the three UAM dimensions recurred consistently rather than giving way to fundamentally new ones, even as individual cases added context-specific variation in how those patterns played out. This indicates a degree of thematic saturation at the level of the recurring patterns, while the study does not claim full theoretical saturation, since the sample size and research design do not allow for such a conclusion (Bryman & Bell, 2024, pp. 361–370).

3.4 Informant Selection

To ensure that the empirical material would speak to all three dimensions of the UAM, informant selection was governed by three criteria specifying the type of experience, company context and validation involvement required.

Criterion 1: Informants must be founders with direct and active involvement in early stage product development at a SaaS company, hands-on participation in decisions about what to build, who to

build it for and how to validate those decisions, rather than advisory or investor roles at a distance from the product development process.

Criterion 2: Informants were selected from SaaS startups at relatively early or evolving stages of development, where customer understanding, product direction and validation processes were still developing. All included companies continued to face uncertainty regarding customer needs, market positioning, or product market fit at the time of the interviews.

Criterion 3: Informants must have direct experience of customer interaction and validation work, whether through interviews, prototype testing, observation, or co-creation, so that their accounts address the validation practices constituting the third analytical dimension of the UAM. Founders whose customer understanding was mediated entirely by other team members were excluded.

Informants were identified through the authors' professional and personal networks and selected based on confirmed founder access and alignment with the three criteria. Since all informants were known to the authors beforehand, this may have introduced bias, as respondents could adapt their answers and the authors could hold prior assumptions. To reduce this risk, all interviews followed the same semi-structured guide and the analysis focused on recurring patterns across the full sample. The sample is presented in Table 1.

Informant	Role	Company	Age	Industry	Validation Role
I1	CEO & Co-founder	A	2 years	Law	Direct
I2	CSO & Co-founder	A	2 years	Law	Direct
I3	CTO & Co-founder	B	<1 years	Accounting	Direct
I4	Co-founder & Data Protection Officer	C	4 years	Education	Direct
I5	Co-founder & Technical Manager	C	4 years	Education	Direct
I6	CGO & Co-founder	D	2 years	Fashion	Direct

Table 1. Overview of informants

3.5 Data Collection (Interviews)

Empirical data was collected through semi structured interviews with founders of early stage SaaS companies. This method was chosen because the research question asks how founders navigate uncertainty about customer needs, a phenomenon constituted by subjective interpretation, situational reasoning and lived experience that cannot be adequately accessed through surveys or document analysis. Semi structured interviews allow predetermined themes derived from the theoretical framework to be explored systematically while preserving the flexibility to follow unanticipated directions in respondents' accounts (Bryman & Bell, 2024, pp. 358-370).

The interview guide was constructed by translating the three analytical dimensions of the UAM directly into questions: uncertainty type questions were designed to surface whether founders encountered expressed or latent needs, decision logic questions to reveal whether founders reasoned causally or effectually and validation practice questions to examine which methods founders used and whether those methods were suited to the type of need they faced.

Each interview was allocated approximately 45-60 minutes, recorded with prior consent and transcribed verbatim to preserve the precise language and nuance of respondents' accounts, essential in interpretive research where meaning is embedded in formulation and not only in content (Kvale & Brinkmann, 2014, pp. 203-209). Interviews were conducted digitally, which offered scheduling flexibility but reduced the ability to observe non verbal cues and build rapport compared to physical settings (Saunders et al., 2019, pp. 455-457). This was mitigated through an interview structure that began with open narrative questions before introducing analytically focused themes, allowing respondents to establish comfort before addressing potentially sensitive topics such as decision errors or failed validation attempts.

Two sources of bias require acknowledgment. Interviewer bias was addressed by formulating questions in open ended, non leading language and piloting the guide before use. Social desirability bias, the risk that founders present their reasoning in a more structured or deliberate light than it actually was, was addressed by including retrospective questions that invited founders to reflect on what did not work and what they would have done differently, creating space for accounts of failure that purely forward looking questions tend to suppress (Bryman & Bell, 2024, pp. 347-348).

3.6 Method for data analysis (Thematic Analysis)

3.6.1 Transcription

Interviews were recorded with participants' consent and transcribed verbatim to ensure accuracy and reduce the risk of misinterpretation. All quotations appearing in the analysis have been translated into English after the coding process by the authors. The transcripts were reviewed several times in order to increase familiarity with the empirical material, which corresponds to the first phase in Braun and Clarke's (2006) six phase thematic analysis process. Original Swedish transcripts are available as a separate file upon request. References to empirical material are cited by transcript and page number throughout the empirical findings and analysis (e.g., I2:4), where I1-I6 correspond to the informants as presented in Table 1.

3.6.2 Coding

The analysis followed an abductive approach guided by the study's theoretical framework and analytical dimensions, while also remaining open to inductive patterns as new themes emerged during the interpretation process (Braun & Clarke, 2006; Saunders et al., 2019).

The analysis was structured around three analytical dimensions:

- Type of uncertainty (e.g., expressed versus latent needs)
- Decision logic (effectuation versus causation)
- Validation methods (exploratory and confirmatory approaches)

These dimensions guided the coding process and enabled a structured interpretation of how founders identified, interpreted and acted upon uncertain customer information in practice.

The coding process was conducted in several stages. Initially, the coding was theory driven and connected to central concepts from the theoretical framework, such as customer uncertainty, customer validation, effectuation and latent customer needs. Thereafter, recurring patterns and differences across the interviews were identified and organised into preliminary themes reflecting how founders navigated uncertainty during early product development.

The themes were continuously reviewed and refined in relation to both the empirical material and the theoretical framework to ensure analytical clarity and consistency (Braun & Clarke, 2006). To strengthen the credibility of the study, coding decisions and interpretations were continuously discussed between the researchers throughout the analytical process (Nowell et al., 2017).

The full codebook, including all codes, definitions and examples from the empirical material, is presented in Appendix B.

3.7 Research Quality

To evaluate the quality of this qualitative study, the four criteria proposed by Lincoln and Guba (1985) are applied: credibility, transferability, dependability and confirmability.

3.7.1 Credibility

To strengthen credibility, semi structured interviews allowed informants to elaborate on their experiences in their own terms. All interviews were recorded and transcribed verbatim and transcripts were subsequently sent to each informant for review and verification, a member checking procedure confirming the accuracy of the empirical record before analysis began (Bryman & Bell, 2024, pp. 342-343). During analysis, recurring themes, similarities and differences were compared continuously across all six accounts, ensuring that findings rest on patterns across the full sample rather than isolated statements (Lincoln & Guba, 1985).

3.7.2 Transferability

Transferability is addressed through detailed descriptions of each informant's background, role, company context and development stage, presented in Section 3.4. These thick descriptions allow readers to evaluate whether the conditions under which the findings were generated are comparable to other early stage SaaS contexts and to assess the applicability of the findings to similar settings (Lincoln & Guba, 1985).

3.7.3 Dependability

Dependability was ensured through continuous documentation of the research process, covering informant selection, interview guide development, data collection, coding and thematic analysis. All interviews followed the same semi structured guide, ensuring consistency across informants and the coding process was conducted systematically against the three UAM dimensions with empirical material continuously compared to the theoretical framework. Full transcripts are available upon request, enabling external review of the analytical trail from raw data to conclusions (Lincoln & Guba, 1985).

3.7.4 Confirmability

Confirmability was pursued through an explicitly transparent approach throughout the research process, continuously examining how prior knowledge of the informants, given that all were identified through personal and professional networks, could influence interpretation. Coding and thematic categorisation were discussed jointly between the researchers to reduce individual bias and all interpretations are anchored in direct empirical quotations linked explicitly to the theoretical framework, allowing readers to assess the basis for each analytical claim independently (Lincoln & Guba, 1985).

3.8 Ethics

3.8.1 Informed Consent

The study follows ethical principles for social science research in accordance with Lund University's guidelines for student projects (Bryman & Bell, 2024). Before each interview, participants were informed about the study's purpose, how material would be used and that participation was voluntary. Participants were informed of their right to withdraw at any time. Written consent was obtained from all six informants prior to the interviews and no interview was conducted without confirmed consent.

