Preparation of the budgeting tool and different financial analyses.
Commissioning company: Lumoa.me Oy

Nhan Nguyen Thi Thanh

Abstract

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Author(s) Nhan Nguyen Thi Thanh	
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The main topic of this bachelor's thesis is to design a master budget for 2018-2024 and prepare different analyses for Lumoa.me Oy, which is a Finnish computer software start-up established in 2016. The company provides a software-as-a-service (SaaS) online platform to collect, process and analyse customer feedback and turn it into actionable insights in a fast and easy manner. The final product is expected to be an Excel budgeting tool together with different financial analyses.

This is a product-oriented thesis, which includes two parts: a theory section and an empirical section. The whole structure is divided into five separate project tasks. The first section consists of three tasks, which establish the relationship of theories to budget project implementation. The second section illustrates how the author designed the tool and prepared selected analyses in tasks four and five, respectively. In detail, task one and task two discuss the role of budgeting in management and the budgeting process. Task three describes the business structure of a SaaS company and its characteristics generally. After that, there is a brief introduction of selected analyses and reasons why they are needed for the commissioning company. The process of creating a master budget for the commissioning company is addressed carefully in task four. Next, project task five focuses on developing different analyses such as breakeven revenue, customer-revenue analysis, cash flow analysis, scenario analysis and finally variance analysis for controlling purposes. Lastly, task six is aimed at evaluating the project.

The main software used to design the budgets and prepare different analyses is Microsoft Excel. As a result, the final product comprises a master budget and a set of analyses. In the master budget, an operating budget and a financial budget are budgeted monthly in the first two years from 2018 to 2019. Following that, there is a simple forecasting of the next five years from 2019 to 2024. The operating budget is made up of a sales budget, a sales & administration (S&A) expense budget, and an income statement budget, while a cash flow budget is considered as a financial budget. In addition, for every budget, there is a summary table to capture the proportion of each element in that budget annualized in each year.

Overall, the thesis was delivered on time and met the commissioning company's expectations. The CEO was also satisfied with the end results and found the master budget very helpful in her daily work.

Keywords
Budgeting, Budget, Master Budget, Operating budget, Financial budget, Sensitivity analysis, Variance analysis.

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Abbreviations

ARR	Annual recurring revenue
ARPA	Average recurring revenue per account
CAC	Cost of acquiring customer
CEO	Chief executive officer
CLV	Customer lifetime revenue
COR	Cost of revenue
COGS	Cost of goods sold
CS	Cost to serve
EBIT	Earnings before interest and tax
MRR	Monthly recurring revenue
Oy	Osakeyhtiö
P&L	Profit and loss
PO	Project objective
PT	Project task
R&D	Research and development
S&A	Sales and administration
SaaS	Software-as-a-service
SRS	Source-of-revenue statement
VAT	Value-added tax

1 Introduction

Budgeting is one of the most important accounting processes for any company; especially it is needed in internal management. Budgeting helps managers to implement an organization's strategies by translating them into concrete figures. A budget is a result of the budgeting process, which itself presents clearly how business plans are tackled and shows the potential growth to attract investors. Companies use budgets to plan in advance resources, to minimize uncertainties and risks related to their business and to motivate employees to achieve an organization's common goals. At the same time, a budget also provides a useful measurement of the financial results in comparing with its expected performance.

1.1 Background

Personally, the author is very interested in budgeting topic and wants to expand her knowledge on this matter. In particular, the thesis writer always wishes to learn more about how budgets are built in practice, taking into consideration the real business concerns and requirements. Budgeting is a necessary skill for every manager, however, mastering this skill requires a lot of time and practice. Understanding the budgeting process is easy but managing the whole budgeting process efficiently is quite challenging. The author's expectations of this thesis process were gaining both theoretical and practical experience on budgeting and accounting, sharpening her forecasting and analysing skills, and lastly, developing a good sense of designing an effective financial tool.

For the case company, it lacks resources to make a good master budget. Because of that, data was not automatically updated due to a poor design. Too much information was put on one sheet, and it was really hard to keep track of each element. Additionally, there were no proper analyses created for budgeting purpose for the commissioning company. Therefore, it was a need to re-design a full package of operating and financial budgets and prepare a set of appropriate analyses for the case company. Those objectives are the primary purpose of doing this thesis. To increase productivity and efficiency, advanced functions of Excel are used as much as possible to create an automatically updated budget and produce quick and dynamic analyses.

1.2 Project objectives and tasks

This is a product-oriented thesis; the expected outcome is an Excel file containing a set of different sub-budgets and analyses. The project objective and the project tasks are listed below.

Project objective (PO): Designing budgeting tool in an automatic way and preparing different analyses for the commissioning company. (Table 1)

Project tasks (PTs):

- PT1: Establishing the purposes of budgeting.
- PT2: Defining budgeting process and its elements.
- PT3: Research about SaaS business and its key properties.
- PT4: Creating the budgeting tool.
- PT5: Preparing analyses and calculating key metrics
- PT6: Discussion and evaluation.

Table 1: Overlay matrix

Project task	Methods	Outcomes	Chapter
PT1: Establishing the purposes of budgeting	Desktop research	Purpose of budgeting in management accounting	2
PT2: Defining budgeting process and its elements	Desktop research	Budgeting process and its elements	2
PT3: Research about SaaS business and selected financial analyses	Desktop research and theoretical framework.	General idea about SaaS companies and selected financial analyses	2
PT4: Creating a master budget	Excel tool	Practical implement of creating budgets	3
PT5: Key metrics calculation and preparing analyses	Excel tool.	Calculating key metrics and preparing practical analyses	4, 5
PT6: Discussion and evaluation	Main findings, personal learning, limitations and company feedback	Self-evaluation and feedback from the commissioning company	6

1.3 Project scope

The scope of this thesis is to create a tool for internal management budgeting, which plans and controls business activities and financial results from 2018 to 2024. Figure 1 below shows what are covered in the final product. On the left side, the master budget comprises of operating budgets such as sales, expenses and income statement budget. For analyzing part, the main focus is customer-profitability, cash flow, 'what-if' scenario and sensitivity analyses.

Master Budget → **Analyses**

Operating budget:
- Sales budget
- Expense budget
-Income statement

Financial budget:
- Cash flow budget

Profitability analysis:
- SaaS Customer-Profitability analysis
- Scenario analysis
- Sensitivity analysis

Cash flow analysis

Variance analysis tool
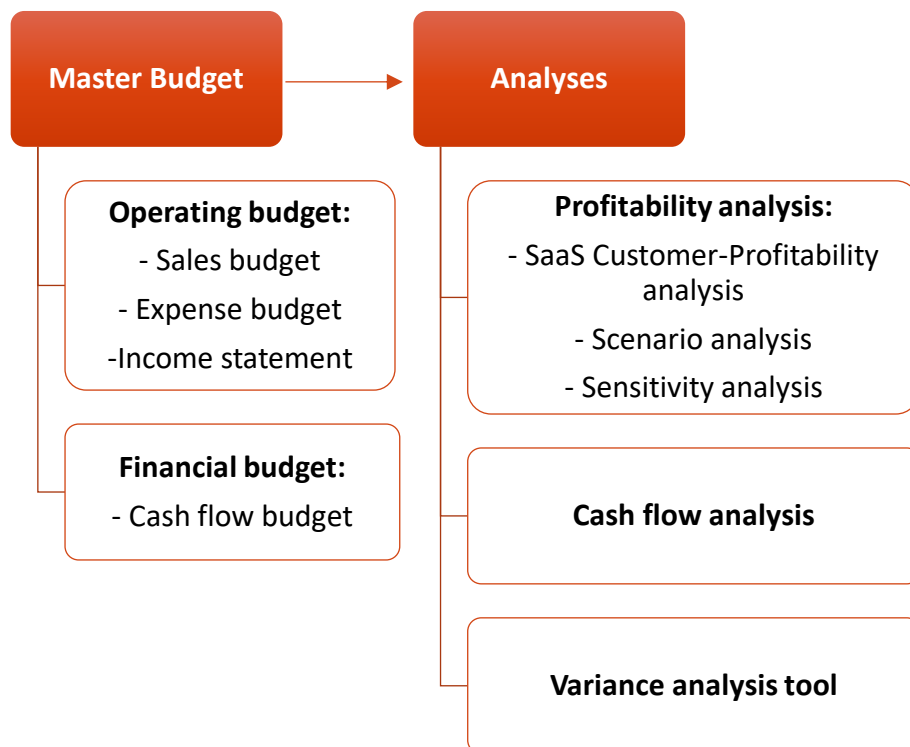
Figure 1: Scope of the thesis

1.4 International aspects

Talking about international aspects of this thesis, the main language of the budget is English, which makes it easier to be edited and implemented by foreigner employees when the company grows bigger in other countries rather than Finland or when the commissioning company seeks for funds from international investors. Furthermore, other students, who are interested in this topic can also use this thesis as a reference for their studies. Even students who have basic accounting background could understand and follow the whole process.

1.5   Anticipated benefits

From the commissioning company's view, they benefit from having a proper budgeting tool for long-term usage and a guideline for preparing several analyses. The company just celebrated their first fiscal year in operation in November 2017; hence it would be a huge advantage to have somebody create variance analysis tool for controlling purpose. Moreover, to enhance the tool's application in variance analysis purpose, a simple tool for summarizing the actual outcomes (for instance: revenue, expenses, income statement and cash flow) was added into the final product. A manager or CEO can easily extract numbers from accounting software into the tool and analyse variance, either monthly, quarterly or yearly.

On the other hand, the author did strengthen her knowledge regarding the budgeting topic, how to select proper quantitative methods to analyse data using Excel, and practical skills of applying theories into the real project. Addition to that, the ability to work in team and other soft skills such as communication and project management, have also been improved.

1.6   Key concepts

Budgeting is considered as a process, which consists of a set of different activities performed so as to prepare a detailed financial budget for a specific period (Accounting Coach, 2018).

Budget is defined as a quantitative plan or a financial plan, which is prepared for a specific time period, usually for one fiscal year. It shows how a company acquires and allocates its resources. (Hilton 2008, 348; Kaplan financial knowledge bank, 2018).

