How to efficiently onboard new users to a complex structured SaaS solution for data analytics

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Abstract

How can a user be onboarded seamlessly to a new complex SaaS solution for data analytics? This thesis covers how different design principles and onboarding frameworks can create an efficient user flow and user interface for onboarding users to the complex data analytic tool Link. A literature study was conducted to find good frameworks for onboarding and define usable concepts fitted to user experience and onboarding for a data analytics tool. Four personas of different user types were conducted to understand better what users need to reach value. The current issues with Links onboarding were tested with four user interviews and tests. Two expert heuristics evaluations were conducted on two different onboarding processes in two different Saas-solutions for data analytics. A user flow was conducted based on a literature study, the four personas, the user tests/interviews, and the heuristic evaluations. A lo-fi prototype was created. Two online surveys based on the lo-fi and user flow questions were created and distributed through email and online. One survey was directed to auditors, the target group for Link, and the other to working adults over 18. A hi-fi prototype was implemented into the existing application Link. Another set of user tests and interviews was conducted to improve the user flow further. In the end, a theory about the best user flow for onboarding users to a new complex data analytics tool was presented. The study shows the importance of knowing the product users and how to deliver them the value proposition within a new complex application.

Abstrakt

Hur kan en användare integreras effektivt till en ny komplex SaaS-lösning för dataanalys? Denna rapport behandlar hur olika designprinciper och frameworks kan skapa ett effektivt användarflöde och användargränssnitt för onboarding till det komplexa dataanalysverktyget Link. En litteraturstudie genomfördes inom ramen för studien för att hitta bra framworks för onboarding och definiera användbara koncept anpassade till användarupplevelse och onboarding för ett dataanalysverktyg. Fyra personas för olika användartyper skapades för att bättre förstå vad användarna behöver för att nå värde i produkten. De aktuella problemen med produkten Links onboarding utvärderades med fyra användarintervjuer och tester. Två expertheuristiska utvärderingar genomfördes på två olika onboardingprocesser i två olika Saas-lösningar för dataanalys. Ett användarflöde skapades baserat på en litteraturstudie, de fyra personorna, användartesterna/intervjuerna samt de heuristiska utvärderingarna. En lo-fi-prototyp skapades utifrån det skapade användarflödet. Två onlineundersökningar baserade på lo-fi-prototypen och användarflödet skapades och delades med möjliga deltagare via e-post och online. En av onlineundersökningarna riktades till revisorer, som är målgruppen för Link. Den andra riktiadte sig till arbetande vuxna över 18 år. Därefter implementerades en hi-fi-prototyp i den befintliga applikationen Link och ännu en uppsättning användartest och intervjuer genomfördes för att hitta ytterligare brister i onboarding flödet. Som resultat presenterades en teori om det bästa användarflödet för användare av ett nytt komplext dataanalysverktyg. Studien visar vikten av att känna till produktanvändarna och hur man kan ge dem värde i en ny komplex applikation.

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Chapter 1

Introduction

User experience and interaction design aim to create intuitive use cases, simplifying the functionality and the user flow to make it easy for users to understand and navigate a product. Many web applications today are complex. They connect a lot of different sources and platforms. They contain and provide a lot of data, functionality, use cases, and different user flows. This kind of complex program structure is challenging to break down into simple and easy-to-learn user flows. To learn and gain insights from an application like this, the user must understand how to use the product and get insights into how it can help them. To make this possible, the user must have an efficient user onboarding to the product that helps them reach the value they need or want. User onboarding is the process of getting new users to understand and learn a new product flow or service (Federov 2015). It is a process to increase the likelihood of new users feeling successful and content when learning a new product or service (Hulick 2021).

A growing ability to analyze and collect big data is changing the accounting and auditing industry (Richins, Stapleton, Stratopoulos & Wong 2016). The big data revolution and the possibility of data analytics will change the role of accountants and auditors and allow them to focus more on providing value to their clients. By using big data from internal and external sources, accountants and auditors can use data analytics to study what happened in the past, what will happen in the future and find solutions for potential problems. This changes the accountants' role into a more strategic one (Appelbaum, Kogan, Vasarhelyi & Yan 2017). In addition, accountants and auditors will play a significant role in big data and its impact on the financial industry (Kaya & Akbulut 2018). Many companies are aware that they need big data, but they have a hard time understanding why and how to use it.

The Umeå based company Senseworks is currently building a product called Link. Link is a program to optimize and simplify data analytics for auditors to guide with the "why" and "how" data analytics can help them in their work. With Link, the goal is to build a SaaS solution where all analyses for auditors can be performed and accessed in one environment. The web application is currently under development, and much functionality is being built into it, and here we encounter the issue of how to onboard a new user to the application.

A Software-as-a-Service (SaaS) solution is a type of service that's getting more and more

common (Turner 2019). It is a cloud-based service where users can access software in their browsers instead of downloading it to their computer desktop. Depending on what type of service the SaaS solution provides, the user can integrate with other users, perform tasks, save data, share data, and much more directly in their browser. This emphasizes the question we brought up earlier; how can we onboard a new user to such a complex application? How do we minimize the learning time to reach value while giving the user the best overall experience of the application?

1.1 Problem description

Auditors in Sweden today use data analytics in their work to gain insight and help their clients. Currently, the data analysis process for auditors in Sweden requires a long learning period. One reason for this is the difficulty of understanding the software used to perform the different analyses and understand how to use it to its full potential. It may take years until a new accountant understands how to use and structure the analysis process thoroughly. Today, there is no one-fits-all solution or program to perform all required auditors' analyses. The auditors have to learn different solutions and programs themselves to optimize their work. These are the problems the company Senseworks are trying to solve with their new data analytic tool Link. Link is a SaaS solution with many possibilities and many different features, tools, and most importantly, data analyses.

What is the best way to onboard users to a complex solution like Link? The application has primary use cases like logging in and getting started. However, it also has more complex functionality like verifying data, analyses and creating reports. For the accountants that will start using Link instead of their current workflow, how do they understand what to do and see Link's capabilities, regardless of whether they are new accountants or transitioning from other solutions?

1.2 Objective

This thesis is done in collaboration with the company Senseworks to help develop an onboarding flow and appropriate UI pattern for their product Link. This thesis aims to develop and evaluate a user flow and UI pattern for onboarding to a complex program structure for data analytics, like the SaaS solution Link. A user flow and UI pattern will be created, prototyped, and tested to understand the best user onboarding experience to complex functionality of data analytics and find what combinations of onboarding theories can minimize the time for the users to gain insights.

Chapter 2

Theory

2.1 Cloud computing and SaaS-solutions

Cloud computing is a concept that has evolved since the beginning of the '90s (Sharma & Sood 2011). It started as referring to large ATM networks to in the modern days become and an umbrella term for an extensive spectrum of services: SaaS, Platform-as-a-Service (PaaS), Infrastructure-as-a Service (IaaS), and Hardware-as-a-Service (HaaS). Cloud computing is a game-changer for, especially small and medium businesses. Instead of costly stand-alone hardware/software, a cloud service is distributed and available over a network.

SaaS is a cloud-based service where users can access software in their browser instead of downloading it to their computer desktop (Turner 2019). The most significant disadvantage of a SaaS solution is that it needs an internet connection to function. Advantages are accessibility, compatibility, and operational management. It usually costs less than traditional solutions.

2.2 Onboarding

Onboarding is a term that originates from onboarding new employees/newcomers to a company (Klein, Polin & Leigh Sutton 2015). However, in this thesis, the word onboarding stands for the concept of user onboarding, which is the process of onboarding a new user to a product flow or service (Federov 2015)

To get a better insight into the concept of onboarding, we can look at a quote by Hulick (2021) : "User Onboarding is the process of increasing the likelihood that new users become successful when adopting your product." Richard Kipp, CPO at Grow, formulated it as:" As you remove pain and friction from your user's experience of attaining their valued objective, your total addressable market grows." It is clear that onboarding is an essential part of a product and how usable and attractive it is to users.

According to Federov (2015), the four most common patterns for onboarding are: Tour (a walkthrough of the product with 3-5 steps), Setup Wizard (a step by step approach to set

up settings), dive right in, and annotated tips (draw the user attention to critical features with small visual tips).

User onboarding is a relatively new term in the world of product development, and the concept of user onboarding is growing, and different frameworks to achieve a good onboarding experience have been and still are developed. This thesis will look into two user onboarding frameworks, the EMBED framework and the Bowling Alley framework.

2.2.1 The bowling alley framework

The Bowling Alley framework can, as the name implies, be compared to an actual bowling alley (Bush 2019). The framework is built on the concept of using bumpers to "bump back" users to the right path when they are sidetracked. According to Bush (2019), three things are needed to master the Bowling Alley Framework: Develop a straight line, create a product bumper and build a conversational bumper.

Developing a straight line

A straight line in the Bowling Alley Framework refers to the shortest path from A to B (Bush 2019), the shortest path to guide the user to the desired value when using a product. A big issue with helping the user on the shortest path to reaching value is, according to Bush (2019), is to know what the user wants to accomplish. Before developing a straight line, one must understand what the user wants and work from there. A straight line is developed by mapping out the path to the value, labeling every checkpoint, and in the end, developing the straight line.

Mapping out the path (Bush 2019) refers to mapping out the entire path from signup to when the user has reached its value. It means every click and choice the user has to make. After that, the labeling of the steps begins.

Each step of the mapping should be labeled with either green (essential steps), yellow (advanced features that can be introduced later), or red (parts that can be removed completely). When all that is completed, the straight line can be developed. According to Bush (2019), this is done by reviewing all the steps and removing as many red and yellow steps as possible. In the end, the goal is to have the shortest path to reaching value.

Product bumpers

Product bumpers help users adopt and get started with the product within the application itself (Bush 2019). Standard product bumpers are welcome messages, product tours, progress bars, checklists, onboarding tooltips, empty states.

Conversational bumpers

Conversational bumpers are bumpers used to educate users about the application, bring them back if they leave too long, or give them nudges to update their account (Bush 2019).

Standard conversational bumpers are: User onboarding emails, push notifications, explainer videos, direct mail. If used smartly, these bumpers can help the onboarding process.

2.2.2 EMBED Framework

The EMBED in the *EMBED framework* stands for: Establish, Map, Brainstorm, Execute and Do It Again (Kelsey 2018). It is a framework with five steps created by the company Appcues. Appcues is a business that helps products with onboarding (Appcues 2021).

Step 1: Establish user onboarding at the company

The first step in the EMBED framework involves establishing two things: the importance of onboarding at the company and setting up an onboarding team (Kelsey 2018). This step includes educating the company employees and the product team about the importance of onboarding and building a team with the right expertise to create an efficient onboarding.

Step 2: Map users onboarding journey

This step of the EMBED framework is about mapping the user journey to develop the onboarding solution (Kelsey 2018). A user journey is a user's timeline of actions from beginning to end. When mapping a journey for this step, the team only has to focus on the onboarding aspects of the application.

According to the EMBED framework, all user touchpoints should be noted. Aha-moments should be marked with a big star. The aha moments in the EMBED framework are the moments in the user journey where the user realizes the app's value proposition. All onboarding efforts should, according to the framework, help the users to get the aha-moments.Analytic tools are preferably used to track better and understand the user's journey and optimize the mapping.

Step 3: Brainstorm solutions for potential problems

In this step of the EMBED framework, the team should brainstorm for potential solutions (Kelsey 2018). The team needs to look at both the quantitative and qualitative data for the best results. Quantitative data, numbers, and analysis from the previous step tell what kind of problems the onboarding is facing. Qualitative data, user recordings, and heat maps tell the why of the problem. Use the quantitative information to find what to focus on and use the qualitative data to understand and solve the problem. The following four psychological principles are essential to keep in mind in this step according to the framework:

- **Goal gradient hypothesis**: humans, tend to complete things they started
- **The choice paradox**: humans are more likely to make a decision when fewer choices are given.

- **The Zeigmnark effect**: explains how humans shift their focus to tasks they have not completed
- **Familiarity bias**: humans prefer familiarity over something new

Step 4: Execute the onboarding process

In this step in the EMBED framework, it is time to execute the plan built in the other steps (Kelsey 2018). The plan should, according to the framework, be executed in two parts. Inside the app, things like tooltips and in-app messages. Outside the app, things like emails triggers and push notifications. According to the framework, there must be synchronization and links between these two. If an email to a user promises something the app does not deliver, it will disappoint the user and may make them leave the product.

Step 5: Do it again: Improve and repeat

When the plan is executed, and an onboarding solution is implemented in the application, the work should not stop (Kelsey 2018). According to the framework, the solution should never stop evolving, and the fifth step is to start over and do it all again to optimize the solution.

2.2.3 Customer Success and Reaching Value

The term *Customer Success* has become a buzzword in the SaaS field (Gainsight 2021, Wolf n.d.). The Customer Success Association (2019) defines Customer Success as *"a long-term, scientifically engineered, and professionally directed strategy for maximizing customer and company sustainable proven value."* According to Gainsight (2021), customer success *"is relationship-focused client management, that aligns client and vendor goals for mutually beneficial outcomes."* The success of a product is directly linked to the success of the product's customers. It is all about delivering success to the user to ensure they stay with the product for the long term. By starting to monitor their customers' success, Hubspot was able to keep 33 percent of the users that previously left, so-called churn users (Wolf n.d.).

Delivering success is about *Reaching Value*, so the customers' success and reaching value go hand in hand (Bush 2019). To create a successful product, you need a quick time-to-value. A user has, according to Bush, to be able to reach a value from the product without human help, which means only help from the product and onboarding process/user assistance. Intercom claims that 40-60 percent of new users never return after signing up. According to Intercom (2019): *" The best onboarding is the kind that pays less attention to getting users to complete steps the business cares about and more about getting them to experience "successful moments." "*.

Churn rate

It is essential to be able to measure customer success. There are some important metrics to keep in mind and track to see the customer success rate (Gungon 2021). *Churn rate* is the most important metric to keep track of (Wolf n.d.). Churn rate is also closely connected with the onboarding part of the application.

The churn rate is the percentage of users/customers that leave a product service after some time (Gungon 2021). To measure churn rate is to measure how happy the users are (Wolf n.d.). According to Wolf (n.d.), there are different kinds of churn to measure: user churn, revenue churn, Net promoter score, average, revenue per customer, customer growth, customer engagement, and trial-to-paid conversions. It is all about how many customers are lost on a monthly/yearly basis. Specific metrics to track to be able to measure this is different for different applications, but some examples are cancellation of a subscription, closure of an account, non-renewal of a contract or service agreement, customer decision to shop/use another service provider (Gungon 2021).

2.2.4 User Assistance

User Assistance, referred to as UA, is a concept of assisting a user when they use a product (Welinske 2011). User Assistance is, according to Welinske (2011), built on the fact that every user consumes information differently. He lists the following options to communicate information to assist the user, with UI patterns: Context-sensitive topics, FAQs, Community portal, Twitter, Server-based content, "Cheat" sheets, Release notes, Training videos, Wikis, Wizards, Tipsheets, Printable user guide, RSS feeds/email, UI help text, Glossary and Index, Blogs, Knowledge base, and Youtube.

2.2.5 UI patterns/product bumpers for onboarding

UI patterns are patterns "that overlay or augment the app's true interface with annotations" (Balboni 2021). The patterns are meant to guide a user to reach value faster and minimize the risk of churn users. Bush (2019) refers to them as product bumpers in the Bowling Alley Framework. There are many different UI patterns (Intercom 2019). It is according to Intercom (2019) to find the ones that fit the product best.

Welcome messages

A *welcome message* is the product's opportunity to greet new users and make them feel welcome (Bush 2019). It is appropriate to state the product's value proposition and increase user motivation in the welcome message. The welcome message can also contain information about expectations for the user. A welcome message often includes an action, like a button to begin a tour or something important for a good product experience (Balboni 2021). The welcome message is one of the first things a user sees when entering a new product (Intercom

2019). It is therefore essential to be warm and approachable and not lose the opportunity to engage the user.

Product tours

A *product tour* is what it sounds like, a tour of the product(Bush 2019). It should, according to Bush (2019), be 3-5 steps long. In a product tour, the user should be asked and help to set up the options to be ready to use the product. A product tour should cover the essential steps for the user to reach value later. In the product tour, a "Focus-mode" can be used to only present limited choices. "Focus-mode" refers to stripping the view of unnecessary options to make it easier for the user. Balboni (2021) defines product tours as: "Tours often walk a user through an important workflow or point out a few key steps along the way that might otherwise be missed."

Progress bars

A *progress bar* indicates how far a user has come and how much left it is of a process. According to Bush (2019), it is essential to remember that humans are addicted to process, and breaking tasks into smaller goals to make them achievable is an excellent way to create a good experience.

Onboarding tooltips

Onboarding tooltips are a way to guide users and give additional information throughout the process. According to Bush (2019), it is essential to remember that tooltips should not be used as an onboarding tour. Balboni (2021), on the other hand, gives onboarding tooltips as an excellent example to use as an onboarding tour. Tooltips are often text labels, and they should always be available for users to see if they want to (Intercom 2019).

Checklists

A *checklist* is a way of breaking big and complex tasks into smaller achievable ones. According to Bush (2019), a checklist is an excellent way to motivate users to complete a crucial set-up task. A checklist offers, according to Balboni (2021), a visual representation of an unfinished task. A way to inform users how far they have come and how far they are from completing something.

Empty state

When someone first logs into an application, it can look empty because no content is added (Bush 2019). An *empty state* is a way to show users what they need to do to set up something. To decide what to include in an empty state these three questions should be answered: "What steps does a user need to complete to experience a quick win?", "What is the most important step in my straight line?" and "How can I make sure that the majority

of users complete this step? ". Without content in an empty space the product or app can overwhelm the user (Intercom 2019). Well-designed empty spaces can reassure and guide the user to fill the content and reach value.

Hotspots

A new UI pattern, *hotspots* are a cross between notification badges and tooltips. It is a small spot shown in the interface to indicate that it is essential and urge users to click on it to give the user more information (Balboni 2021). According to Balboni (2021), hotspots are best used for calling out non-essential features since they are very subtle.

Action-driven tooltips

According to Balboni (2021), *action-driven tooltips* are a way of guiding a user through a workflow across multiple views and pages. By darkening out the rest of the page, the user must follow the tooltips and be guided to a specific action.

Persona-based onboarding

Some users may know how they want to use the product when they sign up (Balboni 2021). By collecting this data through the onboarding process, it can be easier to give customized help to achieve the users' most important goals. Doing this could help the user have a more relevant experience and lead to a low time-to-value rate.

2.3 How we really use the web

According to Krug (2014), there is a big difference in how people think users use a website and how they actually use it. A designer or creator often thinks the user will carefully look at each page when in reality, they do not even read the content. On a good day, each page gets a scan but often only a glance. According to Krug (2014), there are three essential facts about how people use the web that is important to keep in mind when designing for the web and dealing with users.

2.3.1 Users do not read they scan

According to Krug (2014), users do not read the web page. They scan them. Even when a user reads a newspaper on the web, that alternate between scanning and reading. Users do this for these three reasons: they are on a mission and searching for something specific by scanning the page, they know they do not have to read everything, or they are good at sorting out what content they need to look at to get what they want.

2.3.2 A user chooses the first reasonable option

A designer often designs a web page as if the user will choose the best available option. According to Krug (2014), this is for the most time not the case. A user chooses the first reasonable option, an option that satisfies. They do not stay and scan for other alternatives. The reason for this is: the user is often in a hurry, there is not much of a penalty for guessing wrong, weighing options may not improve their chances, and guessing is more fun. This does not apply to all users but is essential to keep in mind since it is how many users make decisions on a web page.

2.3.3 Users do not read the instructions

According to Krug (2014), when a user is faced with new technology, very few of them take time to read the instructions. They try and guess until they find a way. The user often starts using a program with no knowledge of how it works, just clicking around. For a user, it is not important how something works, as long as we can use it. If the user finds a way that works, they usually stick with it and stop looking for other solutions.

2.4 Product-led growth

Product-led growth is a strategy based on getting customers and growing your business based on the product and a "try before buy" concept (Bush 2019). Product-led growth is a way of growing a SaaS Business and a product-led organization is led by the product through every department within the organization. Every team in the company works with the product as the focus, this results in working from questions like: "how can our product generate a demand flywheel?" "How can we use the product to qualify our prospects for us ?" "How can we create a product that helps "customers become successful?". Working with the product as lead the customer value becomes a focus as well. Bush (2019) formulates it as : "By having every team focused on the product, you create a culture that is build around enduring customer value"

2.4.1 Usertypes

According to Bush (2019) and his product-led growth approach there are four types of users to take into consideration:

- **Mission impossible users**: A mission impossible user is a user that have no motivation to use your product and finds it hard, almost impossible to use it
- **Rookie users**: A user that have high motivation, but need help to use the product. This user type is often a result of employees forced to use software provided by their employers and considered a luxury problem.

- **Veteran users**: A user that have low motivation but can easily use the product. This is a user type that is easy to onboard but that is easy to lose if they experience any kind of friction.
- **Spoiled users**: A user that has high motivation and finds it straightforward to user your product.

2.5 An introduction to the SaaS-solution Link

Link is a SaaS solution built by the Umeå based company Link. It has been developed since spring 2020 and is soon ready for release. Link is a data analysis tool developed for financial analysis, first for auditors but in a more extensive spectrum of accountants, companies, and anyone interested in analyzing companies' financial statements. Link has no UI pattern for onboarding other than the one provided by the UX research of each page and analysis, and the application itself. The SaaS solution Link consists of several analyses for auditors. The user can log in, get an overview over your work (figure 2.3), create companies (figure 2.4), invite a team, upload data (figure 2.5), verify data (figure 2.6), perform analyses (figure 2.7, 2.8 and 2.9), save them in a report and export them. It is also possible to connect other platforms to upload data, work with multiple users in the same analysis, comment, set specific company settings (figure 2.10) and invite people. Overall, Link is a solution with much functionality built into it and a lot more that will be built into it.