3.8.2 Confidentiality, Anonymity and GDPR

Informants were anonymised using labels I1-I6 and company names were replaced with letters A-D throughout the study. Identifying details, including specific product names, client names and partnership details, were omitted or generalised in the empirical presentation to prevent identification of individuals or organisations through quotations or descriptions. Interview recordings and transcripts were stored securely and accessible only to the authors during the research process, in accordance with GDPR requirements for handling personal data in student research at Lund University.

3.8.3 Ethical Handling of Sensitive Business Information

The study concerns founders' internal decision making processes, validation practices and customer strategies, informants shared commercially sensitive information during interviews, including details about product pivots, pricing decisions, customer relationships and competitive positioning. To handle this responsibly, the interview environment gave informants full control over what they disclosed and no probing questions were asked that could pressure informants to share information beyond their comfort level. In the presentation of findings, commercially sensitive details were either omitted or presented at a sufficient level of abstraction to protect both informants and companies.

3.9 Use of generative AI tools

This study follows Lund University's guidelines regarding the use of generative AI tools. AI use is reported transparently and did not replace the authors' analytical work, interpretation, or conclusions. Generative AI tools (Claude and ChatGPT) were used as supportive tools during the research process for:

- (1) language refinement,
- (2) structural feedback,
- (3) development and reformulation of interview questions,
- (4) discussion of alternative theoretical framings.

AI was not used to generate empirical findings, perform coding independently, conduct analysis, or formulate conclusions. AI was thereby used as a complement in the creative process, all output was critically evaluated and revised by the authors before inclusion. Specific prompts are presented in appendix A.

4. Empirical Findings

4.1 Introduction to the Empirical Findings

This chapter presents the results from the semistructured interviews completed with co-founders in the researched SaaS companies. The material was analyzed through thematic analysis to identify recurring patterns and perception in relation to the study's purpose and research question.

The empirical findings are presented company by company due to the different industries and market contexts in which the firms operate. The findings are then organized thematically based on central recurring themes in the interview material. These themes include how founders handle uncertainty regarding customer needs, how customer feedback is interpreted and utilized in product development and how intuition, experience and iteration affect decision making during early stage development.

4.2 Company A

Company A is a Swedish B2B SaaS platform serving lawyers and legal professionals working with family law and estate management. The company was approximately two years old at the time of the interviews. Two founders were interviewed: I1 (CEO) and I2 (CSO), both of whom entered the legal technology sector without prior domain knowledge in law.

4.2.1 Uncertainty Type: Expressed and Latent Needs in a Non Technical Market

Both founders describe an early phase in which customer needs were neither stable nor straightforwardly articulable. Some problems were immediately visible while others only became clear through sustained observation and the challenge of building a product sufficiently standardised to scale while accommodating variation in individual working practices was a tension that initial customer conversations did not surface.

The clearest illustration concerned document export: customers consistently requested Word export capability, but the underlying need proved to be collaborative document review and team editing, something customers had not formulated in those terms (I1:3). I2 describes the broader pattern: *"It became quite clear that many said things that lacked concrete meaning. They could express frustration or wishes, but without really understanding what they needed technically or process-wise"* (I2:7). Customer needs also evolved over development. Rather than asking customers which features they wanted, I2 described focusing on underlying problems through questions such as *"what is the most difficult part of your working day"* (I2:6), with early answers often reflecting existing working patterns rather than underlying problems (I2:10).

4.2.2 Decision Logic: Effectual Reasoning from Available Means

Both founders describe a reasoning logic consistent with effectuation: rather than entering the market with a predefined solution to test, they used their available means, financial services experience, cross sector pattern recognition and personal proximity to the problem, as a starting point for learning. As I1 explained, *"We spent basically a year just trying to understand what was actually needed"* (I1:1-2), which involved sitting alongside lawyers during live case work and producing detailed notes for developers based on direct observation (I1:2).

Founder judgement operated as an active filter throughout: *"Often customers ask for a specific solution, but that does not mean it is the best solution to the problem. They may have worked the same way for 30 years and therefore think within those frames"* (I1:3). I2 describes segmenting customers by feedback quality: *"We tried to segment customers internally. We looked at who ran good businesses, had efficient processes and thought in a forward leaning way. Those customers we began to listen to considerably more"* (I2:7). I2 also described building certain features based on anticipated AI development rather than direct customer requests (I2:8). I2 further reflected that "a lot of decisions were based on intuition and observations" (I2:8), illustrating how customer input was interpreted rather than treated as direct product instruction. Across Company A, customer input was therefore not treated as direct product instructions but as one source of information among several. Founders described actively interpreting and prioritising feedback based on whether requests reflected broader underlying problems, long term relevance, or alignment with their own understanding of customer contexts. Validation was consequently not described as implementing customer suggestions directly, but as making selective judgements about which signals were meaningful to act upon.

4.2.3 Validation Practice: Observation Based and Iterative

Company A's validation approach was characterised by embedded observation rather than formalised build test cycles. I1 describes bringing prototype functionality directly into customers' working environments, sitting beside them during live cases and translating observed behaviour into product requirements (I1:4). The platform's core architecture evolved through this process, the founders initially conceived of a single integrated platform for both lawyers and clients, an assumption challenged by a customer at approximately the fifth meeting and subsequently abandoned (I1:2). I2 describes a parallel dynamic: *"In the beginning we had a tendency to think quite logically and process driven about how the work 'should' function, but when we actually saw how customers worked it became clear that certain ideas did not fit their reality"* (I2:9).

A further dimension concerns the gap between positive qualitative signals and confirmed willingness to pay: *"There is an enormous difference between someone saying they think your idea is good and someone actually paying for the product because it creates real value"* (I1:2). Both founders converged on decisiveness as a critical adaptive capacity: *"You do not have time to think through every decision a hundred times and wait for perfect information. You have to be able to live with uncertainty"* (I1:5).

4.3 Company B

Company B is a Swedish B2B platform SaaS developing an AI driven accounting platform. The company was approximately seven months old at the time of the interview, having pivoted from an initial credit risk modelling product two months prior. One founder was interviewed: I3 (CTO), who holds a background in engineering and prior experience as a product developer at a workforce management software company.

4.3.1 Uncertainty Type: Latent Needs in a Regulated and Trust Sensitive Market

Company B's founding problem was not identified through customer research but through direct personal experience. I3 and the co-founder encountered the limitations of existing accounting systems while building credit risk models, with data quality so poor that *"if you bought an iPhone, the analysis would say you went bankrupt yesterday"* (I3:11). Because the founders themselves were the intended users, the initial need identification was straightforward: *"since we experienced the problem ourselves and we have a fairly clear user profile where we in many ways ourselves became the ICP, it was quite easy to see: how do we build this so we don't encounter this again?"* (I3:12).

Once the product launched and attracted over 300 users, the nature of uncertainty shifted. The users who arrived were not the users the product was built for: *"our marketing wasn't aimed at the customer group that actually came in. They just thought: wow, a nice free accounting system. Let's start using this day in and day out"* (I3:12). This produced a heterogeneous feedback stream, with some users wanting a cheaper incumbent, others simpler functionality and others vertical specific features, creating a situation in which expressed needs were abundant but largely misaligned with the intended product direction. A further complication arose when users requested features that would violate accounting law, illustrating that expressed needs cannot always be taken at face value.

4.3.2 Decision Logic: Vision Led with Selective Customer Integration

I3 described a reasoning logic that started from the team's own means and a clear vision of the intended user rather than from predicting demand or testing predefined hypotheses. The founding

team maintained a clear picture of the intended ICP, a technically sophisticated founder seeking automation and scalability and used this vision as the primary filter through which customer feedback was evaluated: *"it is quite tough to sift through all this feedback while also keeping your own vision in check"* (I3:13).