Master budget is made up of both management's operating and financial plans for a given period of time, usually for one fiscal year (Datar & Rajan 2018, 199).

Operating budget is a crucial part of a master budget, which comprises a budgeted income statement (for operations) and its supporting budgets (Datar & Rajan 2018, 203).

Financial budget is another part of the master budget that focuses on how operations and planned capital outlays affect cash. Specifically, capital expenditures budget, balance sheet, and the budgeted statement of cash flows are some of its components. (Datar & Rajan 2018, 203.)

Sensitivity analysis is known as a "what-if" technique that managers use to examine how sensitive an outcome will be if there are any changes occurred in the original predicted data or an underlying assumption (Datar & Rajan 2018, 203).

Variance analysis is one of controlling and evaluating activities, which is used to analyse the difference between actual results and expected performance (Datar & Rajan 2018, 250).

1.7 Case company introduction

Lumoame Oy is a technology start-up company established in 2016 by three people, who used to work in Nokia and then Microsoft for more than ten years. Earlier in their careers, they had been designing customer experience measurement and management system. After quitting from Microsoft, they decided to collaborate to found a company and utilize their learnings of customer experience to productize it for the benefit of other companies.

Lumoa's solution process can be seen clearly in figure 2 below. Lumoa's service is targeted to companies which receive large amounts of customer feedback. It is a software-as-a-service (SaaS) online platform for companies, which want to process customer feedback and turn it into actionable insights in an easy and fast manner. In other words, Lumoa's online service assists decision makers in enterprises to understand the positive and negative drivers of their customer experience. A large amount of feedback is processed into actionable insights, which enables companies to reduce churn, react to issues in real time and empower the whole organization to make improvements. The service handles text feedback in more than 60 languages. (Lumoa.me 2017.)
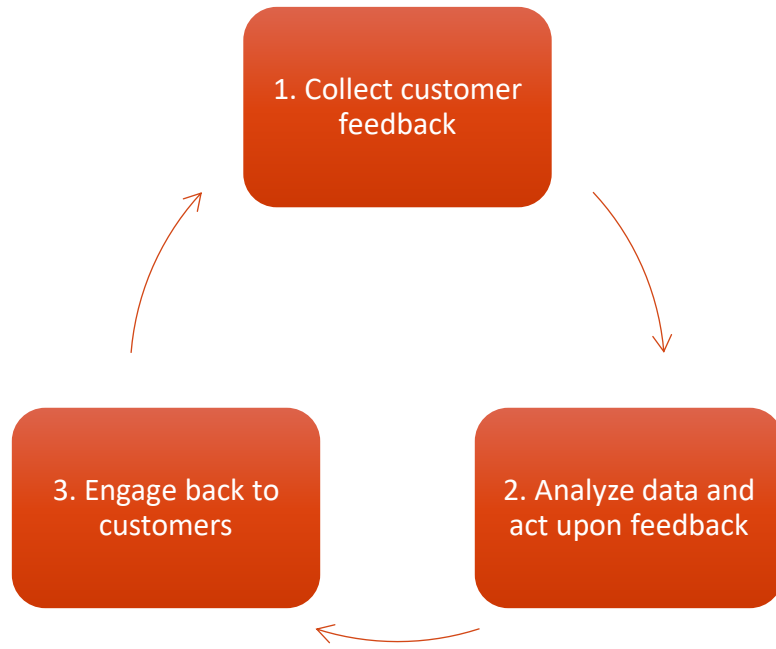
Figure 2: Lumoa's solution process (Lumoa.me 2017)

2 Connecting theories to the budgeting tool implementation

Chapter 2 focuses mainly on talking about theories of budgeting and how they are related to the budget designing process, general information of SaaS company as well as addressing key selected analyses for the commissioning company.

2.1 Budgeting in management

Apparently, budgeting plays an essential role in business, and it is undeniable how important budgeting is to managers in doing a good job. Kaplan financial knowledge bank (2018) defined budgeting as "a crucial area of management accounting, which particularly impacts on the areas of planning, control and performance management." Another way of defining budgeting by Accounting Coach (2018) is to consider budgeting as a process, which consists of a set of activities performed so as to prepare a budget. A budget is a financial plan, which is used to control future operations and manage results to keep up with company's goals both in short-term and long-term perspective (McWatters & al 2008, 266).

Purposes of budgeting

Figure 3: Purposes of budgeting

7

As mentioned above, budgeting is an important management mechanism in every company and in every department of that organization. Datar & Rajan (2018, 200), also supported by Kaplan financial knowledge bank (2018), stated that budgeting helps companies operate and allocate resources more effectively and efficiently. It also facilitates planning, control, maintains a smooth flow of communication and coordination between departments, serves as an excellent tool for managers to evaluate performances, at the same time, motivates employees in any level (Figure 3 above).

Planning and budgeting process

Budgeting is, indeed, a form of planning. Sharing a similar view regarding planning hierarchy in business, Kaplan financial knowledge bank (10 February 2018) and Datar & Rajan (2018, 199) described a planning process starting from strategy phase, followed by tactic (long-run) planning, and lastly operational (short-run) planning.
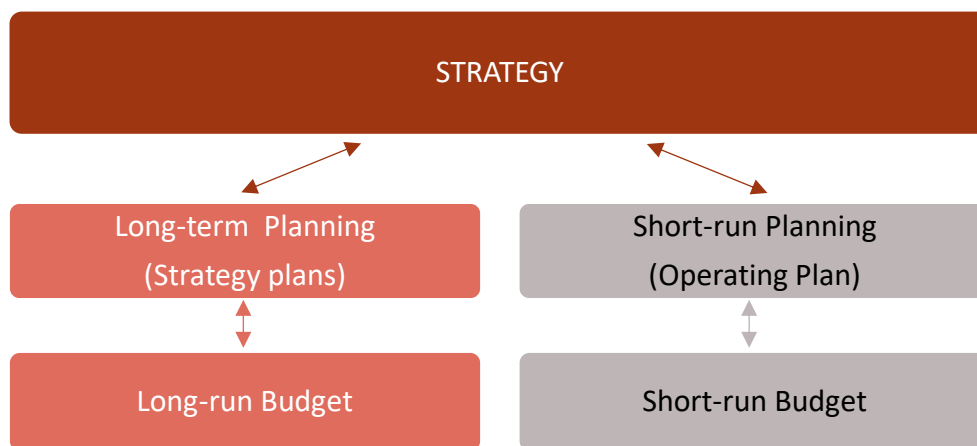
Figure 4: Strategy, Planning, Budgets (Datar & Rajan 2018, 199)

In strategy phase, corporate goals, which is a set of long-term objectives, often from 5 to 10 years, are discussed carefully such as earnings growth, cost minimization, sales, and production volume, return on investment, and so forth (Shim & al 2011, 2). After that, long-term and short-term plans are drawn up to accomplish those goals. To succeed in the budgeting process, strong communication is required at all levels of the organization. Otherwise, the effort will fail, leading to unfavorable events to the business. That is why all the arrows used in Figure 4 are two-way.

Continue from that, it comes to the budgeting process. Shim & al (2011, 12) described six steps in a budgeting process as follows:
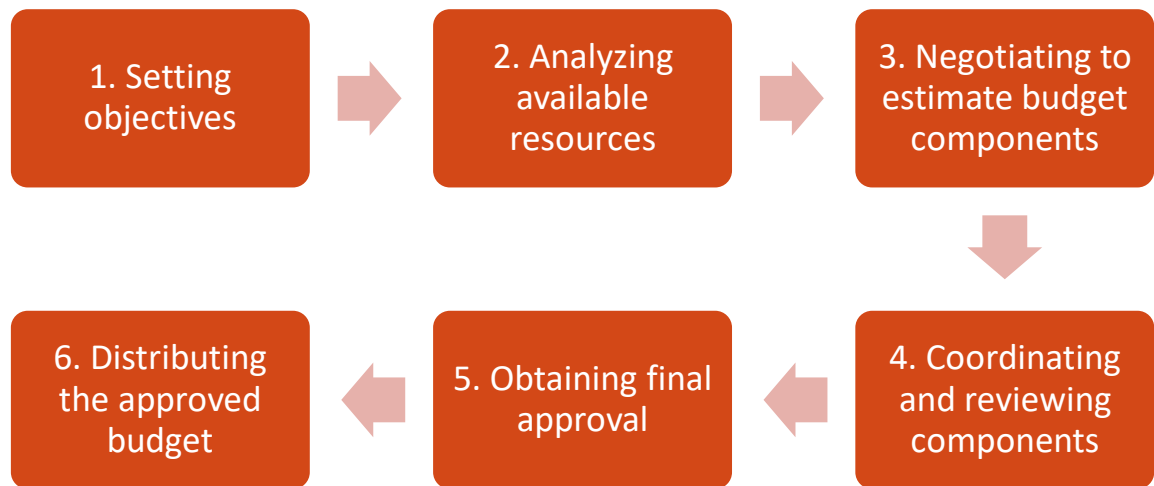
Figure 5: Budgeting process (Shim & al 2011, 12)

In short, budgetary targets are made based on the long-run and the operating plans. Those objectives should be realistic enough to motivate employees and most importantly, boost the growth. To accomplish what has been set, managers should start with available resources to see if they are sufficient enough to operate. If not, extra resources must be planned and negotiated with senior managers. When every component of the budget has been reviewed, the budget is ready to be assessed for final approval. After that, managers are able to distribute it openly to employees and other functions if needed (Figure 5).

2.2   Master Budget

Shim & al (2011, 6) explained master budget as an overall financial and operating plan for a forthcoming calendar or fiscal year. It is usually prepared annually or quarterly and consists of a number of sub-budgets linked together to summarize the business's planned activities. According to Bragg (2013, 125), this term is defined similarly as the aggregation of all lower-level budgets, which are produced by a company's various functional departments. Two main elements of the master budget are, namely operating and financial budget. As for service company, elements of operating budget and financial budget are illustrated in figure 6 below.