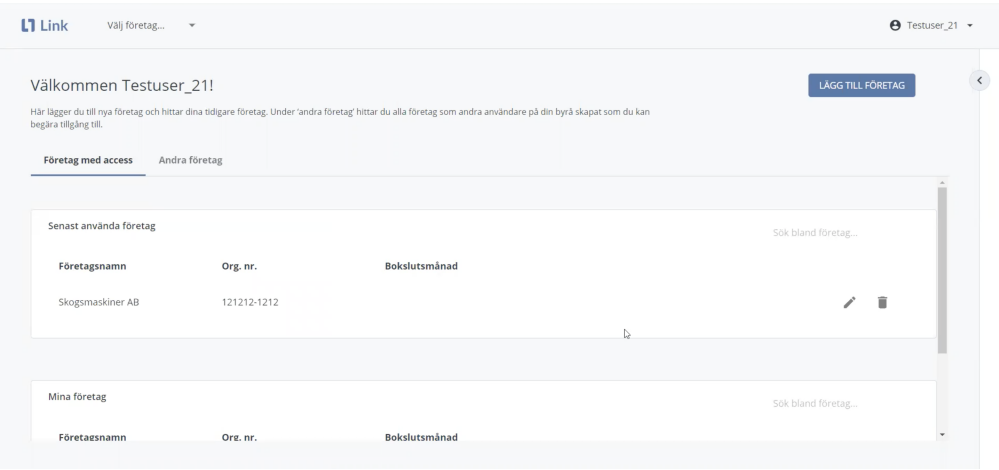

Figure 2.1: Screenshot of Link Application - Start page (Link, 2021)

2.6 Information Vizualisation and Visual analytics

According to the Interaction Design Foundation (2020), *information visualization* is "the art of representing data in a way that it is easy to understand and to manipulate, can help us

Figure 2.2: Screenshot of Link Application - Create Company pop up (Link, 2021)

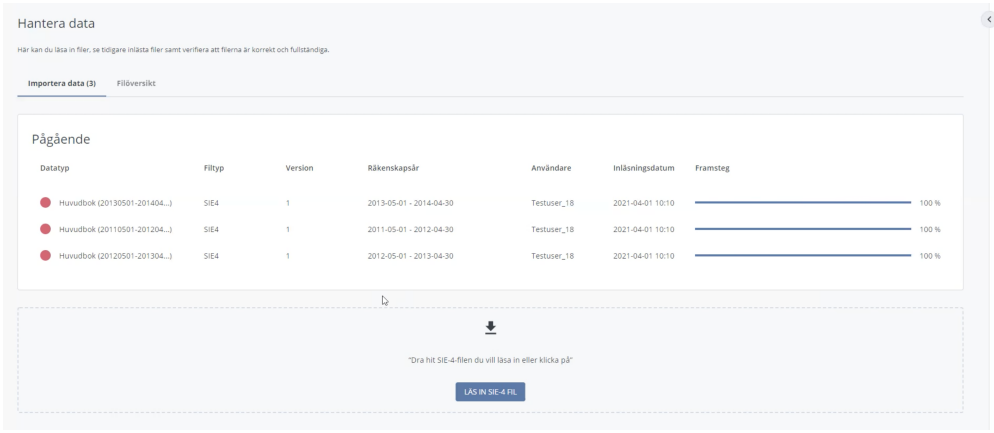

Figure 2.3: Screenshot of Link Application- Download data overview (Link, 2021)

make sense of information and thus make it useful in our lives. ”An example of information visualization can be the subway map or bus map to show different routes. There is also a ”dark side” to information visualization to keep in mind. For example, when the visualization of statistics is used to make the observer believe in another result than the actual one, by modifying the visualization (Interaction Design Foundation 2020). According to Spence (2014), visualization is ”the activity of forming a mental model of something.” Visualization is a human activity and initially has nothing to do with computers. Today we have a lot of raw data, referred to as big data. According to Spence (2014), we can use information visualization to help users gain insights from raw data they could not see otherwise. By representing and presenting the data to the human user, the user can pick up insights and we help the user. Spence (2014) also argues that information visualization also involve how

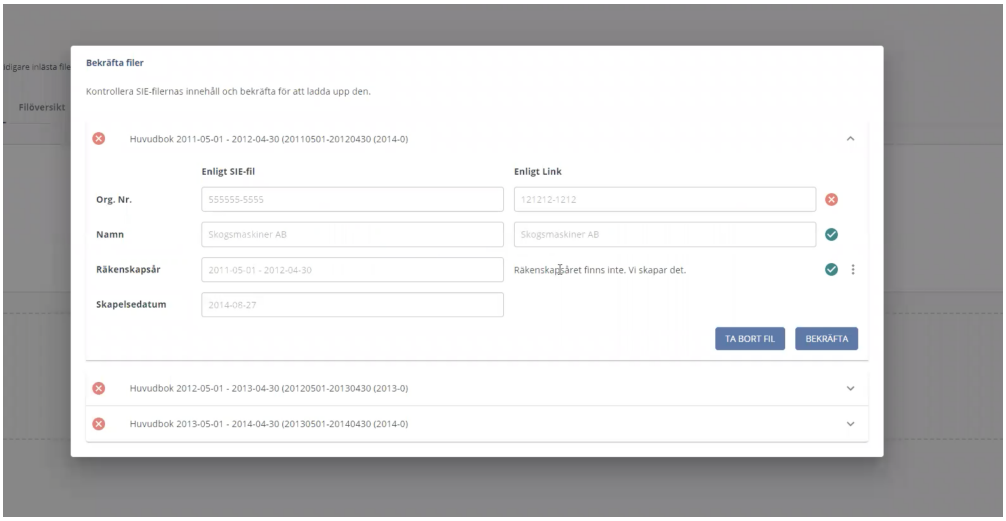

Figure 2.4: Screenshot of Link Application - Verify data pop up (Link, 2021)

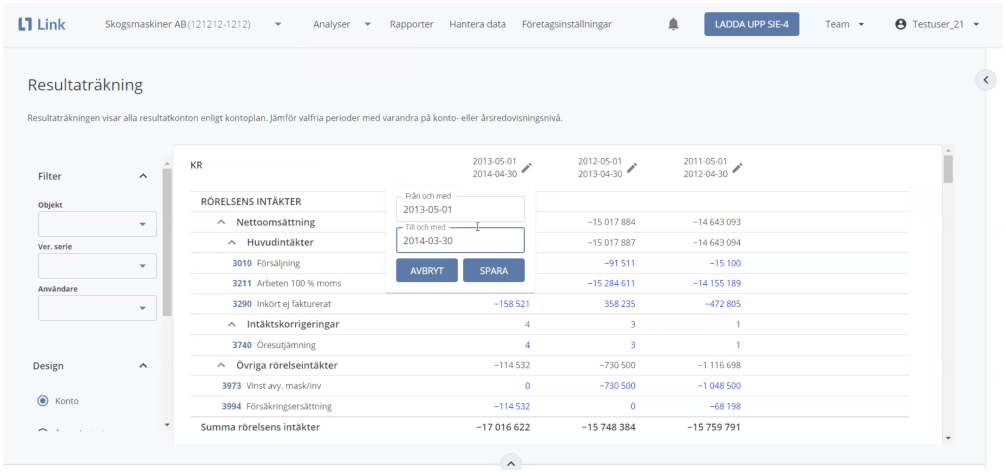

Figure 2.5: Screenshot of Link Application - Result analysis (Link, 2021)

a user can interact with the data visualized to and input, variables and gain other insights in real-time.

Visual analytic is the science of gaining insights and analytic results from big data and data sources using interactive visual interfaces (Keim, Stoffel, Ziegler & ÖZSU 2009). Visual analytics has its origin in information visualization and data analysis, and it strongly encourages human interaction in the analysis process. Visual analytics is more than the only visualization. It is a combination of visualization, human factors, and data analysis. Much data is produced at a high rate in modern society, and humans currently collect more data than they can analyze. That is where visual analytics comes in. Visual analytics is a method to gain insights into complex problems in a short time. Visual analytics research aims to turn all the data and information into an opportunity and help people use all the data we

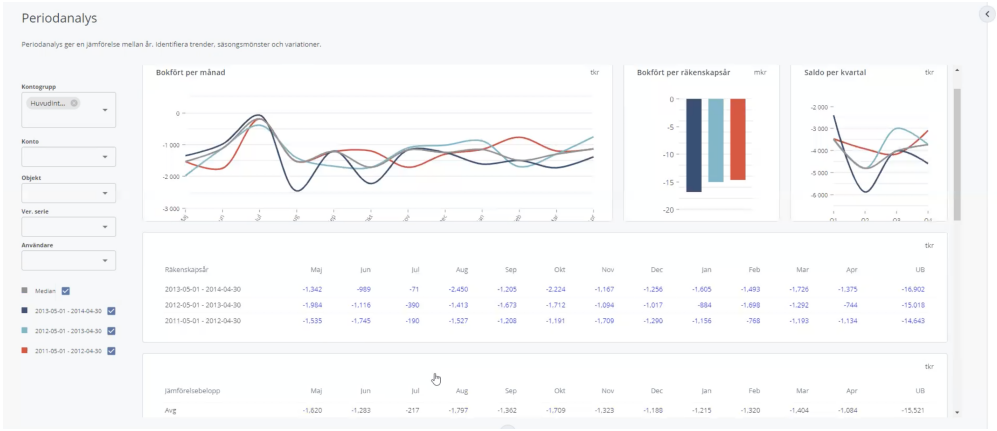

Figure 2.6: Screenshot of Link Application- Account analysis (Link 2021)

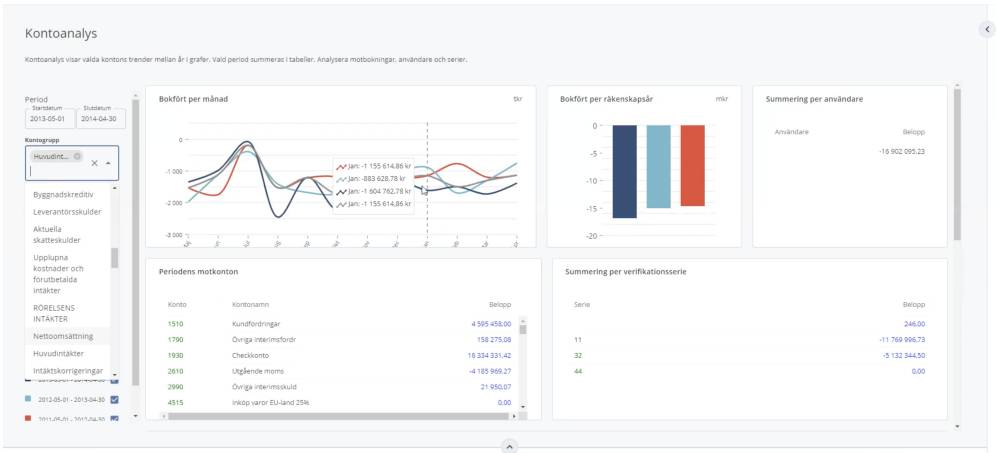

Figure 2.7: Screenshot of Link Application - Period analysis (Link, 2021)

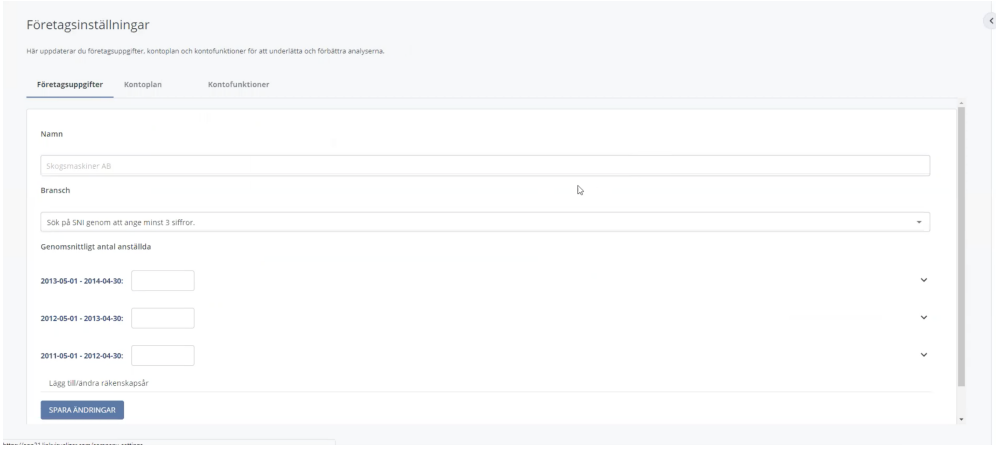

Figure 2.8: Link Application - Company Settings (Link, 2021)

collect to make good well-based decisions in all situations..

2.6.1 Presentation

A common use for information visualization is presentations in pictures or figures to explain concepts and things that otherwise would be impossible to explain shortly and straightforwardly (Foundation 2020). A map of the subway lines is one example of a presentation.

2.6.2 Explorative Analysis

Using information visualization for exploitative analysis provides a way to show relationships in data, like a map with common diseases highlighted in a specific color (Foundation 2020). This kind of visualization does not show the why, but it can show indications and patterns.

2.6.3 Confirmation Analysis

To understand connections between different data and visualize it to make it easy to take with confirmation analysis would be presenting data in a graph, for example, a graph over stack prices over the years compared to other stock prices (Foundation 2020).

2.7 Important design principles to keep in mind

2.7.1 Nielsens 10 heuristics

To determine, if a design is user-friendly Nielsen (1994) have defined 10 design heuristics to follow :

- *Visibility* - a system should always keep the user updated with what's going on and help with needed feedback.
- *Matching between system and the real world* - the system should "speak" the same language/behave in a way the users understand so the users feel more natural in their interaction with the system
- *User control and freedom* - A lot of users will use the "wrong" option and the interface must provide a clear way of exiting or solving a situation where this happens
- *Consistency and standards* - The user should not have to wonder if different words, functions, icons, etc means the same thing.
- *Error prevention* - The best design does not need error-messages. Instead, the program should eliminate the possibilities to do wrong and present the user with a confirmation function where things could go wrong.

- *Recognition rather than recall* - The users need to memorize thing should be as small as possible. The user should not need to remember a dialog from one part to another, instructions are something that always should be provided when needed
- *Flexibility and efficiency of use* - Accelerators that makes it possible for the interaction to move on faster for an expert at a system so the system can be used by both experts and beginners
- *Aesthetic and minimalist design* - There should not be more information than needed.
- *Help users recognize, diagnose, and recover from errors* - Error messages should be presented understandably so the user can understand what went wrong and what action to take next
- *Help and documentation*- Even if it's the best if a system can be used without documentation, it is often needed for some parts. All this kind of information should be easy to find and navigate.

2.7.2 Hicks law

Hicks Law is named after the psychologist William Edmund who, together with Ray Hyman in 1952, started to examine the relationship between the number of choices presented and a person's reaction time to the given stimulus (Soegaard 2020). They discovered the fact that with more options, the longer it takes for the user to make a decisions and the more work it gives them. Hick's Law is about reducing the number of stimuli and get a faster decision-making process. The users' time is precious, and to create a better user experience, Hick's Law should be considered. To do this, a designer should categorize choices and obscuring complexity. To sum it up, Hick's Law is about avoiding flooding the user with too many options. Guide users between clear and "easy" options that get them to reach value quickly.

2.7.3 The Endowed progress effect

The Endowed progress effect is the effect that if a user thinks they have a head start to completing a goal, they tend to work harder to achieve the goal (Batterbee 2020). For example, if a person is given a loyalty card with, alt A: Ten stamps and no free stamps or alt B: Twelve stamps with two free stamp. The endowed progress effect shows that although both require ten steps to get to the goal. People tend to work harder with alternative B since they have been given a head start. The endowed progress is a result of the psychologists' Joseph C. Nunes and Xavier Dreze's research.

2.7.4 The Zeigarnik effect

The Zeigarnik effect states that people tend to remember unfinished tasks better than finished tasks (Vinney 2019). It was originally observed by a Russian psychologist Bluman

Zeigarnik, but much research supports the effect since then.

2.8 Research methods

2.8.1 Personas

Why a persona?

Personas are according to Dam & Siang (2021) "fictional characters, which you create based upon your research in order to represent the different user types that might use your service, product, site, or brand in a similar way." Personas are a fictional representation of a target user (Adlin & Pruitt 2010). Personas are for putting a face on the user and use as a reference when designing products. A persona helps the team understand the users' needs, experiences, behaviors, and goals (Dam & Siang 2021). Personas can help the design team understand that different users have different needs and help the team identify with the user.

There are many benefits of personas (Adlin & Pruitt 2010). Personas make knowledge and assumptions about a user available to everyone working in the team/project. It creates great opportunities to talk about the user with the same characteristics in mind. Personas make it easier to design for a specific target group/user type, and it's a great way of making the user more human. Making the team feel sympathy and understand the user better than when only using data.

How to create personas

According to Nielsen (2014), it is essential to remember that a persona is not the same thing as an archetype person. A persona does not describe an entire person but the areas and context the team wants to focus on based on their work area. Nielsen (2014), brings up four different perspectives on developing personas: goal-directed, role-based, engaging, and fiction.

The goal-directed perspective: In this method, the hypothetical archetype is not described as a person but a unique character with specific details (Nielsen 2014). Many personas are created based on ethnographic research and later on merged into final personas, one for each type of user. To put it simply, users' work goals are the focus of the persona, for example, workflow contexts and attitudes. The good thing about this method is that it provides a focused tool.

The role-based perspective: The role-based perspective was created from criticism towards the goal-directed perspective (Nielsen 2014). This perspective is data-driven with data from both qualitative and quantitative sources. The most significant difference from the goal-direct perspective is that this perspective uses both qualitative and quantitative data sources and has a clear relationship between data and the persona description. The persona should consist of information about: the size of the market share the individual persona takes up, what influence the persona has, the users' computer proficiency, activities, hope, fears,

description of a typical day, and more. The main point of this perspective is the focus on the users' roles in the organization.

The engaging perspective: The engaging perspective of personas has its roots in the ability to produce involvement and insights (Nielsen 2014). This type of personas uses understanding of characters and stories to create personas so that the designer stops seeing the persona as a stereotype and start to identify with them. The other types of personas mentioned are often criticized for creating stereotypes and not looking at a whole individual. The most important part of this perspective is the way humans interact with other people. To create a persona like this, the team needs broad knowledge of the users. Data for this kind of personas should contain information about social background, relationships, characteristics, and more. This persona is described by (Nielsen 2014) as a "defense against automated thinking".

The fiction-based perspective: Fiction-based personas are used to explore design and discuss insights(Nielsen 2014)). Ad hoc personas are based on the designer intuition and experience, and it is used to create an empathetic focus in the design process. Assumption personas are based on the team's assumptions about the user and proto-personas from brainstorming within the company. These kinds of personas give the organization a starting point for thinking about users and make early design hypotheses. The validity of these personas has been discussed and criticized.

What to include in a persona

There are many different things to include in a persona. According to Ellis (2018) these topics are ones to be put into a persona: Name, Photo, Personal quote/motto, Bio, Demographics, Personality Traits, Motivations, Goals and frustrations and Preferred brands and influencers. He also suggests including different other topics depending on the perspecitve of the persona: Preferred social media channels, Daily routine, Tech skill, Myers-Brigg personality types, Hobbies and interests, Education level, Job responsibilities/duties, Shopping and product research habits. According to Joosten (2017) a persona should include: Fictional name, Photograph, Job title and profession, Age, Marital Status, Goals, Values/Fears, Pain Points.

2.8.2 Heuristic evaluation

A *heuristic evaluation* (Nielsen 1994) is a method to evaluate and find usability problems in a user-interface and gain insights about user experience issues to solve during the iterative design process. A heuristic evaluation is confirmed to be an efficient and non-expencive way to detect and solve a lot of the usability problems in an interface.

A heuristic evaluation should according to Nielsen (1994) not be performed by a single individual since one person can't detect all usability problems by themselves. Nielsen recommends using three to five different evaluators in a heuristic evaluation since a larger number of evaluators according to studies don't show a detection in more usability problems.

The evaluation is conducted by each evaluator inspecting the interface alone with a list of usability heuristics to determine the interface user experience. A typical heuristic evaluation

lasts one or two hours. To make it easier on the evaluator an observer can be added to the evaluation, to take note and observe what the evaluator finds. Other ways to record the evaluation could be a written report or a verbally told summary by the evaluator.

The difference between traditional user testing and a heuristic evaluation is the willingness of the observer to answer questions from the evaluator. In a heuristic evaluation, the evaluator can be given tips on how to use the interface. It is important to remember that the user should not be given help until they are completely stuck and can't get any further.

According to Nielsen (1994) a discussion or debriefing after an evaluation session can provide good advice for design solutions.

2.8.3 Online Survey

Online survey as part of research is a young and evolving technology (Wright 2018). The advantages of an online survey are the possibility to reach participants at distant locations, reach participants that are difficult to reach, having automated data collected, reduce time and effort. The disadvantages are that it includes uncertainty over the validity of the data, concerns surrounding the design, implementation, and evaluation.

Chapter 3

Method

3.1 Litterature study

A literature study was conducted to understand better the terms, science, and frameworks surrounding onboarding theories. It aimed to understand the subject better and create a theoretical base for building a user flow for effective onboarding to Link. Books and articles about onboarding frameworks, appropriate design principles, information visualization were read. Everything relevant to the study was summarized and later on written into the theory section of this thesis. Articles online and websites with knowledge about the subject were also read and, if relevant, included in the research. Some of the terms searched for to find relevant information was: 'onboarding', 'onboarding flow', 'onboarding to saas', 'saas solution onboarding', 'onboarding framework', 'onboarding to data analytics', 'information visualisation', 'accountants and big data', 'data analysis auditors'.

3.2 Heuristic evaluation

In this study, two heuristic evaluations on user onboarding were made and summarized into a couple of meaningful key points presented in the result. The heuristic evaluations were made according to Nielsen's ten user heuristics. The two programs evaluated were "Spotlight Reporting" and "Fathom." Both are Saas-solutions for conducting financial analysis and gaining insight from big data. Their onboarding process and an evaluation of it from a user's perspective were relevant as a part of the theoretical base for creating an onboarding flow. One evaluation was made on each product. All parts of the programs relevant to onboarding were tested and documented. The documentation was summarized and transferred into key points that stood out as most important for this study.