This selectivity was grounded in a conviction that founders in emerging technology categories must lead the market rather than follow it. I3 described users requesting features that already existed as AI accessible functionality but whose accessibility was not legible to users unfamiliar with AI interfaces: *"they almost don't understand it"* (I3:13). The appropriate response was not to simplify the feature but to accept that *"since we are facing a shift in how you run your company at all, we almost have to lay the tracks for entrepreneurs rather than the other way around"* (I3:13). I3 drew an analogy from prior experience at a workforce management company, where excessive product flexibility proved counterproductive: *"a better approach, especially if you have some mandate within a sector, is to say: this is how McDonald's does it. If you are Max Hamburgers you should probably do it like that too"* (I3:13).

At the same time, I3 acknowledged a major unresolved strategic uncertainty: whether to build AI functionality directly into the product or position it as a data layer for external AI tools. This had produced observable friction, as I3 noted: *"we have now, probably three times, built AI functionality into the system and then removed it"* (I3:16), reflecting a tension between responding to expressed user demand and committing to a longer term architectural bet.

4.3.3 Validation Practice: Early Release, Open Source and Community Co development

Company B's validation approach departed significantly from structured MVP testing. Rather than conducting controlled experiments with predefined hypotheses, I3 pursued an early public launch with an open source codebase, deliberately shipping an imperfect product: *"the longer you hold on to something, the more time you lose, because you'll never be able to test all the edge cases anyway"* (I3:14). The open source model transformed users into active co developers, with engaged users filing their own bug reports with precise technical detail, effectively collapsing the distance between feedback and implementation. I3 framed this as both a development strategy and a trust building mechanism: *"by launching early and getting people to feel involved in the product, I think you build both a good product and a strong brand"* (I3:14). Customer contact was maintained through support cases, open meetings and direct calls with engaged users, though I3 acknowledged that the breadth of the incoming user base made extracting a coherent product signal difficult.

The key insight I3 described concerned validation sequencing: rather than launching broadly and iterating from heterogeneous feedback, I3 argued retrospectively for building the proof of concept directly with a credible early customer: *"if you start from that end, you are roughly 80 percent of the way there"* (I3:18). The corollary was an explicit rejection of assumption based product development: *"you should never start from assumptions, even if someone has domain expertise of various kinds... it doesn't count until someone says: yes, this is something I will pay for"* (I3:17).

4.4 Company C

Company C is a Swedish EdTech SaaS platform providing AI based tools for study and career guidance in schools and municipalities. The company was founded in 2022. Two founders were interviewed: I4 (Co-founder and Data Protection Officer) and I5 (Co-founder and Technical Manager), providing complementary perspectives on the same development process, with I4 representing product and customer interaction and I5 technical implementation role.

4.4.1 Uncertainty Type: Latent Needs Obscured by User Proximity and Sector Complexity

Company C's early product development was grounded in the founders' own recent experience of navigating educational choices and university applications. Both informants described this proximity as a source of initial confidence: I4 notes they *"built from our own domain expertise as former students"* (I4:19) and I5 describes how *"many UX decisions were based entirely on our own judgement"* (I5:22). This personal familiarity created a working hypothesis about user needs that proved only partially valid.

The limitation became apparent when the product shifted toward serving study and career guidance counsellors rather than students directly. The team believed they understood the counsellors' needs, but *"had completely misunderstood the needs and functionality"* (I4:19): needs that appeared expressed through proximity were in practice latent, requiring inference and co-development rather than direct translation. I5 similarly described how customer understanding continued to change during development: *"once we actually start building it, we discover many other connected problems"* (I5:21)

A further dimension of latency concerned users' own awareness of what was possible. I4 notes that users *"can be limited by what they think is possible"* (I4:20), particularly in relation to AI based functionality with no prior equivalent in their working environment, meaning customer needs emerged gradually through exposure to new capabilities rather than being articulable from the outset.

4.4.2 Decision Logic: Experience Based Reasoning Shifting Toward Customer Co development

Both founders describe a decision logic that evolved from internal judgement toward more customer-informed reasoning without fully abandoning either. In the earliest phase, product and UX decisions were driven primarily by the team's own understanding of the problem domain. As the product moved toward counsellors, this logic became insufficient and the team shifted toward more intensive customer dialogue.

The critical filter both founders applied was whether a given need was specific to one user or generalisable across the professional group: *"you need to know whether something benefits one customer or the entire professional group"* (I4:19). I5 reinforces this, describing how the team chose not to implement features that would have fragmented the product: *"customers are not always right"* (I5:22). This selectivity reflects a reasoning structure that combines customer input with internal judgement about scalability and product coherence rather than treating feedback as instruction.

I4 also describes a geographical focusing decision consistent with effectual logic: rather than pursuing international markets simultaneously, the company committed to a single market, *"to be excellent in one market instead"* (I4:20), reflecting affordable loss reasoning and concentrating available resources on the most certain opportunity rather than maximising potential reach.

4.4.3 Validation Practice: Demo Led Iteration Without Formal MVP Testing

Company C's validation approach was characterised by continuous demo cycles and early customer contact rather than structured build test experiments. I5 describes how the team *"booked customer meetings before the product even existed properly"* (I5:22), treating early sales interactions as learning opportunities rather than purely commercial engagements. I4 describes a sustained period of approximately one year of repeated demos and continuous rebuilding: *"spent almost a full year running demos, hearing everything we had done wrong, rebuilding and iterating continuously"* (I4:19).

The company did not use separate test versions or prototype environments, always showing *"the production environment"* (I4:20) rather than staged prototypes, meaning customer feedback was gathered against live product. This made iteration visible to users and embedded learning into the commercial relationship, but validation was not systematically structured around testable hypotheses.

A further source of uncertainty arose from outside the product itself. I5 describes how legal requirements and procurement processes in the public sector created long and unpredictable sales

cycles the team had initially underestimated: *"processes take an extremely long time"* (I5:23), extending the feedback loop between product development and confirmed adoption and requiring product adaptations driven by regulatory requirements rather than customer need.

Across both accounts, uncertainty was treated not as a problem to eliminate but as *"ultimately something positive if you want to continue growing"* (I4:20).

4.5 Company D

Company D is a Swedish B2B SaaS platform operating in the fashion technology sector. The company was founded in the summer of 2024. One founder was interviewed: I6 (CGO and co-founder), who entered the fashion industry without prior domain knowledge, bringing instead experience from co-founding a consumer application that reached over one million users.

4.5.1 Uncertainty Type: Latent Needs Obscured by Expressed Technology Preferences

Company D's founding problem was identified through a research paper on virtual try on technology rather than through prior market knowledge. I6 describes the team's starting position: *"we are really just tech nerds and knew nothing about the fashion industry from the start"* (I6:25). This absence of domain expertise made external customer input structurally necessary from the outset and the team compensated by recruiting industry knowledge through board and advisory roles, bringing in experienced fashion industry executives to provide ongoing signals about what customers valued and what they would pay for.

The nature of the uncertainty Company D faced was primarily latent rather than expressed. Early customer conversations produced clear signals, but expressed preferences pointed toward something larger that customers had not consciously framed: *"customers said they wanted to create AI generated images of a hoodie or similar. But actually it was about something bigger, such as return problems or product visualisation"* (I6:24). The most consequential illustration concerned the initial rejection of AI generated model images: customers explicitly stated they did not want such images, a signal the founding team initially accepted at face value. When the team returned with significantly improved models, the response reversed entirely: *"when we later came back with significantly better models that looked more realistic, we got the completely opposite response: wow, this is something we absolutely want"* (I6:25). This reveals a need actively obscured by an expressed preference that reflected the current state of the technology rather than the customers' actual underlying requirements.

A further dimension of latency was shaped by external market conditions. Shifting return policies created a substantially stronger commercial incentive to solve the sizing problem than had previously existed, illustrating how latent needs are shaped not only by customer awareness but by broader context.