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┌─────────────────────────┐        ┌──────────────────────────────┐
│                         │        │      Operating budget:       │
│                         │        │    - Sales/Revenue budget    │
│     Master Budget       │────────│      - Expense budget        │
│                         │    ╲   │  -Income statement budget    │
│                         │     ╲  └──────────────────────────────┘
└─────────────────────────┘      ╲ ┌──────────────────────────────┐
                                  ╲│       Financial budget:      │
                                   │  - Capital expenditures budget│
                                   │      - Cash flow budget      │
                                   │   - Budgeted balance sheet   │
                                   └──────────────────────────────┘
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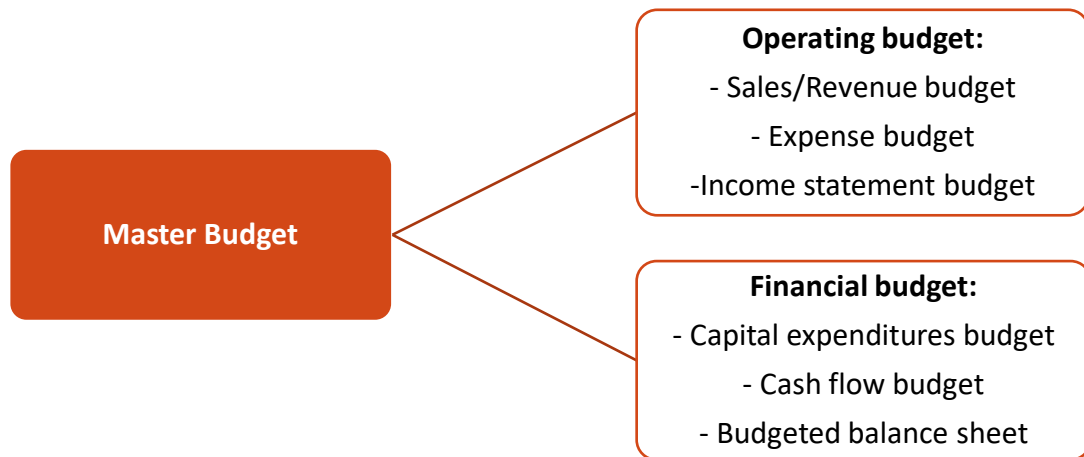
Figure 6: Standard Master budget of service company (Braun & Tietz 2013, 540)

Steps in preparing the master budget

Based on theory stated by Shim & al (2011, 96), figure 7 describes the order of preparing master budget adjusted for the commissioning company, beginning with the operating budget and then, the financial budget.

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        ┌──────────────────────────┐
        │                          │
        │      Master budget       │
        │                          │
        └──────────────────────────┘
         │
         │   ┌──────────────────────────┐
         │   │    Operating budget:     │
         ├───│   - Sales/Revenue budget │
         │   │     - Expense budget     │
         │   │  -Income statement budget│
         │   └──────────────────────────┘
         │   ┌──────────────────────────┐
         │   │    Financial budget:     │
         └───│    - Cash flow budget    │
             └──────────────────────────┘
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Figure 7: Master budget for the commissioning company

2.2.1 Operating budget

As a definition, the operating budget consists of budgets related to operations or business such as sales or revenue budget, expenses budget, and income statement budget. Preparing a sales budget is the first step in making an operating budget. Sharing the same

thought, Datar & Rajan (2018, 265) and Bragg (2013, 20) pointed out that the key driver of any budget is the amount of revenue estimated during the budget period. In the sales budget, the sales revenue is typically estimated concerning both units and money. The purposes of establishing the sales budget first are to reduce uncertainty about sales in the future(1), to incorporate management judgments and decisions into the planning process (2), and to provide necessary information for creating a comprehensive profit plan (3), and lastly, to help in the control of sales activities (4) (Shim & al 2011, 97).

Based on the information in the revenue budget, managers can start to allocate resources in the expense budget to meet the sales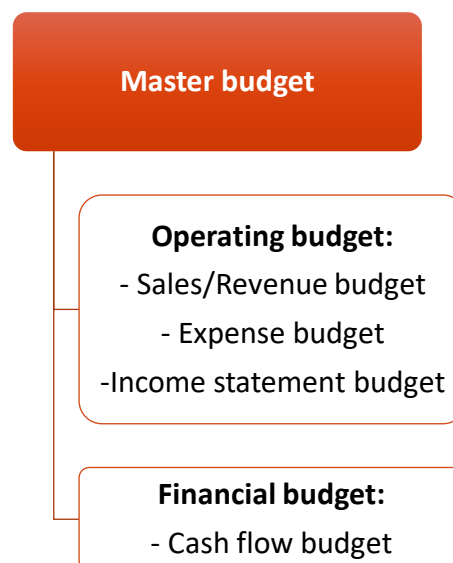 targets. It is important to do the best possible forecasting revenue, since other budgets, including expense budget, are linked to it. Operating expense budget is a budget that concerns all the costs related to selling products and administrate business activities. (Shim & al. 2011, 107). For the case company, typical cost-behavior patterns in expense budget were either variable cost or fixed cost. In fact, a majority of budgeted expenses of the commissioning company was variable costs.

- **Variable cost** is a cost that varies *in total* in proportion if there are any changes in the level of total activity or the total volume of output produced (Datar & Rajan 2018, 32; Garrison & al 2018, 30).
- In opposite, **fixed cost** is considered unchanged *in total* for a specific period of time, even if the level of total activity or volume of output production changes. (Datar & Rajan 2018, 32; Garrison & al 2018, 32.).

Furthermore, assets depreciation is also a part of the expense budget. Depreciation is the process of allocating costs or value of an asset over a specific period of time (Kaplan financial knowledge bank 2018b). However, depreciating assets causes no cash flow effect and should not be included in the cash budget. There are several common methods of depreciation, such as straight-line, unit-of-production and accelerated depreciation method. The author decided to use the straight-line method when depreciating assets for the commissioning company. Because this approach is easier to apply than the accelerated method, while the unit-of-production way is irrelevant to Lumoa's business structure. As a definition, straight-line is a depreciation method that gradually decreases the carrying amount of a fixed asset over its useful life (AccountingTools 2017a).

After preparing the sales and the expense budget, the income statement budget can be created. Income statement budget is designed to capture components of both revenue and expenses budget for a specific period (Shim & al. 2011, 111).

2.2.2 Financial budget

In contrast to the operating budget, the financial budget emphasizes the expected assets, liabilities, and shareholders' equity of the business (Shim & al 2011, 6). Additionally, Datar & al (2018, 203) defines a financial budget as a budget that focuses on how operations and planned capital outlays affect cash. Cash, capital expenditures, and balance sheet budget all belong to the financial budget. However, in this thesis, only cash budget was prepared due to the commissioning company's needs, since they more concerned towards cash flow matter, as most of the start-up companies do (Figure 6). In fact, cash is the most important matter for every company: a shortage of cash might drive the company to bankruptcy.

Briefly, a cash flow budget plans expected cash receipts and cash payments based on the budgeted sales and expense level to see whether extra funds are needed to have sufficient cash at hand. Addition to that, it also predicts other financing transactions such as loan payments, debt and equity financing. (Braun & Tietz 2013, 520.) As stated by Shim & al (2011, 6), there are four main sections in a cash budget as follows:

- Cash inflow section, representing opening cash balance, cash collections from sales and other sources.
- Cash outflow section, where all cash payments are recorded.
- Cash surplus or deficit, showing the positive or negative ending balance of cash inflow and cash outflow.
- Lastly, financing section, reporting all the movements of cash in an account of expected borrowings and repayments during a specific period.

2.2.3 Other important information related to preparing budgets

For the cash flow and the expense budgets preparation, there are some important payment due dates that company operated in Finland should be aware of in order to avoid penalties.

- VAT payments must be filed and paid by the 12th of the second month after the taxable month or quarter. VAT standard rate is 24% for service type of products. (Vero 2018.)
- Employer's contribution to employee pension (TyEL) in 2018 is on average 17.75% per month and payments should be made on 20th of the next month following payroll month (Ilmarinen 2018a).
- Self-employment pension (YEL) due date is the 20th day of the month or the first weekday following the 20th. One can pay many installments up to 12. However, half of YEL contributions should be paid at least before August (Ilmarinen 2018b).

(Details of TyEL and YEL can be found under chapter 3.3.1).

2.3 Approaches to budget

There are several types of budgets that a company could use for its budgeting purposes. Some of the most common ones are rolling budget, static (fixed) budget and flexible budget.

Depending on a few factors such as type and size of a company, business industry, type of product and culture of the organization, different approaches to budgeting are selected (Kaplan financial knowledge bank 2018a).

Rolling budget is a type of budget that is always available for a specified future period created by continually adding a month, quarter, or year to the previous period. The advantage of this budget is accuracy compared to traditional static budget because it focuses on short-term goals. By contrast, preparation of rolling budget is considered time-consuming to managers, and it might not be the best option for achieving long-term goals and motivating employees since the budgetary targets are continually changing. (Shim & al 2011, 11; Kaplan financial knowledge bank 2018c.)

Static or **fixed budget** is a budget that plans figures at the expected capacity level. It is often used when a company is relatively stable or when a company plans for its long-term goals. The main problem with a static budget as the term suggests is that it does not allow flexibility in adjusting if unpredictable changes occur (Shim, Siegel 2011, 6).

Opposite to the static budget, **flexible budget** allows budget adjustments based on the actual activity and it is quite effective for an unstable period when volumes vary within a relatively narrow range or when a manager revises the budget. It is seen as an excellent alternative solution to the traditional budget model – static one. (Shim, Siegel 2011, 7.)

Each type of budgets has its advantages and disadvantages; a manager should consider carefully which approach best suits the business needs and his/her skills best. A static budget is commonly used in the budgeting for long-term goals and served as the first version of the budget. On the other hand, in controlling phase, a flexible budget is seen as a better option, because it allows adjustments to the budget. In this thesis, the static budget was chosen because the project manager had to prepare the master budget at once for six years from 2018 to 2024. However, it is advisable for the commissioning company to use a flexible budget approach when revising its budgets.

2.4   General information about SaaS company

SaaS and other recurring revenue businesses are slightly different from traditional software companies. Orjala (2012) explained that in SaaS model, software is executed on a service provider's server and service is delivered to customers through the Internet. As a result, customers could enjoy the service without installing it into their own laptops or computers.

