

Developing a financial forecasting tool for a pre-revenue B2B SaaS early stage startup company

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<p>This thesis aims to create an easy-to-use and scalable financial forecasting tool for the needs of a commissioning company, a B2B SaaS pre-revenue early-stage startup. The primary objective is to construct a tool in an Excel spreadsheet tailored for the company to assist in its financial planning.</p> <p>The need for the tool arose when the author joined the company as a financial intern. Based on discussions with the company's management team, it was clear that a lack of financial planning and expertise existed. Through this thesis, the author seeks to create a tool that will allow the management to more efficiently plan the company's finances for the future; this in turn can help the business when preparing financial forecasts to obtain funding and other forms of investments.</p> <p>The author reached the goals of the thesis through the study of relevant accounting principles and theory regarding how financial projections are built. He did this in relation to the SaaS industry in which the company operates, and in doing so, key industry characteristics are mentioned throughout the process. He then assessed the internal structure of the company and attempted to understand the goals and targets of the business and to determine many of the assumptions that will be utilised for the design of the tool and the financial projections.</p> <p>In addition, several recommendations were provided to the company to improve its efficiency and maximise the use of the tool, and the author ends the thesis by discussing the key outcomes, recommendations and suggestions for further research. The author's personal evaluation on the project and his reflection on learning are also covered at the end.</p>	
Keywords Financial forecasting, revenue modelling, revenue projections, cash flow projections, SaaS, startup forecasting,	

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1 Introduction

This chapter presents the topic and primary objective of this project, which is the creation of a financial forecasting tool to build financial projections for a pre-revenue business-to-business (B2B) software-as-a-service (SaaS) tech startup company. Also, the author introduces the overall scope of the thesis in more detail by providing some background information and further examining the project's tasks. Furthermore, the benefits of this thesis are mentioned, and several key concepts are explained to familiarise the reader with the general topic. Lastly, a brief overview of the international aspect of the project and an introduction to the commissioning company are discussed.

1.1 Background

When it comes to startups, most founders do not perform long-term financial planning; instead, they focus on short-term goals. This may cause the business to grow at a slower rate than is desirable. A well-thought-out financial plan that considers the future can provide much insight to a potential business owner. While financial planning may seem to be a difficult task to undertake, its benefits are quite valuable, and it must eventually be done. (Radak 2017.)

Financial planning and analysis permit potential startup founders to assess multiple aspects such as determining the potential revenue and projected costs of a company. Several other essential metrics related to profitability and the profit-cost relationship can be analysed and allow a business owner to evaluate the potential growth and success of a company. (Chrisos 2019.)

Robo.CEO is creating a highly innovative and disruptive service in an industry that has seen much growth and is expected to grow exponentially over the next years. The aim of this project is to design a forecasting tool including relevant profitability indicators and specific SaaS key performance indicators (KPIs) for the needs of the commissioning company.

1.2 Project objective and tasks

As mentioned previously, the main intention of this thesis is to develop a forecasting tool that can be used to build financial projections for the commissioning company to assist in its financial planning process when seeking funding from investors and various lending institutions. Also, the tool will assist the company in its internal analysis and decision making in regard to the financial strategy, which can be done by employing the tool and testing different hypotheses and scenarios. The projections that can be built through the

use of the tool can help the company's management team to visualise its goals and profitability targets in a quantifiable financial manner.

The author clarifies that the numbers used in the projections in this thesis are based on simplified assumptions, as projections are not the main objective of this thesis. Furthermore, these numbers are mostly examples for demonstration purposes to showcase the use of the forecasting tool. Nevertheless, the author has attempted to base many of those calculations on reasonable assumptions made through discussions with the company and research into relevant material. In cases where that was not possible, oversimplified and dummy numbers have been entered. The goal is to demonstrate the use of the tool and not the projections themselves.

The project objective (PO) and project tasks (PTs) are structured as indicated in table 1 below. As this is a project-based thesis, the structure may not follow the exact outline of a more classical research-based thesis. In the following chapters, the author clearly explains what is done and how it connects to the PT and other chapters.

Table 1. Project Objective (PO) and Project Tasks (PTs)

PO	Develop a financial forecasting tool for a pre-revenue B2B SaaS early-stage startup company.
PT 1.	Determine the company's needs.
PT 2.	Study and present relevant accounting theory in relation to the SaaS industry.
PT 3.	Analyse the internal financial structure and assumptions of the company.
PT 4.	Design the forecasting tool and test it.
PT 5.	Prepare recommendations for the company.
PT 6.	Evaluate project management and outcomes.

1.3 Project scope

By determining the needs of the commissioning company, the author is able to narrow the scope of the thesis. Then, by studying the theoretical concepts in relation to the SaaS industry, and by analysing the company itself and understanding its existing financial structure, present objectives, goals, and targets for the future, the author obtains information that forms the knowledge base that will be used in the design process of the forecasting tool.

The SaaS industry has its unique characteristics, as with any other industry; however, even within the industry itself, several crucial differences should be taken into account

when developing a financial plan. Therefore, the project will specifically focus on the B2B aspect of SaaS financial forecasting instead of a more general approach, since the former is directly relevant to the needs of the company. By collecting and studying the necessary data from accounting theory, industry, and company analysis, the objective of this project will be achieved. The scope is briefly visualised in figure 1 below.

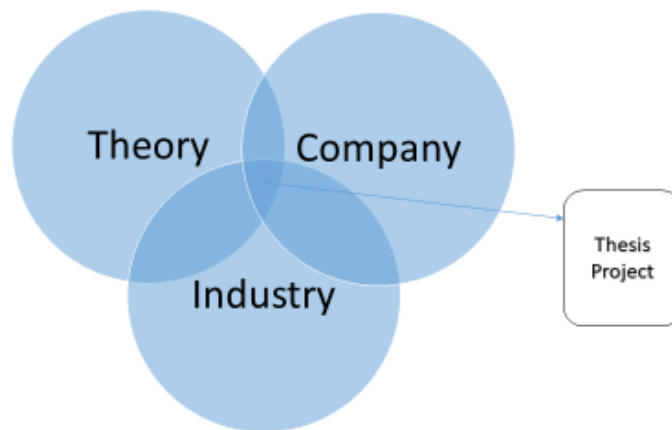


Figure 1. Project Scope

1.4 International aspect

The company is planning to offer a cloud-based platform service, thus allowing it to seek customers globally. Many of the existing employees and contributors are located in different countries, creating an international working environment. The industry in which Robo.CEO operates and the nature of the software it offers is such that it is not limited by borders, thereby allowing the company to have a global growth strategy.

1.5 Benefits

The benefits for the company are that it can use the forecasting tool to test different scenarios of financial projections. The nature of a startup can understandably be highly unpredictable; plans, strategies, and targets could thus quickly change from month to month. The goal is to build the tool so that it can be easily adjusted and edited based on the input of key data to allow the company's management team to experiment with different assumptions and hypothetical scenarios.

From the author's perspective, this is a valuable opportunity to practice many of the entrepreneurial and analytical skills that were taught at the University of Haaga-Helia. This project relates to his professional goals and aspirations for the future, thereby allowing him to further develop his skillset in the financial sphere of entrepreneurship and business from an international perspective.

Other beneficiaries could be potential founders or other aspiring startup entrepreneurs of similar companies, who may use the thesis as a structure to create their financial projections. Potential indirect stakeholders that could benefit from this thesis could be the partners of the commissioning company and the staff of Haaga-Helia and advisors who advised the author over the duration of this project.

1.6 Key concepts

A **startup** is a company in its early stage, typically of a technological nature, and usually with a high growth potential. Startups commonly attempt to disrupt the market by a highly innovative idea. (Canete 2018.)

Financial forecasting is the financial estimation of how a company will behave in the future. Profit and loss (P&L) is the most typical financial statement used to make such a prediction. (Corporate Finance Institute.)

Software-as-a-service is a cloud-based software licensing model in which access to the service is provided based on a subscription. This service is accessed through the web with login credentials. (Investopedia 2019.)

Managerial accounting focuses on assisting the management of the company in decision making. Managers can use internal accounting reports to help them in the process of planning, directing, and controlling operations. (Braun & Tietz 2015, 20-22.)

Monthly recurring revenue (MRR) is the amount of income that a company will receive monthly through the sale of subscriptions and services. This MRR allows the company to breakdown revenues from multiple pricing and subscription models into a monthly viewpoint. This allows the company to have a better overview of its financial health and growth direction. (Bauer 8 May 2017.)