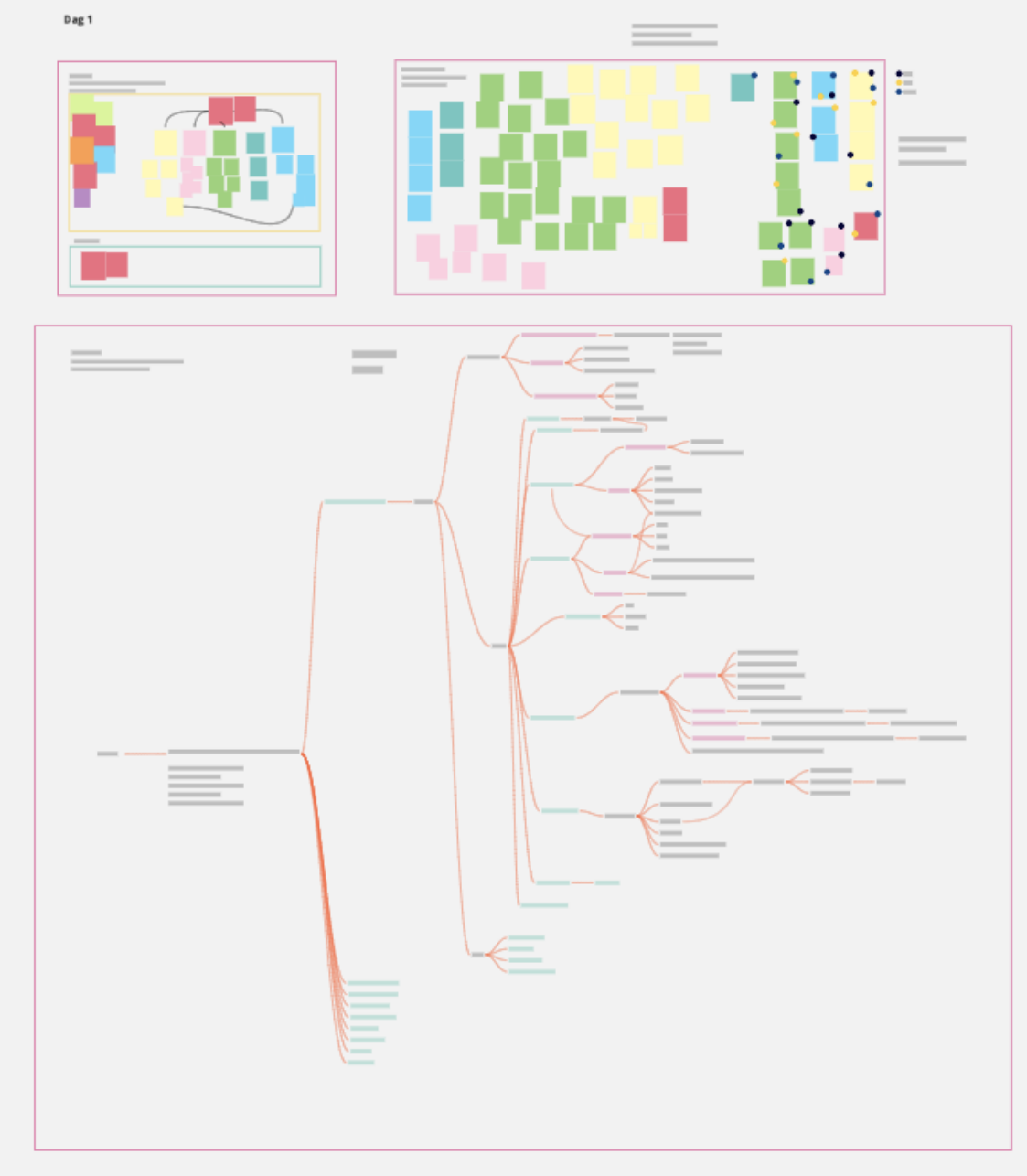

Figure 3.1: Screenshot from Miro Application - Process of workshop for mapping overview of the application (Miro 2021)

3.3 Mapping Link

The application was mapped to get a better picture of the user journey and what elements were essential to include in the onboarding flow. The mapping was done with a mix of the methods suggested in the EMBED and Bowling Alley framework. The mapping process consisted of two parts. First, the most crucial functionality of Link was mapped at a workshop with two employees at Link. Second, a primal user flow was created in Miro (application for working together) to get an overview of Link as a whole., see figure 3.1. Later the user journey to logging in, information crucial to persona onboarding, importing data, verifying data, and the main parts of the period- and account analysis was mapped with post-it notes. The most crucial ones were selected and used as a base to create the onboarding user flow.

3.4 Creating persona

Four personas were created with a mix of the role-based perspective and engaging perspective. A persona for each role of a potential user for Link in the near future was created at a one-day workshop with the founder of Link, Alexander Ögren. The reason for the mix of perspectives was that each persona should represent a type of user with a specific work role since the company wanted to onboard each of them in the near future.

The engaging perspective was added to help engage the designers and developers at Link to see the user as a person and be able to relate to them and understand their needs in a better way. Working with such a specific group of users can make it hard to understand their everyday problems. In this thesis, the personas were used together with other theories to create the user flow for onboarding and developing relevant interview questions. These topics were chosen to fit the different perspective and the purposes of the personas: Fictional name, work title, demographics, biography, motivations at work, tech skills, social media channels, programs used right now, brands, work experience, pain-points, values/fears and typical day. The data for the personas were based on Alexanders' personal knowledge of years in the profession.

3.5 Interview/usertest: Without onboarding

Semi-structured interviews and user tests with three auditors were conducted to understand better how the onboarding to Link worked before improvements. No onboarding solution was implemented in Link since before, and all help that existed was based on user experience design. For this reason, the user experience of the solution was also evaluated in the user interview and test. User experience and onboarding go hand in hand as a good user experience can be considered a part of good onboarding since it helps the user understand the product fast and reach value (Bush, 2019).

The questions for the interview and the user test were formulated to understand how the user moved in the current version of Link, what problems they encountered, and understand

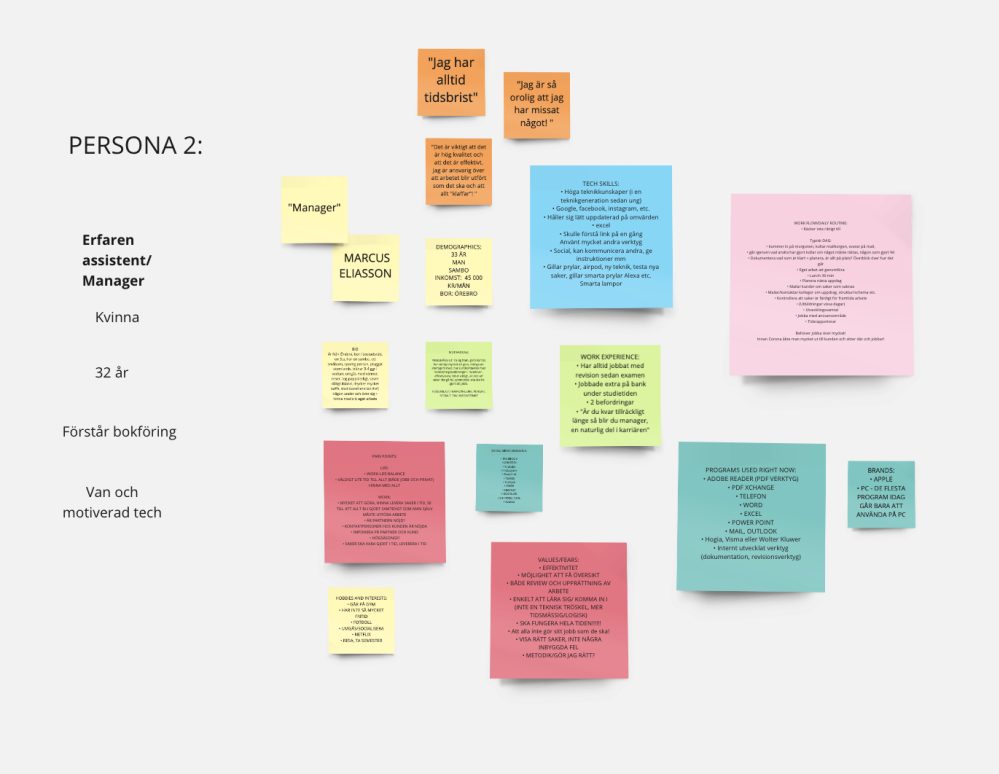

Figure 3.2: Screenshot from Miro Application - From brainstorming the personas (Miro, 2021)

what the user wanted to know/understand to feel like they reached value. In addition, all participants were informed about the interview and test purpose and asked if it was all right to have their screen recorded during the user test part. They were also informed that the test was anonymous and would not be linked to them. Alexander Ögren at Link wrote the user testing scenario for the test since it needed experience in the auditor field to be believable. We observed the user test and conducted the interview together. The user tests and interviews were conducted over Zoom.

Notes about what the participants said were taken during the interview and the test. The screen was recorded to make it easier to go back later and check how the user moved around the program and where they had trouble. The notes and insights from the video were summarized and turned into keypoint essential for the user experience design and the onboarding process.

3.6 Building user flow

The user flow for the onboarding process to Link was created using the information gained in previous steps in the study. By using the information about onboarding frameworks, the key

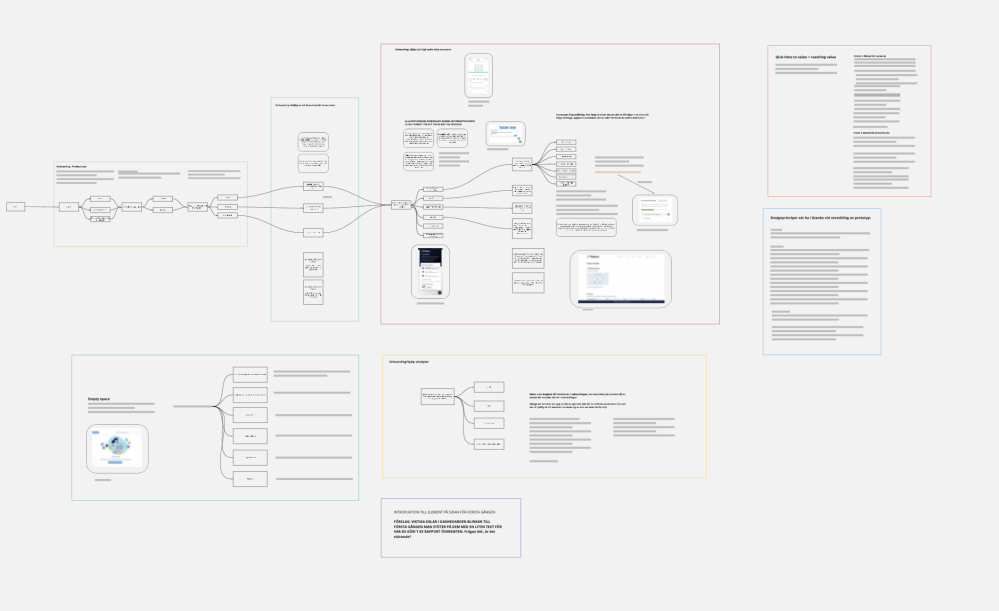

Figure 3.3: Screenshot from Miro Application - Process of building user flow (Miro 2021)

points of the personas, the heuristic evaluations, the user interviews, tests, and the mapping of the user journeys in Link. It was built in Miro and reviewed a couple of times. The user flow raised some questions about the onboarding process at work and to a data analytic tool. To evaluate and iterate the user flow and onboarding experience further, these questions were gathered and used to create an online survey to understand better what kind of user onboarding fitted this application and how the user wanted to receive new information.

3.7 Building Lo-fi

The lo-fi was built in Figma (a program for prototyping) and based on the user flow created in the previous step. It was a way of visualizing the user flow, showing how it would look to a user, and evaluating how the personas would perceive it. The lo-fi was reviewed and rebuilt a couple of times, and insights about improvements in the user experience design from the first interviews and user tests were included in the lo-fi.

3.8 Online Survey

To gather more information about the users and what kind of onboarding UI they preferred, how they reach value, if they like onboarding, and how they best take in new information, two online surveys were conducted. One survey was directed to auditors and one to working adults over 18 in general. The reason for this was the considerable risk of getting few answers from only auditors. The questions for the survey for the auditors were explicitly formulated

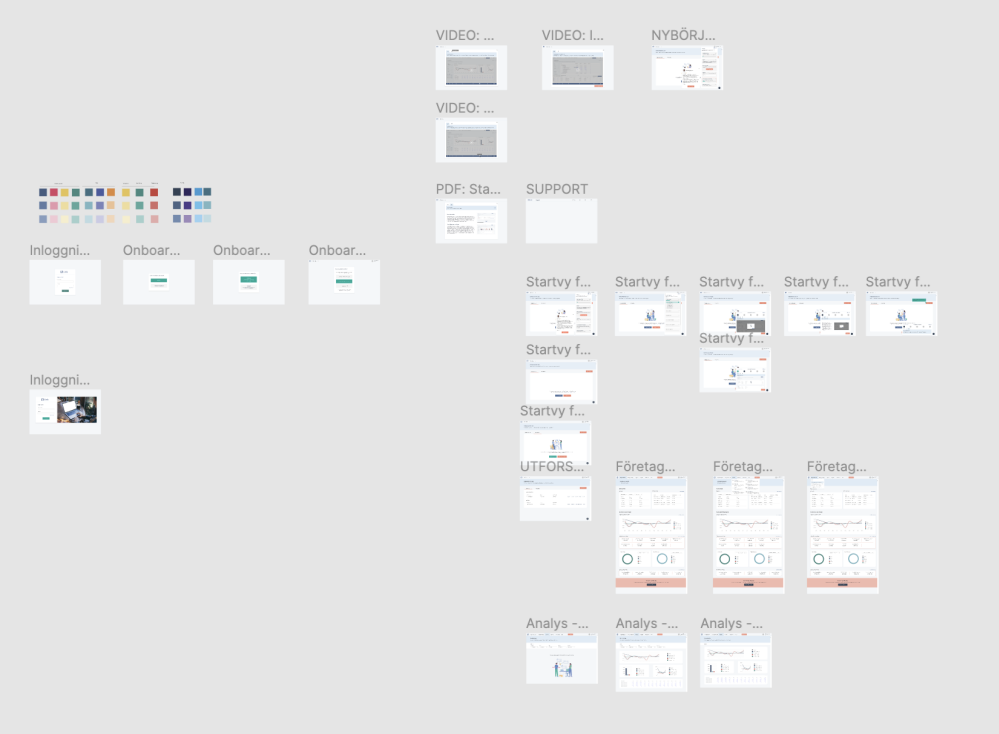

Figure 3.4: Screenshot from Miro Application - Process of Lo-fi (Miro 2021)

for auditors, while the other survey questions were formulated in a general manner to fit all working categories. Since it was hard to make sure the participants in the general survey had the same view on data analytics, the term was excluded from the survey, and the questions were based on programs for improving their work. When calculating the result in the general survey, all participants who did not enter a valid profession were excluded from the data.

3.9 Implementing Hi-fi

The hi-fi was implemented in the existing product Link. The Hi-fi was implemented using React JS, Redux, and Material UI in the Link repository. A proper way of handling the information gathered in the onboarding system was built into the product. A few onboarding tours were created for user testing. The prototype was usable and clickable but not fully implemented with a backend connection. Many proposed options in the onboarding flow were not possible to implement since they had no knowledge base, like FAQ, articles, and more.

3.10 Interview/usertest: Simple onboarding prototype

As a last attempt to review and gain insights about the efficiency of the created onboarding flow, a set of semi-structured user tests and interviews were made on the mid-fi. Four participants were interviewed and user-tested. The test session consisted of a semi-structured interview part and a user test. The first part of the interview and the information were the same as for the first test session. The participants were in the user test given a scenario created by Alexander Ögren at Link to test functionality that included essential parts of the onboarding process and UI components created by the user flow.

Chapter 4

Result

4.1 Heuristic evaluation

4.1.1 Summarized key points

When conducting the heuristic evaluation, some key points stood out as most important. The first and most important thing is the ability to leave an onboarding process intuitively and easily. It is annoying for the user to get stuck in a series of steps that have to be finished to move forward. An onboarding tour should not be too long and should not be forced on the user unless absolutely necessary. The process of getting data into the program was long and complicated in both programs evaluated. In situations like that, a demo company with test data is essential for the user. Testing/learning the application and getting stuck in a series of steps that seem to end creates a bad experience. The onboarding tours and information are easy to access throughout the entire application in both of the programs evaluated. Many times, a user wants to go back to the information/tours offered in the beginning. This created a nice user experience where the user might feel the need to click around in the program to get an overview themself. Both programs provided extra help in different forms, both in text and videos. When wanting to get help, the user was sent to another site in both applications. There was no possibility to get the help in the same view as the application if it was not part of an assigned onboarding tour. This was not very pleasant for the user. A video overview where the user can skip to different parts of the video through markings in the timeline was very useful. When watching an overview of functionality, it was easy to move forward or go back to different video parts. In Fathom the user could get more information about what was shown in the graphs by clicking on the graphs. A pop-up showed the additional information and insights to how the graph was calculated.

4.2 Persona

4.2.1 Persona 1: Partner

Name: Thomas Eriksson
Work-title: Partner
Age: 50 years
Sex: Male
Salary: 65 000 sek/month
City: Stockholm
Quote: "It is important for me to help my clients and keep me updated with my work"
Biography: Grew up in Västerås in Sweden. Lives in a house with his two children and a wife. In the summer he likes to spend time in his cottage with his family or travel. In the winter he likes to go on skiing-trips. He is very social and loves hanging out with friends and family. He has a big social-network, he socialites with clients even on his spare time.
Motivations at work: Help clients, value relationships, deliver in time, keep himself updated about news that affects clients/work.
Tech skills: Not good with computers. Used to the systems that exists at the moment, the ones he have worked with for some time. Learns new technology slowly and is reluctant to do so. Asks the Assistant Manager for help.
Social media channels: Facebook, Linkedin, Teams, DN/DI,Hemnet, Google, Snipping tools.
Programs used right now: Adobe Reader, PDF XCHANGE, Phone, word, excel, powerpoint, mail/outlook (tried most programs for work before becoming partner)
Brands: Apple phone, PC. Most auditor programs are only available on PC today.
Work-Experience: Started as auditor at the firm he is partner at, climbed positions, promoted 5-6 times, was chosen as partner based on very good and dedicated work. Owns a part of the firm. Trustworthy. Still have active clients.
Pain-points: Work-life balance, not enough time, a lot to do, deliver in time, are the clients happy? Are the employees at the firm happy? Does talent stay at the company?
Values/Fears with a new product for work: Trustworthy product, easy to use, reliable, shows right data, legal
Values/Fears work: Get everything done, fear of missing anything important when reviewing, that clients know something we do not, not asked clients the right questions
Work tasks: All contact with clients, bring in new clients, meetings with clients, ultimate responsibility for work, deliveries etc.
Typical day :
• Get in to work, morning meeting, get a cup of coffee, prepare the day
• Another meeting
• Consultant job
• Check what employees have done and how the work aligns with plan
• Call 3-4 clients with questions

• Book a meeting
• Lunch
• Meeting
• Prepare presentation/morning meeting for next day
•Collect insights from day
•Help clients: insights, advise,
•Invoice
•Time report
•Often: longer workday

4.2.2 Persona 2: Assistant manager

Name: Ayla Eliasson
Work-title: Assistant Manager
Age: 33 years
Sex: Female
Salary: 45 000 sek/month
City: Örebro
Quotes: "I have always too little time"
"I'm always worried I missed something important"
"It is important that a new program is of high quality and efficient. I'm responsible for work getting done and everything working according to plan."
Biography: Grew upp in Örebro, now lives there. Lives in apartment with her partner and toddler. Works out 3-4 times a week. Studied a semester abroad. Likes social events and hanging out with friends. Loves to travel and do activities. Sleeps bad from time to time, when it is a lot at work. Drinks a lot of coffee. Traditional middle management.
Motivations at work: Going forward, make a career, successful, optimistic, want everything to go as plan/ work smoothly, efficiency, everybody puts in their time and does the assigned work, competition, money, social.
Tech skills: High tech skills, appart of tech generation, keeps informed of the word through technology, would understand a product like Link right away, used a lot of other programs for analytics etc. likes new technology.
Social media channels:Facebook, LinkedIn, Youtube, Instagram, Snapchat, Teams, Outlook, DN/DI, Hemnet, google, Snipping tool, Avanza
Programs used right now: Adobe Reader, PDF XCHANGE, Phone, word, excel, powerpoint, mail/outlook , hoogia, visma eller Wolter kluwer, internetutvecklat verktyg (dokumentation/revisionsverktyg)
Brands: Apple phone, PC. Most auditor programs are only available on PC today.
Work-Experience: Always worked with auditor work since graduating, worked extra at a bank when studying, 2 promotions.
Pain-points: Work-life balance, not enough time, a lot to do at work and home, deliver

in time, make sure everybody else gets things done in time and also their own work, make sure the partners of the firm is happy, make sure the clients are happy, impress partners and clients,
Values/Fears with a new product for work: Efficient, get overview over work my own and the employees, be able to review and create work, easy to learn and get started (do not have time with learning something for a long time), have to work all the time, not show wrong data/needs to be high quality.
Typical day:
• Get in to work, checks mail, answers mail
• Check employees work and see if anything is wrong/need redoing.
• documents what is done and what needs to be done, is everything going according to plan?
• Work with their own tasks/clients
• Lunch
• Plan next task
• Mail clients if anything is missing
• Mail colleagues about tasks, structure/plan,
• Checks that things are done for future work,
• Qualification development
• Development talks with employees
• Work with tasks
• Time reporting
• Works a lot overtime
• Before corona, had to visit the clients office a lot/sit there and work

4.2.3 Persona 3: Assistant

Name: Anton Ståhl
Work-title: Assistent
Age: 26 years
Sex: Male
Salary: 24 000 sek/month
City: Luleå
Quotes: "I want to do a good work, not do anything wrong"
Biography: Grew upp in Luleå, lives in rented apartment, looking for an apartment to buy. Newly graduated.Likes nature and go to family cottage in Riksgränsen, to ski in winter and chill in summer. Lives alone, hangs with friends, go to gym. Motivated to work, nervous for his first work. High-performance, don't want to do something wrong.
Motivations at work: Get started with work, do a good job, get to know people at the firm, be liked, make a good impression at work, uncertain if this is the right line of work
Tech skills: Not used a lot of data analytic tools, no knowledge about technical processes in audit-work, no knowledge about programs for auditors, accountants etc, high knowledge

about communicative services lite social media and finding information, worked with drive and other shared environments, shared a lot of information online
Social media channels:Facebook, LinkedIn, Tinder, Instagram, Snapchat,Zoom, Gmail, Hemnet, google, Avanza, whatsup
Programs used right now: Adobe Reader, PDF XCHANGE, Phone, word, excel, mail (outlook), Hoogia, Visma eller Volter Kluwer
Brands: Apple phone, PC. Most auditor programs are only available on PC today
Work-Experience: Worked extra with book-keeping during studies, engaged in student life, this is the first employment after graduation
Pain-points: Am I doing everything as I should? Worry about doing something wrong, double checks everything, a lot of big/complex programs to learn, learn all important processes and way of work, learn working terms, hard to get feedback if I'm doing something right, do not want to be another/don't want to ask "stupid questions", want to be liked, handle failure, used to be high achieving, now everything is new
Values/Fears with a new product for work: Wants to find an efficient way to learn new things, not miss anything/do something wrong (wants help to prevent that)
Typical day:
• Work with task
• Competence development 2h webb-course
• Lunch
• Work with next assignment
• Time repport

4.2.4 Persona 4: Accounting consultant

Name: Marianne Stenborg
Work-title: Accounting consultant
Age: 45 years
Sex: Woman
Salary: 37 000 sek/month
City: Göteborg
Quotes: "I don't like changing when I'm done, I rather make it right from the beginning"
Biography: From a smaller town, moved to Göteborg. Lives in a house outside central Göteborg. Have to children, 15 and 17 years old. Married. Likes to go overseas for vacation. Takes a lot of walks with friends. Likes running exercises.
Motivations at work: Structured workflow, easy to change if something new comes up, wants to do everything right from the beginning, rather not change things in advance.
Tech skills: Low techskill, uses google a lot, no experience in short commando, don't like computers sees it as a working tool
Social media channels: Facebook, youtube, Linkedin, Instagram, snapchat, Whatsup, Teams, Outlook, Göteborgsposten, Googla, Avanza

Programs used right now:Telofon, word, excel, Mail (outlook), Fortnox, Visma Bookkeeping or Hogia bookkeeping, tools for banks (Swedbank, Handelsbanken etc.), Wolter Kluwers or Hogia for tax and financial statements.
Brands: Apple phone, PC. Most auditor programs are only available on PC today.
Work-Experience: Started of at an accounting consultant firm for 10 years, worked as finance manager at a company for 4 yers, works as accounting consultant again since 3 years back
Pain-points: Clients do not deliver information on time, fix client creative solutions, don't like working overtime
Values/Fears with a new product for work: Do not want to be replaced by a machine, worried about losing their job, do not want a high learning curve on a new technical solution
Typical day:
• Check mail, answer questions from clients
• Work with financial statements
• Gets questions from auditor
• Help a colleague
• Lunch
• Work with book-keeping
• Time report

4.2.5 Key points

Looking at the different personas we are able to see some key points that is similar and stands out as more important in regards of the onboarding process.