Revenue generated from the service based on a subscription that comes over an extended period of time known as "the customer lifetime" (Shok 10 February 2018a).

2.4.1 Revenue models in SaaS

Reference to Oraja's article (2012, 1), there were three main types of revenue models in SaaS, namely pay-per-use, software rental and traditional software licensing. Lumoa business is seen as the pay-per-use model, which means customers are charged when and how much they use the service. On the other hand, Skok from forentrepreneur.com (10 February 2018a) pointed out that there are only two types of SaaS business. One way is to offer a monthly contract, which is agreed for a specific period of time, says 3 to 6 months. In this type of business, the primary focus is MRR (Monthly Recurring Revenue). And the other one is primarily annual contracts, with some contracts for multiple years. Their focus is on ARR (Annual Recurring Revenue), and ACV (Annual Contract Value). In practice, Lumoa has offered both types of contract depending on customers' need and financial status. On that account, MRR and ARR are deemed as important key metrics for the company, and they needed to be analysed.

Main contributing elements of revenue

On the subject of revenue, source-of-revenue statement (SRS) addressed by Shim & al (2011, 98) is a detailed and helpful model serving as a guide to better forecast sales expectation. Elements of revenue in the SRS model (Shim & al 2011, 98) are shown as below:

- Continuing sales for existing or established customers
- Sales from market share gained
- Sales from expanding markets
- Sales from adjacent markets
- Sales from new products or business line.

Additionally, Shok (10 February 2018a) indicated three main elements contributing to the revenue for SaaS company, namely revenue from new customers (either in a month or a year), expansion and churn revenue. In detail, expansion revenue refers to revenue from existing customers who continue to use the service, while churn is the loss of income linked to lost customers and it should be in negative numbers. For the case company, expansion sales and sales from new customers could be forecasted by using SRS model mentioned above. However, estimating churn is relatively a big topic to cover and out of the scope of this thesis. As Lumoa has just operated for roughly more than a year and has not yet reached its stable growth, the churn rate is hard to calculate correctly; therefore, it was obtained directly from the CEO's self-estimation. According to Shok (10 February 2018a),

churn does not matter much in the early stage of SaaS business, but it becomes considerably essential in forecasting MRR when the number of customers gets higher. To get MRR or ARR, one could follow equation 1 below:

MRR (ARR) =	New MRR (ARR)
	+ Expansion MRR (ARR)
	– Churn MRR (ARR)

(Equation 1)

2.4.2 Cost of goods sold (COGS) in SaaS

COGS in SaaS is calculated slightly differently from the traditional service company. It is defined to measure expenses that a company spends to deliver an application. Hazarika (10 February 2018) pointed out that COGS is also known as costs to serve customers (CS). Generally, COGS for a SaaS company is considered quite small, accounting from 10% to 20%, leaving a gross margin of about 80% of total costs (Valchev 10 February 2018).

$Gross\ margin = revenue - COGS$ (Equation 2)

According to Cummings and Gardner (10 February 2018), they suggested that some of the general costs included in COGS/CS are:
- Hosting and other related expenses
- Personnel costs related to keeping the production environment running
- Customer support costs
- Cost of any third-party website, software or data like content delivery networks, embedded software
- Cost of employees required to deliver the ongoing service and so forth.

However, one should not count these costs a part of COGS/CS in SaaS:
- Sales commission fees
- Product development costs
- Third-party software used for operation, but not a part of the service
- Customer acquisition costs.

(Cummings 10 February 2018; Gardner 10 February 2018).

2.5 Selected analyses for the commissioning company

Understanding the relationships between revenue, costs, the number of subscriptions and profitability is necessary for budget preparation. In the following sub-topics, the author explains carefully some of the concepts used for analyses for the commissioning company.

2.5.1 Break-even analysis

Break-even point is the sales volumes or the revenue at which a company makes no profit or profit equals to zero (Bragg 2013, 11). Due to business characteristics of the commissioning company, break-even revenue analysis was made only regarding euros. Lumoa has offered two types of products, and the gap in prices are high. Hence it was difficult to estimate COGS for each product category to calculate break-even point in units. To determine the break-even revenue, one must calculate two things first: total fixed costs and gross margin ratio.

$$Total\ fixed\ costs = Total\ costs - COGS$$

$$Gross\ margin\ ratio\ (\%) = \frac{Revenue - COGS}{Revenue} \quad \text{(Equation 3)}$$

$$Breakeven\ revenue = \frac{Total\ fixed\ costs}{Gross\ margin\ ratio} \quad \text{(Equation 4)}$$

A margin of safety is the extent that the sales volume or sales revenue exceeds the break-even point. It is calculated and expressed in percentage as follows:

$$Margin\ of\ safety = \frac{sales\ revenue - break-even\ revenue}{sales\ revenue} \quad \text{(Equation 5)}$$

(Bragg 2013, 14-15; ACCA Global 2018).

2.5.2 Customer-revenue analysis

A few important revenue metrics that were calculated for the commissioning company are MRR, ARPA (average monthly recurring revenue per account), ARR, CAC (Customer Acquisition Cost) and CLV or LTV (customer lifetime value). The formula of MRR and ARR can be found in chapter 3.3 above. Details of how to calculate other metrics are explained in section 4.1. In the final product, the analysis of budgeted customer profitability was created separately on one sheet, so that the commissioning company could easily keep track of these figures.

2.5.3 Cash flow analysis

It is undeniable that cash is vital for every business, especially for start-ups companies. Because they have not generated enough profits for self-sustaining and usually, they are spending more than what they earned. **Cash flow runway** is a useful tool for estimating how long the current cash situation could sustain with and without taking into account other changes in operation (Minnihan 10 February 2018). It measures how long the company can cover its operating expenses before it runs out of cash.

For analysing purpose, the cash flow analysis was made quite similar to scenario analysis made for cash flow, and it was separated into two scenarios based on the need of the commissioning company (Chapter 5.4).

2.5.4 Scenario and sensitivity analysis

Sensitivity analysis is known as a "what-if" technique or scenario that managers use to examine how sensitive an outcome will be if the original predicted data or an underlying assumption changes (Datar & Rajan 2018, 203). In connection with this thesis, the sensitivity analysis was designed to measure how changes in two main factors: revenue and costs, would affect the output of EBIT shown under chapter 5.2.

Scenario analysis is also another type of 'what-if' analysis. Unlike sensitivity analysis, scenario analysis allows managers seeing in detail how outputs change relative to inputs and access other scenarios that beyond the scope of sensitivity analysis. Chapter 5.3 describes clearly three scenarios to be analysed to compare final profits of the case company.

2.5.5 Control and variance analysis

Control is a critical part of planning and budgeting, which allows managers to allocate resources efficiently, minimize waste and keep track of significant variances in operation. **Variance analysis** is one of controlling tools, which reports differences between budgeted numbers and actual results. In other words, the use of it is to evaluate the performance of the business done by division, department or product line. Variances should be analysed on as detailed level as necessary. (Shim & al 2011, 131.) Variance analysis can be made monthly, quarterly or yearly. It is better to analyse variances preferably every month or every quarter, especially for start-up company when it is still in an unstable and fast-growing stage.

This thesis concerns only creating a profit variance analysis sheet, whose format is same as the format of the income statement. The reason is that the author started to design the budget tool from 2018; therefore, variance analysis of 2017 is not a part of this thesis and will be done later by the commissioning company. In reality, differences in profits reported from variance analysis might result from these reasons (AccountingTools 2017b; Shim & al 2011, 169):
- Changes in the total numbers of subscription
- Changes in the sales mix (changes in the numbers of different products sold)
- Changes in the sales price
- Changes in costs

3   Creating budgeting tool for the commissioning company

This chapter explains the process of creating a budgeting tool in chronological order as for how the tool was made. Underneath, figure 8 shows a quick view of the whole process of creating the budgeting tool for the case company.

Phase 1
- Identifying problems and needs
- Acquiring information and data
- Theory Revision

Phase 2
- Designing operating budget
- Designing financial budget

Phase 3
- Sensitivity and scenario analysis
- SaaS customer-revenue analysis
- Cash flow analysis

Phase 4
- Designing variance analysis
- Designing a simple tool for booking actual results for variance analysis purpose

Figure 8: Process of creating the budgeting tool and analyses for commissioning company

In phase one, information was mainly acquired through face-to-face meetings and exchanging emails with the CEO of the commissioning company. Data was collected by receiving an Excel file including the old version of the master budget. As agreed, timeline wise this budget spans from 2018 to 2024. In detail, 2018 and 2019 were budgeted in monthly level, after that it was annualized in one year.

The second phase starts to design operating and financial budget after carefully revising theory and other sources for references. The process follows the same path explained in theory chapter of preparing the master budget (Figure 7 and chapter 2.5).

The next step was to select appropriate methods and metrics to analyse. A package consists of sensitivity and scenario analysis, calculating SaaS customer-revenue metrics and cash flow analysis, which can be seen in chapter 4 and 5.

Lastly, to make it easier for the company to compare between actual and budgeted results, a simple variance tool was created following the same structure of their income statement in the accounting software. The manager could save a lot of time inputting data into excel file.

3.1 Sales budget

Primary sources of revenue information were taken from historical sales of existing products, marketing and promotion strategies, and expectation of salesperson number. For the ease of use, two tables of sales budget were created. The first one was budgeted in number of customer subscriptions per month or per year (Appendix 2 and Figure 9) and the other one was made in euros (Appendix 3 and Figure 9). It also reflects the order to start with subscription numbers, then continuing with calculation in euros when budgeting the company's sales.

	Jan-18
Total salesperson (2)	-
New customers starting (link to salesperson)	0
Large customers (pro and master)	
Customers beginning of month	2
New customers	0
Lost customer (project end)	0
Customers month end	2
Customers mid-month	2
Medium customers	
Customers beginning of month	1
New customers	0
Lost customer (project end)	0
Customers month end	1
Customers mid-month	1
Basic customers	
Customers beginning of month	0
New customers	0
Lost customer (project end)	0
Customers month end	0
Customers mid-month	0

Figure 9: Sales Budget in numbers

Currently, there are two types of products that the company provides: one for large customers and one for medium (or standard) customers. However, in the budget tool, a third 'small product' is also created for later usage. There have been a few changes in the business structure during the period of designing the master budget. In the beginning, small customer product was included in the product types, but it was later on removed due to the weak demand.