4.5.2 Decision Logic: Means Driven with Strategic Signal Filtering

I6 describes a decision logic consistent with effectuation: the founding team used available means, technical capabilities, personal networks and the ability to attract experienced advisors, as a starting point rather than beginning from a predefined market hypothesis. When early customer signals indicated that AI generated model images were not viable, the team did not abandon the product category but asked a deeper question: what problem were customers actually trying to solve? This reframing led to the pivot toward size recommendation and return reduction.

When customers rejected AI generated images, the team held a view about the underlying need that the expressed signal did not support and continued developing the technology based on the judgement that improving quality would shift receptiveness, committing to a direction before positive customer feedback validated it.

Feedback was also filtered by source quality. I6 treated input from a major global fashion retailer as strategically more informative than input from smaller actors, not because of commercial volume but because of accumulated experience with the problem space: *"H&M has invested in similar technology for almost 20 years and had a lot of knowledge about what had worked and what hadn't"* (I6:27).

4.5.3 Validation Practice: Broad Relationship Based Engagement and Convergent Signal Accumulation

Company D's validation approach was characterised by unusually broad customer engagement rather than controlled experimentation. I6 describes contacting virtually every accessible clothing company, first in Sweden and then globally: *"I contacted basically every clothing company I could find"* (I6:26), generating a waitlist of over one hundred companies that served simultaneously as demand validation and as a future customer pipeline.

Rather than treating early negative feedback as a signal to exit the category, the founding team used it as a starting point for deeper inquiry. The eventual decision to rebuild the entire product and company around the sizing problem was grounded in the convergence of signals across hundreds of customer conversations: *"it essentially meant that we had to rebuild the entire company and product from scratch"* (I6:25). The consistent pattern across those conversations provided increasing conviction

even before a working solution existed: *"when we met hundreds of customers and everyone started saying the same thing about the sizing problem and returns, it gave us even more energy"* (I6:25).

A further dimension of validation concerned the awareness of prior failure. Knowing that hundreds of companies had previously attempted to solve the same problem shaped the team's understanding of what validation actually required: not just confirming that the need existed, but understanding why prior solutions had not worked: *"there were already hundreds of companies that had tried to solve the same problem and failed"* (I6:25). I6 frames the evolution of uncertainty over the development process: *"if you can convert the uncertainty into feedback and improvements to the product, it becomes very valuable"* (I6:27).

5. Analysis

5.1 Introduction to the Analysis

In this chapter the empirical data is analysed based on the theoretical synthesis and the analytical model presented in the theoretical framework. The analysis focuses primarily on how founders of SaaS startups identify, interpret and handle uncertainty around customer needs during early product development.

The analysis is based on three central dimensions from the study's theoretical synthesis: type of uncertainty, decision logic and validation practices. These dimensions are used to analyse how the founders acted in situations where customer needs were unclear, changing or difficult to interpret.

Furthermore, it analyses how different customer signals influenced product development, how founders balanced intuition and customer feedback in the decision making process and how different forms of customer validation were used to minimize or handle uncertainty over time. The analysis is thematically structured and integrates empirical evidence with previous research and theories in entrepreneurship, effectuation and customer validation.

5.2 Customer Needs and Uncertainty

The following section analyses how the four companies experienced and interpreted uncertainty around customer needs during early product development. A central finding across all cases is that customer needs were neither stable nor straightforwardly accessible through direct questioning. The analysis examines this through two dimensions: first, how founders navigated the distinction between what customers expressed and what they actually needed and second, how the nature of customer needs changed over the course of the development process.

5.2.1 Expressed and Latent Customer Needs

A consistent pattern across all informants is that what customers articulated rarely corresponded directly to what they actually needed, requiring founders to interpret rather than simply collect signals. The gap between expressed and latent needs manifested in three analytically distinct ways, each revealing a different mechanism through which customer articulation proved insufficient as a guide to product development.

The first mechanism concerns situations where customers requested specific solutions pointing toward underlying needs they had not consciously formulated. Customers consistently requested Word export functionality, but the actual need proved to be collaborative document review and team editing: *"often customers ask for a specific solution, but that does not mean it is the best solution to the problem. They may have worked the same way for 30 years and therefore think within those frames"* (I1:3). Rather than asking customers what they wanted, the team shifted to asking *"what is the most difficult part of your working day?"* and *"what do you spend most time on?"*, surfacing the problem behind the preference (I2:6). Slater and Narver (1998) account for this precisely: customers operating within established working patterns describe solutions within the boundaries of what they already know, systematically obscuring latent needs. A purely customer led orientation risks producing incremental innovation precisely because it takes expressed preferences at face value.

The second mechanism concerns situations where customers could not conceptualise the solution space and therefore could not articulate needs that were in principle addressable. I3 described users requesting features that already existed as natural language prompts, yet unable to recognise that the functionality was accessible in that form: *"they almost don't understand it."* (I3:13). I4 noted that users *"can be limited by what they think is possible,"* (I4:20) and that guidance counselors who had never encountered an AI assisted navigation system would not naturally request one. I6 observed that customers who initially rejected AI generated model images did so not because the underlying need was absent but because the technology had not reached the threshold at which it became legible: *"when we came back with significantly better models that looked more realistic, we got the completely opposite response: wow, this is something we absolutely want"* (I6:25). Von Hippel (1986) accounts for this precisely: customers cannot articulate needs for products or interaction modes they have not yet experienced.

The third mechanism is one where misclassification of uncertainty type originates not with the customer but with the founder. I4 described how the founding team assumed their own experience as students gave them sufficient insight into the guidance counsellor's working context, treating that group's needs as expressed and knowable through proximity, leading the team to build features and conduct demos before discovering they had *"completely misunderstood the needs and functionality"* (I4:19), required by that user group. I2 reflected on a parallel limitation: *"their answers often reflected existing working patterns rather than what would actually create the most value"* (I2:10). McMullen and Shepherd (2006) argue that entrepreneurial uncertainty is constituted not merely by missing information but by the interpretive challenge of constructing meaning from ambiguous signals and both cases show that the most consequential interpretive error can occur before any customer signal is received. Company D presents a contrasting case: rather than accepting the expressed rejection of AI generated images at face value, I6 reframed the signal by asking what problem customers were

actually trying to solve, surfacing the underlying need around return reduction and product visualisation, illustrating what productive founder interpretation looks like where Company C's experiential substitution fell short.

One might argue that these patterns simply illustrate the ordinary difficulty of early stage product development rather than anything theoretically distinctive about the expressed latent distinction. On this reading, all founders misunderstand customers initially and the distinction merely provides vocabulary for what is a universal and unremarkable experience. This objection has surface plausibility but misses the analytical point. The distinction matters not because misunderstanding is unusual but because the type of misunderstanding determines which corrective action is appropriate. A founder who misreads a latent need as expressed will not correct course through better testing, because the validation method itself presupposes customer feedback the situation does not allow, conflating the two produces not just wrong answers but wrong corrective strategies.

5.2.2 Customer Needs as Ambiguous and Evolving

If 5.2.1 established that expressed and latent needs are analytically distinct at any given moment, the classification itself proves unstable over time. Across all informants, customer needs shifted in character as founders and customers developed shared understanding through sustained interaction, with direct consequences for how validation practices must be designed and maintained.

The clearest illustration concerns decisions that only became visible once a concrete product proposition made the underlying problem tangible. I1 described how the founding team's vision of a single integrated platform persisted through four customer meetings before being challenged at the fifth, at which point separation into two distinct platforms was identified as necessary, a need that had not been articulable in the abstract (I1:2). I2 reinforced the broader pattern: early customer answers *"often reflected existing working patterns rather than what would actually create the most value,"* only becoming apparent through sustained engagement (I2:10). I6 described the same dynamic at a larger scale: *"we became almost obsessed with understanding why previous solutions had not worked"* (I6:26). Sarasvathy and Dew (2005) account for this pattern: customer needs are not simply discovered but co-created through iterative interaction, meaning the product development process itself is a mechanism through which latent needs become expressible rather than a procedure for verifying needs that exist independently of it.