The **customer churn rate (CCR)** calculates the amount of revenue or the number of customers lost within a specific period. It is a highly important metric to track, as it indicates the health of the company. (Bernazzani.)

The **customer acquisition cost (CAC)** is the metric that displays the acquisition cost of a new customer and how profitable he or she is for the company. When analysed in relation to the lifetime value of a customer, the CAC can demonstrate whether a business model is viable, thus making it an important metric. (Bernazzani.)

1.7 Challenges and risk management

The primary source of data for the creation of financial projections is historical financial data, which is gathered by analysing the cost and revenue structure of a company. In the case of this project, the company happens to be in an early-stage pre-revenue phase, which adds a layer of complexity and unpredictability. The company is still figuring out its exact market fit and business strategy, resulting in uncertainty about the business model it will follow. This poses a challenge, as it is unclear what the strategy of the company will involve.

Despite the challenges of the project, the author attempts to minimise the risks by constructing the forecasting tool in such a way that it is not too complicated and specific. Instead, the tool will be simple enough to be edited and experimented with as the business model of the company evolves in the future.

1.8 Project management methods and process

To collect the necessary data for this thesis, the author carried out a combination of secondary data research and qualitative research via interviews and informal discussions with the company's management team. Interviews and discussions were conducted with Jack Richardson, who is the Director of Business Development and one of Robo.CEO's first angel investors. Some interviews and discussions also took place with Juha-Pekka Tajakka, who is one of the three original founders of the company and who currently holds the position of Infrastructure Engineer.

At the beginning of the thesis project, the data collected via the interviews was used to determine the needs of the company. The author conducted thorough desktop research to study relevant theory in relation to the SaaS industry and concepts that will be used throughout the process of this project to reach the desired objective. Later on, especially during the tool's design phase, multiple interactions through interviews and communication tools took place with the management team to receive feedback and other information that helped the author tailor the tool to the case company's needs.

Table 2 below lists in more detail the knowledge base, the project management methods, and the outcome that will result from each PT. The table also describes how those components relate to one another based on the PO and tasks mentioned in section 1.2.

Table 2. Overlay Matrix

Project Tasks	Knowledge Base	Project Management Methods	Outcomes
PT 1. Determine the needs of the company.	Commissioning company.	Qualitative interview.	Narrow the scope of the project and determine important performance indicators.
PT 2. Study and present relevant accounting theory in relation to the SaaS industry.	Accounting theory, concepts, models.	Secondary data research.	Method of financial planning and understanding of KPIs.
PT 3. Analyse the company's existing financial information.	Commissioning company, goals, targets.	Qualitative interviews.	Determine the structure of the tool.
PT 4. Design the forecasting tool and test it.	PT1, PT2, PT3, similar tools.	Use of EXCEL, feedback from the company.	The product (forecasting tool).
PT 5. Prepare recommendations for the company.	Outcomes from PT 2, PT3, and PT4.	Secondary data research, SaaS industry observation, own conclusions.	Useful recommendations for the company.
PT 6. Evaluate the project management and outcomes.	The thesis report and the forecasting tool.	Self-assessment, feedback.	Self-reflection and learning.

1.9 Case company: Robo.CEO

Robo.CEO is registered as Robo.CEO Ltd in Ireland, and as Robo.CEO Oy in Finland. Robo.CEO Ltd is the parent company, and it holds all of the Robo.CEO group's IPR and investments.

Robo.CEO is a cloud-based operating system for running self-organising companies online; it is an AI-powered collaboration platform, built for project management and communication tools for a wide range of clients. The company operates on a subscription-based model. The best way to think of the platform is as a digital working space that aims to meet the increasing demand for better collaboration tools for remote work or larger companies seeking better communication between their employees and improved project management processes.

The company is in an early pre-revenue stage; therefore, operating activities are not profitable at present. Several beta projects and testing clients are located in different

countries across the globe, and since its inception in 2016, Robo.CEO has raised a total of 0.45 million € from angel investors and public institutions.

It has become a trend for an increasing number of companies to attempt to challenge the 'old' ways of hierarchical management of a corporation. Businesses ranging from small companies to larger enterprises are trying to implement a leaner horizontal management approach. The cloud-based platform that Robo.CEO is offering is based on the principles of this self-organisation, agile culture, and horizontal management. The software aims to help companies of all sizes to implement a more open self-organised management approach.

2 Financial planning

In this chapter, which relates to PT 1, PT 2, and PT 3 – mentioned in section 1.2 – the author determines the needs of the company by interviewing the management team and then studies the relevant theory and concepts that are needed to reach the objective of the thesis. The method of creating a forecasting tool and the financial projections is also discussed in relation to accounting theory. Essential elements for constructing financial forecasts are studied and discussed. In addition, key industry information is discussed, as it is necessary to study and present the theory from the perspective of the SaaS industry, which is the one in which the commissioning company operates. Lastly, the author looks at the internal structure of the company to gather as much data as possible that will determine the framework of the tool.

2.1 Determining the company needs

As stated in section 1.8, the author had several interactions with the commissioning company, which helped to determine its needs. Through those interactions and interviews, it was made clear that the company would mainly benefit from the construction of a financial forecasting tool that can be used to build long-term financial projections.

The company requires this tool to be simple enough for it to be easily edited and so that experiments can be conducted with different variables each time. The tool is supposed to include key performance metrics of the SaaS industry that can measure the profitability of the company. It was also stated that it should demonstrate a clear view of the company's revenue and cost structure.

Given that the company has neither a definitive proof of concept yet, nor a clear market fit, which is the case with any early-stage pre-revenue startup, it is essential not to complicate the forecasting tool more than what is required. The tool should be adaptable to allow the company to make edits as it evolves and finds its path to the market.

This step, which relates to PT1, was extremely valuable for the author, as it allowed him to narrow the scope of the thesis to meet the specific needs of the commissioning company.

2.2 Accounting basics

From small to large enterprises, accounting data is used to track and analyse the financial health of an organisation. It is an essential aspect of any business, as it enables all types

of financial activity for any sector or type of organisation. (Wohlner.) Accounting is often divided in two types which are explained below.

Financial accounting focuses on providing stockholders and creditors with the information they need to make lending and investment decisions. This information takes the form of financial statements: profit and loss (P&L), the balance sheet (BS), and cash flow (CF) statements. On the other hand, managerial accounting focuses on providing internal management with the information it needs to run the company competently and successfully. This information takes many forms depending on management's needs. (Braun & Tietz 2015, 20.)

In this thesis, the author primarily adopts a managerial accounting perspective to reach the intended outcomes of the project, which will be used for the internal purposes of the commissioning company.

As part of accounting theory, it is also essential to distinguish between cash and accrual accounting; the difference is in when revenue and costs are recognised in the accounts. Accrual accounting recognises sales when goods are sold (even if cash is not collected) and the costs when billed (but not yet paid). In contrast, in cash-based accounting, sales are recognised if and when money is exchanged. (McCool 2018.)

For example, if a client orders 1,000€ worth of products in June 2019 but pays for it in August 2019, then the amount of 1,000€ will be recognised as revenue in June 2019 on the P&L; however, since the cash is received in August 2019, it will be reflected on the CF statement only then. It is therefore essential to analyse the three financial statements together and not draw a conclusion only based on one of them. More details on the use of financial statements and how they relate to one another are provided further in this chapter.

2.3 Financial forecasting approach

There are several ways in which financial forecasting can be performed. However, it can usually be characterised into two main methods: top-down and bottom-up techniques. (Preuss 10 May 2018.)

A top-down approach begins by analysing the market as a whole from a macro perspective. Then, based on market trends, the company decides how much of that market it aims to capture. In contrast, the bottom-up approach focuses on the product or service itself and what it would require to enter the product into the market. (Maguire.)

A convenient way in which to achieve top-down forecasting is through the total available market (TAM) - serviceable available market (SAM) - serviceable obtainable market (SOM) method. It captures the market size on three different levels: TAM refers to the whole market size of the specific product, while SAM narrows the niche of the company's product, and SOM is the part of SAM that a company could reasonably aim to seize. (Bobbink 2018.)

The bottom-up approach is not as reliant on the market variables; instead, it is influenced by the internal data and abilities of the company. Forecasts, in this case, are affected by the key drivers of the company. (Bobbink 2018.)

In practice, both approaches can and usually are used simultaneously. Therefore, for this project, the author attempts to use largely the bottom-up approach and, whenever possible, to extract information from a top-down perspective.