To calculate the revenue, three elements should be estimated first: the number of new customers, the number of existing customers and the number of churned customers. New customers were expected to gain from growth in market share mainly in the established market. The number of new customers was budget to tie to the number of salespersons. In the first 2 or 3 years, the company estimated to attract an average range of total 10 to 16 new customers per salesperson in one year, regardless of product type. After that, this number decreased by a small amount due to slower growth and maturity. Having done that, sales expectation could be calculated as below:

$Beginning\ customers$
$= Customer\ month\ end\ in\ the\ previous\ period\ (or\ deemed\ as\ existing\ ones)$
$Churn/\ Loss\ customers\ =\ Beginning\ customers * Churn\ rate$
$Customer\ month\ end\ =\ Beginning\ customers\ +\ New\ customers\ -\ Churn\ customers$
$Customer-mid\ month\ =\ (Beginning\ customers\ +\ Customer\ month\ end)/2$ [1]

---

[1] customer-mid month will be used to calculate revenue in that month by multiplying with average revenue per customer per month. (Figure 10).

	Jan-18
Consulting	-
Pilot	-
Setup	-
Total other revenue	-
PRODUCT REVENUE	
Large customers	
Average revenue per customer per month	6,000
Large customer product revenue	15,000
Product subscription sales / medium customers	
Average revenue per customer per month	2,000
Medium customers product revenue	4,000
Product subscription sales / basic customers	
Average revenue per customer per month	-
Small customers product revenue	-
Total Internal MRR	19,000
Total Other Revenue	-
Total Revenue	*19,000*
Total MRR Revenue In %	100%
Large customers	79%
Standard customers	21%
Small customers	0%

Figure 10: Sales budget in euros

Consideration of the sales budget in euros, revenue was divided into two parts: MRR and "other revenue" besides MRR labelled as consulting, pilot and setup (Figure 10). Other revenue recorded one-off items that are paid for once only. The "customer-mid month" is used to calculate revenue in that month by multiplying with average revenue per customer per month. It is worth noting that total revenue is different from MRR because MRR did not include other revenues like setup, pilot and consulting, as it only referred to "recurring revenue." (Appendix 3).

$Total\ other\ revenue = Consulting + Pilot + Setup$ (Equation 6)

$Total\ revenue = total\ other\ revenue + MRR$ (Equation 7, MRR can be calculated by following Equation 1)

3.2 Expense budget

COST SUMMARY	Total 2018
Hosting and other related costs	3.0%
R&D expenses with personnel	32.6%
Marketing and sales with personnel	42.4%
Miscellaneous costs	8.6%
Other supporting costs with personnel	13%
Total Costs	**100%**
Personnel expenses (of Total costs)	74.9%

Figure 11: Total budgeted Costs Summary (2018)

Expenses were categorized into several distinct sections (figure 11) such as hosting and other related costs (1), personnel salaries (2), R&D expenses (3), Marketing and Sales expenses (4) and other miscellaneous costs (5). The figure above summaries how costs were budgeted for the company in 2018. The combined expense budget can be checked from Appendix 4 and 5. For most of the expenses, starting from 2020 to 2024, all the costs were estimated based on expenses in the previous period and added up to average 10% of the inflation rate. For the commissioning company, total expense in expense budget was calculated as:

$$Total\ expense = Hostings\ and\ other\ related\ costs + personnel\ expense$$
$$+ R\&D(non-personnel) + Sales\ and\ marketing\ (non-personnel)$$
$$+ Miscellaneous\ costs + depreciation$$

(Equation 8)

3.2.1 Personnel expense

Personnel salaries accounted up to 75% of the commissioning company's total costs in 2018. It comprised the salaries of all employees in the company, including other related costs like pensions and insurance contribution (TyEL and YEL). The commissioning company is now in their early stage of business; therefore, a majority of employees were budgeted in R&D to productize their service, then in sales and marketing related roles and later on, in customer support service.

$Personnel\ expense = Total\ salaries + TyEL\ or\ YEL\ expense$

Pension and insurance contribution

"Pension cover is part of the Finnish social security system because a part of it that is not funded by taxes but by earnings-related pension insurance and the related insurance contributions called **TyEL** insurance expense" (Ilmarinen 2018c). **YEL** is served as the same means as TyEL, except that YEL is for entrepreneurs only. The three main elements of TyEL and YEL average contribution rate are the pension of old-age, disability and pooled component (the most significant component) used to fund survivors' pensions and the index increments of all pensions. (Ilmarinen 2018c; Ilmarinen 2018b).

Speaking of TyEL pension expense, in 2018, it was calculated only for employees since the owners of Lumoa are considered as entrepreneurs; therefore, a different rate applies to them. The owners claimed to pay YEL fees themselves. Consequently, there was no TyEL expense for them in the budget during 2018. After that, the same rate was applied to total gross salaries including owners'. The average rates of YEL and TyEL can be obtained from Ilmarinen website shown in Table 3 and 4, ranging from 24% to 25%. However, an employer is supposed to contribute only 17.75% of TyEL or YEL expenses and the rest, approximately 8%, are paid by employees themselves.

$TyEL\ or\ YEL\ expense = Gross\ salaries * 17.75\%$

Table 3: TyEL insurance contribution rate in 2018 and 2017 (Ilmarinen, 2018c)

Tyel insurance contribution, % of payroll	2018	2017
Average TyEL insurance contribution	24.4	24.4
Basic TyEL contribution	25.3	25.1

Table 4: YEL insurance contribution rate in 2018 and 2017 (Ilmarinen, 2018b)

Age, years	YEL contribution, % of earned income in 2018	YEL contribution, % of earned income in 2017
Aged under 53	24.1	24.1
Aged 53-62	25.6	25.6
Aged over 62	24.1	24.1

3.2.2 R&D expense

There was a separate section for R&D expenses to separate costs which mainly contributes to R&D activities. It combined the salaries of R&D personnel with other rated costs like licensing or outsourcing costs to develop products.

$$Total\ R\&D\ expense\ (incl.personnel) = R\&D\ personnel\ expense + other\ R\&D\ expense$$

3.2.3 Marketing and sales expense

Marketing and sales costs were grouped into one table, which made up of costs related to sales and marketing, for example, salesperson salaries, marketing people salaries and other marketing costs such as spending on advertising to attract new customers and maintain customers' satisfaction.

$$Total\ Marketing\ and\ sales\ expense\ (incl.personnel)$$
$$= Related\ personnel\ expense + other\ marketing\ and\ sales\ costs$$

3.2.4 Other costs

Most of the remaining expenses were 'fixed' over a particular time. 'Other miscellaneous' keeps a record of various types of costs like auditing, insurance, banking, costs of recreation for employees, office rent and other utilities. Auditing, other insurance expenses, banking services were budgeted as fixed costs over a specific period of time, for instance, six months to one year. Office rent accounts a big portion here. Hence, it should be estimated carefully, especially when the number of employees was expected to grow quite fast from 2018. According to Cushman & Wakefield (2017, 1), the average office rent per square meter per month in Helsinki city centre was calculated at € 35.50 or € 426 per year. The growth in 2018 was estimated at 4.4% and after that 3.4% for the 5-year period. There is a strong demand for an area ranging from 200-300 square meters.

$$Total\ other\ miscellaneous\ costs$$
$$= office\ rent + office\ utilities + auditing + insurance + banking\ service$$
$$+ recreation\ costs\ for\ employees$$

Depreciation

At the moment, the commissioning company has only computers and phones, which can be categorized as long-term assets. However, in 2016 and 2017, they had booked those values in expense account and treated them as costs occurring in that period. When preparing the master budget, computer and phone costs were linked directly to the number of new employees. Due to fast growth in the number of personnel during 2018 and 2019, this part of costs also increased. To betterment the company's assets and operating performance, it seems that recording these values as assets and depreciating over time is a more desirable approach. In respect of this thesis, starting from 2018, computers and phones were considered as assets and their useful life were estimated to vary from 3 to 5 years with no residual values.

3.3 Income statement budget

When sales and expenses budgets have been done, the income statement budget was created based on those two budgets. Income statement should also include interest and income tax expenses after calculating EBIT (Figure 13; Appendix 6). According to Vero (2018), corporate income tax rate remains the same as before, at 20% for a limited company (Oy). Interest rate varies a lot depending on the type of loans the company borrowed and the amount of the loan.

To calculate profit in the income statement, one can follow these simple steps:

Total revenue *(Equation 7)*
-     Total expense *(Equation 8)*

= EBIT
-     Interest expense (% varies)
-     Income tax expense (20%)

= Net profit

Profit&Loss Budget Statement	Total 2018
REVENUE	
Total Consulting & Setup	360,000
Product revenue	
Large customer	60,000
Medium customer	50,000
Basic customer	-
Total Revenue	**470,000**
Expenses	
Hosting and other related costs	59,500
Net Personnel expenses:	
Owner salaries (3)	126,000
Other employee salaries	844,100
TyEL (pension) or YEL (for owners)	361,757
TyEL (pension) + unemp. ins. for employees	415,757
R&D expenses non-personnel	35,000
Sales and Marketing expenses non-personnel	224,849
Other Costs	171,648
Depreciation	11,050
Total costs	**1,725,377**
EBIT	**(578,794)**
EBIT/Revenue Ratio	**-123%**
Interest payment	2,500
Income Tax payment	-
Net profit	**(581,294)**
Net Profit/Revenue Ratio	**-124%**

Figure 13: Income statement budget in 2018

3.4 Cash flow budget

For cash flow budget, a direct cash flow format is used to design this budget, which is divided into three corresponding activities, namely operating, investing and financing.