The first one is the fact that almost none of the personas have time over, they have a lot to do and the only on with assigned time to learn new things are the newly graduated persona. All others have a lot of tasks, have to work overtime to keep up with existing tasks, especially in the high season. So in an onboarding process it is essential to keep in mind that time and getting on to the new program is essential for the different personas/user-types.

Secondly, a lot of the personas already have experience in the field of data analytics, different tools like Hoogia and Visma or at least tools for bookkeeping. It is only the newly graduated persona that will have no experience of such programs since they dont learn them at their education at the university.

Third, everyone need a new solution to help them guarantee they are doing the right thing and understand that the numbers they see and work with are right. This puts pressuare on the onboarding process to help the user feel safe with the new program and trust what the program shows them. If not, it will be difficult for the user to feel at ease and reach value of the product.

4.3 Interview and user test on existing solution

There were three participants in the first set of interviews and user tests. One had worked in the auditor field since august 2020, one for two and a half years, and the last one for four years. The sessions took between one to one and a half hours. It was performed according to the method, and all participants had experience with more than one other data analytic tool.

All participants navigated reasonably quickly through the application and did not get stuck on any significant issues except for a couple of implementation errors known to Link.

4.3.1 Issues with UX/UI

All participants tried to click in the middle of the "Analysis" button in the top bar to get to the analysis overview. They had to try again and click on the small arrow beside the button to get to the dropdown with all the analysis options. One user got stuck for a long time, figuring out that they had to double click to get more information on the cells in the tables of different analyses. The others had to try only a few times. All users had big trouble finding where the colors of the graphs were shown connected to fiscal year, one did not find it at all, and the others had to search for a while. None of the participants seemed to check the validity of the file and if the data read in properly.

4.3.2 Time

It between 14-30 seconds for the users to create a company upon entering the dashboard. It took an average of 2.5 min from creating a company to having three fiscal years of data loaded into Link. In the end, it took about 3 min for the users to enter the program until they were ready to begin doing the analytic scenario of the test session.

4.3.3 Mindset

All users expressed happiness over the simplicity and how easy it was to navigate the solution. They did not seem to mind when they got stuck and back traced their actions to try to find the right one. It was evident that they had experience with try/error testing and were used to doing things repeatedly. All participants asked many questions about the meaning behind different wordings in the application, and the best way to read labels/where to find the information. All participants fell into a natural working role and started to perform the tasks in the scenario with ease. The participant who worked a little shorter in time had questions about if the tasks were performed correctly

4.4 User Flow for onboarding

The onboarding flow was created to visualize the framework, user journey, and essential onboarding elements for Link. The first part of the user flow shows how the user starts with an onboarding tour with three questions when entering the application for the first time, see figure 4.1. The questions, according to the user flow, the user are forced to answer are: "Their role", "Experience in data analysis" and "Select learning method." These questions were built upon the principle of persona-based onboarding. To make the users' experience as customized as possible, these were the questions that seemed the most relevant regarding the user journey, personas, and theory.

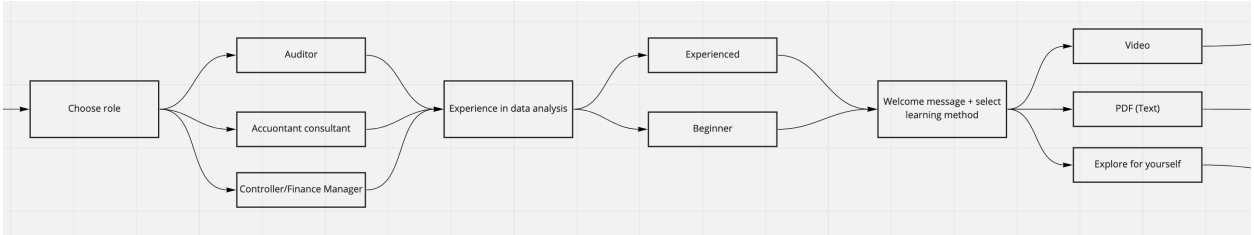

Figure 4.1: Screenshot from Miro Application - Part one of the user flow showing the onboarding tour (Miro 2021)

The second part of the user flow represents what happens depending on the user's choices in the onboarding tour, see figure 4.2. The idea is that if the user wants, they can be thrown into the application right away, but if they want a text or video introduction, they can view it first. If the user chooses a beginner to data analytics in the onboarding tour, the program should suggest a course for onboarding to data analytics. This is to include beginner users with no previous experience.

The third part of the onboarding flow represents the help the user can get within the application at any given time—a help box with multiple options, see figure 4.3. The options included in this part are a result of the heuristic evaluations and the different UI patterns that fitted the Link application.

The fourth part of the onboarding flow shows the different events that happen when a user picks different options for help, see figure 4.4. This is a result of the heuristic evaluation and the need to see some information within the same view.

The fifth part of the onboarding flow shows the most critical parts of the Link application to learn as a user, not just to gain insights about data but also the full functionality that is important for the user to reach value, see figure 4.5.

In figure 4.6 the analysis of needed empty spaces is shown. The empty spaces should help the user see what can be done and guide them to reach value.

Figure 4.7 shows how the onboarding should be in every single analysis. As a result of the user test/interviews and the heuristic evaluation, it was evident that every analysis needed possibilities for deeper insights.

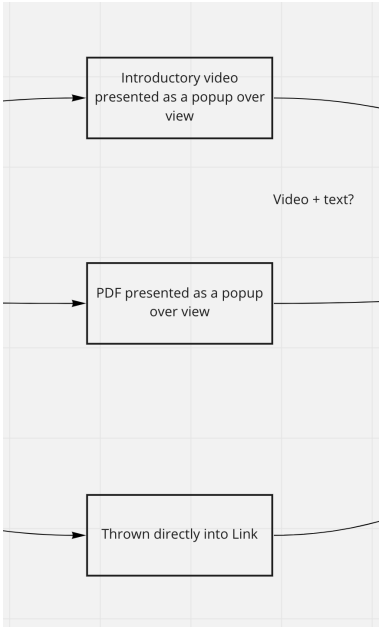

Figure 4.2: Screenshot from Miro Application - Part two of the user flow showing the result of the onboarding tour (Miro 2021)

4.5 Online Survey

4.5.1 Survey 1: For accountants

A total of 11 participants. Most participants had around 4.5 years work experience, 6 st. The other had 7+, 0.8 to 2.5 years of work experience in the field, see figure 4.9. 91 percent answered that they use analytic tools a lot, 9 percent answered a little. None of the participants answered almost none or never, see figure 4.10. This was reflected in the next question "How long have you used analysis tools (eg Visma Analysis, Hogia Transaction Analysis, WK Transaction Analysis or Business Intelligence tools) in your professional role?". 64 percent answered 2-5 years, none answered never, see figure 4.10. It is clear from the results that data analytic tools are a part of their everyday work and something they use a lot.

On the question how much time they would like the spend learning a new tool an avarage, no one answered that they would spend no time. 64 percent answered one day, 9 percent answered 1-2 hours, 9 percent answered a few days and 18 percent answered a couple of weeks, see figure 4.11.

On the question "Which learning method do you prefer when learning a new program?" all options except "Read a descriptive text" had votes. 36 percent answered that they prefered guides directly in the program that step by step went through the functionality, the other options got between 27 and 18 percent, see figure 4.12. It seems like what learning method one prefers are personal.

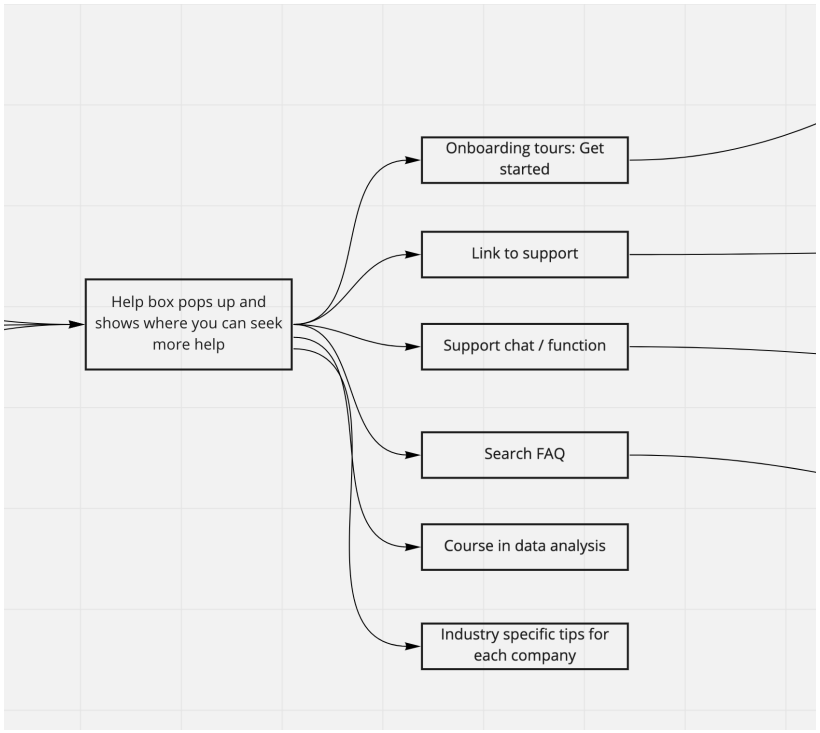

Figure 4.3: Screenshot from Miro Application - Part three of the user flow showing the help options for the user within the program (Miro 2021)

On the question about chatting with someone in the program, there were mixed answers. 36 percent said yes, they would often use it, and 27 percent answered no, the would rather seek the answers themselves, see figure 4.13. 36 percent answered that they could not imagine how it would work.

4.5.2 Survey 2: For working adults

A total of 65 participants. The ones that did not fill in a proper work as occupation was removed and 52 participants remained. The majority of participants removed had filled occupation as students with no extra work. On the question "How much time on average would you like to spend learning a whole new program if it helped you streamline your work?", 37 percent answered one day, 31 percent a few days, 15 percent a couple of weeks and 17 percent 1-2 hours, see figure 4.15. No one answered that they would put in no time. A total of 46 percent said they could put in more than one day to learn a program that helped them streamline their work.

On the question "How do you prefer to take in new information when you are learning a new program/website on a computer?" 45 percent answered a combination of all the options. The other options varied between 9-17 percent, see figure 4.16.

On the question "If you were to start using a new program, would you like to have a

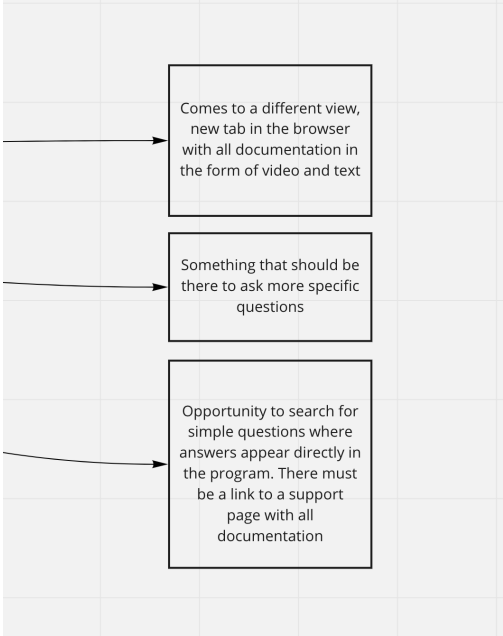

Figure 4.4: Screenshot from Miro Application - Part four of the user flow showing the onboarding tour (Miro 2021)

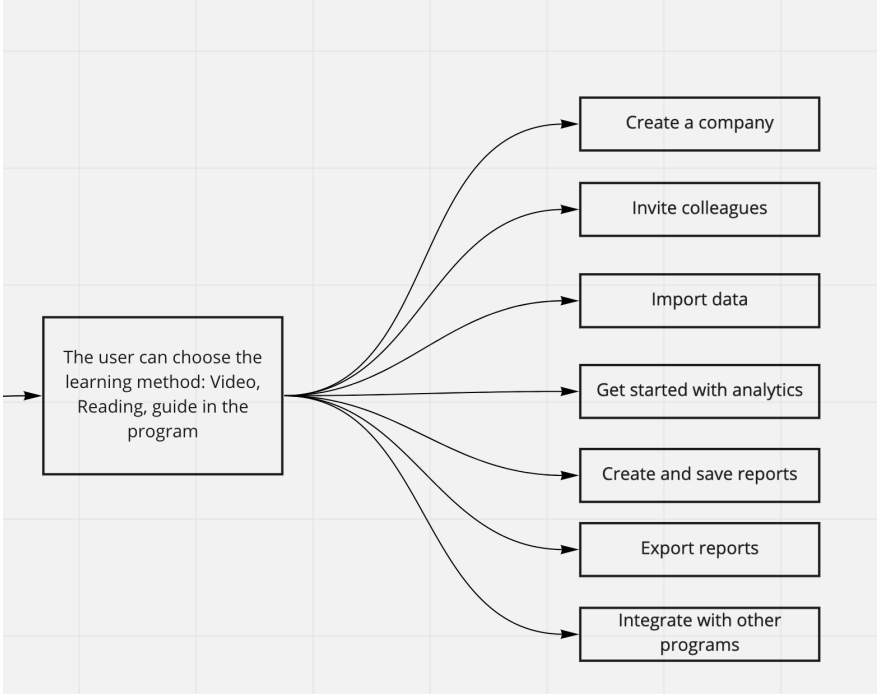

Figure 4.5: Screenshot from Miro Application - Part five of the user flow showing the most important functionality to be onboarded to in Link (Miro 2021)

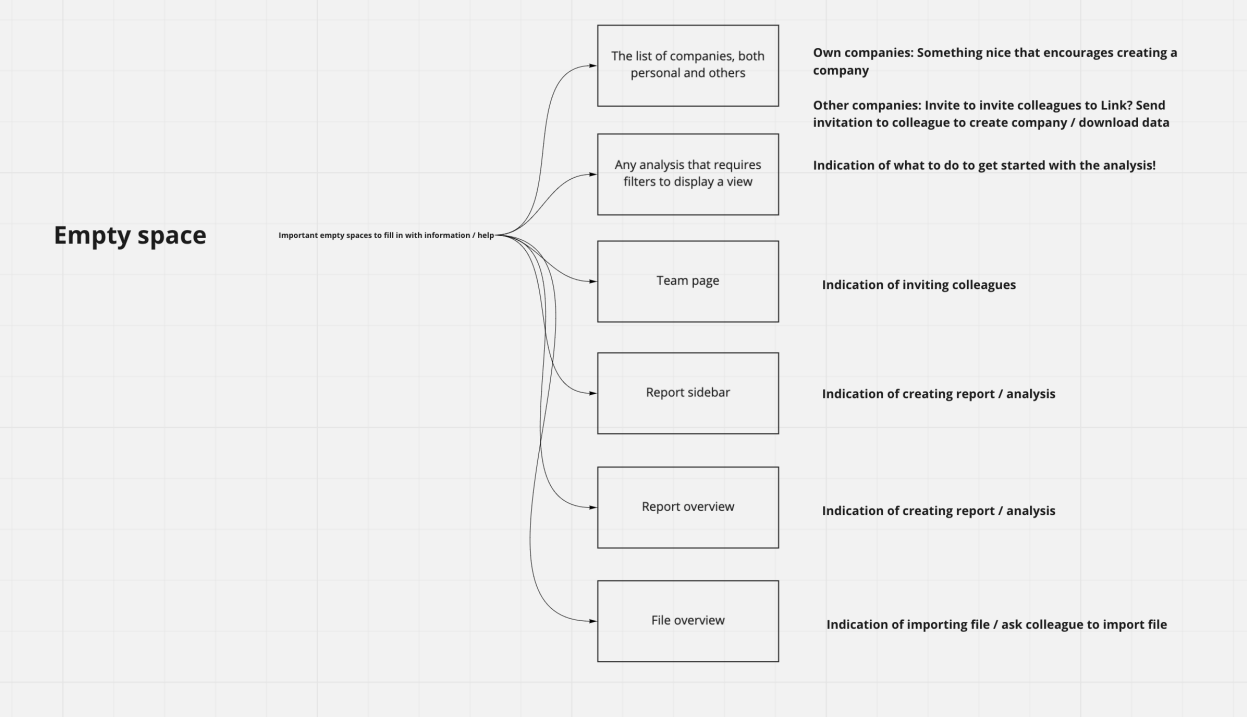

Figure 4.6: Screenshot from Miro Application - Suggestion for Empty spaces (Miro 2021)

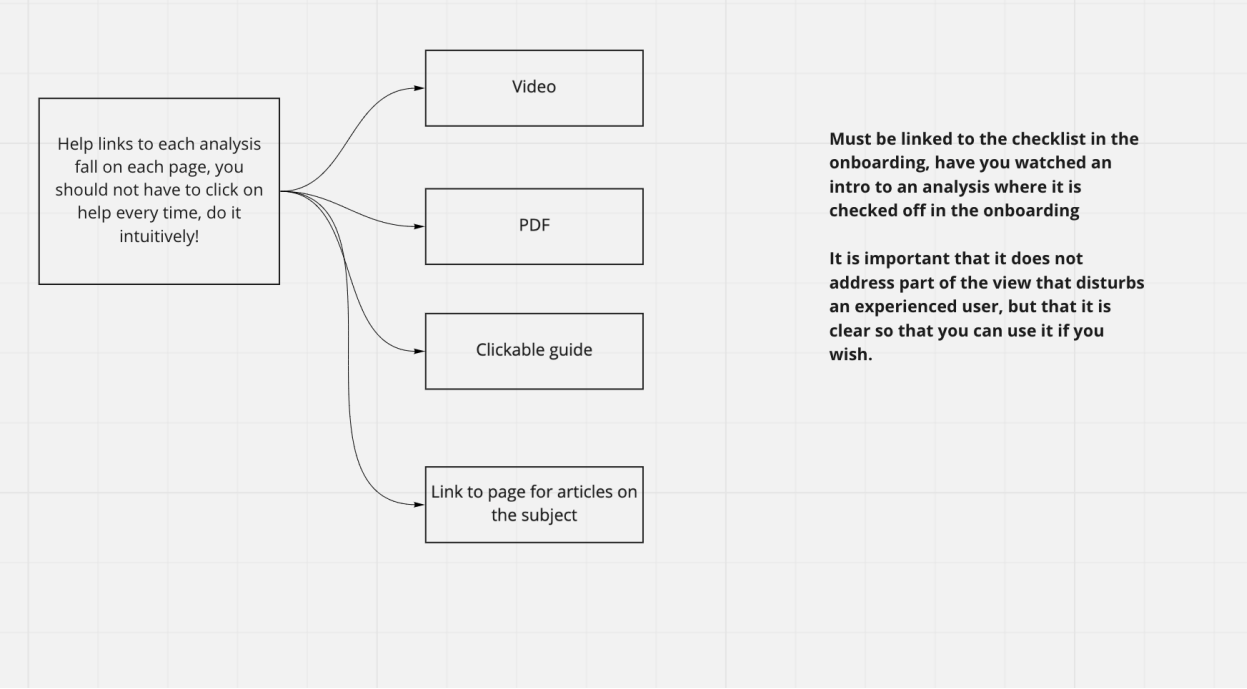

Figure 4.7: Screenshot from Miro Application - User flow for analysis (Miro 2021)

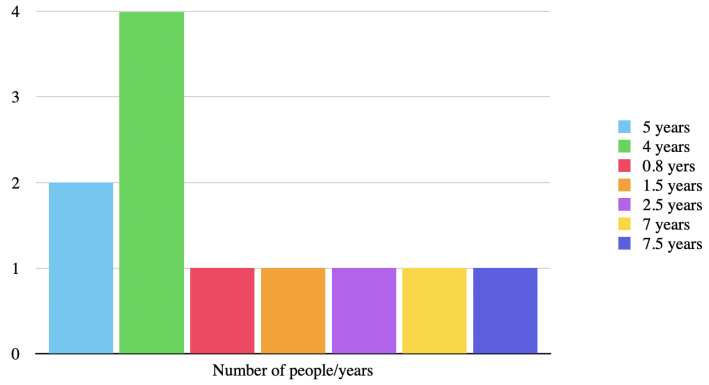

Figure 4.8: Survey 1: How long have you been working with auditing?

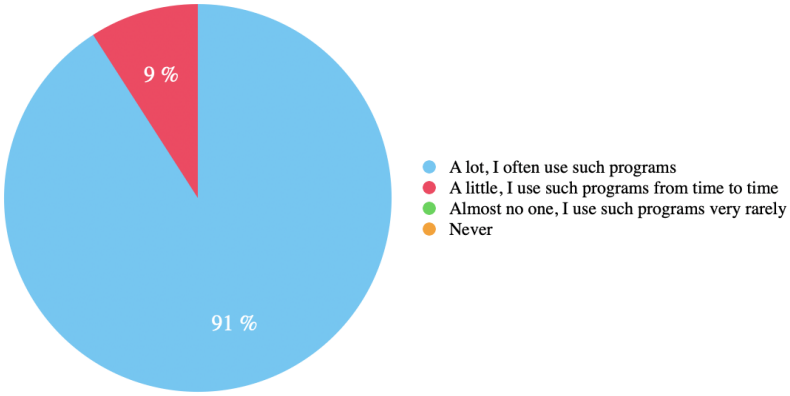

Figure 4.9: Survey 1: What experience do you have with analytic tools (for example Visma Analysis, Hogia Transaction Analysis, WK Transaction Analysis or Business Intelligence tools) ?

half-day intro course with your colleagues where the program is explained by a person and you have the opportunity to ask questions?" 75 percent answered yes, see figure 4.17.