A related pattern concerns the act of building itself as a validation mechanism. I5 described how implementing a feature frequently revealed adjacent needs customers had not previously articulated: *"once we actually start building it and get deeper into the problem or context, we discover many other connected problems or needs."* (I5:21). I1 similarly described sitting beside lawyers during live case

work and recording which buttons they clicked and why, generating insight that direct questioning had consistently failed to produce (I1:4). This challenges the sequencing implicit in the Lean Startup's Build Measure Learn loop, where building follows from a hypothesis and learning follows from measurement, what these founders describe is a process in which building is itself a form of learning. Frederiksen and Brem (2017) identify this as a structural tension between the Lean Startup and effectuation theory: the former imposes deliberate structure on learning by requiring predefined assumptions, while the latter allows goals and insights to emerge through interaction without predefinition.

A further temporal complication emerges where the evolution of customer needs was driven not by deepening founder customer understanding but by an uncontrolled expansion of the user base following a public launch. I3 described how a launch without targeted marketing attracted a user base substantially broader than the intended customer profile, generating expressed needs ranging from requests for cheaper incumbent alternatives to vertical specific workflow features to functionality that would have violated legal requirements. I3 described the challenge as one of signal filtering rather than signal absence: *"it is quite tough to sift through all this feedback while also keeping your own vision in check."* (I3:13). I4 described a parallel challenge at a different stage, noting that users presented *"a ton of different wishes only because they had been presented something new"* (I4:19) and that distinguishing needs with genuine scalability from individual preferences required active editorial judgement rather than passive collection of expressed signals.

One might reasonably contend that the temporal evolution described across these accounts reflects the progressive refinement of founders' understanding rather than genuine shifts in customer needs and that needs were always there, simply inaccessible at first. This is a philosophically coherent alternative interpretation that retrospective interview data cannot entirely rule out. However, the practical implication for founders is identical regardless of which reading is correct: validation practices must be designed to surface what cannot yet be articulated and the relationship between validation method and the needs it is capable of generating must be actively maintained as the development process unfolds. Whether needs are ontologically fixed or genuinely constructed through interaction, the founders' task is the same: to create the conditions under which they become visible.

5.3 Decision Making under Uncertainty

The empirical evidence shows that decision making under uncertainty permeated all companies' early product development. None of the founders described customer needs as clear or stable from the start, but rather something that needed interpretation and developed successively through interaction, as I5 describes it, *"customer needs evolved and changed during the development process itself"* (I5:21). I1 captured the broader orientation: "We spent basically a year just trying to understand what was actually needed" (I1:1-2). This reflects the Knightian condition established in the theoretical framework, where founders lacked not only information but also the means to predict how customers would respond. I2 reinforces the interpretive dimension identified by McMullen and Shepherd (2006), noting that customers often expressed frustrations and preferences without fully understanding what they needed from a technical or process perspective (I2:7). This suggests that founders needed to construct meaning from ambiguous signals rather than simply collect data.

Crucially, this uncertainty did not function as an obstacle to action. Despite limited information, all companies continued developing products, testing ideas and interacting with customers. I6 described how accumulated customer signal around the sizing problem increased rather than diminished motivation: "When we met hundreds of customers and everyone started saying the same thing about the sizing problem and returns, it gave us even more energy" (I6:25), illustrating that uncertainty functioned as a condition to navigate rather than a barrier to overcome.

5.3.1 Effectual Reasoning in Early Product Development

Effectual reasoning was present across all four companies during the early product development phase, though it varied in degree and purity. It appeared most clearly in companies that began from available means rather than a predefined goal, while in others it was tempered by a more vision-driven or gradually evolving logic. Instead of working from a ready marketing strategy or a clearly defined final goal, the founders described how they started with their resources, experiences and network that was already available. I1 captured this by saying *"We spent basically a year just trying to understand what was actually needed"* (I1:1-2).

This can be connected to Sarasvathy's (2001) bird-in-hand principle, where entrepreneurs start with available resources rather than trying to predict the future through extensive planning. In all cases, founders previous experiences and network worked as a substitute for market knowledge that yet did not exist. Product development thus evolved successively through customer interaction rather than through a ready made plan from the beginning.

The empirical evidence shows that the companies worked consistently through smaller experiments and gradual testing rather than extensive initial investments. Company A similarly relied on iterative learning through customer interaction and continuous adjustment rather than predefined testing structures (I1:4; I2:9). This is in line with Sarasvathy's (2001) affordable loss principle, where entrepreneurs focus on what they can afford to lose instead of optimising from expected return. The results suggest that iteration and small scale testing were used as a way of minimizing uncertainty around customer needs and the product's direction without tying up too many resources early on. I6 illustrates the same logic through different means: lacking domain knowledge of the fashion industry, the founding team used their ability to attract experienced industry executives to board and advisory roles as a substitute, allowing product direction to emerge through those relationships rather than from a predefined market hypothesis.

At the same time, empirical evidence shows that goals and the product's direction changes successively through customer dialogues and recurring feedback. I4 described how it first started from their own assumptions but later on changed the product through continuous iteration: *"Spent almost a full year running demos, hearing everything we did wrong, rebuilding and rebuilding correctly for almost a year"* (I4:19). This supports Sarasvathy & Dew (2005), who argue that entrepreneurs and stakeholders together form both goals and opportunities through interaction. The analysis suggests thereby that customer needs not only were discovered by the founders, but gradually were constructed and redefined through the ongoing contact with the users.

Company B illustrates the same effectual logic in a more market-shaping form. Rather than predicting demand or testing predefined hypotheses, I3 started from the team's own means and a clear vision of the intended user, seeking to create and lead the market toward that vision rather than infer it from existing demand, describing the founder's role as laying the tracks for users rather than following their stated preferences (I3:13). This reflects the non-predictive logic of control that Sarasvathy (2001) and Fisher (2012) describe and corresponds to the market-shaping orientation Sarasvathy and Dew (2005) develop, whereby founders transform existing conditions into new markets rather than predicting demand within established ones. One might read this founder-led selectivity as closer to causal reasoning; however, because I3 sought to construct a market rather than predict an existing one, it is interpreted here as market-creating effectuation. This vision was not fixed, however. When the product attracted users outside the intended profile, the team did not hold rigidly to its original definition but reformulated both product and target group in response: *"our marketing was not towards the customer group that actually came in"* (I3:12). I3 similarly described building and removing the same AI functionality three times as understanding evolved (I3:16). Rather than executing a predetermined plan, the team learned through iterative action, allowing the product's

direction to emerge through repeated cycles of building, observing and revising (Read et al., 2009; Chandler et al., 2011).

Together the results suggest that the companies did not try to reduce uncertainty through extensive predictions or detailed planning. Instead they navigated uncertainty through available resources, iteration and continuous customer interaction, which lies closely to the effectual logic that Sarasvathy (2001) describes.

5.3.2 The Role of Previous Experiences

The empirical evidence shows that previous experiences worked as a central decision making tool during periods where reliable market data was missing. All companies described how previous experiences were used to interpret customer problems, prioritise features and make decisions around product development. I2 captured this directly: *"A lot of decisions were based on intuition and observations"* (I2:8).

The results suggest that prior experience worked as a way to create a sense of direction when clear market signals were missing, operating not in isolation but as an initial decision support thereafter tested against actual usage and feedback.

Several informants described how previous experience made it possible to anticipate problems that customers themselves did not explicitly express. I4 described how the team, in the absence of customer data, drew on their own recent experience of the education system: *"we built from what we ourselves knew and from the domain expertise you get from recently being a student"* (I4:19). Because the founders had themselves recently navigated the student experience, this prior experience served as a basis for inferring student needs that users could not yet articulate, allowing the team to *"sometimes identify opportunities before customers could even formulate them"* (I4:20).

