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**Continuous validation of customer value: case study of
Estonian B2B SaaS companies**

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Kliendiväärtuse järjepidev valideerimine: juhtumiuuring Eesti äritarkvara teenusena pakuvate ettevõtete

Lühikokkuvõte:

Eesti tarkvaraettevõtted on tuntud oma kiire kasvu ja globaalse äritegevuse poolest. Kiire kasvuga tuleb ka palju vastutust. Tarkvaraettevõtted on lähtunud oma otsustes tootele antavast tagasisidest ning selle analüüsist. Järjepidev kliendile loodava väärtuse valideerimine on üks võimalusi pakutava toote eduloole. Samas on leitud, et tagasiside kogumine ja analüüs ei ole tihti süstemaatiline. Antud töös uuritakse probleeme ajakohase kliendi tagasiside kogumise ja analüüsimisega. Lisaks vaadeldakse milliseid väljakutseid esineb Eesti tarkvara teenusena pakuvate ettevõtete tagasiside kogumise protsessides, töötlemises ja tootearenduse praktikates. Kasutades varasema kirjanduse ülevaadet ja ühte välja pakutud HYPEX mudelit, luuakse kolm hüpoteesi. Autor viib läbi juhtumiuuringu, kus uurib kolme Eesti päritolu äritarkvara teenusena pakuvat ettevõtet nende hüpoteeside valguses. Antud uuringu panuseks on ülevaade kolme äritarkvara teenusena pakuva ettevõtte tootearenduse ja tagasiside kogumise ning analüüsi protsessist, väljakutsetest ja parandusettepanekutest.

Võtmesõnad:

toote tagasiside, tootehaldus, tarkvara teenusena, äritarkvara

CERCS: P170 Arvutiteadus, arvanalüüs, süsteemid, kontroll

Continuous validation of customer value: case study of Estonian B2B SaaS companies

Abstract:

Estonian software companies are known for their high growth and global reach. Fast growth comes with responsibilities. Software companies have typically based their decisions on product feedback and analysis. Continuous validation of customer value is one example of a successful product. However, it has been found that feedback collection and analysis is not systematic. In this thesis, challenges around collecting customer feedback and analysis are uncovered. In addition, it will explore what challenges Estonian Business-to-Business Software-as-a-Service (B2B SaaS) companies have around product feedback collection, analysis and best practices in product development. Using previous literature review and proposed HYPEX model, three hypotheses were created. Author conducts a case study analysis which explores three Estonian B2B SaaS companies in the light of these hypotheses. The scientific contribution of this work is an overview of how three B2B SaaS companies collect and analyze product feedback, how it relates to product development decisions and potential improvement areas.

Keywords: product feedback, product management, Software-as-a-Service, B2B

CERCS: P170 Computer science, numerical analysis, systems, control

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Introduction

Estonian Software-as-a-Service (SaaS) companies are known for their high growth and global reach. There have been many success stories in recent years from new unicorns to fundraising rounds. Moreover, the industry can be distinguished for subscription models, large customers that generate significant revenues and continuous improvements throughout the product. Typically these companies also use a business-to-business (B2B) service model meaning that their products are used by other businesses. Product feedback helps companies define product-market fit and ensure their offering provides value to the customer. However, collecting, analyzing and systematizing feedback in a fast paced and high growth environment can be challenging.

Software companies are developing their products typically in short sprints and continuously learning from feedback. However, how companies are collecting and analyzing product feedback to make decisions has not been widely researched [1]. It has been found that one of the ways to prove value to customers is to continuously validate customer value through feedback [2]. It is one thing to develop a startup product MVP that proves product-market fit but another to make data-driven product development decisions that take the product to a new level.

Once a product has proven its value in the market, choosing what to build next becomes more difficult. While most companies collect customer feedback, it has proven to be difficult to do it in a systematic way [3]. In addition, product teams have to fulfill expectations of upper management, top priority customers and market needs. Often there is not enough data and if there is, the pace of high growth companies does not allow continuous validation of that data [4]. This is especially relevant to B2B SaaS companies that depend on their Web-based applications and large enterprises as customers. Product feedback becomes an important success criteria that influences product development decisions.

Problem statement: product teams are often facing difficulties getting up-to-date customer feedback. Therefore, companies are making product development decisions without properly validating what value new features bring to customers.

Research question: what challenges Estonian B2B SaaS companies face with product feedback collection and analysis?

Based on the research question 3 hypotheses were created that were based on findings from literature review and the HYPEX model:

- lack of data hinders decision-making processes in product development
- product teams are using intuition rather than data to prioritize features
- feedback is only received after a new feature has been fully deployed

Research design: Case study with 3 Estonian B2B SaaS companies founded in the last decade.

Additionally, the author seeks to explore how feedback is collected at different companies and how that data is used later in different product development phases. Research was done in a case study format. Interviews were used to validate the key findings from the research. The work is structured as follows: the first chapter introduces the key concepts around product feedback, product development and how it relates to continuous validation of customer value. The second chapter describes the methodology and hypotheses introduced in this research. The third chapter provides a summary of the key findings from interviews with 3 Estonian B2B SaaS companies. The fourth chapter focuses on hypothesis validation and discussion.

Terms

- Product team - team responsible for prioritizing new features and delivering on items from the product roadmap
- Product manager (PM) - common role in the Product team responsible for generating new ideas, analyzing product feedback and coordinating product development with other departments
- Product feedback - feedback obtained either directly from a customer proactively or collected by the company directly from the product, through reviews, surveys and interviews
- High growth company - company that's value is increasing in a quick manner, potentially doubling revenue and employee count year-over-year
- Business-to-Business (B2B) software - business conducted from a company to company, service and/or software is sold to another business that can use it internally or with their end users
- Business-to-Consumer (B2C) software - business conducted from company to consumer directly like common social apps Instagram and Facebook
- Software-as-a-Service (SaaS) - Software-as-a-Service is typically a cloud-based service that is offered on a subscription model
- Feature - specific functionality or part of a product
- OKR - formalized process referring to Objective Key Results and it is used by technology companies to set priorities and goals
- Continuous validation - collecting data and feedback to understand whether the feature delivers value to customers or not even after it has been fully deployed to production
- Instrumentation - tools and instruments for taking measurements of an application or a new feature

1. Background

This first section of the thesis provides an overview of product feedback collection processes and the importance of validating customer value. It starts from defining different methodologies used for feedback collection and challenges related to it. Following is the section of most common feedback collection methods and why they are important. The first two sections build up to the core concepts of the thesis - product feedback and validation of customer value. Third section introduces the HYPEX model that has been used to evaluate feedback validation processes.