Next, the author discusses theoretical concepts that are needed to construct an excellent financial forecasting tool and the input sheets that are usually part of a financial model.

2.4 Key performance indicators (KPIs)

Several metrics are used from each company; some of them are more general, and others are more specific depending on the industry and individual company. Key performance indicators are essential for the owners of a company, as they are critical for other stakeholders such as potential investors. (Bobbink 2018.)

It is crucial for each company to choose the metrics that it will utilise to track its performance. It is also recommended that fewer KPIs are employed, as using too many can be overwhelming. Limiting the number of key metrics is advisable because this would make it easier to keep track of a company's growth process.

Since Robo.CEO operates in the SaaS sphere, several industry-specific metrics must be chosen and forecasted as well. Through interviews with the company and through a study of relevant theory and industry, sources helped to determine which KPIs are important and which are not.

Further in this chapter, the author explores the different inputs into the financial plan, include revenues, costs, and specific SaaS metrics. Moreover, several performance indicators are presented.

2.5 Profit and loss (P&L)

In section 2.2, the author mentioned three different financial statements, which are part of financial accounting reporting. In this section, the author examines the P&L statement, since it is the most important of the three in visualising the profitability of a company.

A summary of the revenues and costs of a company over a specified period can be determined from the P&L statement. This statement also indicates whether the company is profitable or running at a loss; at the same time, it provides more details on the various income streams and types of expenses. Also, the P&L is often used to compare either different financial periods or companies or to compare the forecasted P&L to the actual one. (Bobbink 2018.)

Table 3 below is a representation of a simple P&L statement for 2 years. It displays the main blocks that are part of the statement and how they relate to one another.

Table 3. Profit and Loss Example

P&L	Year 1	Year 2
Revenue	€ 1,000	€ 1,500
Cost of Sales	€ (200)	€ (300)
Gross Profit	€ 800	€ 1,200
Operating Expenses	€ (300)	€ (500)
Operating Profit or EBIT	€ 500	€ 700
Interest	€ (50)	€ (50)
Taxes	€ (50)	€ (75)
Net Profit	€ 400	€ 575

The primary indicators related to revenue and profitability are revenue growth rate, gross margin, and operating profit (Bobbink 2018).

2.5.1 Revenue growth

Revenues or sales are the amount of money a company receives from its clients for the sale of a service or a product (Business Literacy Institute).

By looking at the revenue growth change from year to year as a percentage, the revenue growth rate can be calculated. This rate is one of the most critical metrics for any startup, as it demonstrates how quickly the company is growing. (Geckoboard.) By subtracting the first-year revenue from the second-year revenue, then dividing the result by the first-year revenue, and finally multiplying by 100, the revenue growth rate can be determined, as indicated below.

$$\text{Revenue Growth Rate (\%)} = \frac{\text{Revenue Year 2 (€)} - \text{Revenue Year 1(€)}}{\text{Revenue Year 1 (€)}} \times 100$$

If one were to apply the formula to the numbers in table 3, then the result would be a 50% revenue growth rate from year 1 to year 2.

2.5.2 Gross profit

Gross profit is the profit after subtracting the cost of sales (COS) from revenue, and gross margin is the gross profit as a percentage of revenue; however, these terms are sometimes used interchangeably (Averkamp). To determine the gross profit, the following formula is employed:

$$\text{Gross Profit (€)} = \text{Revenues (€)} - \text{Cost of Sales (€)}$$

Gross margin, which is gross profit represented as a percentage of revenue, is calculated by dividing gross profit by the total revenue, as seen from the equation below:

$$\text{Gross Margin \%} = \frac{\text{Revenue (€)} - \text{COS (€)}}{\text{Revenue (€)}} \times 100$$

Applying the above formula to calculate the gross margin % from table 3 for 'year 1' would result in an 80% gross margin.

2.5.3 Operating profit

Operating profit can be calculated by subtracting operating expenses (OPEXs) from gross profit. It is an important metric because it indicates how much of the revenue and costs the owners of a company can control. (Business Literacy Institute.) The equation for calculating operating profit is as follows:

$$\text{Operating Profit (€)} = \text{Gross Profit (€)} - \text{Operating Expenses (€)}$$

2.5.4 Net profit

Net profit is the amount that remains after interest and taxes are subtracted from the operating profit or loss of a company (Investing Answers). The formula for this is as follows:

$$\text{Net Profit (€)} = \text{Operating Profit (€)} - (\text{Interest (€)} + \text{Taxes(€)})$$

2.5.5 Cost of sales

Cost of sales refers to the expenses associated with the delivery of the service or product. Without those costs, the company would not be able to offer to its clients the service or product. For SaaS companies exclusively, the cost of sales could be considered to be the costs related to hosting services, customer support and success, client onboarding costs, and online payment processing fees. All of these costs are necessary for the delivery of the service, which would otherwise be impossible. (Bobbink 2018.)

Cost of sales does not include commissions, expenses associated with cross-selling, development costs, and expenses linked to internal operations. The overall benchmark in the SaaS industry is that COS is usually about 10–20% of revenue. (Panagoulas.)

In summary, anything related to the delivery of the service can be considered to be part of COS. A small representation of this is provided in table 4 below:

Table 4. Expenses Example

Expenses	
Hosting Fees	€ 500
Payment Processing Fees	€ 250
Customer Support Salaries	€ 150
Customer Success Salaries	€ 150
Cost of Sales	€ 1,050

2.5.6 Operating expenses (OPEXs)

Operating expenses are the expenses created by the regular activities of a business, but they are not directly linked to the creation of the product or service. These expenses can differ broadly depending on the industry and the company itself. (My Accounting Course.)

Operating expenses can be grouped into the following three categories: sales and marketing, research and development, and general and administrative. These tasks are

considered to be part of the operations of a company. In more detail, operational costs could include events, travel expenses, legal fees, online advertising, labour costs (of personnel not part of COS), accounting, rent, insurance, prototyping, utilities, office supplies, and promotional materials. (Bobbink 2018.)

In the case of a SaaS startup, the OPEXs can be categorised as indicated in table 5 below:

Table 5. Operating Expenses Example

Operating Expenses	
General and Administrative	
From G&A Salaries	€ 2,000.00
Rent	€ 500.00
Accounting & Legal	€ 200.00
Travel Expenses	€ 100.00
Total G&A	€ 2,800.00
Sales and Marketing	
From S&M Salaries	€ 2,500.00
Online Advertising	€ 5,000.00
Marketing Events	€ 1,000.00
Travel Expenses	€ 1,000.00
Promotional Materials	€ 500.00
Total S&M	€ 10,000.00
Research and Development	
From R&D Salaries	€ 4,000.00
Prototyping	€ 2,000.00
Travel Expenses	€ 100.00
Total R&D	€ 6,100.00
Total Operating Expenses	€ 18,900.00

As the table demonstrates, some expenses are unique to each department. For example, while promotional materials would fall under the S&M category, travel expenses could belong to both the G&A and S&M categories depending on which employees' expenses from which department can be incurred. In the next section, the author elaborates on personnel costs.

2.6 Staff costs

Based on what was discussed in sections 2.5.5 and 2.5.6, it can be deduced that staff costs are divided into four main categories. One of them is part of COS and includes the direct labour responsible for the delivery of the service, such as customer success and customer support employees.

Section 2.5.6 explored the OPEXs, which were divided into three different departments, namely S&M, G&A, and R&D. With this logic, staff salaries are related to those departments, and the cost of those salaries is considered an OPEX.

2.7 Cash flow (CF)

Cash flow statements indicate the money that is moving in and out of a company at each specified period, and it includes the following different portions: the CF from operations, the CF from investing activities, and the CF from financing. The distinction between those CFs provides an understanding of where money is going out from and coming into the business. (Bobbink 2018.)

Cash flow from operations shows the movement of money that is produced by the main operating activities of a company. Cash flow from investing activities displays the money spent from investing in assets; the number can also be positive when a company sells some of its assets. Cash flow from financing reflects the changes in the cash balance caused by raising investment, such as from loans, and when dividends and/or interest from loans are paid. Runaway and burn rate of a startup's CF are two other critical metrics when it comes to seeking investment and determining the funding needs. (Bobbink 2018.)