I6 similarly described holding a conviction about the underlying need that was not yet supported by expressed feedback, illustrating how prior experience can function as a forward looking commitment rather than merely a heuristic for interpreting existing signals. I4 described how the team in their early stages largely depended on their previous experiences as former students: *"We built from what we ourselves knew and from the domain expertise you get from recently being a student"* (I4:19). This supports Leonard and Rayport (1997) and Von Hippel (1986), who argue that customer needs are often latent and not directly articulated, suggesting that prior experience appeared to function as a heuristic for interpreting behaviours beyond what customers directly express.

At the same time, the same proximity that helped the founders read student needs became a liability once the product shifted toward counsellors. I4 described how the team realised that their own experience as students could not be directly transferred to the needs of study and career counsellors: *"We quickly realized that we had completely misunderstood the needs and functionalities"* (I4:19). Prior experience was thus a resource within the founders' own domain but a source of misreading beyond it.

I2 described how decision making gradually became more balanced over time: *"Today we try to combine intuition with observations, customer behaviours and ongoing validation"* (I2:10). This is consistent with Chandler et al. (2011), who demonstrate empirically that effectual and causal logics often coexist in entrepreneurial processes, with founders combining prior experience, judgement and ongoing customer feedback rather than relying on either in isolation.

5.4 Iterative Validation as a Response to Uncertainty

This section analyses how founders sought to reduce or manage uncertainty through customer interaction and validation over time. A consistent finding across company A-D is that formal MVP processes as described in the Lean Startup literature were largely absent in their textbook form, yet all companies engaged in sustained iterative learning through other means. The analysis examines both the structure of that learning and the relative weight founders placed on observed behaviour versus directly expressed feedback.

5.4.1 Iterative Validation Through Customer Interaction

The Lean Startup framework prescribes a structured, cyclical process in which founders build a Minimum Viable Product, measure customer responses against predefined metrics and learn whether to pivot or persevere (Ries, 2011). Blank (2005) similarly positions customer needs as hypotheses to be tested through direct interaction before committing resources to full development. The practical logic of both frameworks is causal: specify an assumption, design a test, collect data, revise accordingly. The empirical material suggests that early stage SaaS founders do not validate in this way in practice and that the mechanisms through which they actually learn are structurally different from what the frameworks prescribe.

Validation in all four cases was relational and emergent rather than experimental and designed: understanding accumulated gradually through repeated interaction rather than through discrete build test cycles. Three observations support this. First, customer interaction began before any stable product existed. I5 described how the team *"booked customer meetings before the product even*

existed properly" (I5:22), treating early interactions as opportunities to understand rather than events designed to verify a predefined assumption. I6 approached this from the opposite direction: rather than waiting for a product, I6 contacted virtually every accessible clothing company from the outset, building a waitlist of over one hundred companies that served simultaneously as demand validation and future customer pipeline (I6:26). Second, duration of engagement was treated as the primary source of insight rather than the precision of any individual test. I1 described spending approximately one year sitting alongside lawyers to observe their working practices (I1:2). I6 described a parallel commitment at the market level, becoming *"almost obsessed with understanding why previous solutions had not worked"*, treating accumulated prior failure as a form of negative validation that shaped product direction as powerfully as positive signals (I6:26). Third, in none of the four cases did founders follow the complete Build Measure Learn cycle as prescribed: no predefined hypothesis was specified, no success criterion defined in advance and no structured measurement designed to verify a particular assumption. Learning was nonetheless real and consequential, emerging from sustained engagement rather than designed experimentation.

A sceptical reader might object that these founders were following the spirit of the Lean Startup even if not its letter and that the difference is one of degree rather than kind. Although all four founders iterated and changed course based on customer input, the structure of their learning diverges from the Lean Startup's causal logic in a meaningful way. The Build Measure Learn loop assumes that founders can specify in advance what they are testing and what a meaningful outcome looks like. Frederiksen and Brem (2017) identify this as a structural tension between Lean Startup and effectuation: the former imposes deliberate structure on learning by requiring predefined assumptions, while the latter allows goals and insights to emerge through interaction without predefinition. The founders in this study consistently operated according to the latter logic. I3 described rebuilding AI functionality three separate times as strategic understanding evolved: *"we have now, probably three times, built AI functionality into the system and then removed it"* (I3:16), a process driven by emerging judgement rather than predefined measurement. I6 illustrates the same logic at its most consequential: the pivot from AI-generated model images to size recommendation was not the outcome of a structured hypothesis test but of accumulated convergent signal across hundreds of conversations, *"when we met hundreds of customers and everyone started saying the same thing about the sizing problem and returns, it gave us even more energy"* (I6:25).

Rather than deploying a minimal product to verify a specific assumption, early releases functioned as mechanisms for co-creation and relationship building. I3's open source launch transformed users into active co-developers: *"by launching early and getting people to feel involved in the product, I think you build both a good product and a strong brand"* (I3:14). I4 and I5's year-long demo process and I1's sustained co-presence with lawyers reflect the same logic: early releases created conditions for

ongoing dialogue rather than generating measurable data points against predefined criteria. I6 extended this co-creation logic beyond the product itself by recruiting experienced fashion industry executives into board and advisory roles from the outset, building a structure through which ongoing market knowledge was co-created with stakeholders who could provide signals that neither customers nor internal judgement alone could generate (I6:24).

5.4.2 Observation Versus Direct Feedback

Direct feedback and observational learning are not equivalent validation methods: they generate structurally different kinds of insight and are suited to different types of uncertainty. This section argues that within the emergent validation process established in 5.4.1, observational learning consistently proved more productive than direct feedback across all four companies and that founders arrived at observational practices not through deliberate methodological choice but through the accumulated experience of direct feedback's insufficiency.

The structural limitation of direct feedback became apparent across all four cases in a consistent way: customer signals were real but bounded by what customers could currently imagine, articulate, or distinguish from their established working patterns. When feedback was sparse, it was difficult to interpret; when it was abundant, as after I3's public launch, its heterogeneity made coherent product direction harder rather than easier to identify. I3 captured this directly: *"it is quite tough to sift through all this feedback while also keeping your own vision in check"* (I3:13). I1 encountered the same boundary from a different angle, observing that sustained physical presence alongside lawyers revealed dimensions of the problem that months of customer conversations had not, precisely because what lawyers did in practice diverged systematically from what they described when asked (I1:2). I6 produced the analytically most consequential illustration of this limitation: customers' expressed rejection of AI generated model images was a genuine and consistent signal, yet it reflected the current state of the technology rather than the underlying need. Had I6 treated this direct feedback as a definitive signal about product viability, the team would have exited a category where latent demand was real, the expressed signal actively pointed away from the underlying need rather than toward it (I6:25). Von Hippel (1986) accounts for this precisely: customers cannot articulate needs for products or interaction modes they have not yet experienced, meaning expressed signals are genuine but bounded by current technological frames of reference. In all four cases, direct questioning produced a starting point for understanding but not a reliable basis for consequential product decisions.

The most significant product insights across all four companies emerged not from what customers said when asked but from what became visible when founders showed or did something concrete. I1's decision to separate the platform into two distinct products, I4 and I5's repeated discovery of adjacent needs through the act of building, I3's generation of technically precise signal through user behaviour

in the codebase and I6's pivot from AI model images to size recommendation through sustained probing of what customers were actually trying to solve, all reflect the same underlying dynamic: concrete interaction surfaced what direct questioning could not. I5 captured this mechanism precisely: *"once we actually start building it and get deeper into the problem or context, we discover many other connected problems or needs"* (I5:21). This aligns with Leonard and Rayport's (1997) argument that observing customers in their natural environments surfaces needs that direct questioning cannot, precisely because behaviour reveals what articulation conceals. I6 extends this argument in a specific direction: the most productive insight did not arrive through building at all, but through accumulating convergent signal across hundreds of conversations about why previous solutions had failed, representing a form of observational learning conducted at the market level that no single customer conversation or prototype test could have generated.