1.1. Product feedback

Collecting product feedback at software companies is typically a team effort. It requires different stakeholders to be involved from upper management to sales, marketing and other customer-facing teams. From the moment that product or service has been delivered to clients, focus will go to fixing issues and getting client feedback [5]. Collecting feedback is important to ensure that the developed features and functionalities are delivering value to customers and align with the company's goals [6]. Whether it's a small startup working on their first MVP or a scaleup that has already established product-market fit, product feedback is an important practice.

There are different methods for how product feedback can be collected. It can be received from end users directly via social media, blogs, forums or submitted through the application [7]. Moreover, application reviews in Google Play Store or Apple App Store can also often uncover information about new features and documentation from end users [8]. However, using app store reviews is mostly common for consumer apps like Instagram or Facebook not B2B SaaS applications. Moreover, app store reviews are not relevant for companies that only have a Web-based application like a B2B SaaS product.

Various previous works have explored product feedback from a B2C perspective. Bhatia et al. have identified social media as one highly important source for feedback [9]. Using social media

can be beneficial for many companies to get feedback. It has been found that monitoring user activities and asking for feedback is increasingly popular practice for software companies [10]. However, when the key stakeholders are not consumers but other businesses, social media may become less applicable for B2B companies.

There are feedback portals for B2B companies. G2 crowd is a portal where companies can get reviews from users, ratings and feedback about their software [11]. These reviews can consist of both negative and positive interactions with the software. One downside for such reviews is that they often lack context when it comes to technical data and details [12]. Typically company employees need to elaborate further by asking questions directly from a customer to get to the level of detail [13]. Therefore, while reviews from public portals and websites can be useful, they often need to be analyzed further to get actionable requirements for the product roadmap.

In the B2B context, there have been techniques introduced that are more suitable compared to reviews and social media. Common techniques used to interact with customers include use cases, scenarios, prototypes, interviews, alpha- and beta-testing, observations and customer surveys [4]. While these are not exclusive for B2B, they are great examples of techniques that require interaction and communication between different stakeholders. Another popular method is opening applications and features to a selected group of users to get early feedback for the new product or a feature [14]. Moreover, Pipedrive offers a community where users can provide feedback, see answers to frequently asked questions and read help articles about how to use the product [15]. All these methods can be useful when exploring product feedback.

When looking at B2B software companies further, observing users and asking their feedback directly through the platform have also been popular. For example, companies have used built-in tools in applications to report bugs or options for feedback [2]. Additionally, another method is to record logs and videos from user behavior on the platform [8]. Some developers also prefer to have a standalone web-based tool for tracking feedback while others want to see analytics and feedback in their issue-tracking tools [16], one of the popular tools being Jira in this area. There

are plenty of methods available but most of these require more time and effort to be set up, tracked and analyzed.

Instrumentation is an enabler for feedback collection directly from the platform. It is a technique that allows collecting data points and measuring metrics to analyze feature or product usage. From previous work it has been found that instrumentation can be classified from basic (performance data and user demographics) to advanced feature-level instrumentation [17]. Product usage data is observed to understand which features to invest in and how to improve them [17]. Companies that succeed are tracking metrics regularly and acting on customer feedback when scaling their organization [1]. Therefore, instrumentation is an important technique to evaluate how different parts of the product are performing and delivering value to customers.

1.2. Challenges related to feedback collection

Previous chapter provided an overview of popular ways for collecting feedback for software companies. Research by Olsson and Bosch explored five companies involved in large-scale software development, finding that although companies have processes to collect large amounts of data from customers and products, there is no systematic approach to how that data is utilized and validated [3]. Often decisions about the product are affected by what is needed, what is expected and what can be done [3] and product teams need to juggle between all these areas. With fast growth and multi-stakeholder relationship management, systematic feedback collection can often become difficult.

One reason why feedback collection and analysis can be troublesome is prioritization. Companies often need to decide between building a feature that is critical to a high priority customer, is a top priority for the business or is part of a product area that has received less previous attention [3]. When combined with the fast pace and ambitious growth plans that illustrate the software company industry [18], it becomes evident why taking time to digest and analyze the findings can be difficult. However, it has been found that instead of implementing a

lot of features, focusing on clients' suggestions brings more value [19]. It is especially relevant for B2B SaaS companies that often have large and strategic customers that bring a lot of revenue.

Additionally, companies can also struggle with analyzing collected feedback. Feedback loops have been described as situations where there are no efficient processes in place to receive timely feedback from the customers [3]. This is further supported by another research which found that maintaining and analyzing client feedback on a consistent basis is troublesome for software companies [4]. What this can lead to is that feedback is received only after a new feature has been deployed and the lack of continuous mechanisms for collecting feedback hinder the decision-making process [2]. Companies have to stay ahead of their roadmap and make sure that required analysis is done in advance.

Product development decisions are often done hastily. It was found in a large-scale survey among startups that many companies rely their product development decisions on intuition and experience rather than data [4]. Product roadmaps are focusing a lot on feature development and fulfilling all the tasks instead of listening to feedback [4]. When product development decisions and solving problems for customers are not connected, new features may not bring value to the customer.

Feedback analysis is difficult to automate. Issue-tracking tools like Jira combine general feedback, requirements and bugs with everything becoming part of the next development cycle [10]. Machine learning and natural language processing methodologies have been used to filter reviews and features but these have struggled with detecting less popular feature requests [8]. Additionally, automation is difficult especially when feedback comes to technical details and data [12]. It is often necessary to ask for additional information. From previous works it has been found that this responsibility typically relies on customer support for B2C companies[13]. In the context of B2B, it is typically part of customer-facing teams and product teams. The input from these teams is gathered by the Product team who in the end is responsible for prioritizing this feedback in the roadmap.

Product teams do not always have the full overview of what clients are doing. Fabijan et al. have explored how lack of timely and accurate customer feedback can affect product management decisions which can cause feedback loops [2]. Moreover, Markey et al. support this finding by identifying how strong customer feedback systems can increase loyalty and create positive impact [20]. After all, acquiring new customers is more expensive than keeping existing ones. This illustrates the B2B SaaS context as well where customers are typically on a subscription model and many renew their subscriptions year after year if the product is delivering value.