Starting with operating section, the cash inflow is a sum of budgeted revenue from sales received in cash, other 'income in cash' like receiving regular payments from leasing properties or bonds (Figure 14). In detail, cash receipt from new customers' sales revenue on credit was three months in average. Owing to different contracts, a 'confirmed revenue' row was also created to store all the revenue that was already or will certainly be received from existing customers in order to make the cash flow budget more realistic. To reduce the

complexity of the cash flow budget, a separate sheet was made to keep track of all the payment information of Lumoa's customers, so that the company can calculate correctly "confirmed revenue." Cash outflow, on the other hand, is what a company pays out to maintain their operations. Most of them were expenses derived from the expense budget. To calculate operating cash flow:

Expected revenue from sales

+ other income in cash

- other non-cash income

_____

= Total operating cash in

-    Net salaries (= gross salaries *(1-withholding tax and other social payment rate %))
-    Withholding tax and other social payment
-    TyEL/YEL payment
-    Other operating expenses
-    Interest payment
-    Income tax payment
-    VAT payment

= Total operating cash balance

For investing part, there is no cash in for the commissioning company, and mostly, they have cash payments for purchasing equipment and other assets.

Finally, financing activities are often dealing with loans, funds and equity investment to make sure they have enough working capital for the whole periods. Interest payments were reported in financing instead of operating cash flows. Depending on the types of loan and fund, the interest rate may vary. For instance, capital funds from the owners apparently incur no interest and payments will be made when the commissioning company is strong enough to sustain on their own profits.

An illustration of cash flow budget is shown in figure 14. The tool also includes a row for 'sustain time of current cash flow situation' with a threshold of, says, € 7,000 (this variable can be edited by the manager). It can help to predict when there is not sufficient amount of cash available to run the business and show how much extra money is be needed in that period. Depending on that information, the CEO could choose whether to acquire a short-term loan or long-term loan. Summary of the cash flow over the budgeted period can be found in Appendix 7 and 8.

Total operating cash balance

+ total investing cash balance

+ total financial cash balance

_____

= total cash flow

+ Opening cash flow

_____

= Ending cash flow

CASHFLOW BUDGET	1.2018	2.2018
OPERATING CASHFLOW		
Expected Revenue (new customers - credit 3 mons)	60,000	21,000
of which confirmed Revenue	6,000	-
Other Income in Cash		
Less Other Non-Cash Income		
Total Operating Cash In	60,000	21,000
Net Personnel Salaries	(25,800)	(30,000)
Withholding tax and social security payments	(7,740)	(9,000)
TyEL (pension) + unemp. ins. (incl. YEL)	(4,590)	(5,850)
Other operating expenses	(23,239)	(21,628)
Interest Payment	(625)	-
Income Tax Payment	-	-
VAT Payment		
Total Operating Cash Out	(61,994)	(66,478)
Total Net Cashflow used in Operating Activities	(1,994)	(45,478)
INVESTING CASHFLOW		
Investing Cash In (e.g selling assets)	-	-
Purchase Office Equipment	(1,000)	(1,000)
Purchase Computers and Phones	(4,200)	(4,200)
Total Net Cashflow used in Investing Activities	(5,200)	(5,200)
FINANCING CASHFLOW		
Onwers' Investment		
Capital Funding		
Estimated Funding from Tekes		
Other Financing Cash In	96,000	
Repayment of Loans		
Other Financing Cash Out		
Total Net Cashflow used in Financing Activities	96,000	-
Total Cashflow	88,806	(50,678)
Opening Cashflow	53,601	142,407
Ending Cashflow (Should be at least 7000)	142,407	91,729
Extra Cash Needed	-	-
Sustaining time with Current situation	7	months

Figure 14: Cash flow budget for the commissioning company

4 SaaS revenue metric calculation

In this chapter, details of how key revenue metrics were calculated and what kinds of analysis were used for the commissioning company are explained in each sub-topic.

4.1 SaaS revenue metrics calculation

4.1.1 Monthly recurring revenue (MRR)

Monthly Recurring Revenue (MRR)	Total 2018
Product Revenue	
Large customer product revenue	650,000
Standard customer product revenue	84,250
Small customer product revenue	-
Total Product Revenue	**734,250**
Total Customers Mid-month	28
Average Revenue per Account (ARPA)	**26,700**

Figure 15: Calculate MRR and ARPA in 2018

Looking at figure 15, it summarizes how ARR, MRR, and ARPA are calculated for the commissioning company. It is important to note that the metrics above include only product revenue, excluding one-time revenue.

ARR = *Total product revenue in one year (excluding pilot, consulting and setup).*

$$\text{ARPA} = \frac{ARR}{Total\ number\ of\ customers\ Mid-month\ in\ 1\ year}$$

$$\text{MRR} = \frac{ARR}{12}$$

4.1.2 Cost of acquiring customer (CAC)

Customer Acquisition Cost/Customer (CAC/C)	
Salesperson salaries	346,000
Marketing and other sales Costs (with personnel)	484,282
Total Customer Acquisition Costs	**830,282**
Total New Customers	72
CAC/C	**11,532**

Figure 16: Calculate CAC and CAC/C in 2018

CAC as the name suggests, it refers to the cost of acquiring new customers. The metric reveals how much money the company is investing in acquiring one new customer on average. It can be measured in a month or annualized for one year. CAC comprises of two key factors: sales and marketing expenses, and new customers acquired. The simple equation for calculating CAC per customer (or CAC/C in Figure 16) is shown below (Shok 10 February 2018b; Mulla-Feroze 10 February 2018, 18).

Total CAC = *Total sales and marketing costs (or total customer acquisition costs)*

$$\text{CAC (CAC/C)} = \frac{Total\ CAC}{numbers\ of\ new\ customers\ in\ 1\ year}$$

4.1.3 Customer lifetime value (CLV)

CLV indicates how much profits in total a company could generate on average from one customer. The customer lifetime value is high if the customers are satisfied with the service or product, which keeps them coming back and willing to stay longer. (Shok 10 February 2018b.) And if unfortunately, they feel unsatisfied with the experience, they could churn immediately. For every company, to maximize the values, companies should not put only effort in acquiring customers but also – and perhaps more importantly - in keeping the existing ones.

To get CLV, COGS or cost-to-serve (CS) must be calculated first. One should be aware that all the metrics below were annualized in numbers.

Customer lifetime value (CLV)	
Average Revenue per Account (ARPA)	26,700
Cost to Serve	
Hosting + Other COGS	59,500
Costs of Customer Success	75,000
Customer support salaries	67,549
Total Costs to Serve per Customer	*(7,347)*
Gross Margin %	72%
Annual churn rate	**10%**
CLV	**193,528**
CLV/CAC Ratio	17

Figure 17: Calculate CLV and CLV/CAC ratio

$COGS\ (CS) = \ Hosting\ and\ other\ related\ costs$

$+\ Costs\ of\ customer\ success$

$+\ Customer\ support\ costs\ (salaries\ of\ customers\ support\ employees)$

(Equation 9)

$$CSPA\ (CS\ per\ account)\ = \frac{CS}{Numbers\ of\ customers\ mid-month\ in\ 1\ year}$$

$$Gross\ margin\ (\%)\ = \frac{ARPA - CSPA}{ARPA}$$

$$CLV = \frac{ARPA * Gross\ margin}{Annual\ churn\ rate\ \%}$$

4.2   Breakeven analysis

After calculating gross margin and COGS above (Equation 9), the total fixed costs can be obtained easily to estimate breakeven revenue (Equation 4) and margin of safety ratio (Equation 5). In the first two years 2018-2019, the commissioning company's fixed costs were budgeted exceeding MRR and ARR, resulting in the negative margin of safety ratios.

5   Sensitivity and scenario analyses

5.1   Sensitivity analysis

Sensitivity analysis is designed to measure how changes in two main factors, revenue, and costs, would affect the output (EBIT). The most important thing about this analysis is that the manager can edit inputs as they wish and even the year in which they want to analyse. The grey-coloured cells indicate that it requires input for variables. The outcomes or net profit in that year will be automatically calculated based on different variables. Figure 18 is an example of sensitivity analysis for the commissioning company in the year 2020.

YEAR:	2020

NET PROFIT SENSITIVITY ANALYSIS

		0%	2%	7%	20%	-25%
Total Revenue	7,886,869					
Total Expenses	8,537,732					
	0%	(650,863)	(493,125)	(98,782)	926,511	(2,622,580)
	-1%	(565,485)	(407,748)	(13,404)	1,011,889	(2,537,203)
	-5%	(223,976)	(66,239)	328,105	1,353,398	(2,195,693)
	-10%	202,911	360,648	754,991	1,780,284	(1,768,807)
	-15%	629,797	787,535	1,181,878	2,207,171	(1,341,920)
	-20%	1,056,684	1,214,421	1,608,765	2,634,058	(915,034)

53% of the cases will result positive net profit

Figure 18: Net profit sensitivity analysis

5.2   Scenario analysis

Scenario 1

In total, there are three scenarios to be analysed for the case company. The first scenario is accounting for sales derived from the third party. The company has strong belief that they could get new customers from third-party channels and it has been a common case for many companies. For simple estimation, the number of new customers was calculated as a percentage increase to the "customer-mid month"-figure in that period. The budgeted percentage increased resulting from the third-party sales in 2018 and 2019 varied in the range from 10% to 20% of 'Customers Mid-month' increasing the 'Average product revenue' in euros relative to this. Due to the fact that part of the revenue is paid out to the third party as a sales commission, 30% of the gross sales was deducted to calculate the net revenue (Figure 19). An increase in profits equals to an increase in net sales generated from third-party channels.

$$Total\ revenue\ from\ third-party\ sales$$
$$= Large\ customers * average\ revenue\ per\ customer\ per\ month$$
$$+ Medium\ customers * \ average\ revenue\ per\ customer\ per\ month$$
$$Commission\ fee = Total\ revenue\ from\ third-party\ sales * (1 - commission\ rate\ \%)$$
$$Net\ revenue\ from\ third-party\ sales$$
$$= Total\ revenue\ from\ third-party\ sales - \ Commission\ fee$$

	Oct-18	Nov-18	Dec-18	Total 2018
Customers via third party %	20%	20%	20%	
Large customers	3	4	5	23
Medium customers	12	16	21	79
Total	15	20	26	102
Total revenue from third-party sales	21,000	28,000	35,500	150,500
Total 3rd party commission fee	6,300	8,400	10,650	45,150
Net revenue from third-party sales	14,700	19,600	24,850	105,350
Total net revenue (if incl third-party)	166,200	207,100	244,100	1,272,933

Figure 19: Scenario 1 – Budgeted revenue including sales from the third party (Q4-2018)

Scenario 2

In an optimistic scenario, the budgeted income statement (Figure 20) assumes that the number of large customers and medium (standard) customers improved by 20% and 30% respectively, compared to the currently budgeted figures. Product prices were expected to stay the same. With regards to expenses, only two elements R&D and sales and marketing slightly increased since the company may consider investing more money to improve their service and maintain good relationships with their customers. As a consequence, total revenue in this scenario was 1,281,187 €, and EBIT was slightly better with around -500,000€ loss.