None of the founders described consciously choosing observation over direct feedback as a deliberate validation strategy, or recognising that the two modes generate structurally different kinds of insight suited to different validation challenges. What the empirical material reveals across all four cases is a consistent partial alignment. Some founders observed intensively and deliberately, most clearly I1's year of co-presence alongside lawyers, yet none treated observation as a distinct validation method to be deliberately matched to the type of uncertainty they faced. Founders operated with the right overall validation logic but lacked the methodological self-awareness needed to direct it consistently toward what customers could not yet articulate.

5.5 Filtering Customer Signals Through Founder Judgement

The preceding sections have established how founders navigated uncertainty through decision logic and validation practice. What remains to be addressed is the mechanism through which founders determined which customer signals to act on and which to discard. Across all four cases, this took the form of what this study terms selective responsiveness: a filtering of customer signals grounded in founder judgement and continuously recalibrated through sustained observation, operating not as an alternative to customer validation but in continuous dialogue with it.

The structural necessity of active signal filtering follows directly from the latent nature of the needs founders faced. Slater and Narver (1998) distinguish a reactive, customer-led orientation that responds to expressed preferences from a proactive, market-oriented one that selects which signals to act upon; the founders' selective responsiveness corresponds to the latter. When customers could not articulate their underlying needs, treating all expressed signals as equally valid product inputs introduced noise rather than clarity. I2 segmented customers by the strategic quality of their thinking, weighting

forward looking operators more heavily than those seeking to replicate existing workflows: *"we looked at who ran good businesses, had efficient processes and thought in a forward leaning way. Those customers we began to listen to considerably more"* (I2:7). I3 described the founder's role as setting the rails for users rather than following all expressed preferences (I3:13-14) and I1 argued that understanding the problem behind the preference was the precondition for genuine innovation: *"often customers ask for a specific solution, but that does not mean it is the best solution to the problem"* (I1:3). This selective responsiveness aligns with Stevenson et al.'s (2024) observation that early releases carry reputation risk with professional users, highlighting the importance of carefully evaluating which customer signals to act upon. I6 extended this filtering logic in an analytically distinct direction: rather than segmenting by the quality of the customer's thinking, I6 filtered by the source's accumulated experience with the problem space, treating input from an established global fashion retailer as disproportionately informative because of its nearly two decades of investment in similar technology: *"H&M has invested in similar technology for almost 20 years and had a lot of knowledge about what had worked and what hadn't"* (I6:27).

The findings suggest that filtering became more productive when continuously recalibrated through observation. I4's guidance counsellor misread illustrates the risk when judgement operates without observational grounding, a failure corrected only through a year of sustained customer interaction. I6 illustrates the productive inversion: maintaining commitment to a direction that expressed customer signals actively contradicted, acting on a means-driven conviction that improving technical quality would shift receptiveness rather than waiting for the market to validate the direction in advance (Sarasvathy, 2001; Fisher, 2012). This bet proved correct, but required sustained commitment before any confirming signal arrived. I2 described how this balance evolved over time: *"today we try to combine intuition with observations, customer behaviours and ongoing validation"* (I2:10).

One might object that this represents confirmation bias rather than principled filtering. However, all four companies made substantive product revisions in direct response to customer interaction that contradicted their initial assumptions, most consequentially, I6's complete rebuild of the product around the sizing problem, which is precisely what productive calibration between judgement and validation looks like in practice rather than selective confirmation of prior beliefs. Founder judgement thus functioned as the layer through which founders integrated signals from customer interaction with decisions about product direction, mediating the tension between acting on what customers say and attending to what they actually need.

5.6 Refined Interpretation of the UAM Framework

The UAM's central prediction found consistent support across all four cases. No founder relied on predefined hypotheses or structured MVP cycles when customer needs were genuinely unclear and none treated direct articulation as sufficient when the underlying problem had not yet been made visible through interaction. The alignment between uncertainty type and validation logic that Frederiksen and Brem (2017) predict as theoretically necessary was empirically real.

This alignment held even though the uncertainty type itself rarely remained fixed long enough to be treated as a stable input. Three tensions emerged where the empirical material introduced complexity the model does not fully anticipate.

Uncertainty type proved unstable as a category. Rather than diagnosing a fixed state and selecting a response, founders participated in a process through which the uncertainty type itself changed, consistent with Sarasvathy and Dew's (2005) argument that needs are constructed through interaction rather than discovered as pre existing facts.

Decision logic and validation practice proved difficult to separate in practice. The sequential logic the model implies, diagnose, then select a logic, then choose a method, was analytically useful but empirically artificial. Sarasvathy's (2001) argument that effectual founders allow goals to emerge through interaction and Fisher's (2012) finding that uncertainty is the condition that makes new market creation possible rather than a problem to resolve before acting, both suggest the three dimensions co-evolve rather than follow in sequence.

The most consequential mismatches were diagnostic rather than methodological, arising before any method was selected. Company C's experiential substitution is the clearest instance: the team misclassified the counsellors' needs as knowable through proximity before any customer signal was gathered. The UAM surfaces method level mismatches effectively but does not interrogate how the uncertainty type was identified in the first place, the interpretive step McMullen and Shepherd (2006) show is where consequential errors occur.

Taken together and as summarised in Figure 2, these tensions suggest a refined interpretation: uncertainty type is not a fixed input to the analytical process but an emergent output of the validation process itself, one that founders construct, sometimes incorrectly, through the very interactions the model is designed to evaluate.

UAM dimension	Model prediction	Empirical finding
Overall alignment baseline prediction	Latent needs → effectual logic and exploratory validation; expressed needs → causal logic	The pairing of uncertainty type with validation logic held across all four cases
Uncertainty type tension 1	Expressed vs latent are classifiable, stable states at any given moment	Classification shifted as building and interaction reshaped the need (e.g. A, D)
Decision logic and validation practice tension 2	Separable dimensions, applied in sequence: diagnose → logic → method	Co-evolved through the same interactions; diagnosis and method often inseparable
Mismatches tension 3	Method misaligned with the uncertainty type present, at the methodological level	Most consequential errors arose earlier, from misdiagnosis before method choice (esp. C)
Refined interpretation implication	Uncertainty type is not a fixed input to the model but an emergent output of the validation process — constructed, and at times misconstrued, through the very interactions the UAM evaluates	

Figure 2. Refined Uncertainty Alignment Model (UAM). Own construction based on Knight (1921), McMullen and Shepherd (2006), Sarasvathy (2001), Slater and Narver (1998), Von Hippel (1986), Leonard and Rayport (1997), Ries (2011), Blank (2005), Frederiksen and Brem (2017), and Stevenson et al. (2024).

6. Conclusion

This study set out to examine how SaaS startup founders navigate uncertainty about customer needs during early product development. Drawing on semi-structured interviews with founders across four Swedish B2B SaaS companies, the analysis reveals a consistent pattern across all cases: founders did not reduce customer need uncertainty through structured experimentation but operated within it, relying on co-creative engagement, selective interpretation of customer signals and continuous recalibration of their understanding as needs evolved through interaction.

6.1 Answer to the Research Question

Founders navigated customer need uncertainty primarily through effectual rather than causal logic and through relational rather than experimental validation. They did not begin with predefined hypotheses and structured tests but with available means, their own experience, networks and observational proximity to the problem, allowing product direction to emerge through sustained customer interaction. Direct feedback proved consistently insufficient as a sole input, not because customers were unhelpful but because the needs at issue were largely latent and latent needs are structurally inaccessible through direct questioning. The most consequential learning in all four cases arrived not from what customers said but from what became visible through observation, co-presence and the act of building. One case expressed this effectual logic in a distinctive, market-shaping form: Company B used the founder's conviction about an emerging technological shift, rather than predefined goals or purely emergent means, as the primary filter for which customer signals to act on, reflecting the non-predictive logic of control that Sarasvathy (2001) describes and the market-shaping orientation Sarasvathy and Dew (2005) develop.