1.3. Overview of HYPEX model

Feedback flows are consistent. Product teams are prioritizing between upper management decisions, influence from internal stakeholders and customers. While short feedback loops are important to enable fast learning and quicker reaction times, it has not been obvious to transfer it to B2B SaaS domain [21]. Moreover, better systems for feedback and analysis have been suggested for further research [17]. There have been various models created to make feedback collection more systematic and close the feedback loop. Following chapter provides an overview of the HYPEX model that has been used to identify how to close the feedback loop and create a more systematic way for feedback collection.

There has been significant research done on feedback collection and product development decision-making processes. Getting timely and accurate feedback has been explored in several earlier works [23, 2, 3]. Given that feedback collection has continued to be troublesome for companies, several models have been built to explore some of these challenges further. One of these models is known as the HYPEX model - Hypothesis Experiment Data-Driven Development.

The model by Olsson et al. [3] was introduced to discuss concepts around feedback loops. There is a risk that requirements prioritization becomes opinion-based rather than data-driven when customer feedback is slow and mechanisms for data collection and analysis are lacking. This concept is called the ‘open loop’ problem and it refers to challenges for product management to

get accurate and timely feedback from customers. HYPEX model highlights six practices that should help companies run feature experiments. As part of the evaluation, those practices were introduced and adopted by three software companies. Authors recommend using this model when conducting feature experiments to ensure improvements in prioritization and decision-making. It was found that companies that adopted all recommended practices found them useful and continued to follow them in the future. The overview of the model is illustrated on chart 1 from the research.

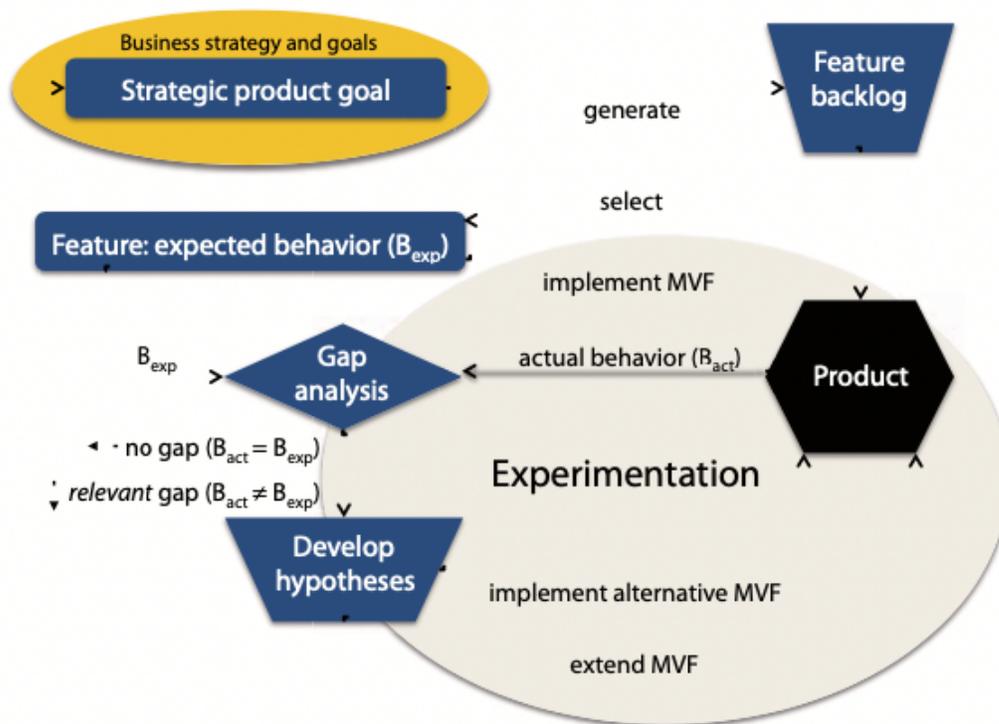


Chart 1. The HYPEX model as illustrated in the work of Olsson et al.

While the model consists of six steps that are suggested to be followed to close the feedback loop, limitations were made in the context of this thesis. Following points elaborate further on the three key areas as introduced in the HYPEX model [3]:

- **Feature selection and specification** - teams select the highest priority feature from the backlog for implementation. There are numerous criterias that can be considered in the selection process: critical to customer, top priority in business strategy, area with less previous experience. Features can be implemented in multiple ways. Once the feature has been selected, the first activity is to specify in detail how the feature adds value to a customer and how it supports the strategic business goals.
- **Implementation and instrumentation** - features are implemented through multiple iterations. First, with the Minimal Viable Feature (MVF) the smallest possible part of a feature that adds value to a customer is identified. Second, instrumentation of the feature is used to collect data from first users.
- **Gap analysis** - evaluation whether the current implementation of the feature is sufficient to achieve the expected behavior. Features can be enhanced, removed or deactivated for the users depending on the analysis results. Based on data and analysis, informed decisions about the product and new features can be made and it is an important step to close the feedback loop.

The model adoption for this thesis was combined with focus on these three areas. However, to get the full understanding of the processes topics around feedback collection, feature prioritization, analysis, instrumentation and gap analysis were also used. The same authors have contributed to research in various other works.

Olsson et al. [22] have also suggested using quantitative and qualitative data to validate customer value. This is called QCD model. The key challenge for companies has been that new feature implementation often happens without validation and continuous feedback. Mainly, often companies struggle with having large amounts of unused features in the application, implementing wrong features and lack of validation especially in the later processes of the product development. This provides additional context into the HYPEX model that highlights the earlier stages of feature specification and instrumentation.

2. Goal of the research and methodology

The following chapters discuss the goal of the research and methodology. The goal is based on theoretical frameworks and from the previous literature review. Methodology was chosen based on previous research done in this field.

2.1. Goal of the research

The goal of this research is to explore what challenges product teams face when collecting product feedback and how they analyze this information to make product development decisions. Author found that Estonian B2B SaaS companies have not been researched in the context of feedback collection and product development. While there has been extensive research done on the B2C and B2B2C segment, the goal is to validate key findings in the context of this thesis. Following paragraphs introduce 3 hypotheses that the author set as part of this thesis. These originate from the theoretical background, HYPEX model and literature review.

Hypothesis 1: lack of data hinders decision-making processes in product development

Making data-driven decisions has proven to be challenging when feedback is slow. Companies often need to make tough decisions when choosing what to build next and are juggling between prioritizing between customer needs, business value and specific product area [3]. Moreover, it is often difficult to prioritize when teams are lacking data to make data-driven decisions. This hypothesis is supported by findings around slow feedback loops [4] and decision-making process about the product roadmap [3].