On the question "What would be most important for you to get started on as soon as possible in a new program at your workplace?" 75 percent answered they wanted to learn the functions in the order that is relevant to what i want to achieve in my professional role, see figure 4.18.

On the question "If there was an opportunity to chat with someone directly in the view in a new program to ask questions, would you use it?" 46 percent answered yes often, 25 percent no and 29 percent that they had a hard time picturing how it would work, see figure 4.19.

On the question "How often do you privately complete a tutorial / onboarding, ie. learning process when you learn a new program / website on your computer?" 63 percent answered

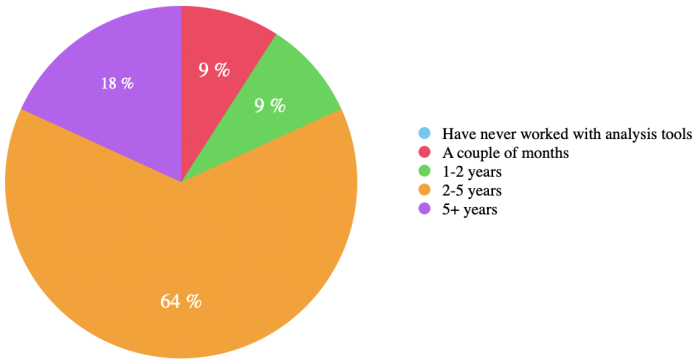

Figure 4.10: Survey 1: How long have you used analysis tools (eg Visma Analysis, Hogia Transaction Analysis, WK Transaction Analysis or Business Intelligence tools) in your professional role?

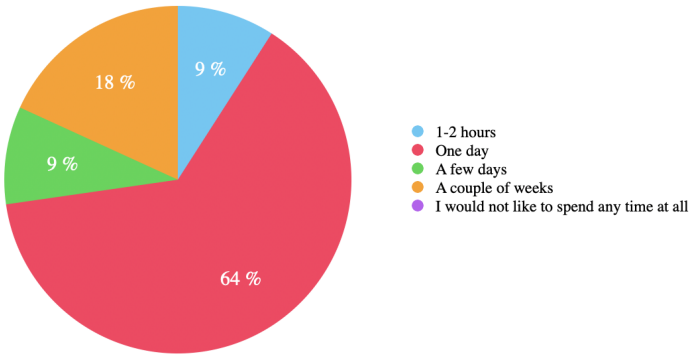

Figure 4.11: Survey 1: How much time on average would you like to spend learning a whole new data analytic program if it helped you streamline your work?

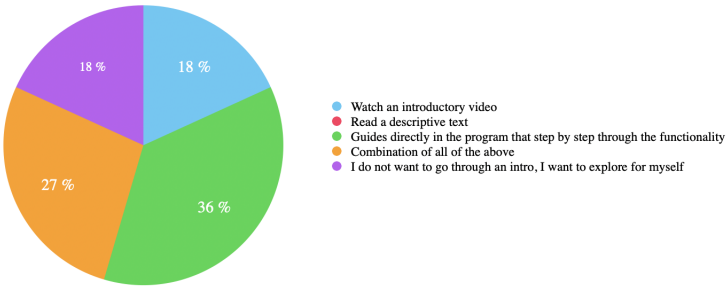

Figure 4.12: Survey 1: Which learning method do you prefer when learning a new program?

sometimes, 10 percent always and 27 percent never, see figure 4.20. On the question about same thing but for work, 58 percent answered sometimes, 25 percent always and 17 percent

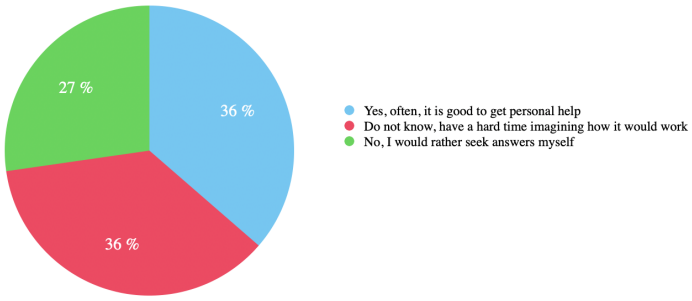

Figure 4.13: Survey 1: If there was an opportunity to chat with someone directly in the view in a new program to ask questions, would you use it?

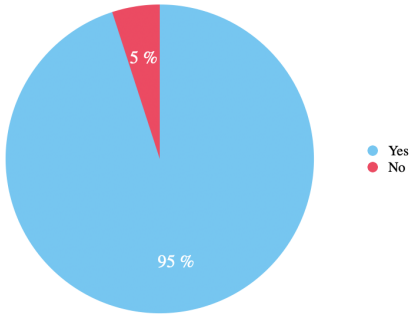

Figure 4.14: Survey 1: If you were to start using a new program, would you like to have a half-day intro course with your colleagues where the program is explained by a person and you have the opportunity to ask questions?

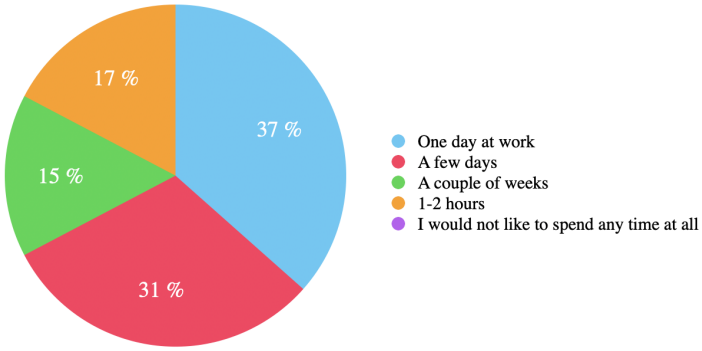

Figure 4.15: Survey 2: How much time on average would you like to spend learning a whole new program if it helped you streamline your work?

never, see figure 4.21. This results suggest that its more likely that a person completes a tutorial/onboarding to a new program at work than privatly.

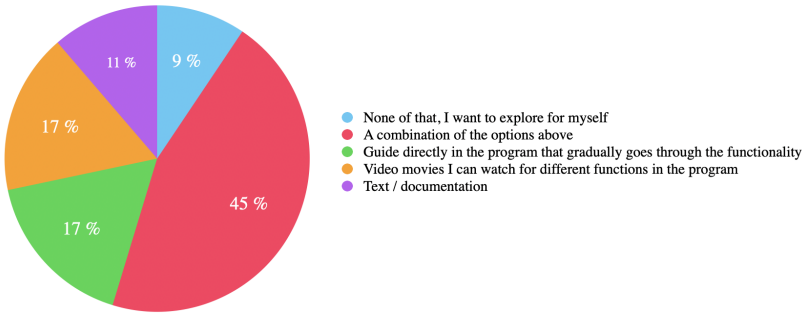

Figure 4.16: Survey 2: How do you prefer to take in new information when you are learning a new program/website on a computer?

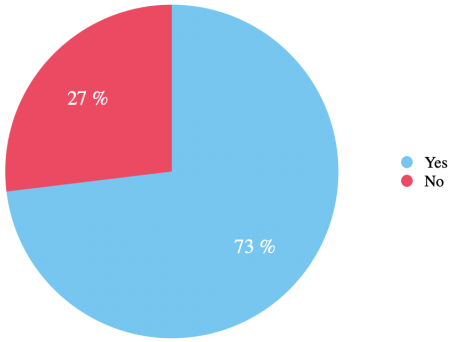

Figure 4.17: Survey 2: If you were to start using a new program, would you like to have a half-day intro course with your colleagues where the program is explained by a person and you have the opportunity to ask questions?

4.6 Lo-fi and Hi Prototype

The Lo-fi and Hi-fi prototype were succesfully build in figma and React JS. Pictures of all the views in the prototypes are presented in the appendix.

4.7 Interview/usertest: Simple onboarding prototype

There were four participants in the second set of interviews and user tests. The sessions took about one hour. It was performed according to the method, and all participants had experience with more than one other data analytic tool.

This session was different from the first one since it was more of an interview and questions within the user test. The user also had to follow specific tasks in the onboarding given in the scenario. All participants clicked quickly through the three forced onboarding steps, and everyone was positive towards them. When asked, all participants felt that the questions

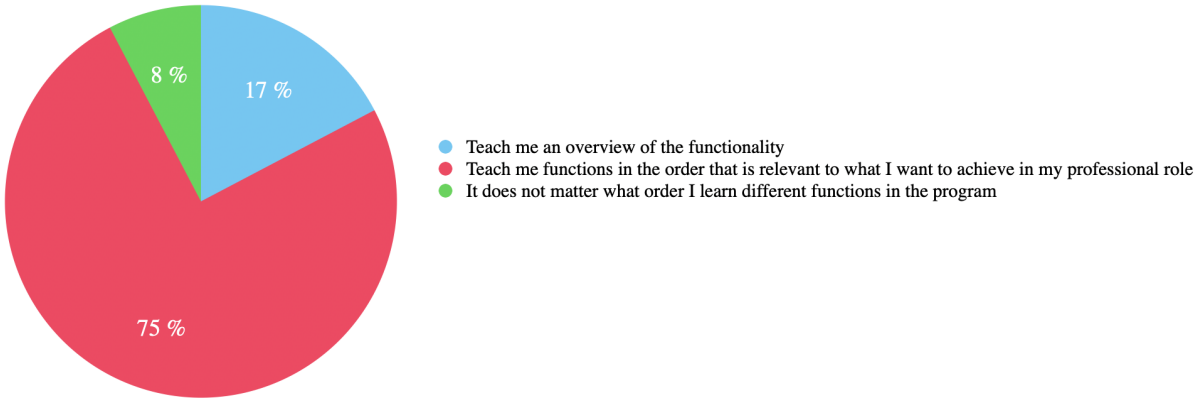

Figure 4.18: Survey 2: What would be most important for you to get started on as soon as possible in a new program at your workplace?

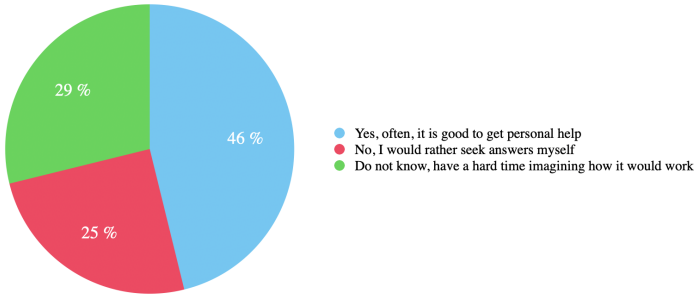

Figure 4.19: Survey 2: If there was an opportunity to chat with someone directly in the view in a new program to ask questions, would you use it?

seemed practical, and they thought it changed what kind of help/analyses were available in the program.

4.7.1 Issues with UX/UI

All users still had trouble getting the double click in the cells of the tables. All users found the colors of the graphs quickly to connect it to fiscal years, and no questions were raised about that. None of the users understood how they minimized the help popup. Furthermore, three of the users had problems with the size of the screen. The components in Link seemed to take up a lot more space, and it turned into a problem since it covered most of the page and made it hard to get an overview.

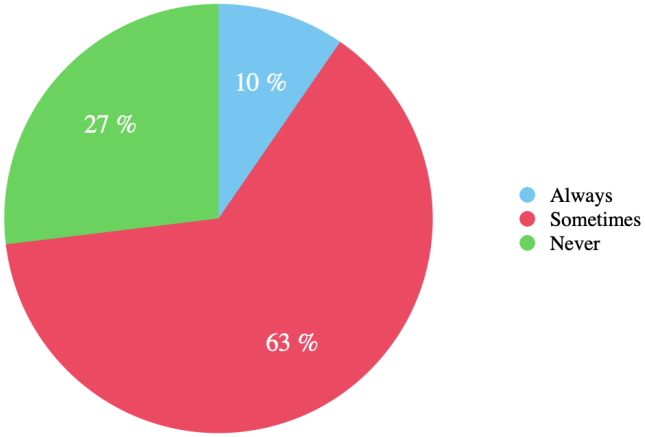

Figure 4.20: Survey 2: How often do you privately complete a tutorial / onboarding, ie. learning process when you learn a new program / website on your computer?

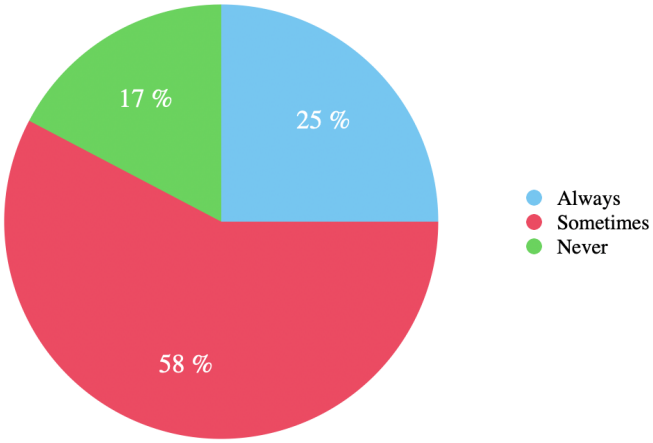

Figure 4.21: Survey 2: How often do you complete a tutorial / onboarding in your professional role, ie. learning process when you learn a new program / website on your computer?

4.7.2 Time

It was harder to measure time in this session since interview questions were vowed into the user test. However, it was apparent that loading data took a lot longer, minutes longer than in the first sessions since the users had to go through the onboarding steps as part of the tasks in the user test. The time for uploading a company was the same as the first session.

4.7.3 Mindset

Some participants voiced concerns about not being able to remember everything from the second onboarding tour. One also voiced concern about taking in all the information as a beginner user. Everyone thought it was relevant information but maybe not as part of the first tour. Maybe it could be available later in the process?

Chapter 5

Discussion

5.1 User tests and interviews

The first round of user interviews and user testing was handy to create a picture of how the user moved around and worked in the existing solutions. It became clear that the current UX/UI design of Link and its similarities to other solutions helped the user feel familiar and made it easier to use for a new user. The study shows that this is an essential part of onboarding to a new solution since the participants in session one had no previous knowledge about Link and still easily got into an everyday workflow since they felt "at home".

In this thesis, only users with previous experience with data analytic tools and some work experience were tested. It would be interesting to in the future perform a similar test for beginners with no experience in data analytics and beginners to the auditor work field and see what kind of help they need to get started with the program and get started with analytic work. However, because of the time limit, only experienced users were included in the sessions.

The second test session was performed to test a new onboarding UI based on the user flow and UI patterns for onboarding to see what kind of steps could/should be included. Because of the need for the user to feel that the data they work with is correct and prevent errors in the analytics, the part tested in this session was the loading and checking data. Because time was running out, there was no possibility to test the analysis and the onboarding UI connected to that nevertheless, since it was evident throughout this thesis, especially if looking at the personas, that the solution auditors work in needs to show the correct data. Because of this, the step of verifying data was an essential part of making sure the user got the value of the data analytics tool.

A big issue that was solved with the new user experience added in the mid-fi in this thesis was the problem with the graphs and connecting data to the colors. In the beginning, the first test session, the markers for the colors of the graphs were placed pretty far from the graphs themselves in the filter section. In the new suggested design, the markers were moved right beside the graph in every container in the analysis dashboard where a graph was placed. In the second test session, no one had a problem connecting the colors to the

right fiscal year.

In the user interviews in both sessions, the participants were asked about what they wanted to learn first in a new solution like Link to get started with their everyday work. Almost all participants in both sessions answered: understanding the analysis.

Overall, all participants were very positive and did not seem to mind small errors or to backtrack their actions. This could result from the fact that the solutions they work in at the moment are hard to understand, and much work has to be re-done repeatedly and over and double-checked. It was evident in the first session where the users changed to account plan for the program. All of them double-checked that the change did happen in the rest of the program to see if they did it right and if the program worked it should.

The sessions showed that when adding the onboarding tour to the loading data process, it took a lot more time for the user to finish. This shows that a good user experience can complement and a part of the onboarding to reaching value. And sometimes an added onboarding tour can create problems for the user.

There were three participants in the first session and four in the last. Norman suggests five for finding most user errors (Nielsen 1994) , but it was hard to find participants that had the time for two sessions. The sessions were long and very deep. The participants had the opportunity to voice any issues and thoughts, and they had to go through much functionality. Together with the other theoretical work, personas, and other tests in this thesis, the test sessions provided a good base and good insight into evaluating and creating the user flow for onboarding to a data analytics tool.

5.2 Visual representation of data

Visualization of information was often associated with data analytics tools in the literature study for this thesis (Spence 2014, Foundation 2020). Since it seemed to have such an important impact on how the user gained insight into data and reached value it seemed important to mention and have in mind developing this user flow. In Link, every analysis consists of a lot of data that have to be consumed by the auditor in a way so they can gain insights and do their work. Information visualization plays a big part in this (Spence 2014, Foundation 2020). In this thesis, no specific test or element was designed to test this. But it still feels worth mentioning since the user test sessions showed that a lot of the participants repeatedly praised the graphs showing an overview of the data to gain insight and overview on what to look at and dive into. For a user to reach value from data analytic tools, all the onboarding and tours in the world can not give the same fast aha-moment of reaching value as a graph that in a good way leads the one performing the analysis to an insight about their work.

In my opinion, based on the literature study and the user test, information visualization is an intuitive way to onboard users to insights that can not be easily retrieved from a table of numbers and onboarding tours. That is why I find Information Visualization an essential part of the onboarding process to complex data analytic tool. The analysis itself is a process of onboarding the user to insights about the data it analyses and quick conclusions about

what the users see. Information visualization is an important tool for quickly presenting value to the user in a data analytic tool.

5.3 User flow

Two user flows were created in this thesis. One initial user flows based on the theories in the literature study, personas, the first test session, and one user flow (the final user flow) based on the survey and the results from the second session. It was hard creating the user flows even with all the theoretical basis in this study. The goal of the user flow was to make the user reach value as soon as possible to feel that Link gives them something and helps them (Spence 2014, Foundation 2020). The purpose of Link is to help auditors gain insights they cannot gain intuitively in today's solutions. It is important to remember that the user flow presented as the "final user flow" in this thesis is not the same as the final solution for the onboarding to Link or any data analytic tool. As a lot of the theory suggests and the principles behind the design process, the user flow has to be iterated and remade many more times. But the user flow and the insights about it in this thesis create a good knowledge base of what challenges are faced with in the onboarding process, what parts are essential, how users react to different onboarding tours, how they behave when facing an onboarding UI.

The most important information about the user flow gained in this thesis was that some onboarding tours meant to help the user made it harder for them, at least more complicated, than just good design. If it is easy to find the button for downloading data and its design is intuitive and easy to understand, the user does not need instructions. Furthermore, if one thinks about it, it is evident, the definition of good user experience design is that the user does not need instructions since the GUI should be designed for the user to understand. They should know what to do right away. In my opinion, this creates an interesting overlap of onboarding and user experience and how they work together. Can the user experience part be excluded from the onboarding process? Reading different articles and frameworks, the EMBED framework (Kelsey 2018) and the bowling alley framework (Bush 2019), even the result from the heuristic evaluation in this study laid focus on the information provided by the onboarding process and flow, not what was gained from the GUI. This is closely related to the previous discussion about the importance of information visualization in an onboarding process to a data analytic tool.

5.4 Online survey

In the online survey for auditors, there were only 11 participants, and it is a bit too few to make any well-based conclusions about the result (Wright 2018). However, it could be used as a base for viewing a trend. Together with the other survey, with 52 valid participants, we can conclude what working adult's relationship/view on onboarding in general. No participants, in any survey, answered they "I would not like to spend any time at all" on the question of

how much time they were prepared to put into learning a new program at work/to streamline their work. Most participants answered they would put in one day or more, which shows a big interest in learning a new program. It was also clear, in both surveys, that the participants preferred to reach value related to working fast when using a new tool at work. It was also interesting to see the diversity in answers regarding how different participants wanted to take in information about a new program, suggesting multiple options should be available.

5.5 Reliability and validity

The validity of the conclusions from the interviews and tests in the first iteration can be considered high. This is since the interviews were extensive and deep – 1-1,5 hours for each participant, the interview questions and test scenarios were developed in cooperation with a senior domain expert, the participants were potential real users matching the identified personas and the test scenarios represented real work situations.

The results from the first interviews and tests were used to create a low-fi prototype of an on-boarding user flow. The design of the low-fi prototype was based on theories and methods how to map existing solutions and pinpoint the important parts and flaws for an on-boarding process. This ensures that the low-fi prototype reliably represents a relevant first design approach of an on-boarding flow.

The low-fi prototype was evaluated by a second iteration of interviews and tests. In addition, a survey was made to get answers on important questions identified during the first iteration. The interviews, the tests, and the survey in the second iteration were not extensive enough to guarantee high validity of any conclusions regarding a final solution of an on-boarding flow in the product. However, it provided useful information about flaws and benefits that will be valuable when making decisions about the next steps in the design of the on-boarding solution.

Chapter 6

Conclusion

A user flow for the entire Link application, analyses, and empty spaces was created. The UI pattern to create the user flow was built into a lo-fi prototype and a hi-fi prototype. User tests showed that the flow helped them, and they liked the UI pattern chosen with the Bowling Alley and EMBED framework. However, to build an efficient onboarding flow for a complex Saas solution for data analytics, the balance between onboarding and user experience is essential. Adding parts to the onboarding that the user easily can find themself with good user experience slows the user down. For example, it took longer for users to find import data with onboarding tours than without.

Information visualization is of great importance for the user experience and onboarding since it helps the user gain insights faster. Although it was no time to evaluate the graphs and table further in this project, the literature study showed its importance regarding onboarding to a data analytic tool.

The surveys conducted in this thesis helped review the onboarding flow and showed that people are prepared to put in the time to learn a tool that helps them streamline their work. Most participants voted for one day or more, and none voted for "no time at all."

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Appendix A

Appendix - Survey, Interview and tests

A.1 User interview/test 1

A.1.1 Intro

Hej! Jag vill börja med att säga tack så mycket för att du tar dig tid att medverka på det här användarundersökning och intervjun!