"Burn rate" refers to the money that a company loses from its available pool of cash, represented in months. "Runaway" indicates the number of months a company has before it runs out of cash. (Mastio 2016.) The formula for burn rate is as follows:

$$\text{Burn rate (monthly)} = \text{Cash balance in previous month} - \text{Cash balance of present month}$$

If we want to calculate the average burn rate over a larger period – let's say 12 months – this would be:

$$\text{Burn Rate (average)} = \frac{\text{Cash balance in month 1} - \text{Cash balance in month 12}}{12}$$

By knowing the burn rate, we can easily calculate the runaway. Let's assume company ABC raises 250,000€ in funding from angel investors, and thus has 250,000€ in the bank. Assuming that the burn rate is 50,000€ per month, the following is the calculation of the runaway: $250,000€ / 50,000€ = 5$ months of runaway

Calculating the burn rate and runaway for an early-stage startup is of critical importance. Those metrics should be tracked not only to ensure that the company has sufficient funds

for its obligations, but also to determine if and when more funding will be required. It is essential for any business but especially for companies that are dependent on external financing such as funding or loans. This is one of the reasons that the creation of a forecasting tool is essential for the commissioning company, as it will help to monitor and forecast the business's cash needs in a more efficient manner.

2.8 Software-as-a-service (SaaS) specific indicators

In this section, the author first introduces several indicators and metrics and then discusses some terminology and theoretical concepts that are explicitly relevant both to the SaaS industry and to the needs of the commissioning company. Some of those were already introduced in section 1.6; they are investigated more closely in this section, and a few more are analysed, as they will be necessary when designing the forecasting tool in chapter 3.

2.8.1 Monthly recurring revenue (MRR)

Monthly recurring revenue (MRR) is an important KPI that describes the sum of total revenue realised from licensing contracts into a monthly view. The measurement of MRR displays only the revenue incurred for the licensing of software-related income. Other income, for example from paid trials, onboarding clients, consulting, and training clients, does not count towards the sum of MRR, even if it is incurred on a monthly basis, and must be reported separately. (Senovo 2018.)

Given the long onboarding times of B2B SaaS clients, a differentiation can be made between committed MRR (CMRR) and invoiced MRR (IMRR). This distinction is important because significant deviation can exist between the two, and at the same time, it allows management to assess the success of sales representatives. (Senovo 2018.)

It is also important to measure both the churned (lost) MRR, which can result from losing clients or the downgrading of existing clients, and the new MRR, which is the new revenue realised by new clients or upgrades of existing ones (Senovo 2018).

According to Senovo (2018), many companies also report an annual recurring revenue (ARR), which includes only the licensing fees. It is calculated as follows: $MRR \times 12 = ARR$.

The Annual contract value (ACV) is another critical metric that calculates the total contract value of a client normalised into a yearly view. It is a valuable metric to the company

because it averages out the annual income per client. The total contract value (TCV) is a further important metric that measures the value of a contract, including not only recurring licensing fees but also non-recurring ones. (Senovo 2018.)

As an example of the above, let us assume that client ABC signs a 3-year contract with a 18,000€ software license fee, a 1,000€ onboarding fee, and a 3,000€ consulting fee in the first year.

$$TCV = 18,000€ + 1,000€ + 3,000€ = 22,000€$$

$$ARR = 18,000€ / 3 = 6,000€$$

$$MRR = ARR / 12 = 6,000€ / 12 = 500€$$

$$ACV \text{ (first year)} = 6,000€ + 1,000€ + 2,000€ = 9,000€$$

$$ACV \text{ (second \& third)} = ARR = 6,000€$$

An additional metric that is useful is the life time value (LTV) or customer life time value (CLTV) of a client. This is the sum of revenues that a business can expect to receive from one client during the whole duration of doing business with that client. (Senovo 2018.)

2.8.2 Churn rates

The rate (%) at which clients cancel their recurring subscriptions at a given time frame is called 'churn'. It can also be displayed in the form of MRR churn, which is the loss of revenues that accrue as a result of the lost customers. (Empire Flippers.)

Churn can be calculated as the number of customers cancelling during a specified period, usually measured on a monthly, quarterly, or yearly basis, divided by the number of customers at the beginning of the same period (Empire Flippers). The customer churn ratio can be calculated using the following formula:

$$Customer \ Churn \ Rate \ \% = \frac{\text{Total clients cancelled in period } n}{\text{Total customers at the beginning of period } n} \times 100$$

Using the same logic, the MRR churn ratio can be calculated by the following formula:

$$MRR \ Churn \ Rate \ \% = \frac{\text{Total MRR lost in period } n}{\text{Total MRR at the beginning of period } n} \times 100$$

Monthly recurring revenue churn and customer churn are vital metrics for each SaaS company to track its performance as well as to project its future revenue and growth potential. For a company to remain afloat, the growth rate must be greater than the churn rate. (Empire Flippers.)

2.8.3 Customer acquisition cost (CAC)

Another essential metric, which was also introduced in section 1.6, is the CAC. The CAC equals all sales and marketing expenses, including the salaries of those departments divided by the number of new customers in a specified period. It is a critical metric, as it indicates the value a client should bring to a company for the business to have a profitable model. (Senovo 2018.)

It would be detrimental for a SaaS company to have a CAC greater than its CLTV', which was mentioned in section 2.8.1. This is because the company would be spending more money on acquiring one customer than it would earn from that customer. Keeping track of this ratio is thus highly advisable.

2.9 Sensitivity analysis

Having covered a number of key metrics from sections 2.5–2.8, it is crucial to mention the importance of sensitivity analysis, as this is highly relevant when designing the forecasting tool discussed in chapter 3. In section 1.5, it was decided how one of the benefits of creating the forecasting tool is that it allows the company to create different scenarios; this is, in a sense, what “sensitivity analysis” means. According to Samonas (2015, 139), one of the most important elements of financial forecasting is the use of sensitivity analysis, as it allows the user to see how specific key performance indicators will change through the quick modifications of key inputs.

2.10 Internal analysis

In this section, which relates to PT3 mentioned in section 1.2, the author analyses the company's existing internal financial structure and establishes many of the assumptions that will be used in chapter 3. During this phase, several interactions and informal interviews took place with the company's management team, as it was necessary to collect some of the required data.

The author clarifies that the assumptions made during this section assist him in determining how the forecasting tool should be structured. The numbers used are often over-simplified and do not resemble the actual financial projections of the company, as

that is not the objective of the thesis. Nevertheless, understanding the logic of those assumptions is essential in the process of designing the tool, which is discussed in chapter 3.

2.10.1 Service to be offered

To date, the company has launched a beta version of its service, since it is still in the midst of the research and development process. The service to be provided is a cloud-based operating system. After discussions with the company's management team, it was decided that the forecasting tool should incorporate the ability to forecast the revenue streams from two separate services based on two different subscription models.

One service would be the 'basic' service, and it will be based on a monthly subscription model. The second one is the 'premium' service, which is based on an annual licencing subscription deal. One reason for making this decision is so that management will be able to use the tool to experiment with different subscription models and analyse how each reflects differently from the forecasted profitability.

2.10.2 Pricing and potential clients

The company is targeting mostly medium-market enterprises. The term 'medium sized' can be interpreted differently depending on the geographical location. In this case, it refers to companies that are larger than SMEs but not sizeable enough to be considered large corporations. This definition of the term also applies to the number of employees of the companies that Robo.CEO has been targeting in the past six months as part of its sales efforts.

One of the reasons for the company to target this size of companies is that the operating system it offers requires extensive training and client support. To be able to cover those costs, the client needs to be large enough to justify the income for the commissioning company. The service is not particularly refined at the moment, so larger enterprises with thousands of employees remain out of the company's target market.

In this thesis, when talking about medium- to large-sized companies, the assumption is that each mid-sized organisation has an average of 500 employees.

After discussions with the company's management team, it was decided that for the sake of testing the forecasting tool, the prices of the offered services would be assumed to be 10€ for the 'premium' version and 5€ for the 'basic' version. These assumptions are

intended as an example only. The main objective, as has been mentioned previously, is the construction of the tool to allow the company to experiment with different variables.

The pricing of the service is per active user per client. Robo.CEO assumes that two thirds of the total employees of each company that will use the service will be active users. A client company with 500 employees, means that two thirds of 500 will be active users. This equates to 66.6%, and if rounded up to 70% of the total number of staff, this translates to 350 active users per client.

The assumption is thus that for each client of Robo.CEO, there will be 350 active users. Below, a calculation is made of the amount the company would earn by one client in each subscription plan.

For the basic plan, 350 employees x 5€ per month would result in 1,750€ of revenue per month per basic client. This is defined as the average revenue per account (ARPA). or the average MRR per month per client.