Hypothesis 2: product teams are using intuition rather than data to prioritize features

Companies are not able to continuously collect feedback that hinders product decisions. Therefore, decisions about what to prioritize next can be made based on intuition. It is illustrated by challenges around continuous feedback collection and developing scalable mechanisms to learn from customers [2]. With the fast pace and growth of B2B SaaS companies, product

decisions can be done hastily. To add to that, there have been challenges identified around managing a long backlog of features and ideas on the product roadmap. This hypothesis is supported by two additional findings around relying on intuition rather than data [23] and fulfilling tasks in the roadmap instead of listening to feedback [24].

Hypothesis 3: feedback is only received after a new feature has been fully deployed

Feedback is received after a feature has been deployed. Typically, feedback is something that is received after a new feature has been deployed and therefore reverting any changes can be difficult [2]. In case a feature is not working as thought or it is not fulfilling the customer need, it is not possible to get back the invested time and resources. These resources, however, are critical to companies' success.

2.2. Choosing the companies

Success of the Estonian startup industry is widely known in the world. According to the Estonian Startup Database there are more than 1000 startups operating in B2B space in Estonia as of February 2022 [25]. Companies chosen for this case study are all high growth scaleups that have moved beyond Minimum Viable Product (MVP). They have products used by hundreds of businesses and have hundreds of thousands of end users. All companies are operating in the B2B Enterprise SaaS segment.

Table 1 illustrates selected companies, their foundation date, team sizes, funding and products. Additionally, all case study companies are digital, cloud-based platforms meaning that feedback collection and experimenting with the product is easier to implement. To illustrate their high growth, all companies have raised a new investment round in recent years or have been acquired. LinkedIn Sales Navigator and companies websites were used to collect the data about the companies. Information regarding Employee count, Engineering and Product team sizes were searched through LinkedIn. Titles like “developer” and “engineer” were searched for Engineering team count. For Product team titles like Product Manager, Product Designer and Product Data Analyst were considered as part of the Product function. The author acknowledged

that the numbers are not completely accurate but give an indication of the size of the company and the overall structure. The last data checkup was conducted on April 29th 2022.

Table 1. Overview of companies based on LinkedIn and company websites as of 29th of April 2022

Company	Founded	Employee count	Funding	Engineers	Product team	Product(s)	Notable customers
<u>Pipedrive</u>	2010	965	<u>Exit and acquired in November 2020</u>	300+	More than 50	CRM and intelligent revenue management platform	Accentuate, Lessonly, PandaDoc, Sendify
<u>Glia</u>	2011	250+	<u>Raised Series D in March 2022</u>	60+	10+	Digital Customer Service platform	United Healthcare, Berkshire Hathaway, Deutsche Bank
<u>Testlio</u>	2012	185	<u>Raised Series B in October 2021</u>	15+	7	Software test management platform	Amazon, Microsoft, SAP, NBA

Each of the company’s has a SaaS platform that can be purchased on an annual subscription. All companies allow for custom setups so not all features are enabled to all customers. Company PR and News sections were searched to find information about recent funding rounds. Foundation year was also searched from About Us pages. Additionally, for Testlio, which is the current employer of the author, internal knowledge and databases were used to determine the number of employees and team sizes.

The fact that these companies collect a lot of feedback is also evident from online research. To understand the value customer feedback might have for these companies Google search was used. Keywords like “company name” and “product feedback” or “customer feedback” were used to identify the different sites and portals for reviews. All companies had hundreds and some even thousands of reviews on Featured Customers website that gathers software and service

customer references [26]. There were also many reviews available on G2 portal that combines business software and service reviews from customers directly [11]. These were just some of the examples where customers and teams can read about the platforms and see what value these companies are delivering in the market.

2.3. Overview of the process

Interviews with the Product teams from Pipedrive, Glia and Testlio were chosen as the main method in this research. Semi-structured interviews have been used to gain more insight and get direct input from the teams responsible for product development and feedback collection [27] [28]. Therefore, semi-structured interviews were used as part of this thesis as well. It was done in order to evaluate validity of the set 3 hypotheses which were explored as part of the discussion.

The work is following a case study format. This format allows researchers to understand the interaction of phenomena with the context [29]. Structure of the interview consisted of a set of subtopics that were validated in order to receive feedback about companies' processes. Following is an overview of the interview structure that was followed:

- General structure of the company
- Role and responsibilities of the interviewee
- Product development process
- Feedback collection
- Feature prioritization
- Instrumentation
- Data collection and summary

During the interviews, the author of the thesis started with more general questions around the company, the role and responsibilities. With each section, interviewees were asked to go deeper into the topic and elaborate on their experience around feedback collection and customer value validation. The last section of the interview was used to validate the key findings around data collection and summarize the topics. Inspiration for the interview structure and questions were

obtained from the works of Olsson et al. including the HYPEX model and QCD model [3, 26]. Additionally, the works of Lindgren et al. and Fabijan et al. were used [18, 2]. While the HYPEX model was the main inspiration for this research and hypotheses, other works helped gather the required context about the company, role and development structures to understand their product feedback processes.

General overview of the research was shared with participants for the background. This included only the main concepts that were researched like how companies collect customer feedback, use the data and analysis in product development. It was done as a recommendation from Runeson et al. to ensure there are no threats to construct validity [29]. The process and expectation setting was important to identify that the right people with appropriate responsibilities were interviewed.

As part of the preparation process, consent forms were prepared for both the interviewee and the company. It was asked from interviewees to sign the employee consent form. Company authorisation letter was shared for reference to the company HR department and management. In total, five companies were asked to be part of this research out of which three agreed to participate.

Total of three interviews were held via Microsoft Teams video call with each interview lasting approximately 1 to 1,5 hours. All interviews were held with Senior and Lead-level Product Management employees. To respect the confidentiality of the companies that were part of this thesis, the results and discussions sections were asked to be anonymized without specifically mentioning which company representative said what in the interview. Therefore, in the results and discussion sections companies are referred to as company A, company B and company C. The next chapters will introduce the key results and findings from the interviews and discussion.

3. Case studies

This part of the thesis describes the key findings from the interviews with three B2B SaaS companies. It will bring out the main processes and structures that these product teams follow in their product development process. Furthermore, different feedback collection, feature prioritization and instrumentation methods will be highlighted and compared to evaluate the hypotheses as set in this thesis.

3.1. Overall structure of the teams

All companies used variations of Scrum in their software product development process. The OKR methodology was also widely used to set priorities. It was one of the fundamental drivers for setting strategic business objectives and product priorities for the year.