Scenario 3

A pessimistic scenario of the budgeted income statement, by contrast, reduces both large customer and medium customer revenue by 20%, ending up less than 1 million euros in sales. The costs were not affected by this event, making this scenario with the total loss of nearly 900,000€ (Figure 20).

SCENARIO ANALYSIS FOR EBIT	Current	Optimistic	Pessimistic
	2018	2018	2018
Number of large customers	174	209	139
Large ustomer MRR	617,500	923,083	613,917
Number of medium customers	156	203	125
Medium customer MRR	90,000	101,500	62,400
Other revenue	360,000	450,000	288,000
Total Revenue	**1,067,656**	**1,281,187**	**854,125**
COGS	59,500	59,500	59,500
Personnel	1,261,130	1,261,130	1,261,130
R&D	35,000	38,500	35,000
Sales & marketing	225,849	248,434	225,849
Other costs	171,648	171,648	171,648
Total Expense (change)	*1,753,127*	*1,779,212*	*1,753,127*
EBIT	(685,471)	(498,025)	(899,002)

Figure 20: Optimistic and Pessimistic Scenarios compared with the current situation

5.3 Cash flow analysis

The commissioning company is interested in knowing cash flow outcomes of different scenarios as follows:

1. how long the current cash situation could sustain to manage to pay all the costs if there were no new customers (Figure 21)
2. how long the current cash situation could sustain to manage to pay only 'fixed costs' if there were no new customers. (Figure 22)

In the first scenario, it assumed that there were no new customers throughout the whole year of 2018. Loss cash flow from new customers was calculated and removed from the cash flow balance. To create a dynamic analysis for both scenario 1 and 2, 'Adjustment' part was created meant for input, which was marked with grey colour.

	cell to input data
Cashflow runway if there is no new customers coming & Total Costs	Jan-18
Opening CF	53,601
Loss CF from new customers	*(3,000)*
Total CF	5,546
Ending CF	**59,147**
ADJUSTMENTS ANALYSIS	
If add/remove new funds	
If decrease/increase loan repayment	
Ending CF with adjustments	**59,147**
Required Ending CF at:	7,000
Extra Cash Needed	-

Figure 21: Cash flow analysis for scenario 1 (Jan - 2018)

Referring to the second scenario, it was assumed that no revenue generated from new customers and cash was expected to pay only for "fixed costs." In this case, "fixed costs" refer to several expenses, which must be paid by the commissioning company (shown in figure 22) such as salaries and employees related costs, office rent and utilities, software licenses and so forth. It is apparently to see that cash flow in scenario two was better than scenario one due to less cash paid out for expenses.

Cashflow runway if there is no new customers coming & for only 'Fixed Costs'	Jan-18
Cash out to pay 'only' fixed costs	
Salaries	25,800
Accounting, auditing	600
Office rent & utilities	1,667
Software licenses	480
Telecommunications, Internet, office supplies	700
Bank & Insurance	200
Occupational health care	343
Total Cash Out for Fixed-Costs	(29,790)
Total CF	31,010
Ending CF	84,611
ADJUSTMENTS ANALYSIS	
If add/remove new funds	
If decrease/increase loan repayment	
Ending CF with adjustments	84,611
Required Ending CF at:	7,000
Extra Cash Needed	-
Ending Cash	84,611

Figure 22: Cash flow analysis for scenario 2 (Jan - 2018)

5.4 Variance analysis tool

Figure 23 below shows variance analysis table made for the commissioning company. All the numbers were invented as it was not a part of this thesis.

Variance analysis - 2017	Actual	Budgeted	Variance	Variance %	U/F
Revenue					
Total Setup, pilot and consulting	1,000	1,200	(200)	-20%	U
Large customer	1,000	1,200	(200)	-20%	U
Standard	1,000	1,200	(200)	-20%	U
Basic customer	1,000	1,200	(200)	-20%	U
Total Revenue	4,000	3,600	(600)	-15%	F
Expenses					
Personnel	2,000	1,200	800	40%	F
R&D	1,000	1,200	(200)	-20%	U
Sales and Marketing	1,000	1,200	(200)	-20%	U
Other costs	2,000	1,200	800	40%	F
Total expenses	6,000	4,800	1,200	20%	F
Profits					
EBIT	(2,000)	(1,200)	(800)	40%	U
Interest payment	(1,200)	(1,000)	(200)	17%	U
Tax payment	(100)	-	(100)	100%	U
Net profit	(700)	(200)	(500)	71%	U
Numbers of new customers	20	25	(5)	-25%	U
Large customers	12	10	2	0	F
Standard customers	8	15	(7)	(1)	U
Small Customers	-	-	-	#DIV/0!	F
Numbers of personnel	40	43	(3)	-8%	U
Numbers of salesperson	5	7	(2)	-40%	U

Figure 23: Variance analysis table designed for the commissioning company

6 Discussion and evaluation

This chapter summarizes few challenges during the thesis period and suggests further improvements in the future. Moreover, it also addresses the author's personal learnings from this project.

6.1 Challenges and further improvements

The most common problem the author faced was that insufficient amount of data made it hard for analyses. The CEO and the author had come up with quite many ideas, but several of them were inappropriate, and some seemed impossible to implement due to the shortage of data, at that time. Some of them could be done after 3 to 4 years of running a business.

Subsequently, in the future, an accurate sales budget requires the use of sophisticated mathematical models and statistical tools. Due to the limitation of bachelor thesis, sales revenue was not well estimated and could be improved. Furthermore, churn rate is also one of the key factors to forecast sales budget. Owing to the shortage of sufficient historical information, this number was somewhat rational at the beginning of every SaaS business. The commissioning company can take a look at Price Intelligently website, which provides a simple, but comprehensive guide to calculate churn for SaaS company. The link to the article could be found in the reference part below.

Another challenge is dealing with budgeting cash flow, with the effort of making it more realistic. The commissioning company, in reality, has different types of contracts with its customers. Some agree to pay a big amount in advance; some want to credit and make payment after few months and other pays as it goes. For that reason, budgeting all revenue as operating income cash is not a correct way; therefore, it will affect balance cash at the end of each period. As a result, estimation of cash is somewhat biased, and this inaccuracy might cause huge problems for the case company. Even though, the project manager created a table to store all customer payment information; it only works well if the number of customers is low. It is advisable to revise cash flow budget and check for variance analysis as regularly as possible.

Referring to uncertainty in budgeting, one must understand that not every element of the budget can be estimated correctly and fixed. A lot of changes in business structure and market situation are expected to occur throughout the budgeting process. Supported by Kaplan financial (2018a), there are few techniques that the commissioning company could apply to deal with this matter. Some of them has been mentioned and already implemented

in this thesis. As an instance, using flexible budget or rolling budget approach can increase the accuracy of the budget. By updating it regularly, uncertainty is reduced. The master budget must be revised when there are significant changes in operations or in prices, which makes it no longer useful for managers as a planning and control tool.

Last but not least, this being said, in the master budget phones and equipment were recorded as assets. While, the commissioning company practically listed them under expense account, creating inconsistent with figures in the budget. The case company should consider this matter when reporting performance by using variance analysis.

6.2   Personal learning

From the author's perspective, budgeting is always a hard topic, because it requires a lot of skills at the same time to succeed in this process. The author has learnt what she wished to learn and even beyond that. There has been a lot of challenges and limitations during the whole project, but overall the author was satisfied with the results and found her learning curve improved. The commissioning company was very collaborative and helpful, particularly the CEO, with whom the author directly worked.

In the past few years, services and computer software companies are growing fast, they are now contributing to a significant proportion of the economy, especially in Finland. Budgeting and analysing financial results for them have never been easy due to differences in business structure. Working as a thesis worker in a SaaS company, it was a great opportunity for the author to expand her knowledge and network, which undoubtedly will benefit her a lot in the future career. As a consequence, the project manager has successfully developed her practical and theoretical knowledge of:
- Budgeting process in general and budget preparation for a SaaS company
- Other information taken into account when preparing budgets in Finland, for instance, details of TyEL and YEL contribution and some other important payments' due dates
- Principles of designing effective financial budgets
- SaaS business structure and its revenue models
- Calculating COGS in SaaS
- Appropriate analyses for a SaaS and a start-up company
- Real-life problem-solving skills.

6.3   Feedback from the commissioning company

Overall, the commissioning company was satisfied with the end results. The CEO said that she found the sales budget, expense budget and the cash flow budget the most helpful in

her daily work. Other budgets and analyses are also important to the company, especially "customer-revenue metrics" calculation and cash flow analysis.