Jag heter Hedvig och studerar sista året på Civilingengörsprogrammet Interaktion och design. Jag skriver just nu mitt examensarbete tillsammans med Senseworks för att utveckla deras produkt Link. Ämnet jag undersöker är hur man bäst onboardar en person på ett program med komplex dataanalys.

Begreppet "onboarding" innebär hur en ny användare på ett bra sätt guidas att förstå och på ett enkelt sätt lära sig att använda en ny programvara. Studien jag gör går sammanfattningsvis ut på att komma fram till hur man så fort som möjligt kan få en ny användare att förstå vad en produkt gör och hur produkten ska användas.

Just nu så finns det inte någon särskild modell för onboarding till Link, men det ska vi ändra på!

Jag vill även att du ska veta att det är helt frivillig att delta och du kan när som helst avsluta testet om du skulle vilja det. Jag vill även förtydliga att det inte är dig vi testar, utan produkten Link, och alla dina åsikter och insikter är av stor relevans för att vi ska kunna göra ett bra arbete.

All personlig information som samlas in under undersökningen behandlas anonymt och resultatet av testet/intervjun kommer inte gå att koppla till dig.

Under delen av undersökningen/intervjun du klickar på skärmen så skulle vi vilja spela in skärmen, är det okej med dig?

Har du några andra frågor?

A.1.2 Intro Questions

• Berätta gärna lite om dig och vilken roll du har på din arbetsplats?
  • Hur länge har du jobbat inom branschen?
  • Vilka data analysverktyg har du erfarenhet av?
  • Hur upplever du att de programmen du använder idag stöttar dig för att nå programmets fulla potential?

A.1.3 Scenario

Du kommer att bli tilldelad ett scenario med ett antal punkter som du ska försöka utföra. När du utför punktera får du gärna högt berätta hur dina tankar går, om du tycker något är irriterande, samt skulle önska att det fanns hjälp att tillgå, svårt att hitta etc.. Vi kommer att finnas tillgängliga för frågor om du fastnar men försök lösa uppgiften själv.
Nu börjar vi spela in skärmen är det okej?

Scenario: Vi låtsas att året är 2014.

En kollega som är påskrivande har tagit in en ny kund och du har blivit inplanerad på uppdraget. Ni kommer träffa kunden senare och påskrivande har bett dig titta igenom siffrorna översiktligt. Påskrivande vill att ni på uppdraget ska testa Link som analysverktyg för huvudbok och har mejlat över instruktioner för hur du kommer igång samt vad denne vill att du tittar på i Link.

Instruktion (mailas ut till testare):
Logga in på app25.linkvisualizer.com med inlogg:
Användarnamn: xxxxx
Lösenord: xxxxx

2. Skapa ett nytt företag i programmet

Företagsnamn: Skogsmaskiner AB
Org-id: 121212-1212

3. Ladda upp SIE-filerna för rå. 2012, 2013, 2014.

4. Nu är det dags att utföra uppdraget du fått av din kollega.

A.1.4 Examples of questions for last part

• Hur tycker du det gick att utföra uppgiften?
• Vilken övrig hjälp än den du fick hade du önskat i programmet?

• Var det något som var svårt att förstå hur det fungerade i programmet?
• Om du skulle börja arbeta i det här programmet som ny användare, vad är det som är viktigast att du så snabbt som möjligt lär dig att göra/får hjälp med?
• Video, skulle det vara något du tar dig tid att titta på?
• Vad skulle filmerna innehålla, struktur, ordning?
• Sammanfattningsvis, är du villig på att lägga tid på att lära dig programmet, special features m.m.?

A.2 User interview/test 2

A.2.1 Intro

Hej! Jag vill börja med att säga tack så mycket för att du tar dig tid att medverka på det här användarundersökning och intervjun!

Jag heter Hedvig och studerar sista året på Civilingengörsprogrammet Interaktion och design. Jag skriver just nu mitt examensarbete tillsammans med Senseworks för att utveckla deras produkt Link. Ämnet jag undersöker är hur man bäst onboardar en person på ett program med komplex dataanalys.

Begreppet ”onboarding” innebär hur en ny användare på ett bra sätt guidas att förstå och på ett enkelt sätt lära sig att använda en ny programvara. Studien jag gör går sammanfattningsvis ut på att komma fram till hur man så fort som möjligt kan få en ny användare att förstå vad en produkt gör och hur produkten ska användas.
Jag har jobbat med att bygga upp en modell för onboarding nu under våren och skulle nu vilja utvärdera den och se om den kan förbättras ytterligare.
Jag vill även att du ska veta att det är helt frivillig att delta och du kan när som helst avsluta testet om du skulle vilja det. Jag vill även förtydliga att det inte är dig vi testar, utan produkten Link, och alla dina åsikter och insikter är av stor relevans för att vi ska kunna göra ett bra arbete.
All personlig information som samlas in under undersökningen behandlas anonymt och resultatet av testet/intervjun kommer inte gå att koppla till dig.
Under delen av undersökningen/intervjun du klickar på skärmen så skulle vi vilja spela in skärmen, är det okej med dig?
Har du några andra frågor?

A.2.2 Questions

• Berätta gärna lite om dig och vilken roll du har på din arbetsplats?

• Hur länge har du jobbat inom branschen?

• Vilka data analysverktyg har du erfarenhet av?

• Hur upplever du att de programmen du använder idag stöttar dig för att nå programmets fulla potential?

A.2.3 Scenario

Du kommer att bli tilldelad ett scenario med ett antal punkter som du ska försöka utföra. När du utför punktera får du gärna högt berätta hur dina tankar går, om du tycker något är irriterande, samt skulle önska att det fanns hjälp att tillgå, svårt att hitta etc.. Vi kommer att finnas tillgängliga för frågor om du fastnar men försök lösa uppgiften själv. Jag vill påpeka att det du nu testar är en beta-version av on-boardingen eftersom den är under uppbyggnad.

Vi kommer alldeles strax dela med oss av några filer och ett scenario, har du några frågor innan vi fortsätter?

Sätt på presentations mode i Google meets. Nu börjar vi spela in skärmen är det okej?

Scenario
1. Logga in på test.linkobs.com med inlogg:
Användarnamn: xxx
Lösenord: xxx

2. Genomför den inledande touren och reflektera sedan över;
• Var det relevanta frågor för dig?
• Tyckte du det var för få/för många frågor?

3. Nu är du inne i Link, vad är ditt först intryck av det du ser?

4. Skapa ditt första företag i programmet:
Företagsnamn: Bolaget AB
Org-id: 141414-1414

5. Nu är det dags att komma igång med Link, gå till ”Kom igång med Link” i hjälp menyn och följ guiden för att ladda upp SIE filer.

Ladda upp SIE-filerna: 2019, 2018, 2017

6. Nästa steg är att Kontrollera att de inlästa filerna stämmer!

7. Vad tyckte du om de olika guiderna? Var det relevant information? Något du saknar?

8. Gå in på Periodanalys och analysera kontogruppen 'Råvaror och förnödenheter' mot tidigare år:

Analysera kontogruppen 'Råvaror och förnödenheter' mot tidigare år.
Identifiera vilka konton som utgör april 2019:s höga kostnader

9. Om du går tillbaka till hjälprutan och läser igenom de olika alternativen för hjälp, vilka tankar har du kring det?

A.3 Survey 1 - Auditors

A.3.1 Intro

Hej!Vi utvecklar ett analysverktyg för revisorer och rådgivare. Programmet heter Link (info @ www.linkvisualizer.com) och finns i en första version. För att nu hjälpa framtida användare att komma in i programmet på så bra sätt som möjligt - lära sig funktioner och vad du som användare kan få ut - gör vi en enkätundersökning där vi just frågar hur vi bäst kan hjälpa nya användare.

Vi uppskattar att du tar dig tid att svara på följande frågor. Det spelar ingen roll om du har erfarenhet av dataanalys/analysverktyg sedan tidigare eller inte. Undersökningen är riktad till revisorer.

Det är frivilligt att delta i enkäten och svaren är helt anonyma.

A.3.2 Questions

1. Ålder?
18-29, 30-39, 40-49, 50+

2.Kön?
Man, Kvinna, Annat

3. Hur länge har du jobbat med revision?

4. Vilken roll har du på arbetsplatsen?

5.Vilken erfarenhet har du av program för analysverktyg (exempelvis Visma Analys, Hogia Transaktionsanalys, WK Transaktionsanalys eller Business Intelligence-verktyg) har du sedan tidigare?
Mycket, jag använder ofta sådana program, Lite, jag använder sådana program då och då, Nästan ingen, jag använder sådana program väldigt sällan, Aldrig

6.Hur lång tid har du använt analysverktyg (exempelvis Visma Analys, Hogia Transaktionsanalys, WK Transaktionsanalys eller Business Intelligence-verktyg) i din yrkesroll?
Har inte jobbat med analysverktyg seda tidigare, Några månader, 1-2 år, 2-5 år, 5 + år

7. Hur mycket tid i snitt skulle du tänkta dig att lägga ned för att lära dig ett helt nytt program för dataanalys ifall det hjälpte dig effektivisera ditt arbete?
1-2 timmar, En arbetsdag, Några dagar, Någon vecka, Jag skulle inte vilja lägga någon tid alls

8. Vilken inlärningsmetod föredrar du när du lär dig ett nytt program:
Titta på en introduktionsvideo, Läsa en beskrivande text, Guider direkt i programmet som stegvis går igenom funktionaliteten, Kombination av allt ovan, Jag vill inte gå igenom en intro, jag vill utforska själv

9. Om du skulle byta till ett nytt program för att analysera data, vad är det viktigast för dig att du kommer igång med så fort som möjligt?

10.Om det fanns en möjlighet att chatta med någon direkt i vyn i ett nytt program för att ställa frågor, skulle du använda det?
Ja, ofta, det är bra att få personlig hjälp, Vet inte, har svårt att föreställa mig hur det skulle fungera, Nej, jag vill hellre söka svar själv

11. Om du skulle börja använda ett nytt program, skulle du vilja ha en halvdags introkurs med dina kollegor där programmet gås igenom av en person och du har möjlighet att ställa frågor:
Ja, Nej

A.4 Survey 2 - Working adults

A.4.1 Intro

Hej! Jag heter Hedvig Björklund och läser till Civilingenjör: Interaktion och Design vid Umeå universitet. Jag skriver just nu mitt examensarbete där jag tillsammans med ett företag undersöker hur man bäst lär sig använda ett helt nytt analysverktyg i sin yrkesroll. Det spelar ingen roll om du arbetar med just analys eller vilket yrke du har, undersökningen går ut på att ta reda på hur människor bäst lär sig ett nytt program på arbetsplatsen. Om

du har tid över får du gärna svara på följande frågor.

Undersökningen är anonym och frivillig, du kan när som helst avsluta. Den tar ca 3 min att fullfölja.

A.4.2 Questions

1. Ålder?
18-29, 30-39, 40-49, 50+

2.Kön?
Man, Kvinna, Annat

3.Vad arbetar du med?

4. Hur mycket tid i snitt skulle du tänkta dig att lägga ned för att lära dig ett helt nytt program ifall det hjälpte dig effektivisera ditt arbete?
1-2 timmar, En arbetsdag, Några dagar, Någon vecka, Jag skulle inte vilja lägga någon tid alls

5.Hur föredrar du att ta till dig ny information när du ska lära dig ett helt nytt program/en hemsida på datorn?
Video-filmer jag kan titta på för olika funktioner i programmet, Texter/dokumentation, Guider direkt i programmet som stegvis går igenom funktionaliteten, En kombination av alternativen ovan, Inget av det, jag vill utforska själv

6.Om du skulle börja använda ett nytt program, skulle du vilja ha en halvdags intro-kurs med dina kollegor där programmet gås igenom av en person och du har möjlighet att ställa frågor:
Ja, Nej

7.Vad skulle vara viktigast för dig att komma igång med så fort som möjligt i ett nytt program på din arbetsplats?
Lära mig all funktionalitet i programmet översiktligt, Lära mig funktioner i den ordning som är relevant för vad jag ska åstadkomma i min yrkesroll, Det spelar ingen roll vilken ordning jag lär mig olika funktioner i programmet

8. Om det fanns en möjlighet att chatta med någon direkt i vyn i ett nytt program för att ställa frågor, skulle du använda det?
Ja, ofta, det är bra att få personlig hjälp, Vet inte, har svårt att föreställa mig hur det skulle fungera, Nej, jag vill hellre söka svar själv

8. Hur ofta fullföljer du privat en tutorial/onboarding dvs. inlärningsprocess när du lär dig ett nytt program/webb-plats på datorn?
Alltid, Ibland, Aldrig

9.Hur ofta fullföljer du i din yrkesroll en tutorial/onboarding dvs. inlärningsprocess när du lär dig ett nytt program/webb-plats på datorn?
Alltid, Ibland, Aldrig

Appendix B

Appendix - Lo-fi

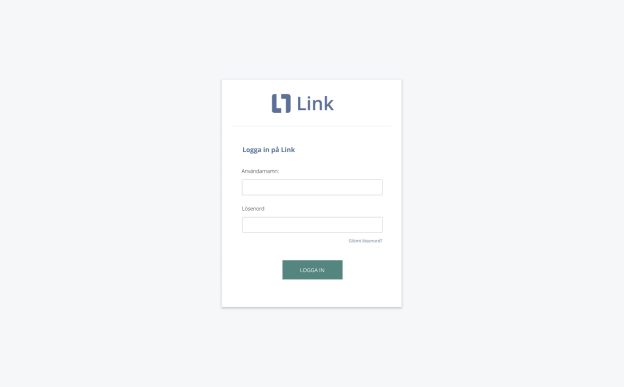

Figure B.1: Login Lo-fi: Suggestion 1

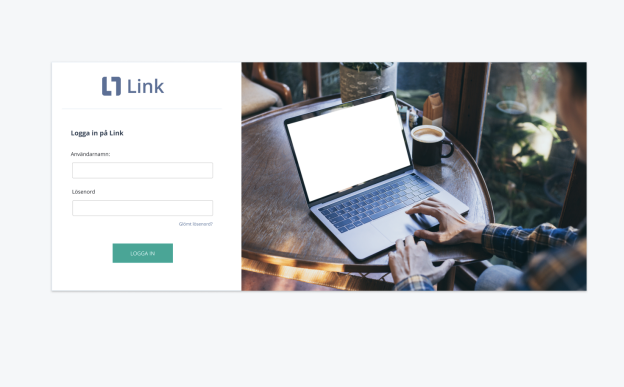

Figure B.2: Login Lo-fi: Suggestion 2

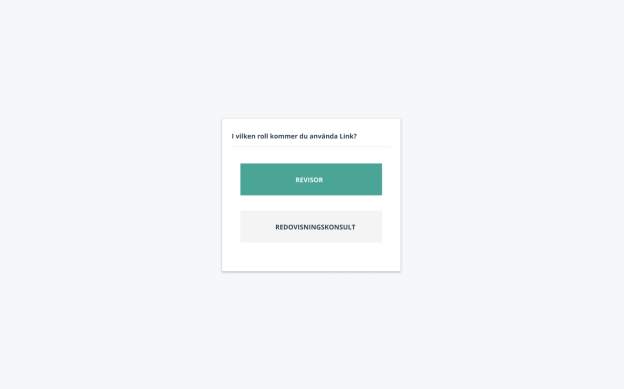

Figure B.3: Lo-fi: Onboarding Tour Question 1

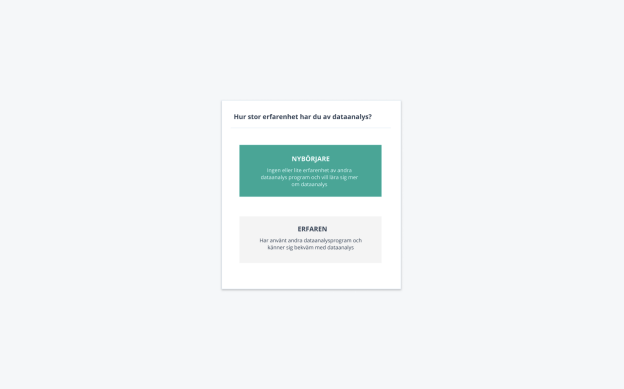

Figure B.4: Lo-fi: Onboarding Tour Question 2

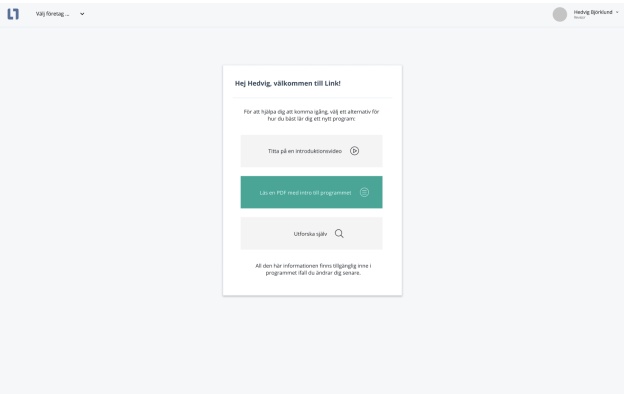

Figure B.5: Lo-fi: Onboarding Tour Question 3

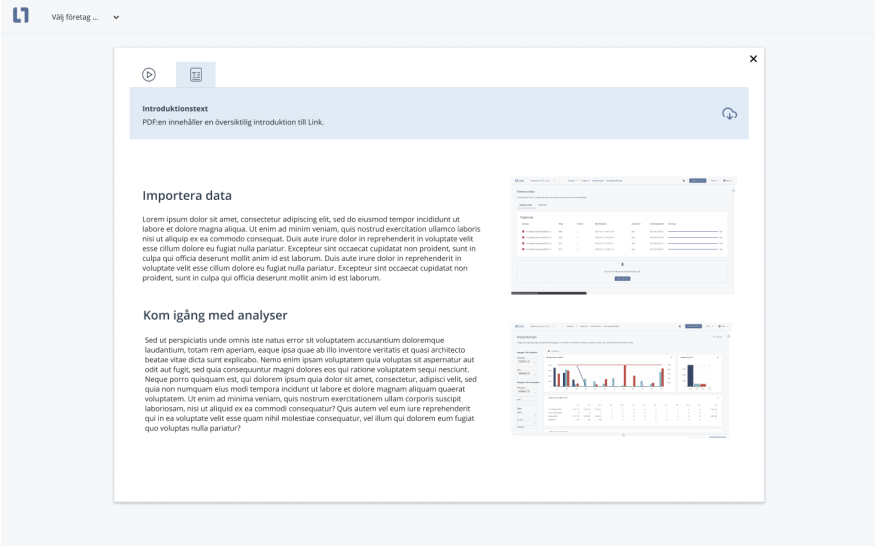

Figure B.6: Lo-fi: Example introduction PDF

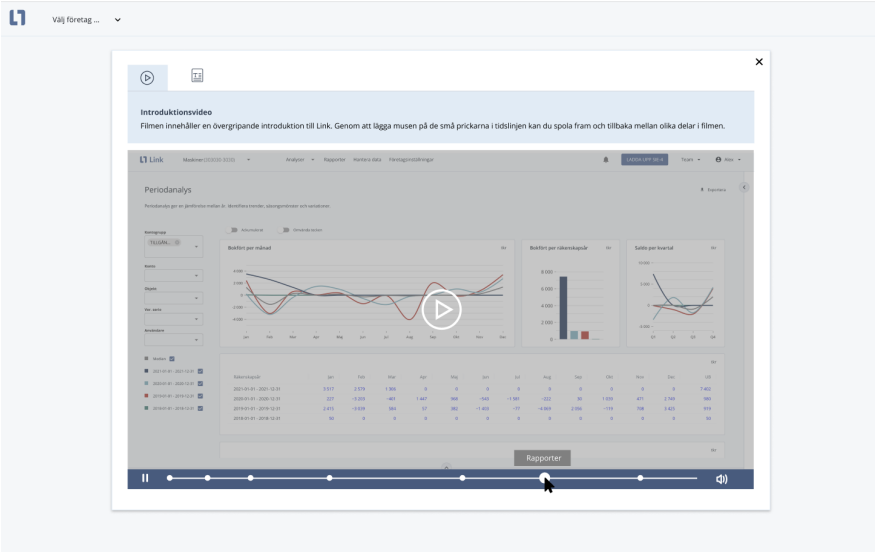

Figure B.7: Lo-fi: Example introduction video

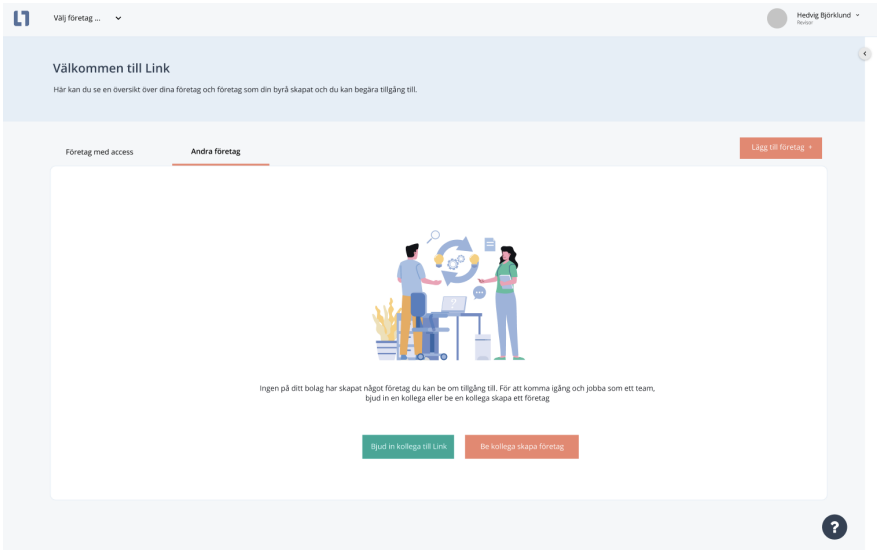

Figure B.8: Lo-fi: New Startpage with messges, help and empty space

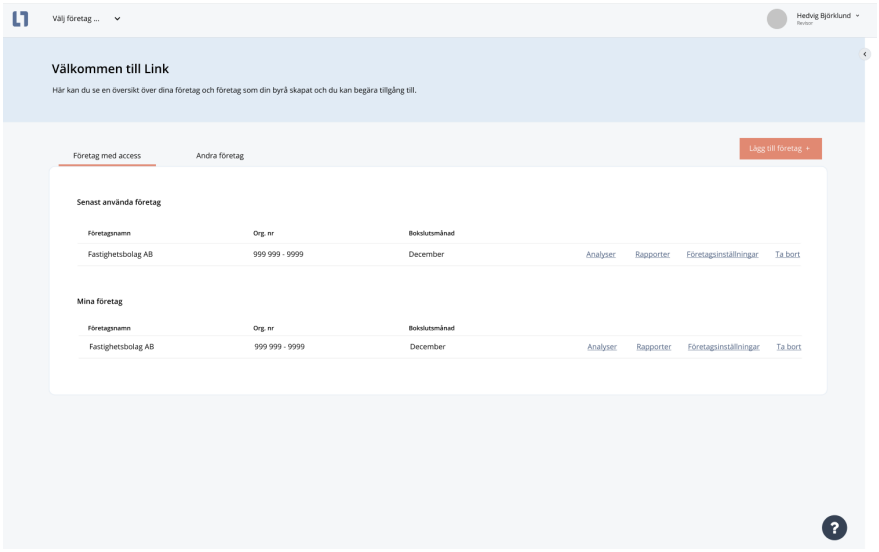

Figure B.9: Lo-fi: Example Empty Space Other companies

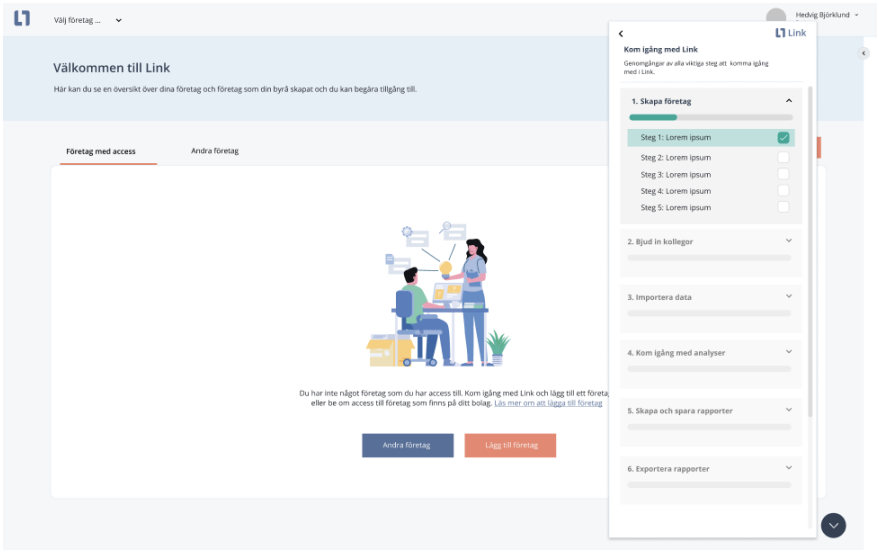

Figure B.10: Lo-fi: New start page layout]