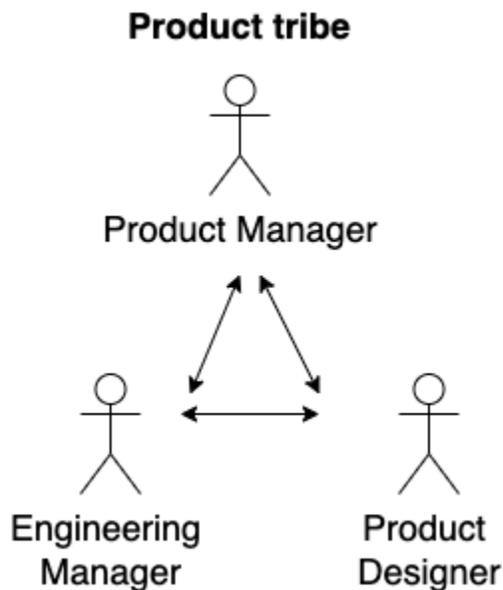


Chart 2. Structure of a Product tribe

There were differences on how product teams were set up at companies. All teams used a variety of what they called Product tribes or teams. Chart 2 illustrates the setup of a typical product tribe

as described in the interviews. One tribe typically consists of a Product Manager (PM), Engineering Manager (EM) and Product Designer. However, depending on the maturity of the company and team size, some of the responsibilities were also shared. Companies aspired to have 1 PM in each team which tends to be an ideal setup. Same goes with Engineering resources that can often be shared depending on where the focus was going in a given quarter. If a specific product area demanded more resources to meet objectives then Engineering resources were shared between teams as well. Another example of shared responsibilities in a product tribe was when one team was working on a specific problem and part of their solution fell under a different team’s responsibility. In that case, PMs were often sharing responsibilities in the product development process.

Similarly to product tribe setup and development methodology, all companies used Jira boards for tracking feedback and prioritization of the roadmap. However, how the feedback was included to the Jira board was different. Companies B and C highlighted that there was significant autonomy in how each product tribe operates on a daily basis. For example, the methodologies that specific Product teams use can vary and there was no single centralized way or framework identified that all the PMs were using. Table 2 illustrates statements around the key findings from the research and whether the finding was fully, partially or not at all true about different companies. It also specifies if and with which hypothesis this statement connects to.

Table 2. Summary of key findings from the interviews per company

Statement	Company A	Company B	Company C	Hypothesis
Jira is the main tool for tracking feedback and prioritization	Fully	Fully	Fully	1, 2
Product team has full autonomy on how they operate and systematize their work	Partially	Partially	Fully	1, 2
Quarterly prioritization defines product roadmap	Fully	Fully	Fully	2
OKR methodology is the main concept for	Fully	Fully	Fully	2

prioritization				
Product team is in direct communication with the customer	Not at all	Not at all	Fully	1, 2
Growth and business-driven prioritization is considered as most important in product roadmap	Fully	Fully	Fully	1, 2
Most common feedback collection method is interviews with customers	Partially	Partially	Fully	1, 2
Internal stakeholders are considered as an important feedback channel	Fully	Fully	Fully	1, 2
Lack of data hinders decision-making	Not at all	Fully	Not at all	1
Feature prioritization is manual work for the product team	Fully	Fully	Fully	1
Due to quick customer base growth prioritization has become more complicated	Fully	Partially	Not at all	2
Data collection occurs before, during and after deployment of a new feature	Fully	Fully	Fully	3
Advanced trackability and usability metrics were available through the platform	Fully	Not at all	Fully	3
Leveraging early users for major redesigns of platform areas	Fully	Fully	Fully	3
Product teams do not have enough data to always validate their ideas	Partially	Fully	Not at all	2
Categorization and systematization of feedback is mainly done manually	Partially	Partially	Partially	2

Everyone used a quarterly prioritization analogy. It was different how long ahead companies think. Most teams set priorities for the full year but kept it flexible in how they prioritize quarter-to-quarter. Thinking 2-3 quarters ahead with a higher level business objective in mind was one of the indicators of how prioritization works in these companies. However, the level of flexibility and anticipated changes were all considered different from company to company.

In addition to the product team, there were many other internal stakeholders involved in the product feedback and development process. Chart 3 highlights the different stakeholders involved and how it relates to product feedback collection, analysis and feature prioritization. While the impact of each stakeholder at different companies was different, all companies highlighted the importance of these teams and stakeholders in their decision-making processes.