As mentioned earlier, the premium plan clients are assumed to be invoiced on annual basis, unlike the basic plan clients who are invoiced on a monthly basis.

For the premium plan, (350 employees x 10€) X 12 would result in a 42,000€ ARR. Normalising that profit into MRR would occur as follows: $42,000\text{€} / 12 = 3,500\text{€}$ MRR per premium client

3 Developing the forecasting tool

In this chapter, linked to PT4 the author discusses the process of designing the forecasting tool. Throughout the duration of this project, over the course of the various stages of the tool's design, the author was in contact with the company's management team. During this period, the tool was shown to the company's management team, and continuous feedback and advice was received, which was important to be able to design the tool in a manner that is valuable to Robo.CEO.

3.1 Design of the tool

The author built the tool from scratch using Microsoft EXCEL spreadsheets tailored to the particular needs of Robo.CEO. The author utilised and analysed various tools available on the web, and inspiration was drawn from them.

The author emphasises again that the main objective was the development of the tool itself; the numbers that are used and that will be shown for the projections are oversimplified assumptions and, in some cases, randomly chosen. Under no circumstance are the projections meant to be realistic projections.

The Excel tool includes five tabs as listed below:

- Inputs
- Staff Expenses
- Expenses
- Revenue
- P&L and CF

A screenshot of each tab can be found in appendix 1-6. Given the length of the monthly projections, it is not possible to display them all on one page, so the results are presented in yearly totals.

Next, the author elaborates on each tab and explains the reasoning behind the design. The decisions were made partly based on the theoretical base, from company interviews and discussions, and based on the author's own judgment after careful study, as all of these elements included in the tool have been studied and discussed in chapter 2.

3.2 Inputs

The input tab is a sheet where the user of the tool can input most of the variables that will affect the calculations in the rest of the Excel sheets. It allows the user to perform sensitivity analysis, as mentioned in section 2.9 as this tab includes most of the key inputs

which will affect the outcome of key performance metrics. Everything highlighted in yellow in this tab must be input by the user. Part of the input tab is displayed in figure 2.

5	Start month of the forecasts (01.mm.yyyy)	
6		01-07-19
7		
8	Pricing	
9	BASIC - monthly billed subscription	
10	price per active user (€)	5
11	# of employees per client	500
12	% of active users per client	70%
13	# of active users per client	350
14	Average Revenue per Client (ARPC) per month	1,750 €
15		
16	PREMIUM - yearly billed subscription	
17	price per active user (€)	10
18	# of employees per client	500
19	% of active users per client	70%
20	# of active users per client	350
21	ARR per client (€) per month	42,000 €

Figure 2. Input Tab (1)

At the top, the user can input the starting date of projections; this will reflect the starting month of projections for the rest of the tool. Below the date is the 'pricing' block, which controls some of the variables on pricing the products. As was already discussed in section 2.9.2, it is assumed that the company is targeting mid-market sized clients with an average of 500 employees. It is also assumed that 70% of each client comprise the potential users. Furthermore, the price is set to 5€ per active user. The Excel spreadsheet then automatically calculates the number of active users per client, and it calculates the average revenue per client (ARPC) per month, which in this case would be equal to the average MRR per basic client. As already mentioned in section 2.9, it is assumed that the basic plan is a monthly based subscription, while clients on the premium plan are invoiced through an annual licensing model. For the premium pricing plan, the tool is set up to calculate the ARR, which would be the same as the ACV (explained in section 2.8.1). For the sake of simplicity, the author decided not to include variables such as onboarding and training costs, which is why the ACV per client, in this case, is equal to the ARR per client.

The reason the author chose these two options is to allow the company to experiment with two different subscriptions models. With a few adjustments, the tool can be changed if the company wishes to do so.

Figure 3 below presents two more blocks of the input tab, related to growth hypothesis and taxation.

24	Growth Hypothesis	
25	BASIC	
26	Basic clients start of 1st month	20
27	Basic clients growth rate	10.00%
28	Basic clients churn rate per month	5.00%
29		
30	PREMIUM	
31	Premium clients start of 1st month	10
32	Premium clients growth rate	10.00%
33	Churn rate per year	2.00%
34		
35	Taxation	
36	Corporate TAX	20%
37	VAT	N/A

Figure 3. Input Tab (2)

In the above figure, the upper block is the 'growth hypothesis'. The Excel sheet is set so that the right cells related to the first month of projections will update automatically based on what is set for the 'clients start of 1st month', which indicates how many customers the company already has at the beginning of the month. Below that line item is the growth rate of clients, and it is set up to be done monthly. Lastly, there is the input field for the churn rate. For the basic clients, that rate is calculated per month, whereas for the premium clients, it is calculated per year. As mentioned earlier as well, the reason the author chose to create these different options is to allow the company to experiment with various scenarios and then adjust the strategy based on what makes the most sense.

Then, beneath the 'growth hypothesis' block, there is the 'taxation' block where the P&L part of the tool is set up, so it calculates the corporate tax to be able to determine the net profit as explained in section 2.5.4. The author included the VAT option in the 'taxation' block, but it does not currently serve any purpose because it was assumed that Robo.CEO conducts only B2B business, so there would be no VAT involved. However, if the company wishes to change that, it can be done by modifying the tool.

Below in figure 4, the staff hypothesis block can be seen. In the 'general' category, a user can input the average rate for payroll tax and social benefits, which are used in the calculation of staff costs in the 'staff expenses' Excel tab. There is also an assumption of a 1% increase in salaries per year.

5	Staff Hypothesis	
6	GENERAL	
7	Payroll Taxes & Benefits	20%
8	Salary increase per year	1%
9	G&A department	
10	Bonus for G&A department	0%
11	Marketing department	
12	Bonus for marketing team	0%
13	Sales department	
14	Bonus for sales team	40%
15	R&D department	
16	Bonus for R&D department	0%
17	S&S department	
18	clients that one S&S employee can service	20
19	Bonus for S&S department	20%

Figure 4. Input Tab (3)

The option to add average bonuses per department also exists. The reason for including this option is that some departments, for example sales, may have much higher bonuses based on their performance, in comparison to the other teams. If the company wishes to keep things simple, it can simply ignore those tabs and leave them empty. In the customer success and support (S&S) department, there is one extra variable: the maximum number of clients that one S&S employee can handle. This allows the company to automate some of the forecasting of the employees. The same logic can be applied to the other departments by modifying the tool accordingly.

In figure 5, the last block of the inputs tab can be viewed.

5	Expenses	Type	
6			
7	Payment processing fees	COS	1.50%
8	IT Infrastructure % of MRR	COS	7.00%
9	Marketing/Advertising as % of Basic MRR	S&M	20%
10	Office rent	G&A	1,000 €
11	Accounting, Legal and Insurance	G&A	2,000 €
12	Other expenses as a % of MRR	G&A	5%
13	Travel expenses per FTE per month (€)		20 €
14	Miscellaneous expenses per FTE per month (€)		10 €

Figure 5. Input Tab (4)

This figure displays the block where various expenses can be controlled. Payments processing fees and IT infrastructure are based on a percentage of revenue or MRR in this case. Those costs are part of the 'cost of sales', as discussed in section 2.5.5.

Below the COS expenses, marketing/advertising costs are set as a percentage of basic MRR. The reason for this is that all marketing/efforts are assumed to be directed towards the acquisition of basic customers, and all sales activities are assumed to be geared towards acquiring premium customers. This is easy to change by editing the formulas in a few of the Excel cells. The author chose to build the tool this way so it can showcase different options to the commissioning company.

Further down in figure 5, other input variables for the 'general and administrative' expenses can be seen. Office rent is set at 1,000€ per year for the next five years, which is not realistic; however, if required, those expenses can easily be adjusted manually on the expenses tab of the tool.

The staff-related expenses assume an average cost of travel expenses per full-time employee (FTE). Other fees per FTE can be considered to be costs such as phone subscriptions for staff and other small miscellaneous expenses.

3.3 Staff expenses

Staff expenses have three main blocks. Appendix 3 contains the block that counts the headcount of employees. The yearly total can be expanded into a detailed monthly view by pressing the (+) sign on top of the tab. Cells can be edited manually, or formulas can be used to increase the number of employees based on certain variables, just as the author did with the S&S department, as explained earlier in section 3.2.

On the right-hand side of the block, the different titles of employees per department can be seen. This would be useful for creating averages per employee category. For example, if a company is planning to hire 10 junior developers, it would be easier to add the job title 'junior developer' on the right-hand side of the block and then add the number 10 to the relevant month during which those hires will take place, instead of adding 10 different rows per employee.