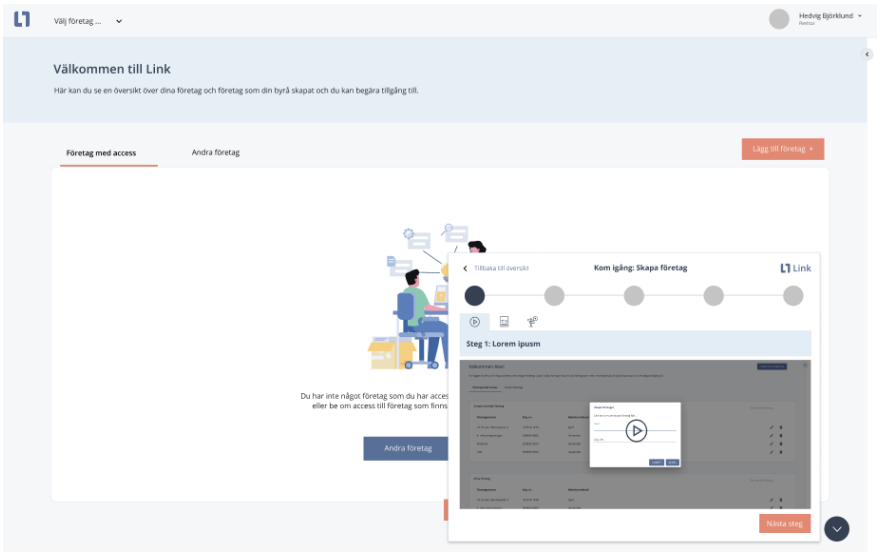

Figure B.11: Lo-fi: Example help pop-up

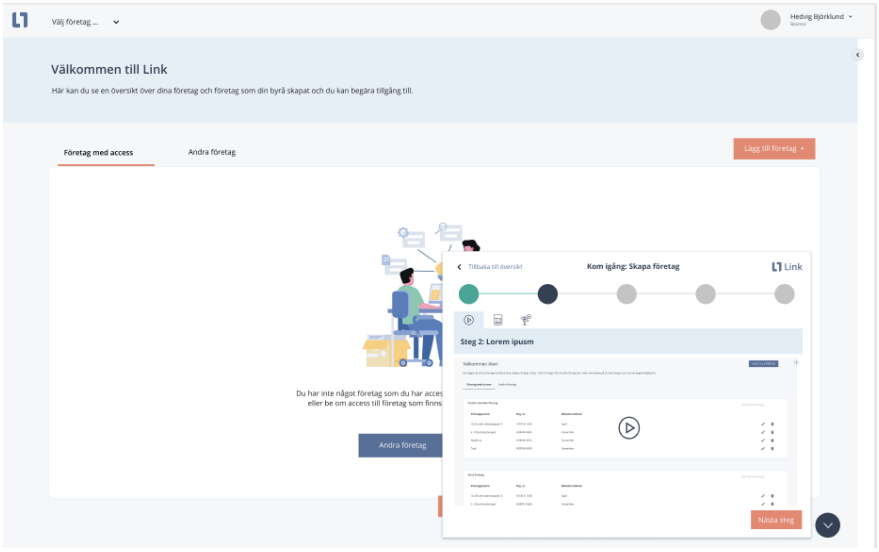

Figure B.12: Lo-fi: Example product tour in help pop-up

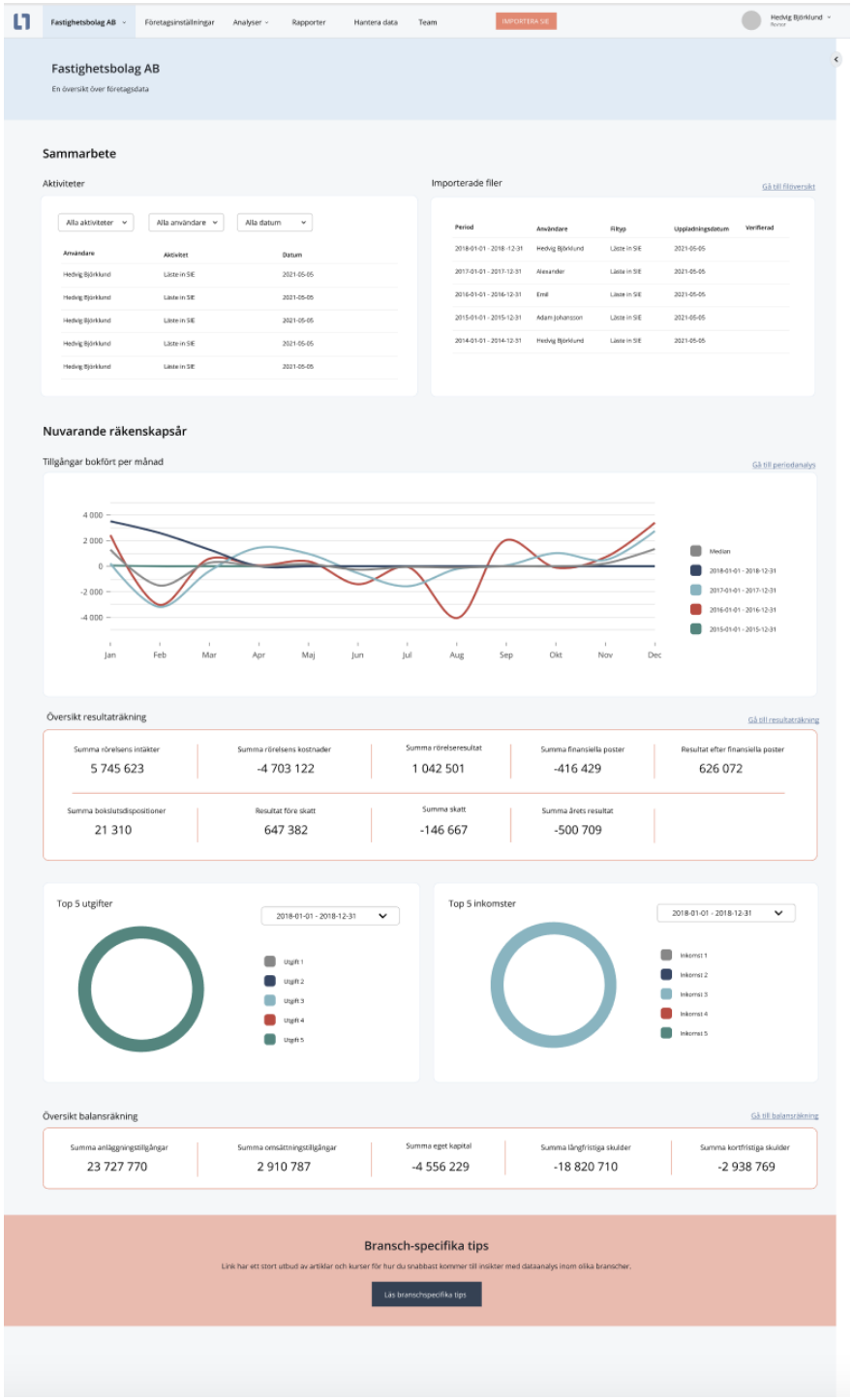

Figure B.13: Lo-fi: Example company page

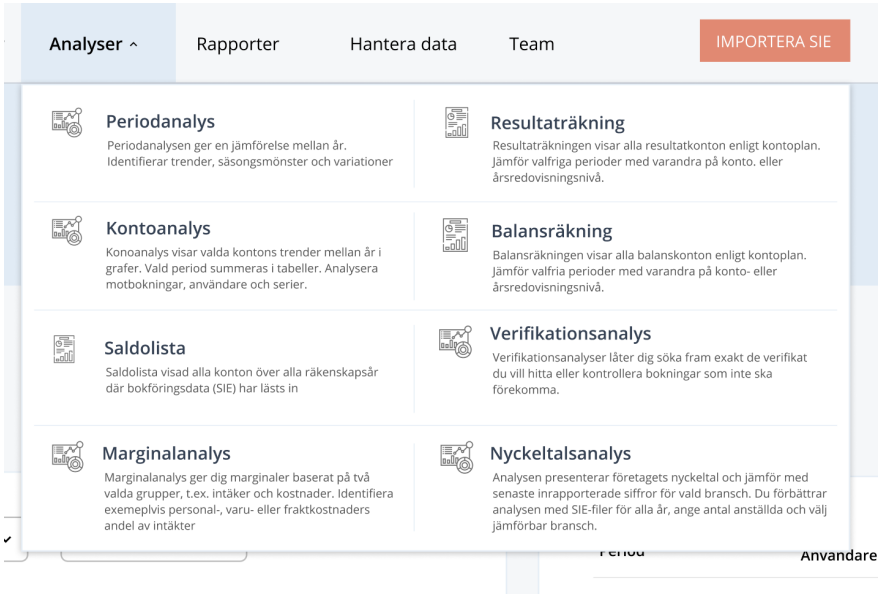

Figure B.14: Lo-fi: Example new drop-down

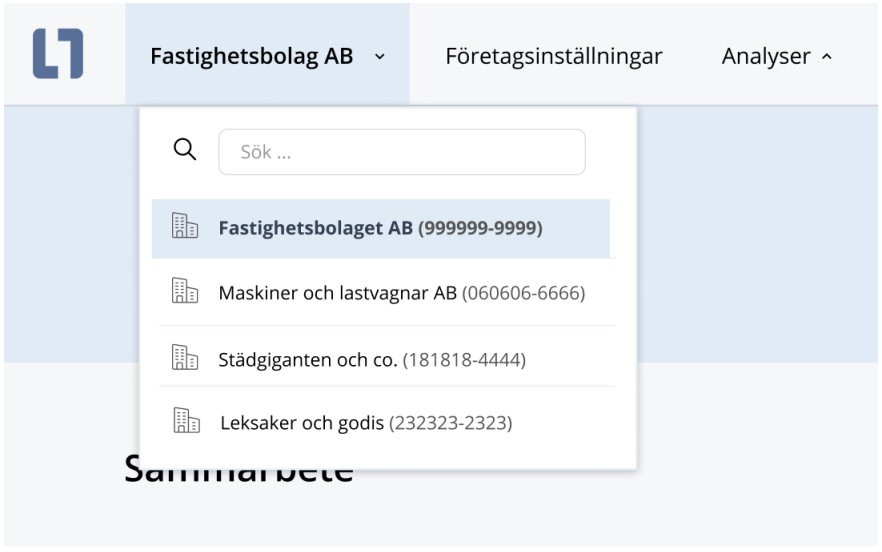

Figure B.15: [Lo-fi: Example new company list

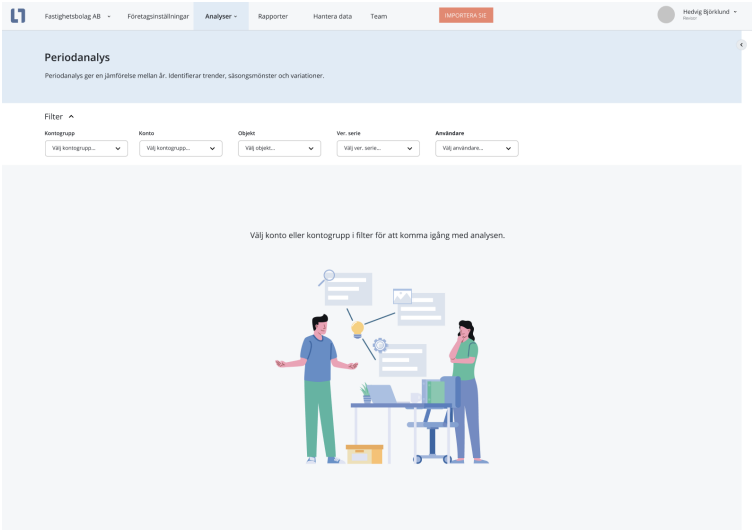

Figure B.16: Lo-fi: Example empty space in analysis

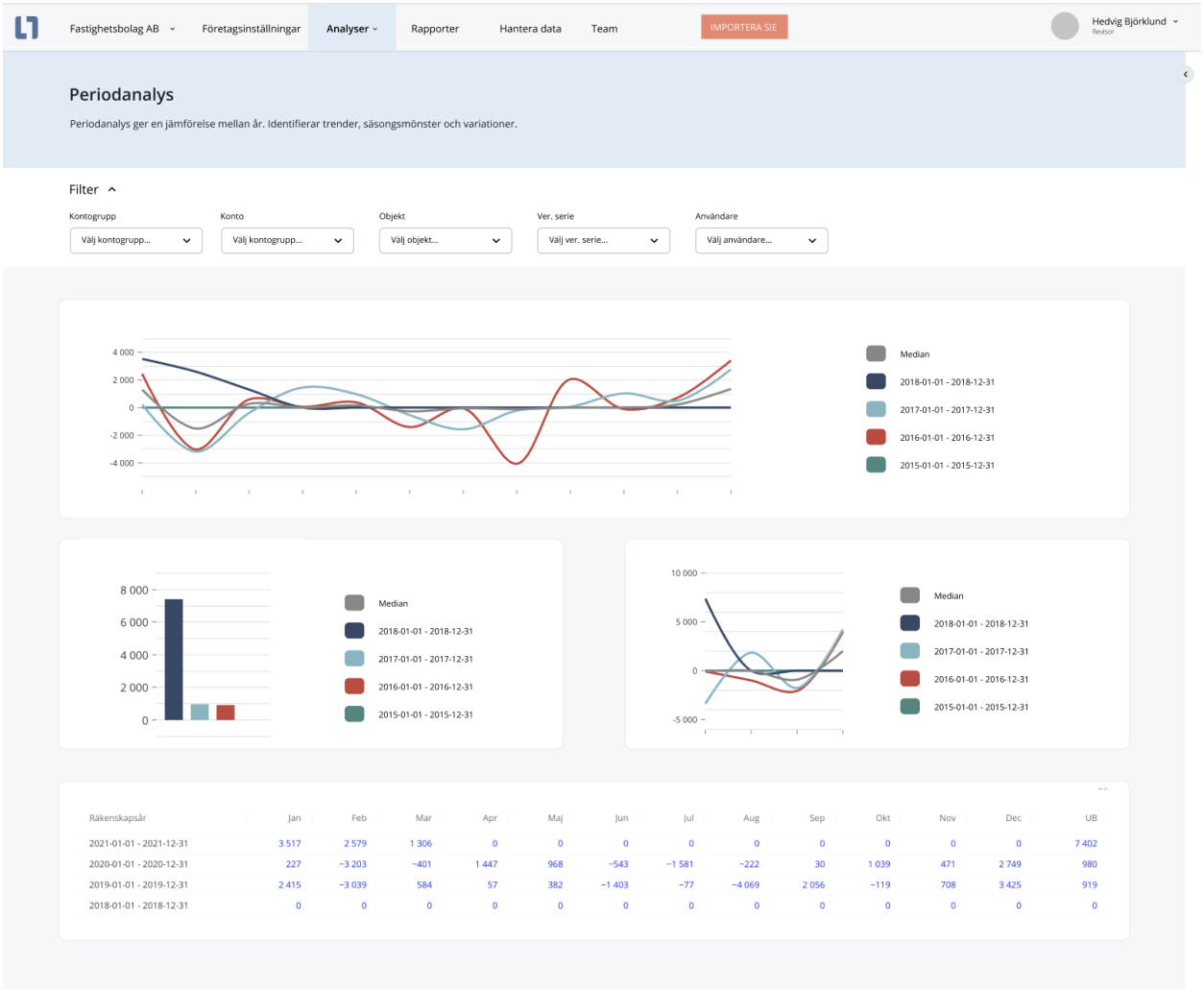

Figure B.17: Lo-fi: Period analysis with new filter menu and graph colors

Appendix C

Appendix - Hi-fi

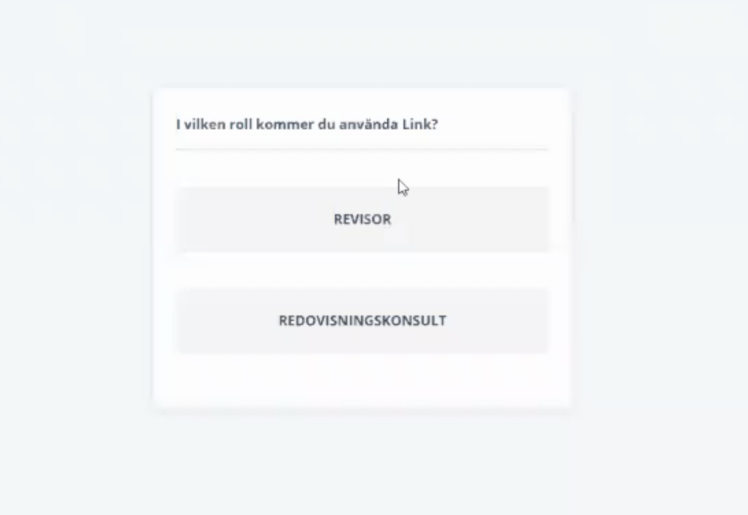

Figure C.1: Hi-fi: Onboarding tour question 1. Screenshot from Link Application (2021)

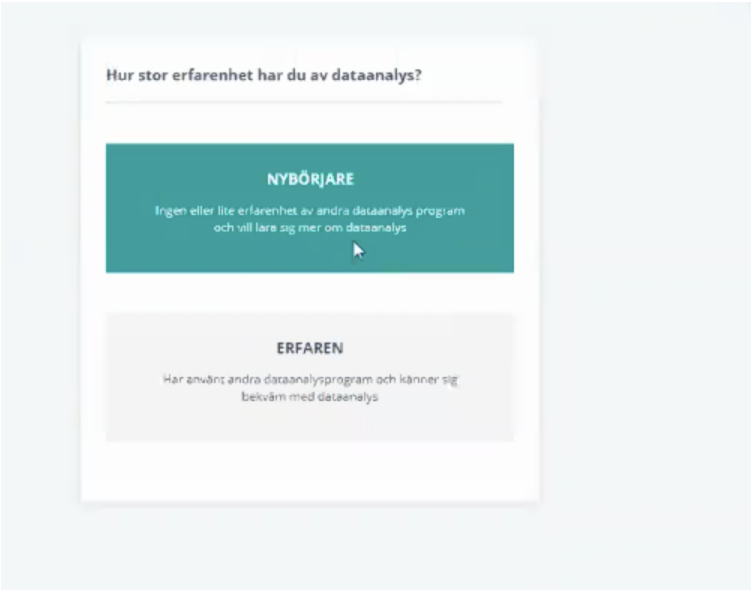

Figure C.2: Hi-fi: Onboarding tour question 2. Screenshot from Link Application (2021)

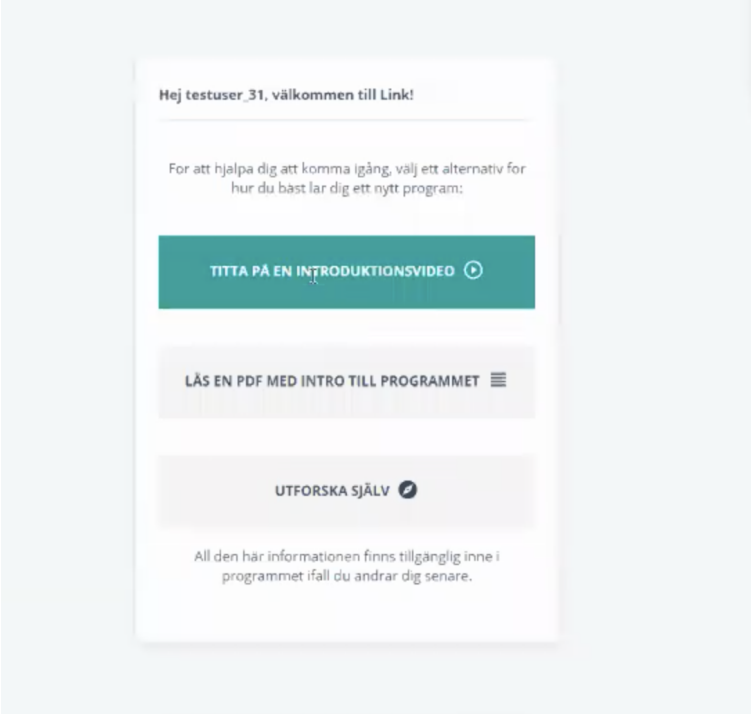

Figure C.3: Hi-fi: Onboarding tour question 3. Screenshot from Link Application (2021)