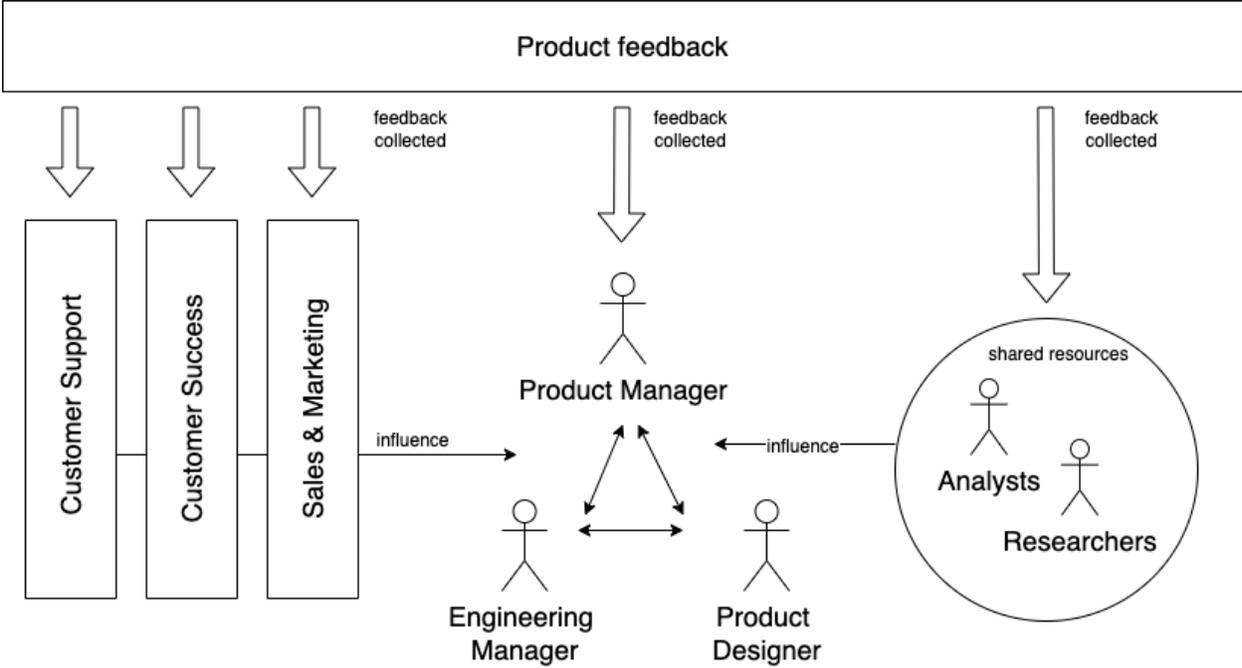


Chart 3. Internal stakeholders that were mapped in the interviews

Each internal stakeholder was collecting feedback either directly from customers like Customer Support, Customer Success and Sales and Marketing teams (customer-facing teams) or through product usage or market analysis like Analysts and Researchers. In all companies, researchers and analysts were shared between Product tribes. The importance and involvement of customer-facing teams that are highlighted on the left was also different from company to company. Companies A and B were relying on customer-facing teams to collect feedback and then translate it to product requirements. However, company C was also directly involved with the customer, keeping customer-facing teams informed but having PMs interview customers

directly. Direct communication with customers was considered an advantage in requirements definition and feedback collection.

Additionally, upper management was mentioned as one of the key influencers in making product-related decisions and setting strategic business objectives. One of the interviewees illustrated the situation: “although we try to run away from it, there are certain requests from certain stakeholders that may not be a priority from the impact point of view but maybe strategically they are”. While involvement of management was very common there were challenges identified related to choosing items in the roadmap that the PMs were not aware of influenced by upper management decisions.

An analogy of all common product roadmap methodologies were used. Growth was most important to all companies when defining their roadmap. However, one notable mention was that while things that cause friction in sales, expansion and client go-live activities were important, security and compliance always became top priority over new features. What methodologies specific teams used varied and there was no centralized way or framework identified that all the PMs were using.

3.2. Feedback collection

Feedback collection and challenges related to that was one topic explored in the interviews. The following table 3 illustrates the key findings in terms of methodologies used and differences between companies. The most common feedback method were interviews which were used in different development phases both pre- and post-deployment of a new feature. Internal stakeholders were also considered as an important feedback channel either from their interactions with the customers and end-users or from their own experience with the platform. User session observation was also widely used from the perspective of collecting specific product usage data and discovering how end users use the platform. Surveys were used but only for generalizations and for quick feedback from the wider user base.

Table 3. Feedback collection methods

Method	How the method is used	Company	Hypothesis
Surveys	Generalization from larger user base; measuring customer value metrics like net promoter score	All companies	1, 2
Session observation	User sessions in the platform are observed to find information about product usage, hacks and what causes friction	All companies	3
From the platform	Collecting product usage like reporting, feature level and overall platform	Companies A, C found it to be advanced and enabling for feedback	3
Internal stakeholders	Sharing feedback from customers and internal observations about the platform experience	All companies highlighted the importance of internal stakeholders but level of involvement was different	1, 2
Direct from customer	Receiving feedback directly from customers or using internal stakeholders for feedback	Only product team from company C had direct access to customer	1, 2

Challenges related to feedback collection were also identified. The following table 4 illustrates the key challenges identified about feedback collection and which companies these challenges affected. As growth was one of the main drivers for prioritization and roadmap, the involvement of large and strategic customers was very important. Some companies felt that the lack of data and a long feature backlog hindered the decision-making process. Moreover, prioritization was still very much manual work when it comes to collecting feedback, tagging it appropriately and making data-driven decisions about what to include in the roadmap. Most teams were given flexibility and freedom in the processes and tools they use which led to lack of visibility and challenges for prioritization.

Table 4. Feedback collection challenges

Challenge	Description	Company	Hypothesis
Large, strategic customers	Large customers have strong and specific needs that need to be fulfilled sometimes without evaluating the overall value to the customer base	All companies	2
Trackability	Users use hacks and workarounds to achieve their goals in the platform without giving feedback	B	2
Automation	Feedback from customers and end-users is not automated and systematized	All companies	1, 3
Number of channels	High number of feedback channels (up to 17 identified) makes it challenging to systematize and prioritize based on feedback	B	2
Prioritization	Prioritization and tagging feedback is manual work, companies also struggled with how much feedback is enough feedback to prioritize	All companies	2
Centralized processes	Processes are not centralized, lack of visibility into how other teams are working	B, C	2
Variety of tools	Tools for feedback collection can vary from their own platform, Slack and Google spreadsheets to Confluence, Jira, Miro, Product Board and Nolt making it difficult to track feedback and cross-team collaboration	All companies	1, 2
Feature backlog	Feature backlog that goes back more than 1 year makes it difficult to focus on new priorities	B	1, 2
Shortage of data	PMs mostly rely on qualitative data and it can be difficult to make conclusions from a small segment of users	B	1, 2

There were also some differences identified between the companies in regards to feedback collection. For example, there were challenges identified with trackability of the platform where subsequent versions of the platform were disrupting feedback collection. Additionally, not all companies felt like they had established efficient feedback funnels. Not everyone felt that they

have identified the best tools for gathering and analyzing feedback and the variety of different tools available to teams created additional friction with feedback collection. Data shortage was an issue for some companies but others highlighted that they have plenty of data both for the end user and from the platform usage perspective.

One positive differentiator in feedback collection methods was workshops. These were part of the feedback collection and validation phase where a group of customers were invited to an on-site meeting where focus group interviews were held. These customers at the workshop acted as ambassadors of the product and knowingly participated in focus groups to provide feedback to a specific problem or theme related to the product.

3.3. Feature prioritization

The main driver for new feature prioritization were strategic business goals also identified from OKR methodology. All interviewees mentioned that the key priorities were set through the overall company strategy that typically was planned 1 year ahead. The prioritization started already in the product discovery phase. If there was not enough information, internal stakeholders and customers helped discover the need and identify the potential solution. Specific group of internal stakeholders was mentioned by all companies as a highly important source of feedback when it comes to prioritization. Those teams were mainly Customer Success and Account Management type teams that were actively engaged with customers on a daily basis about the platform, usage and issues.