Assuming the headcount of the employees immediately affects the other blocks in the staff expenses tab, as can be seen in appendix 2. Changes made to the 'staff headcount' block will have an immediate effect on the 'staff salary expenses' block.

Appendix 2 also contains the block called 'other staff-related expenses'. Staff travel costs and staff miscellaneous expenses are calculated based on the variables inputted in the input tab, as explained earlier in section 3.2.

3.4 Expenses

In figure 6 below, the other operational expenses can be viewed. Such operational expenses were discussed in section 2.5.6.

1						
2		ROBO.CEO		Total 2019	Jan-20	Fe
3						
4		Other Expenses	Cost type			
5		COS				
6		Payment processing fees	COS	11,993	2,664	
7		IT Infrastructure	COS	23,137	5,817	
8						
9		Marketing				
10		Marketing/Advertising	S&M	50,705	10,321	
11						
12		G&A				
13		Office rent	G&A	12,000	1,000	
14		Accounting, Legal and Insurance	G&A	24,000	2,000	
15						
16		Total other expenses		121,835	21,802	
17						
18						
19		CASH OUTFLOW (€)				
20		Salaries		227,520	27,120	
21		Other Stafff related Expenses			270	
22		Other Expenses		123,635	22,072	
23		Total Cash Outflow		352,955	49,462	

Figure 6. Expenses

In the expenses tab of the forecasting tool, other operational expenses can be seen that are not related to personnel. The bottom block of the tab displays the total outflow of cash from all costs, including salaries and salary-related costs, and all other costs, including those from COS and the operational side. Details on the different types of costs were covered in sections 2.5.5 to 2.5.6

3.5 Revenue

In figure 7, the revenue structure of the forecasting tool can be seen. The revenue structure on the basic plan has been designed to demonstrate the changes in the number of clients; at the same, in the 'clients' block, the effect on MRR can be seen.

ROBO.CEO	Total 2019	Jan-20	Feb-20
BASIC Plan			
Clients			
Clients start of month	137	28	29
New clients	14	3	3
Churned clients	6	1	1
Total BASIC clients	28	29	31
CAC (€)		431	407
MRR			
MRR start of the month (€)		48,502	48,502
New MRR from new clients (€)	24,002	4,850	5,160
Churned MRR (€)	10,500	1,750	1,750
MRR end of month (€)	48,502	51,603	51,913
m/m growth		6.39%	7.03%

Figure 7. Revenue – Basic Plan

Basic clients in the first month equal the total basic clients from the previous month except for the first month of forecasting, which is input from the input tab. The number of new clients per month is calculated based on the growth rate that can be set from the 'growth hypothesis' block in the input tab. In a similar fashion, churned clients are calculated based on the churn rate set in the input tab. At the bottom of the figure, the month-by-month growth can be seen, as mentioned in section 2.8.1. The MRR is one of the most important metrics.

As explained in detail in section 2.8.3, the CAC is calculated with the assumption that 100% of marketing expenses are attributed to the acquisition of basic clients and 100% of sales expenses are attributed to the acquisition of premium clients as we mentioned earlier in section 3.2.

Similarly, figure 8 illustrates the revenue structure for the premium plan.

ROBO.CEO	Total 2019	Jan-20	Feb-20
PREMIUM Plan			
Clients			
Clients start of the month		17	19
New clients	7	2	2
Clients up for renewal	6	1	1
Clients who renewed	6	1	1
Churned clients	0	0	0
Total PREMIUM clients	17	19	21
CAC (€)		1,680	1,680
MRR			
MRR beginning of the month (€)		24,500	31,500
New MRR from new clients (€)	24,500	7,000	7,000
Lost MRR (churn) (€)	0	0	0
MRR end of month (€)	24,500	31,500	38,500
m/m growth		28.57%	22.22%

Figure 8. Revenue – Premium Plan

The main difference between the basic and premium plans is that in the latter plan's model, the number of clients who are up for renewal is calculated every year because of the assumption that premium clients are invoiced in annual contracts. The formula has been set up so that, for example, if in June 2019, there are five new clients, then those five clients will appear for renewal after 12 months. The churn ratio for premium clients that is set in the input tab is calculated only from customers who are up for renewal each month. The author did this because of the need to design the tool to showcase two different subscription models, as discussed in section 2.9.

Finally, in figure 9 below, the total number of clients and MRR and the effect on the CF can be seen.

ROBO.CEO	Total 2019	Jan-20	Feb-20
TOTAL Clients & MRR			
Clients			
Clients start of month		45	48
New clients	21	5	5
Churned clients	6	1	1
Total clients	45	48	52
MRR			
MRR beginning of month (€)		73,002	80,002
New MRR from new clients (€)	48,502	11,850	12,160
Lost MRR (churn) (€)	10,500	1,750	1,750
MRR end of month (€)	73,002	83,103	90,413
m/m growth		13.84%	8.80%
Gross MRR churn rate		2.40%	2.19%
CASH Inflow			
Cash In from BASIC clients (€)	253,525	51,603	51,913
Cash inflow from new PREMIUM clients (€)	294,000	84,000	84,000
Cash inflow from PREMIUM renewals (€)	252,000	42,000	42,000
Total cash inflow	799,525	177,603	177,913

Figure 9. Revenue – Total MRR and Cash Inflow

In figure 9, we can view the total number of clients and the total MRR movements among new clients and churned clients. The gross MRR churn rate is also calculated. It indicates the % loss of MRR about the MRR at the beginning of the month.

It is important to mention the difference in how the effect of the MRR is treated between the contracts with basic versus premium clients. Let us assume that the company will invoice one premium client in June 2020 for 12,000€. While the whole amount of 12,000€ will reflect on the cash inflow during that month, the MRR for that client in June 2020 will only be 1,000€. Details about this and why it happens were explained in section 2.8.1.

3.6 P&L and CF

Lastly, P&L and CF comprise the main tab of the forecasting tool. It resembles the P&L statement discussed in section 2.5 and a simplified version of the CF statement discussed in more detail in section 2.7. The P&L and CF tab is important because it displays on one page the profitability of the company as a whole, and the cash balance can be checked.

In figure 10 below, the revenue component of the P&L is depicted.

ROBO.CEO	Total 2019	Jan-20
P&L (€)		
Revenue	330,525	83,103
BASIC MRR	253,525	51,603
PREMIUM MRR	82	19
Cost of Sales (COS)	69,690	14,241
% of revenues	21%	17%
Gross Profit	260,836	68,861
Gross margin %	79%	83%

Figure 10. P&L – Revenue

In the above figure, the total revenue, which is the sum of MRR from the basic and premium plans, can be seen. It was assumed here that the company revenue equals the MRR. In reality, if a company receives income from elsewhere, for example from consulting services, that income should not be count towards the MRR, as explained in section 2.8.1. Instead, it would need to be recorded separately.

Further down, the COS, which was discussed in section 2.5.5, is calculated and is also presented as a ratio of the revenues. Additionally, at the bottom of figure 10, the gross profit and gross margin ratios, which were described in sections 2.5.1 and 2.5.2, are calculated and displayed.

In figure 11, the operational expenses are represented and can be seen categorised per department, as discussed in section 2.5.6. The percentage of that amount that comes from salaries is also calculated in the form of a ratio of the revenues.

ROBO.CEO	Total 2019	Jan-20	Feb-20
Operating Expenses			
Research & Development	86,400	7,200	
% of revenues	26%	9%	
Sales & Marketing	91,025	16,081	
% of revenues	28%	19%	
General & Administrative	138,926	15,555	
% of revenues	42%	19%	
Total Operating Costs	316,351	38,836	
% of revenues	96%	47%	
Operating Profit/Loss	-55,516	30,026	
Taxes	-11,103	6,005	
Net Profit/Loss	-44,412	24,021	

Figure 11. P&L – OPEX

At the bottom of the figure, the operating profit after deducting the operational expenses can be seen, and then, by deducting the taxes, the net profit or loss is calculated as discussed in section 2.5.4. It was assumed that no interest expenses were involved, as they would cause more complexity.

Lastly, in figure 12 below, a simplified CF statement can be seen.