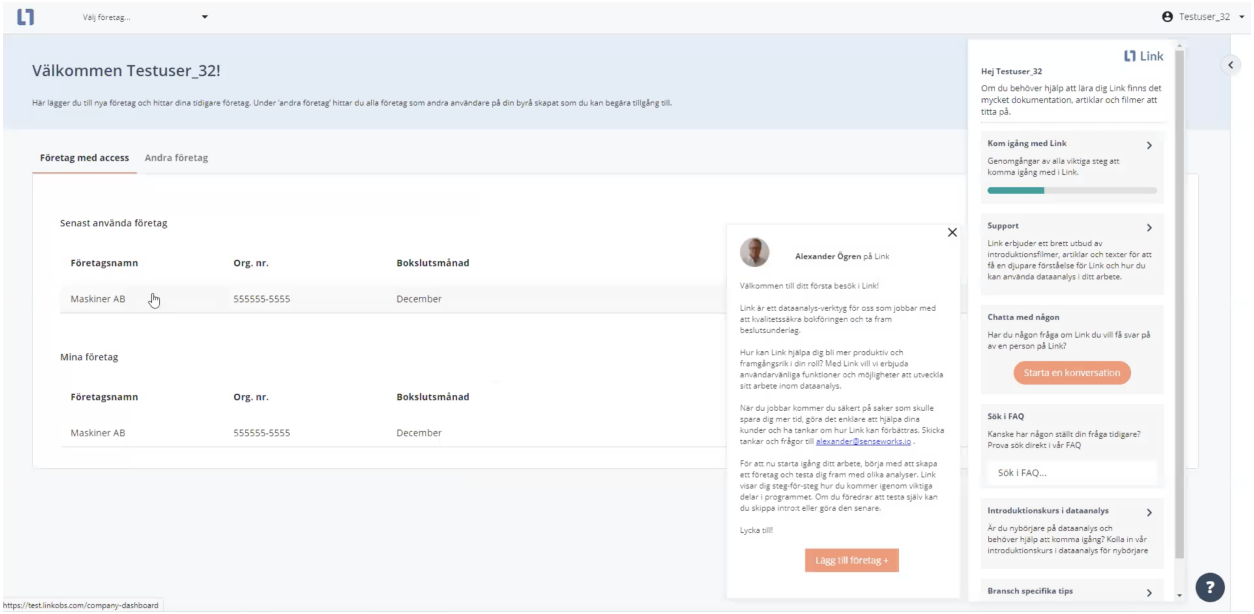

Figure C.4: Hi-fi: Start page with help and welcome message. Screenshot from Link Application (2021)

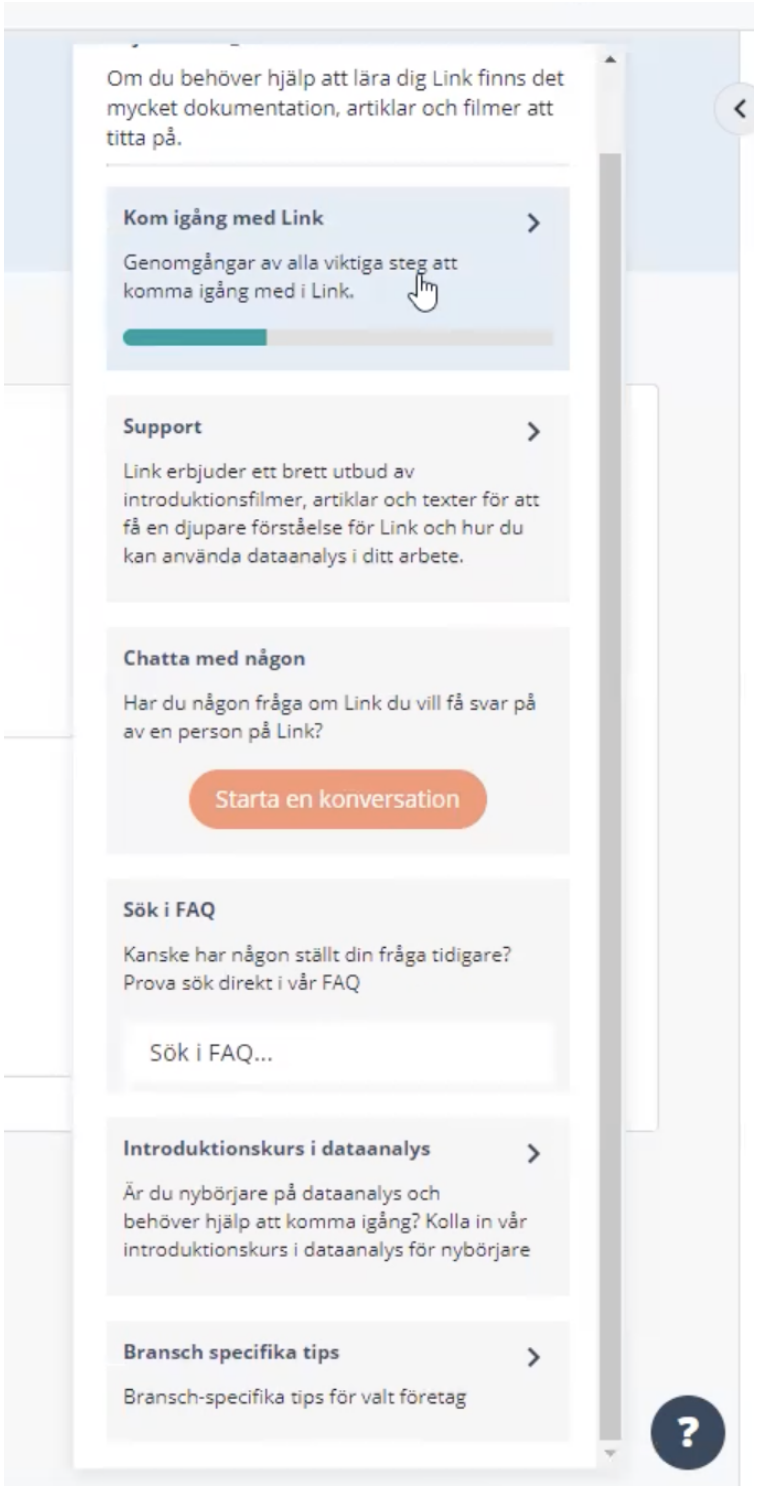

Figure C.5: Hi-fi: Help pop up inside Link. Screenshot from Link Application (2021)

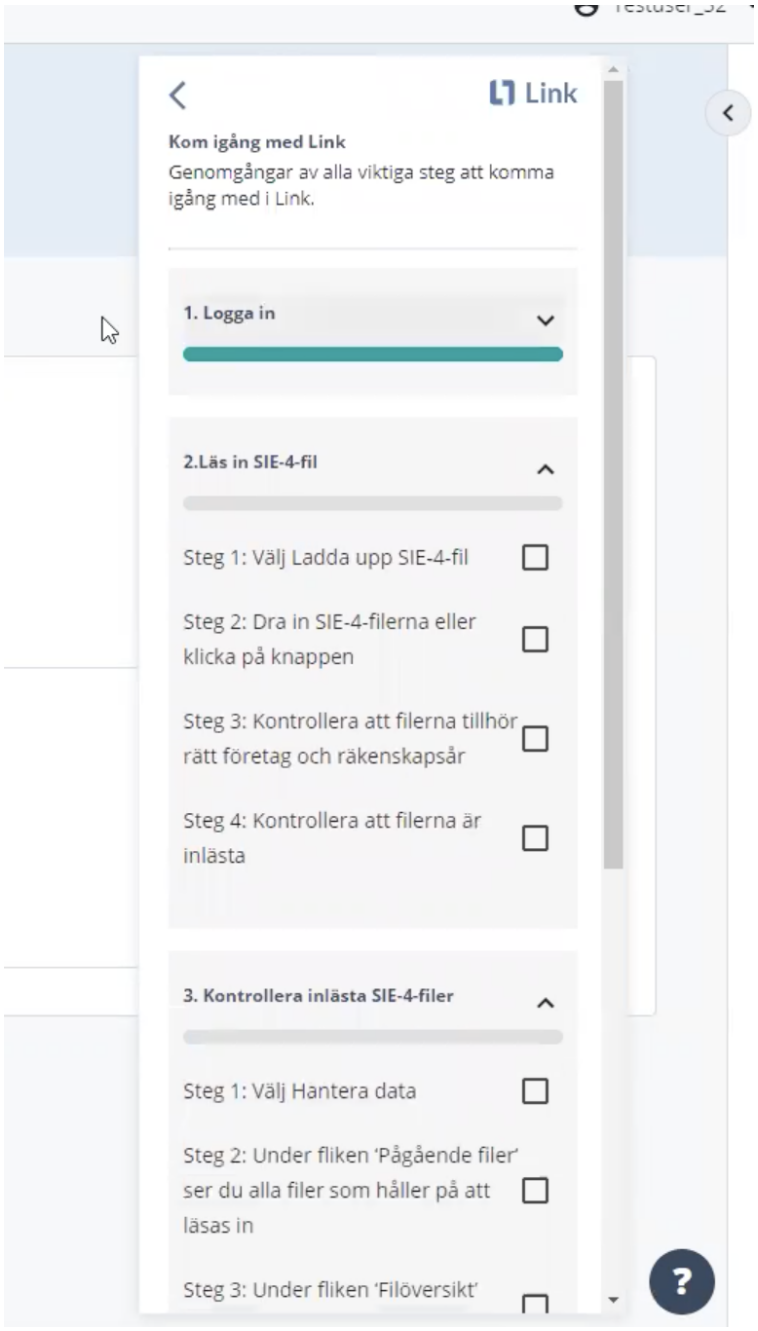

Figure C.6: Hi-fi: Product tour with check-list and progress bar. Screenshot from Link Application (2021)

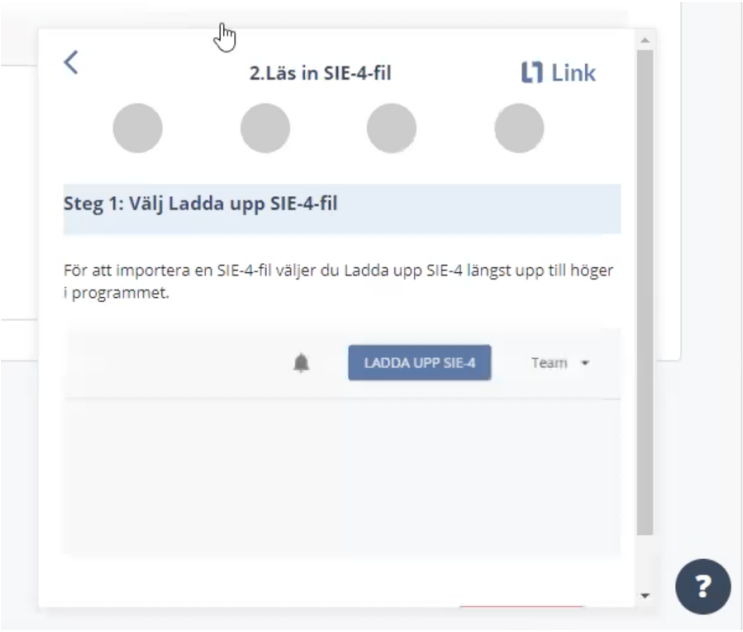

Figure C.7: Hi-fi: Product tour popup example. Screenshot from Link Application (2021)

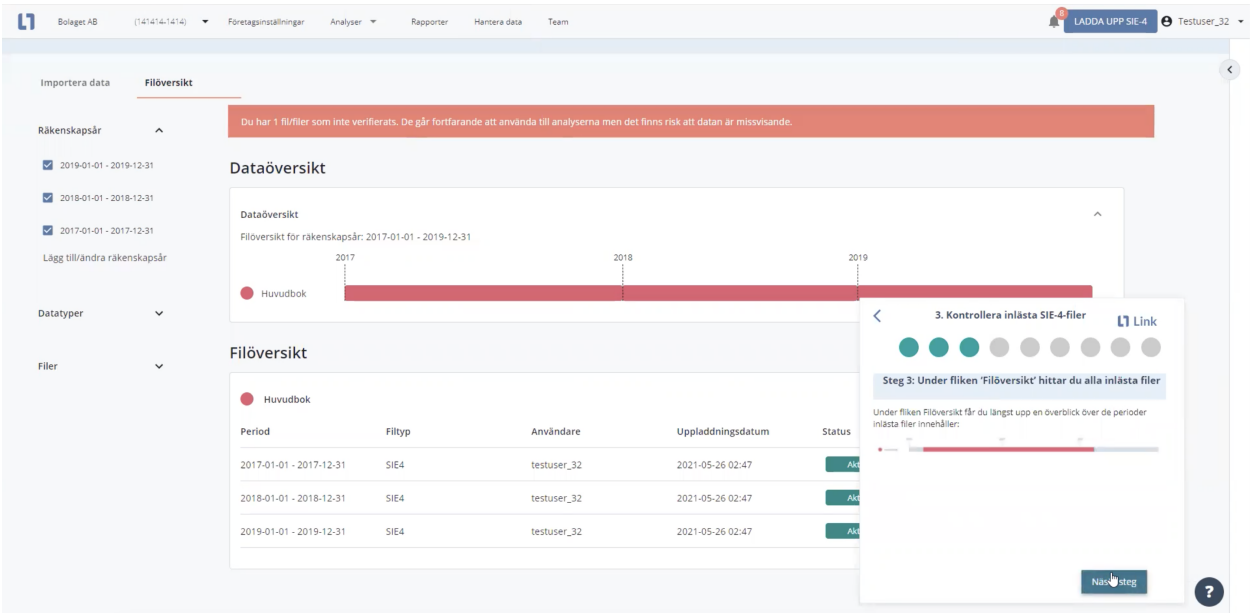

Figure C.8: Hi-fi: Verify Data with product tour popup. Screenshot from Link Application (2021)

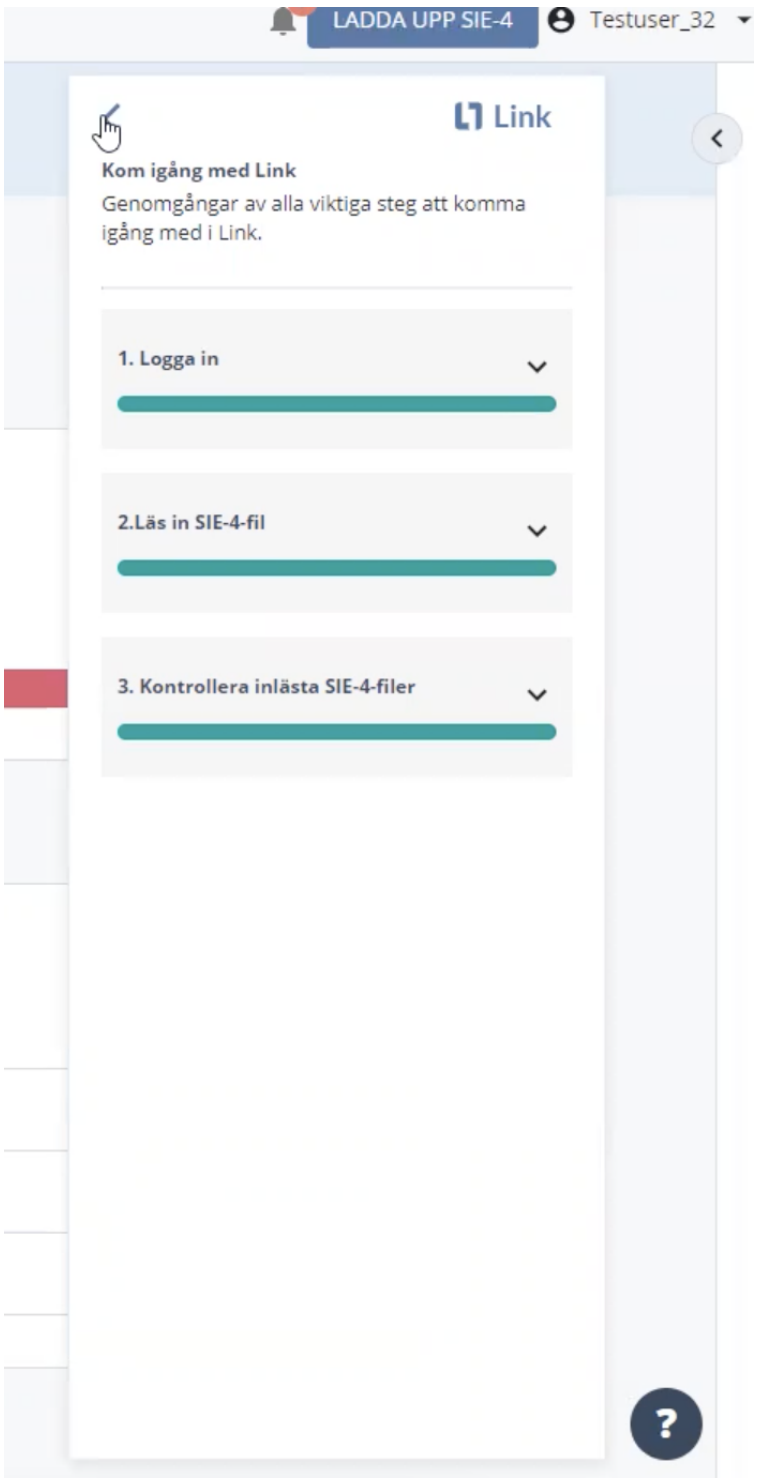

Figure C.9: Hi-fi: Product tours with progress-bar. Screenshot from Link Application (2021)

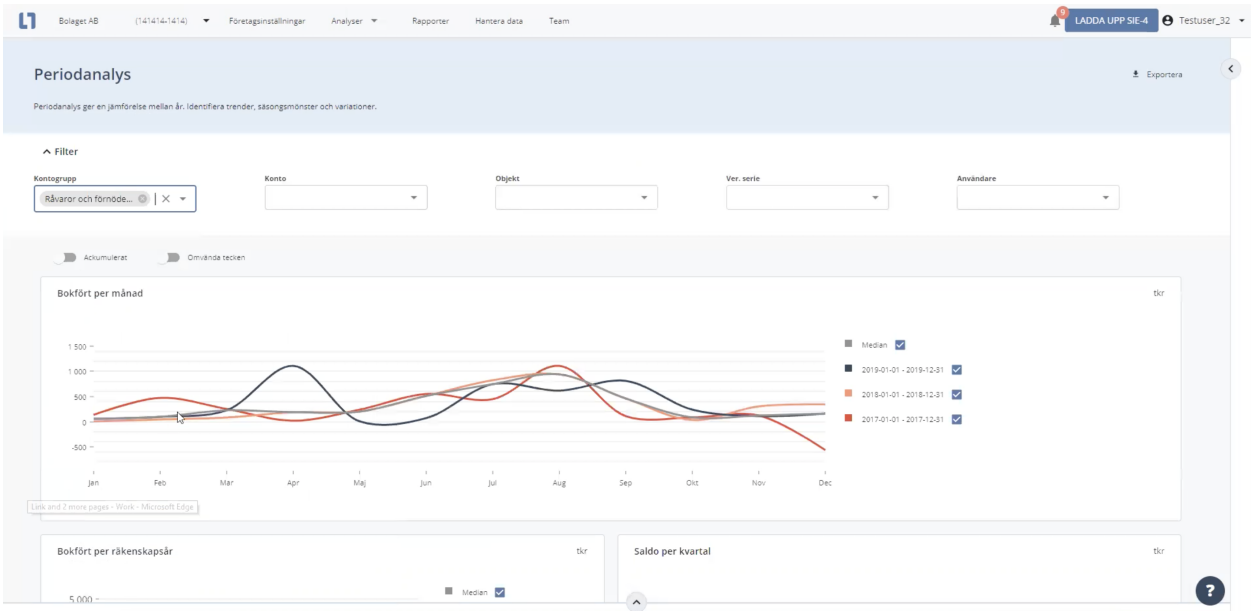

Figure C.10: Hi-Fi: New filter are and graph colors in period analysis. Screenshot from Link Application (2021)

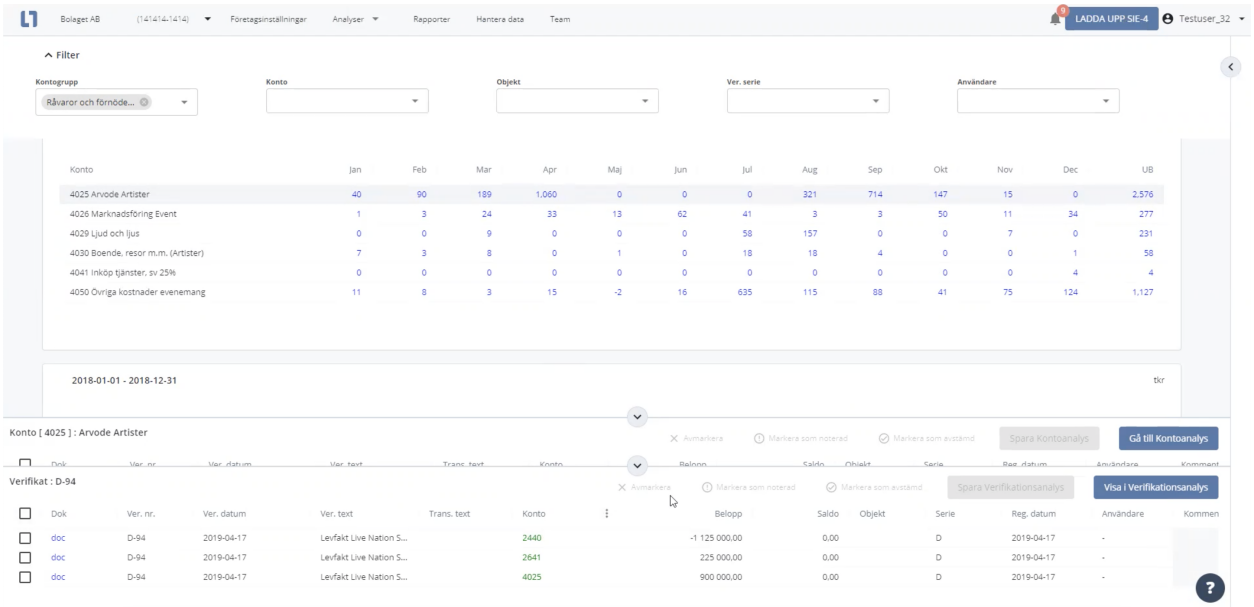

Figure C.11: Hi-fi - Filter at top in period analysis. Screenshot from Link Application (2021)