Companies also mentioned that they have gone through a transition from outcome based to business-driven prioritization. One of the interviewees mentioned that while before they knew what to prioritize next and had a clear vision where they wanted to take the product then in more recent years the prioritization had become more complicated. It was also true for another company that felt like quick growth had changed their decision-making processes to more advanced and less hasty. Moreover, the number of internal and external stakeholders to take into consideration in defining the product roadmap had also increased. With companies transitioning

from selling to more pragmatic buyers, releases also had to be well thought through and there was more friction to be caused with a wrong decision. The main findings are summarized in table 4.

Table 4. Key findings of feature prioritization methods used in all companies

Method	Description	Company	Hypothesis
OKR	Key driver for feature prioritization were coming from OKR methodology that was used in all companies	All companies	2
Business-driven roadmap	Revenue growth was the main driver for feature prioritization	All companies	2
Product discovery	Thinking 2-3 quarters ahead companies were spending time on product discovery prior to prioritizing feature in development	All companies	1, 2, 3
MVP/MVF	Using Minimum Viable Products and Features to iterate through the value creation	All companies	3
Alerts	Alerting the respective PM when feedback about their product area is submitted	C	1, 2
Dashboards	Product dashboards to quickly access data and analyze product usage	A, C	1, 2, 3

All companies also used MVP and MVF methodologies. It was an important step to understand the new feature flow and how it impacts the product. Feature-level iterations were also dependent on the team size. The capacity of to what extent iterations were used was limited due to the team size and their experience. There was a lot of autonomy identified for teams and PMs to make decisions on when they think the feature has solved the problem and the goal has been achieved. Furthermore, companies had set up Product dashboards to quickly evaluate an area of the product and analyze data.

Having quick access to customers was identified as one key factor for product's success. Issues related to product prioritization and roadmap could be connected to the Product team's distance

from customers. The shorter the distance and easier the access, the better input the PMs could get from the customer base. Product teams that were in direct contact with customers had an advantage.

Things that caused friction in Sales, Expansion and Client Go Live activities were also important growth enablers. Given that revenue acquisition was the most important factor in prioritization, a few large strategic customers can have a big impact on priorities. It was highlighted that the value delivery speed to customers was highly important especially in the context of client onboarding from a different platform.

Feature prioritization was also something that could occur by taking a step forward in the Product. It was described as something that is not necessarily causing friction for Sales but an area that clients do not know about yet. While Sales was important for all companies: security, compliance and stability were always prioritized over new features. If specific threats were identified then the focus would go to fixing them. Moreover, a portion of the time was always spent on platform maintenance, technical debt and security. In one of the companies, product managers received alerts for their specific product area if the end user submits feedback about it. However, even though alerts made feedback collection processes easier: prioritization and labeling of that feedback was still done manually and there were no tools that would do that automatically.

3.4. Instrumentation and gap analysis

All companies collected data before, during and after deployment of a new feature. The instrumentation levels ranged from more sophisticated to advanced. The companies that had advanced trackability and usability metrics available on the platform were most sophisticated. Context of the product was another factor that influenced PMs when conducting feature experiments. The more experienced the PM in the industry and in the company, the better the success of a new feature.

One strategy that all companies were using was sharing a major redesign with the client segment to see what their response was before enabling the feature across the full segment. This concept is also known as leveraging beta customers or early users. After first iterations and internal testing of a new feature it was typically deployed to a specific customer segment. Leveraging customers in iterations and feedback was different. Some companies claimed to turn to the same customer base that they know and were eager to share feedback. Others tried to diversify and make sure that the feedback was obtained from different customers with recurring iterations. The benefits of launching with pilot customers first was that these were usually the customers who were already interviewed in the idea validation phase and had a direct value to gain from the new feature.

A couple of differentiators that were identified were the level of detail when it comes to internal stakeholders. For example, one company had a process where the first iteration consisted of pitching ideas to internal stakeholders. In addition, they were organizing workshops for customers for the initial product discovery and research stage. This happened before even starting development on a new feature or product area.

Another example was given from a company about developing the first iteration of a feature. It was a simple overview page that allowed no interaction. After initial deployment, it was identified that the new page already helped solve a challenge for the end user by just taking the first step in the product development process. Solving part of the problem with MVP and validating through multiple iterations were common practices for all companies. The company where the example was practiced found that simply through introducing this view-only page they solved almost 40% of the problem they had identified.

Value iteration and continuous value was also explored in the interviews. One challenge related to value iteration within a specific feature was that in B2B it took longer compared to B2C or B2BC. This was illustrated by the fact that the amount of data that product teams have is typically lower to validate their ideas. Moreover, product discovery started significantly earlier to collect some indicative data about what the new feature should do or how it could help solve a

customer's problem. There were data points that were not captured from an instrumentation point of view but these areas were also considered less important. While companies did have information about everything that was happening on the product, that data was not always considered necessary to be used. Therefore, thinking 2-3 quarters ahead is even more important in the B2B context and something that all Product teams consider highly important for product discovery and research.

There was also a level of leap of faith in the solution that was discovered from the interviews. Companies have information about most things that are happening on the product but clients can use platforms in different ways and come up with hacks to do things. Therefore, one common area that was discussed was sharing and observing user sessions. It provided an opportunity to discover hacks and areas of the product that do not work as intended by the Product team. These findings could then be further evaluated through customer interviews and observations.

Categorization and systematizing feedback was mainly done manually and there were no tools to automate these processes. Even when companies had established feedback funnels, processes and methodologies around collecting feedback, how that data was categorized and prioritized in product roadmaps was still considered a challenge. While prioritization from top down and business strategy level was rather straightforward, the product environments were getting more complex. Another area related to this was general lack of visibility into what other teams are doing or working on. There were examples discovered where one Product team did not know that the other team had prioritized a product area for development that had direct influence by them. The next chapter of the thesis focuses on discussion and hypothesis validation based on the key findings summarized in this chapter.

4. Discussion

There were a total of 3 hypotheses set as part of this thesis. From the interviews it was found that feedback collection and analysis is a challenge that all companies were facing. The extent of the challenges and the context of it was different from company to company. However, the HYPEX model serves as a great starting point for a framework that would help evaluate data-driven development practices and experiments. The following sections discuss the validity of the set hypotheses and key findings around them.

Hypothesis 1: lack of data hinders decision-making processes in product development

The first hypothesis was set to understand to what extent data and more specifically the lack of it can impact decision-making processes. From the interviews it was found that how product teams collect and leverage data could vary from company to company and or even within different teams. While data was collected through different channels the extent and the use of it was different. Some companies recognized that lack of data and feature backlog was influencing their decision-making process. Additionally, collecting and more importantly categorizing feedback was mostly done manually which hindered decision making processes and prioritization. There were also improvements around platform trackability, automation of data and the number of channels used for data collection identified as challenges. Therefore, hypothesis 1 is partially accepted in the light of this thesis.