Two further findings qualify this answer. First, the expressed-latent distinction operated as a dynamic classification rather than a fixed one. Needs shifted in character as founders and customers developed shared understanding, so alignment between validation practice and uncertainty type required continuous renegotiation rather than a single correct choice at the outset. Founders maintained alignment precisely by adjusting their approach as needs evolved and the clearest risk to alignment arose not from a fixed validation method but from misdiagnosing the type of uncertainty at the outset, before any method was chosen. Second, founder judgement was central to the validation process. All four companies filtered customer feedback rather than implementing it directly, treating the scalability of a need rather than the volume or intensity of its expression as the criterion for action. This filtering was necessary given the limits of direct feedback, but it carried a risk of confirmation bias, illustrated

most clearly by Company C's experiential substitution, where the founders' own experience as former students stood in for direct observation of the guidance counsellor segment until accumulated evidence of misalignment forced a correction.

6.2 Theoretical Contribution

The study makes three contributions of differing kinds and ambition.

The first is empirical and most directly supported by the data. The study grounds the connection between effectuation theory and customer validation practice that Ghezzi (2019) identified as largely conceptual. Effectual reasoning emerged not only as a description of entrepreneurial cognition but as an enacted logic that shaped how founders structured validation, in ways that diverge from the Lean Startup's causal prescriptions.

The second is a more tentative theoretical suggestion that would require larger-scale validation to confirm. The findings suggest that the expressed-latent distinction of Leonard and Rayport (1997) and Von Hippel (1986) may operate more dynamically than these frameworks assume and that the most consequential misclassifications can originate with the founder rather than the customer. This possibility, which warrants further investigation through longitudinal designs, would develop McMullen and Shepherd's (2006) account of interpretive uncertainty by indicating that the challenge lies not only in making sense of ambiguous signals but in correctly diagnosing the type of uncertainty present before choosing how to respond.

The third is an analytical reflection on the study's own diagnostic framework, the Uncertainty Alignment Model developed in Chapter 2. The empirical material supports the model's core logic, that alignment between uncertainty type, decision logic and validation practice is analytically meaningful and observable, while showing that the model requires a more fluid interpretation than its design implies. Founders did not move cleanly between effectual and causal logics but operated with both at once and in one case through a vision-led, market-shaping variant of effectual reasoning; the expressed-latent boundary was dynamic; and meaningful validation occurred through improvised observational practices rather than the deliberate methods the model treats as fully aligned. The model's value therefore lies less in prescriptive accuracy than in its diagnostic function: it makes visible the gap between what founders do and what fully aligned practice would require. This third contribution is methodological in character, addressed to researchers who design conceptual alignment frameworks for inductive qualitative studies: the finding that a static typology underestimates the dynamism of uncertainty should inform how such models are constructed and applied in future entrepreneurship research.

6.3 Practical Implications

For founders, the central implication is that validation method and uncertainty type must be matched deliberately rather than assumed compatible. When needs are latent, asking customers what they want produces genuine but misleading signals; the more productive investment is sustained observational engagement, co-presence in customer environments and the creation of conditions in which behaviour can surface what articulation cannot. Founders should treat their own experiential frame as a hypothesis to be tested rather than a substitute for observation, particularly when entering user segments they have not personally inhabited.

For educators, the findings reinforce a point established in the analysis (Chapter 5): the Build-Measure-Learn framework assumes that founders already know enough about the problem to specify a meaningful test. Where that precondition does not hold, which the present cases suggest is common, the framework offers limited guidance for the earliest stage of learning and effectuation theory together with observational methods such as empathic design provides a more appropriate foundation for navigating genuine customer need uncertainty.

6.4 Limitations and Future Research

Several limitations bound these findings. The study is based on four early-stage Swedish B2B SaaS companies, all identified through the authors' existing networks. The findings are therefore analytically rather than statistically generalisable and may not apply to consumer-facing markets, later-stage firms, or contexts with different founder-customer relationships. The retrospective interview design also introduces a risk that founders reconstruct their reasoning as more coherent than it was at the time.

Future research could address these limitations through longitudinal studies that follow founders in real time, comparative studies across industries and national contexts and further development of the UAM as a practical diagnostic tool for assessing alignment between uncertainty type, decision logic and validation practice.

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Appendix A: AI Statement and Prompts

This appendix presents examples of prompts used in connection with the thesis process. Generative AI tools were used as supportive tools for language refinement, grammar correction, structural feedback, interview question wording and clarification of academic terminology. The authors remained fully responsible for all academic decisions, including the choice of topic, research question, research design, methodological approach, empirical interpretation, coding decisions, analysis and conclusions.

AI tools were not used to independently generate empirical findings, perform coding, interpret interview material, conduct analysis, or formulate conclusions. All AI output was critically evaluated, revised and approved by the authors before any text was included in the thesis.

Prompt 1: Language refinement

“Improve the academic English of the following paragraph. Keep the meaning unchanged, preserve all citations and do not add new claims, sources, analysis, interpretations, or arguments.”

Prompt 2: Grammar and spelling

“Check the following text for grammar, spelling, punctuation and sentence structure. Do not change the meaning of the text and do not add any new content.”

Prompt 3: Academic tone

“Review the following paragraph for academic tone. Suggest wording that is more precise and suitable for a bachelor thesis in business administration. Preserve the original meaning and do not introduce new content, analysis or references.”

Prompt 4: Reducing repetition

“Identify repeated formulations in the following section and suggest how the language can be made more concise. Do not remove substantive content and do not change the argument.”

Prompt 5: Structure and flow

“Review the structure and flow of the following section. Focus only on readability, paragraph order and transitions. Do not add new arguments, interpretations, sources, empirical claims or conclusions.”

Prompt 6: Introduction clarity

“Provide feedback on whether the introduction, problem discussion, purpose and research question are clearly connected. Do not change the research question, purpose, topic or problem formulation.”

Prompt 7: Theoretical framework clarity

“Review whether the transitions between the theoretical concepts in this section are clear. Focus on structure and clarity only. Do not add new literature, new theoretical arguments or new interpretations.”

Prompt 8: Theoretical synthesis wording

“Improve the clarity and wording of this theoretical synthesis. Keep the analytical model unchanged and do not create new theories or new analytical categories.”

Prompt 9: Method chapter clarity

“Review this method section for clarity and readability. Do not change the chosen method, sampling strategy, research design or methodological reasoning. Do not add methodological claims that are not already stated.”

Prompt 10: Interview question wording

“Review these draft interview questions and suggest how they can be made more open-ended and less leading. Do not generate answers and do not assume what informants might say.”

Prompt 11: Interview guide structure

“Suggest a clear order for these interview questions in a semi-structured interview guide. Do not change the purpose of the study or the methodological approach.”

Prompt 12: Ethics section clarity

“Review this ethics section for clarity and language. Focus on informed consent, confidentiality, anonymity, GDPR and sensitive business information. Do not add procedures that are not already described.”

Prompt 13: Codebook formatting

“Review the formatting and clarity of this codebook. Check whether code names, definitions, inclusion criteria and examples are presented consistently. Do not assign codes to empirical material and do not interpret the interview data.”

Prompt 14: Codebook language

“Improve the language and consistency of the following codebook entries. Do not change the meaning of the codes and do not add new codes based on the empirical material.”

Prompt 15: Quotation presentation

“Review whether the quotations in this section are grammatically integrated into the surrounding text. Do not interpret the quotations, change their meaning or add analytical claims.”

Prompt 16: Findings chapter readability

“Review the following empirical findings section for readability, heading consistency and language flow. Do not add empirical claims, remove empirical details or interpret the material.”

Prompt 17: Analysis chapter language

“Improve the language and readability of the following analysis paragraph. Do not add new analysis, new interpretations or new conclusions. Preserve the existing argument.”

Prompt 18: Conclusion language

“Improve the language and clarity of the following conclusion paragraph. Do not add new conclusions, new claims or new interpretations. Preserve the existing meaning.”

Prompt 19: Abstract and summary language

“Improve the language and clarity of the abstract and Swedish summary. Keep the meaning unchanged and do not add new findings, theoretical claims, methodological claims or conclusions.”