ROBO.CEO	Total 2019	Jan-20	Feb-20
Cash Flow (CF) (€)			
Cash inflow	799,525	177,603	
Cash outflow	369,481	53,617	
Total operating cashflow	430,044	123,986	
Starting bank balance		365,588	
Cash from funding	400,000	0	
Cash from operations	430,044	123,986	
Cash after taxes	-44,412	24,021	
Ending cash balance		389,608	

Figure 12. Cash Flow

The upper block of figure 12 indicates the movement of CF in and out of the company from operating activities. In the bottom block, the starting balance for each month can be seen, along with any cash inflow from funding. Deducting cash for paying taxes results in the ending cash balance of each month. If that figure is or becomes negative in any given month, that means the company will not have the means to meet its financial obligations.

4 Recommendations

In this chapter, which relates to PT5, the authors discuss some important recommendations for the company that could be used to further maximise the use and value of the forecasting tool.

4.1 Efficient tracking

Efficient tracking among different areas of the business is highly recommended. The authors suggest that the management team develop a more efficient accounting tracking system, as this would be helpful in understanding their cost structure and where and why money is spent. By analysing the historical data, the company can make improvements in areas that may be lacking. Another important metric to track is the lead-to-customer rate and the paid trial-to-full client rate. This would require that sales efforts be tracked efficiently through the whole sales funnel, for example, by the use of a customer retention management (CRM) tool. This would provide the company with insights it could use to analyse the data and evaluate where it may be lacking and where improvements can be made.

4.2 Free trial

It is the norm for many SaaS companies to offer free, scaled-down versions of their services or free trials for a limited – or sometimes unlimited – time. There is no right way to do this. Many companies constantly experiment with different ways to attract more customers. The bottom line is that the company may benefit by offering part of their service for free in one way or another; with proper implementation, this can lead to higher traction and higher conversions to the paid subscription plans that the company may offer.

4.3 Up-selling and cross-selling

The author decided not to include scenarios of downgrades or upgrades from the two different subscription models offered by the company, as those would make the tool quite complicated for the present needs. As the strategy of the company evolves, and as the business finds its market fit, a key recommendation is to include the scenarios and assumptions of subscription downgrades and upgrades or the option of cross-selling or up-selling/down-selling. The possibilities can be limitless, so the goal is to build the scenarios that are relevant to the company's business model.

4.4 Continuous update

The tool must be improved and further developed according to the changes in the organisation. The tool is not meant to be a final work, as this would be impossible; instead, it must continuously be updated and edited based on the changes that occur in the company. The author's recommendation is to review the tool at least once a month. The reason for that is that, nature of any startup is fluid, meaning that things change. The numbers should always be up to date based on the different direction that the company may take shortly.

4.5 Valuation

The forecasting tool allows management to quickly conduct a valuation of the company by using the discounted CF method. This can be used to demonstrate to investors the potential value of the company based on the financial projections. It would be highly recommended to include a separate tab on the Excel tool that displays the potential future value of the company.

5 Conclusions

In this chapter, linked to PT6 the author discusses the key outcomes, offers suggestions to the company for further development, and evaluates the projections. The thesis concludes with a reflection on what was learnt from the process.

5.1 Key outcomes

Through the construction of a forecasting tool and the financial projection, the author accomplished the intended objective of this thesis and is highly satisfied overall with the result of the project, as is the management team of the commissioning company. Furthermore, through the study of accounting theory about the SaaS industry, which relates to PT 2, the author was able to investigate several relevant KPIs and metrics that are used to measure the financial health of the company, such as those related to profitability.

The tool which was explained in detail in chapter 3 can be considered to be of a high quality, compared to other publicly available tools – it matches closely to tools built by even more experienced individuals in the field. Moreover, even though the tool is tailor-made for Robo.CEO, other parties, for example subscription-based startups at an early pre-market fit phase, could benefit from using the tool when planning for their own financial forecasting needs, since the tool is built to be easily adjustable and scalable.

5.2 Suggestions for further development of the tool

The tool can be expanded, and with the use of complicated macros, it could become more detailed in every aspect and incorporate many additional variables. Since the company has not yet determined an exact market fit, and given the fluid nature of an early-stage, pre-revenue, pre-market fit startup, the tool would need to be updated and edited according to the changes to the company's strategy. The author's recommendation is that the company evaluates the use of the tool every month and adapts it to the current business needs. Once the company begins to generate revenues, many of the operations, as well as the revenue and cost structure, will be more transparent, and more solid assumptions can consequently be made. This will allow the financial planner of the company to make the proper adjustments, so the tool remains relevant at all times.

5.3 Project evaluation

The process of this project started by initially assessing the needs of the company (PT1) and then studying the relevant theoretical concepts and models (PT2) required to design the end product. The concepts covered in chapter 2 allowed the author to understand the process and the critical elements needed to create a financial forecasting model.

The lack of historical financial data of the company and the challenges posed from the nature of an early-stage startup company proved to be more challenging than what was initially thought. Despite that, with the careful study of the relevant theory, along with input from advisors at HH and the support of friends, the author was able to overcome those challenges and create a valuable result, as can be seen in chapter 3.

Furthermore, the author prepared vital recommendations (chapter 4) for the company in regard to the use of the tool. The company should keep them in mind in the short-term to extract maximum value from the use of the tool.

5.4 Reflection on learning

During this project, the author had to familiarise himself with many accounting concepts that went beyond the study material covered during the curriculum of his degree programme. The process was valuable as it helped him to gain more knowledge and become more adequate in the field. Additionally, the author gained a significant understanding of the SaaS industry.

The process of planning and building a financial modelling tool, which is covered in chapter 3, is directly related to the author's future career aspirations as a financial analyst. The creation of the tool itself was a substantial part of this project, and it was significantly valuable, resulting in the author developing several skills in financial analysis and project management methods that can be used in the future in his professional development.

Being in constant contact with the company's management team and having back-and-forth communication over the duration of the thesis allowed the author to complete a project that is useful for a real, practical case. It also allowed him to receive valuable feedback from real company founders and investors involved in the tech industry, which resulted in gaining valuable insight into the industry. Also, the practical aspect of this project is one of the highlights concerning personal learning. The author and the commissioning company are delighted with the outcome of this project.

5.5 Closing notes

The author wishes to thank everyone who offered his or her advice and support throughout this project; without them, the completion of this thesis would have felt like an impossible task. Those individuals include the academic advisor, the thesis advisor, the language advisor, the specialisation advisor, and other staff from the university of HH who indirectly advised the author. Also, the vast support and motivation from close friends and family made this thesis possible.

Thank You!

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Appendices

Appendix 1. Inputs tab

	B	C	D	E	F	G
4						
5	Start month of the forecasts (01.mm.yyyy)	01-07-19	Staff Hypothesis			
6			GENERAL			
7			Payroll Taxes & Benefits		20%	
8	Pricing		Salary increase per year		1%	
9	BASIC - monthly billed subscription		G&A department			
10	price per active user (€)	5	Bonus for G&A department		0%	
11	# of employees per client	500	Marketing department			
12	% of active users per client	70%	Bonus for marketing team		0%	
13	# of active users per client	350	Sales department			
14	Average Revenue per Client (ARPC) per month	1,750 €	Bonus for sales team		40%	
15			R&D department			
16	PREMIUM - yearly billed subscription		Bonus for R&D department		0%	
17	price per active user (€)	10	S&S department			
18	# of employees per client	500	clients that one S&S employye can service		20	
19	% of active users per client	70%	Bonus for S&S department		20%	
20	# of active users per client	350				
21	ARR per client (€) per month	42,000 €	Expenses		Type	
22						
23			Payment processing fees		COS	1,50%
24	Growth Hypothesis		IT Infrastructure % of MRR		COS	7,00%
25	BASIC		Marketing/Advertising as % of Basic MRR		S&M	20%
26	Basic clients start of 1st month	20	Office rent		G&A	1,000 €
27	Basic clients growth rate	10,00%	Accounting, Legal and Insurance		G&A	2,000 €
28	Basic clients churn rate per month	5,00%	Other expenses as a % of MRR		G&A	5%
29			Travel expenses per FTE per month (€)			20 €
30	PREMIUM		Miscellaneous expenses per FTE per month (€)			10 €
31	Premium clients start of 1st month	10				
32	Premium clients growth rate	10,00%				
33	Churn rate per year	2,00%				
34						
35	Taxation					
36	Corporate TAX	20%				
37	VAT	N/A				

Appendix 2. Staff expenses tab (1)