Hypothesis 2: product teams are using intuition rather than data to prioritize features

There were different feedback collection methods highlighted in the interviews. From gathering feedback from strategic customers to tracking the platform usage and using a variety of tools to collect, synthesize and analyze the feedback. While there were challenges related to feedback collection, none of them indicated that the feedback collection and value delivery is not continuous.

All companies were using Minimum Viable Feature and Minimum Viable Product methodologies in feature prioritization. Value iteration was part of development cycles and there were feedback funnels established in order to get continuous feedback. What could be an area for improvement is setting up the funnels early on and having more structure and processes for feedback collection, analysis and categorization. Moreover, advanced companies had set up dashboards and alerts for product teams to keep track of data about specific product areas and feedback collected at any time.

However, given that all companies claimed that they have set up continuous feedback collection mechanisms, this hypothesis is rejected in the light of the results of this thesis.

Hypothesis 3: feedback is only received after a new feature has been fully deployed

This last hypothesis was to do with instrumentation and gap analysis. While the instrumentation sophistication levels varied from company to company, all were tracking feedback before, during and after development of a new feature. However, the findings supported the earlier research that in the B2B SaaS context the feature feedback and value validation is more difficult and time consuming compared to B2C. All companies recognized the importance of looking a couple of quarters ahead in their prioritization process to leave enough time for discovery and research.

Automation was one area that was highlighted as part of gap analysis. None of the teams had set up automation frameworks that would help teams categorize and analyze feedback in a quick way. This is something that is still done manually and is taking a considerable amount of time and effort from the Product team's capacity. However, alerting had been set up in one company where the respective Product Manager would get an alert whenever feedback about their specific area is received. Instrumentation and gap analysis are areas that should be researched further for example through participating in feature experiments and continuous development processes.

All in all, this hypothesis in the context of this thesis is rejected. In addition, the author concluded that it is an area that would require additional research for further validation.

4.1. Suggestions and future research

There were several areas for improvement identified as part of this research. First, in order to collect and analyze product feedback efficiently, creating a feedback funnel is an important step to take. One of the 3 companies had done it recently and found it efficient to systematize feedback. However, they also had a backlog of more than a year of feedback from various different channels to work through. It is important to involve PMs directly with the customer, 2 out of 3 companies saw it as an advantage to have direct communication between the client and the Product team. Dashboards help track product usage and identify the most important metrics for the Product teams and should be set up automatically. One of the 3 companies did not have a Product dashboard and all inquiries required a manual query to the database by developers. Enhancing customer communication beyond interviews to organize in-person workshops for clients was found as one of differentiating factors and building a community for customers and end users to learn, share and collaborate helped keep customers closer to PMs. It would be interesting to explore to what extent workshops, client collaboration and communities help drive feedback collection and systematization.

Suggestions for future research were also identified as part of this thesis. One area directly influenced by the HYPEX model would be to run feature experiments with companies, explore feedback systematization and automation. Moreover, how product teams prioritize and how much time is spent on manual work is another interesting topic to explore due to challenges identified in this thesis.

This thesis gives a general understanding of how product teams collect and analyze feedback to make data-driven development decisions. However, further research with the same companies would be suggested to go more in detail with the processes and identify specific gaps in the process. Author would recommend interviewing more product people from the same companies to gain different perspectives. It would be also advised to anonymize the company names for future research in order to make stakeholders more open to sharing specific examples.

Conclusion

In this thesis, author explored how Estonian business-to-business Software-as-a-Service (B2B SaaS) companies collect, analyze and systematize product feedback. Feedback has been an important success criteria in order to make data-driven product development decisions. However, it has been found that there are different challenges related to this area. This thesis aimed to identify what challenges product teams face when collecting feedback from customers and how they can make informed product development decisions.

To find answers to the research question, three Estonian B2B SaaS companies were chosen as part of this research. From reviewing previous literature and using the HYPEX model, the author formulated three hypotheses. Firstly, it was explored how lack of data might hinder decision-making processes in product development which was partially accepted. Secondly, if product teams are using intuition rather than data to prioritize features which was rejected. Thirdly, if feedback is only received after a new feature has been fully deployed which was rejected. In the light of this thesis, author found that companies sometimes do lack data in making decisions. Additionally, it was found that companies are rather making data-driven decisions and not relying on intuition. Lastly, feedback collection was continuous and companies were collecting feedback about features throughout the development cycle. However, improvements can be made in prioritization, automating feedback flows and setting up better systems for feedback systematization.

The key contribution of this work was identifying what challenges B2B SaaS companies are facing with feedback collection and illustrate how product teams tackle some of these problems. It was found that while all companies had their challenges, there were also significant learning points and differences identified that other companies could learn from. Moreover, the same hypotheses can be further validated by exploring other companies from the same industry or widening the scope further to the rest of the world.

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Appendices

Appendix 1. Interview Questions

General structure of the company

- What is your tenure at the company?
- How long have you been working in a product related role?
- Can you briefly describe your role and responsibilities when it comes to product management and development at your current company?

Product development process

- What software development methodology are you using?
- How are your product teams structured?
- What product roadmap methodology do you use?

Feedback collection

- What methods are you using to collect customer feedback?
- Do you have a centralized way to combine that feedback?
- In which development phases are you collecting feedback?
 - Before development
 - During development
 - After deployment
- How do you collect product usage data?

Feature prioritization

- How are you choosing which features to prioritize next in development?
- What criterias are you considering for determining the highest priority feature? (e.g. critical to customer, top priority in business, product area with less previous experience)

- What methods do you use?
- How are you specifying how the feature adds value to a customer?
- How does the new feature support the strategic business goals?
- What challenges do you face in new feature prioritization?

Instrumentation

- Are you using multiple iterations when implementing a new feature?
- Do you use Minimum Viable Feature or Minimum Viable Product principles when deploying a new feature or a product?
- How are you collecting data from first users for a new feature?
- How would you rate your product usage data instrumentation?
 - Basic
 - More sophisticated
 - Advanced

Data collection

- What challenges do you have in obtaining data about new features and customer value?
- How accessible would you say are your customers?
- How do you stay in touch with your customers in regards to new features and value delivery?
- Do you use end user data to learn about the product usage?
 - What challenges do you face, if any, with accessing that data?

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