ROBO.CEO		Total 2019	Total 2020	Total 2021	Total 2022	Total 2023
Staff Salary Expenses (€)	Cost type	Monthly salary (€)				
including bonuses, taxes and benefits						
G&A FTEs						
Founder		5,000	72,000	72,000	72,000	72,000
C Level		2,000	14,400	28,800	28,800	28,800
TBD		0	0	0	0	0
TBD		0	0	0	0	0
Total G&A Salaries	G&A		86,400	100,800	100,800	100,800
G&A FTEs						
R&D FTEs						
Founder		4,000	57,600	57,600	57,600	57,600
Senior Developers		0	0	0	0	0
Junior Developers		0	0	0	0	0
UX/UI Designers		2,000	0	0	0	0
TBD		0	0	0	0	0
Total R&D Salaries	R&D		86,400	86,400	86,400	86,400
R&D FTEs						
Marketing FTEs						
Social Media Expert		2,000	0	28,800	28,800	28,800
TBD		0	0	0	0	0
TBD		0	0	0	0	0
TBD		0	0	0	0	0
Total Marketing Salaries	S&M		0	28,800	28,800	28,800
Marketing FTEs						
Sales FTEs						
VP Sales		0	0	0	0	0
Sales Directors		0	0	0	0	0
Account Executives		2,000	20,160	40,320	40,320	40,320
TBD		0	0	0	0	0
TBD		0	0	0	0	0
Total Sales Salaries	S&M		20,160	40,320	40,320	40,320
Sales FTEs						
Customer S&S FTEs						
Customer S&S Director		0	0	0	0	0
TBD		0	0	0	0	0
Customer S&S Manager for both plans		2,000	0	0	0	0
Total Customer S&S Salaries	CoGS		34,560	123,840	308,160	797,760
CS FTEs						
Total Salaries			227,520	380,160	564,480	1,054,080
Total FTEs						
Other Staff related Expenses						
Total staff travel costs			1,200	2,540	3,820	7,220
Total staff miscellaneous expenses			600	1,270	1,910	3,610
Total other staff related			1,800	3,810	5,730	10,830
Total Staff related Expenses			229,320	383,970	570,210	1,064,910

Appendix 3. Staff expenses tab (2)

ROBO.CEO	Total 2019	Total 2020	Total 2021	Total 2022	Total 2023
Staff Headcount					
G&A FTEs					
Founder	1	1	1	1	1
C Level	1	1	1	1	1
TBD	0	0	0	0	0
TBD	0	0	0	0	0
Total G&A FTEs #	2	2	2	2	2
R&D FTEs					
Founder	1	1	1	1	1
Senior Developers	0	0	0	0	0
Junior Developers	0	0	0	0	0
UX/UI Designers	1	1	1	1	1
TBD	0	0	0	0	0
Total R&D FTEs #	2	2	2	2	2
Marketing FTEs					
Social Media Expert	0	1	1	1	1
TBD	0	0	0	0	0
TBD	0	0	0	0	0
TBD	0	0	0	0	0
Total Marketing FTEs #	0	1	1	1	1
Sales FTEs					
VP Sales	0	0	0	0	0
Sales Directors	0	1	1	1	1
Account Executives	1	1	1	1	1
TBD	0	0	0	0	0
TBD	0	0	0	0	0
Total Sales FTEs #	1	2	2	2	2
Customer S&S FTEs					
Customer S&S Director	0	0	0	0	0
TBD	0	0	0	0	0
Customer S&S Manager for both plans	2	5	13	35	100
Total Customer S&S FTEs #	2	5	13	35	100
Total FTEs #	7	12	20	42	107

Appendix 4. Expenses tab

ROBO.CEO		Total 2019	Total 2020	Total 2021	Total 2022	Total 2023
Other Expenses	Cost type					
COS						
Payment processing fees	COS	11,993	42,072	98,165	265,692	784,172
IT Infrastructure	COS	23,137	120,141	363,042	1,084,321	3,303,728
Marketing						
Marketing/Advertising	S&M	50,705	140,961	208,464	325,359	535,222
G&A						
Office rent	G&A	12,000	12,000	12,000	12,000	12,000
Accounting, Legal and Insurance	G&A	24,000	24,000	24,000	24,000	24,000
Total other expenses		121,835	339,174	705,671	1,711,372	4,659,122
CASH OUTFLOW (€)						
Salaries		227,520	380,160	616,320	1,105,920	2,589,120
Other Staff related Expenses						26,460
Other Expenses		123,635	342,984	711,761	1,722,562	4,685,582
Total Cash Outflow		352,955	726,954	1,334,171	2,839,672	7,301,162

Appendix 5. Revenue tab

ROBO.CEO	Total 2019	Total 2020	Total 2021	Total 2022	Total 2023
BASIC Plan					
Clients					
Clients start of month	137	439		1,410	2,519
New clients	14	44		141	252
Churned clients	6	22	40	71	127
Total BASIC clients	28	50	88	158	283
CAC (€)					
MRR					
MRR start of the month (€)				1,504,369	2,457,622
New MRR from new clients (€)	24,002	76,906	137,888	246,677	440,740
Churned MRR (€)	10,500	38,500	70,000	124,250	222,250
MRR end of month (€)	48,502	68,620	102,513	164,142	277,755
m/m growth					
PREMIUM Plan					
Clients					
Clients start of the month					
New clients	7	38	119	371	1,169
Clients up for renewal	6	12	12	12	12
Clients who renewed	6	12	12	12	12
Churned clients	0	0	0	0	0
Total PREMIUM clients	17	55	174	545	1,714
CAC (€)					
MRR					
MRR beginning of the month (€)					
New MRR from new clients (€)	24,500	133,000	416,500	1,298,500	4,091,500
Lost MRR (churn) (€)	0	0	0	0	0
MRR end of month (€)	24,500	157,500	574,000	1,872,500	5,964,000
m/m growth					
TOTAL Clients & MRR					
Clients					
Clients start of month					
New clients	21	82	198	512	1,421
Churned clients	6	22	40	71	127
Total clients	45	105	262	703	1,997
MRR					
MRR beginning of month (€)					
New MRR from new clients (€)	48,502	209,906	554,388	1,545,177	4,532,240
Lost MRR (churn) (€)	10,500	38,500	70,000	124,250	222,250
MRR end of month (€)	73,002	226,120	676,513	2,036,642	6,241,755
m/m growth					
Gross MRR churn rate					
CASH Inflow					
Cash In from BASIC clients (€)	253,525	704,804	1,042,319	1,626,796	2,676,112
Cash inflow from new PREMIUM clients (€)	294,000	1,596,000	4,998,000	15,582,000	49,098,000
Cash inflow from PREMIUM renewals (€)	252,000	504,000	504,000	504,000	504,000
Total cash inflow	799,525	2,804,804	6,544,319	17,712,796	52,278,112

Appendix 6. P&L and CF tab

ROBO.CEO	Total 2019	Total 2020	Total 2021	Total 2022	Total 2023
P&L (€)					
Revenue	330,525	1,716,304	5,186,319	15,490,296	47,196,112
BASIC MRR					
PREMIUM MRR					
Cost of Sales (COS)	69,690	286,053	769,367	2,147,773	6,317,020
% of revenues	21%	17%	15%	14%	13%
Gross Profit	260,836	1,430,251	4,416,952	13,342,523	40,879,092
Gross margin %	79%	83%	85%	86%	87%
Operating Expenses					
Research & Development	86,400	86,400	86,400	86,400	86,400
% of revenues	26%	5%	2%	1%	0%
Sales & Marketing	91,025	273,441	340,944	457,839	667,702
% of revenues	28%	16%	7%	3%	1%
General & Administrative	138,926	222,615	396,116	911,315	2,496,606
% of revenues	42%	13%	8%	6%	5%
Total Operating Costs	316,351	582,456	823,460	1,455,554	3,250,708
% of revenues	96%	34%	16%	9%	7%
% of which from salaries					
Operating Profit/Loss	-55,516	847,795	3,593,492	11,886,969	37,628,384
Taxes	-11,103	169,559	718,698	2,377,394	7,525,677
Net Profit/Loss	-44,412	678,236	2,874,794	9,509,575	30,102,707
Cash Flow (CF) (€)					
Cash inflow	799,525	2,804,804	6,544,319	17,712,796	52,278,112
Cash outflow	369,481	812,769	1,540,927	3,561,627	9,555,847
Total operating cashflow	430,044	1,992,035	5,003,392	14,151,169	42,722,264
Starting bank balance					
Cash from funding	400,000	0	0	0	0
Cash from operations	430,044	1,992,035	5,003,392	14,151,169	42,722,264
Cash after taxes	-44,412	678,236	2,874,794	9,509,575	30,102,707
Ending cash balance					