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Appendices

Appendix 1. Table of contents for the thesis

Appendix 2: Sales budget in number of customers (2018-2024)

	Total 2018	Total 2019	Total 2020	Total 2021	Total 2022	Total 2023	Total 2024	Total 2020-2024
Total salesperson	9	13	16	19	19	19	21	
New customers starting (link to salesperson)	72	144	192	228	228	228	252	1128
Large customers (pro and master)								
Customers beginning of month	2	27	53	97	146	193	237	53
New customers	25	51	49	56	57	57	62	280
Lost customer (project end)	0	0	4	7	10	13	17	51
Customers month end	27	78	97	146	193	237	282	282
Customers mid-month	15	53	75	122	169	215	259	167
Medium customers								
Customers beginning of month	1	49	128	246	376	490	588	128
New customers	24	91	137	167	171	171	186	832
Lost customer (project end)	0	12	19	37	56	74	88	274
Customers month end	25	128	246	376	490	588	686	686
Customers mid-month	13	88	187	311	433	539	637	407
Basic customers								
Customers beginning of month	0	0	0	0	0	0	0	0
New customers	0	0	0	0	0	0	0	0
Lost customer (project end)	0	0	0	0	0	0	0	0
Customers month end	0	0	0	0	0	0	0	0
Customers mid-month	0	0	0	0	0	0	0	0

Appendix 3: Sales budget in euros (2018-2024)

	Total 2018	Total 2019	Total 2020	Total 2021	Total 2022	Total 2023	Total 2024	Total 2020-2024
Consulting	144,000	-	-	-	-	-	-	-
Pilot	216,000	432,000	576,000	684,000	684,000	684,000	756,000	3,384,000
Setup	-	-	-	-	-	-	-	-
Total other revenue	**360,000**	**432,000**	**576,000**	**684,000**	**684,000**	**684,000**	**756,000**	**3,384,000**
PRODUCT REVENUE								
Large customers								
Average revenue per customer per month	4,417	5,250	6,000	6,500	7,000	7,500	8,000	
Large customer product revenue	617,500	2,560,500	5,400,000	9,483,500	14,224,000	19,335,000	24,896,000	73,338,500
Product subscription sales / medium customers								
Average revenue per customer per month	500	600	700	800	800	850	850	
Medium customers product revenue	90,000	622,846	1,571,113	2,984,624	4,156,931	5,498,428	6,494,364	20,705,460
Product subscription sales / basic customers								
Average revenue per customer per month	-	-	-	-	-	-	-	
Small customers product revenue		-	-	-	-	-	-	-
Total Internal MRR	**707,500**	**3,183,346**	**6,971,113**	**12,468,124**	**18,380,931**	**24,833,428**	**31,390,364**	**94,043,960**
Total Other Revenue	360,000	432,000	576,000	684,000	684,000	684,000	756,000	3,384,000
Total Revenue	*1,067,500*	*3,615,346*	*7,547,113*	*13,152,124*	*19,064,931*	*25,517,428*	*32,146,364*	*97,427,960*
Total MRR Revenue In %	**100%**		**100%**	**100%**	**100%**	**100%**	**100%**	
Large customers	87%	80%	77%	76%	77%	78%	79%	
Standard customers	13%	20%	23%	24%	23%	22%	21%	
Small customers	0%	0%	0%	0%	0%	0%	0%	

Appendix 4: Combined expense budget (2018-2024)

EXPENSES	Total 2018	Total 2019	Total 2020	Total 2021	Total 2022	Total 2023	Total 2024	Total 2020-2024
Total hosting and other related costs	59,500	84,000	85,000	90,000	100,000	110,000	115,000	500,000
% of Total costs	4%	2%	2%	1%	1%	1%	1%	1%
Total net salaries of all personnel	970,100	2,712,040	3,868,792	4,880,031	6,158,648	7,732,035	10,408,861	33,048,367
Total net salaries of the owners only	126,000	162,000	216,000	237,600	261,360	287,496	316,246	1,318,702
Total salaries incl insurance and pension expenses + 30%	1,261,130	3,525,652	5,029,430	6,344,041	8,006,243	10,051,645	13,531,519	42,962,877
Total Headcount	245		77	82	85	88	93	
Total Salesperson	54		16	19	19	19	21	
Total salesperson salaries	230,000	752,000	903,600	1,211,760	1,492,656	1,729,768	2,096,006	7,433,789
Total R&D personnel	396,500	863,600	1,006,720	1,107,392	1,218,131	1,454,144	1,599,559	6,385,946
Total sales and marketing personnel	401,400	1,205,240	1,651,044	2,164,628	2,684,559	3,119,923	3,799,111	13,419,265
Total support personnel	40,000	195,000	297,000	399,300	479,160	570,999	676,414	2,422,873
Total other personnel	132,200	448,200	741,240	1,018,644	1,567,724	2,356,988	4,080,798	9,765,395
% of Total costs	66%	72%	72%	67%	65%	65%	68%	67%
R&D total (non-personnel)	35,000	14,800	13,400	14,500	15,710	17,141	18,705	79,456
R&D total with personnel	431,500	878,400	1,020,120	1,121,892	1,233,841	1,471,285	1,618,264	6,465,402
R&D total with personnel/Total Costs Ratio	29%	23%	19%	15%	13%	12%	11%	13%
Total Sales & Marketing (non-personnel)	225,849	506,733	609,967	629,970	646,347	675,362	701,003	3,262,648
Total Sales & Marketing (with personnel)	627,249	1,711,973	2,261,011	2,794,598	3,330,906	3,795,284	4,500,114	16,681,914
Total Sales & Marketing (with personnel)/Total Costs Ratio	43%	45%	42%	39%	35%	32%	29%	34%
Total Miscellaneous	171,648	464,447	507,764	541,978	564,296	587,008	622,407	2,823,453
Total Miscellaneous/Total Costs Ratio	12%	12%	10%	7%	6%	5%	4%	6%
Total costs excl interest and tax	1,753,127	4,595,632	6,245,560	7,620,488	9,332,596	11,441,156	14,988,634	49,628,434
Interest Payment Expenses	2,500	2,500	2,500	2,500	2,500	2,500	2,500	12,500
Tax Payment expenses	-	-	248,951	1,096,077	1,939,927	2,810,814	3,427,106	9,522,875
TOTAL COSTS	1,464,597	3,784,520	5,336,373	7,255,056	9,427,428	11,934,860	15,295,582	49,249,299

Appendix 5: Costs breakdown (2018)

Personnel Expenses	Total 2018	
Owners	10,500	1%
R&D salaries	396,500	40%
Salesperson salaries	230,000	23%
Marketing salaries + other sales & marketing salaries	171,400	17%
Supporting and other expenses	172,200	18%
Total Personnel Expenses	**980,600**	**100%**
R&D expenses + salaries		
R&D	35,000	8%
R&D salaries	396,500	92%
Total R&D expenses	**431,500**	**100%**
Sales & Marketing expenses		
Sales & Marketing expenses (excl salaries)	225,849	36%
Salesperson salaries	230,000	37%
Marketing salaries + other sales&mkt salaries	171,400	27%
Total Sales and marketing expenses	**627,249**	**100%**

Appendix 6: Combined income statement budget (2018-2024)

Profit&Loss Budget Statement	Total 2018	Total 2019	Total 2020	Total 2021	Total 2022	Total 2023	Total 2024	Total 2020-2024
Total Consulting & Setup revenue	360,000	432,000	576,000	684,000	684,000	684,000	756,000	3,384,000
Product revenue								
Large customer	617,500	2,560,500	5,400,000	9,483,500	14,224,000	19,335,000	24,896,000	73,338,500
Medium customer	90,000	622,846	1,571,113	2,984,624	4,156,931	5,498,428	6,494,364	20,705,460
Basic customer	-	-	-	-	-	-	-	-
Other Income	-	-	-	-	-	-	-	-
Total Revenue	1,067,500	3,615,346	7,547,113	13,152,124	19,064,931	25,517,428	32,146,364	97,427,960
Expenses								
Hosting and other related costs	59,500	84,000	85000	90000	100000	110000	115000	500000
Net Personnel expenses:								
Owner salaries (3)	126,000	162,000	216,000	237,600	261,360	287,496	316,246	1,318,702
Other employee salaries	844,100	2,550,040	3,652,792	4,642,431	5,897,288	7,444,539	10,092,615	31,729,665
TyEL (pension) or YEL (for owners)	361,757	48,600	64,800	71,280	78,408	86,249	94,874	395,610
TyEL (pension) + unemp. ins. for employees	415,757	765,012	1,095,838	1,392,729	1,769,186	2,233,362	3,027,785	9,518,900
R&D expenses non-personnel	35,000	14,800	13,400	14,500	15,710	17,141	18,705	79,456
Sales and Marketing expenses non-personnel	225,849	506,733	609,967	629,970	646,347	675,362	701,003	3,262,648
Other Costs	171,648	464,447	507,764	541,978	564,296	587,008	622,407	2,823,453
Depreciation	11,050	35,442	54,300	48,750	30,200	19,700	19,700	172,650
Total costs	1,726,377	4,631,074	6,299,860	7,669,238	9,362,796	11,460,856	15,008,334	49,801,084
EBIT	(658,877)	(1,015,728)	1,247,253	5,482,886	9,702,135	14,056,572	17,138,030	47,626,876
EBIT/Revenue Ratio	-62%	-28%	17%	42%	51%	55%	53%	49%
Interest rate	0.1		5%	5%	5%	5%	5%	
Interest payment	2,500	2,500	2,500	2,500	2,500	2,500	2,500	12,500
Tax rate			20%	20%	20%	20%	20%	
Income Tax payment	-	-	248,951	1,096,077	1,939,927	2,810,814	3,427,106	9,522,875
Net profit	(661,377)	(1,018,228)	995,803	4,384,309	7,759,708	11,243,258	13,708,424	38,091,501
Net Profit/Revenue Ratio	-62%	-28%	13%	33%	41%	44%	43%	39%

Appendix 7: Cash flow budget (2018-2024)

CASHFLOW BUDGET	Total 2018	Total 2019	Total 2020	Total 2021	Total 2022	Total 2023	Total 2024	Total 2020-2024
OPERATING CASHFLOW								
Expected Revenue (new customers - credit 3 mons)	428,500	728,800	6,824,383	11,777,871	17,586,729	23,904,304	30,507,130	91,709,584
of which confirmed Revenue	6,000	40,000	-	-	-	-	-	
Other Income in Cash	-	-						-
Less Other Non-Cash Income	-	-						-
Total Operating Cash In	**428,500**	**728,800**	**6,824,383**	**11,777,871**	**17,586,729**	**23,904,304**	**30,507,130**	**91,709,584**
Net Personnel Salaries	(970,100)	(2,712,040)	(3,868,792)	(4,880,031)	(6,158,648)	(7,732,035)	(10,408,861)	(33,048,367)
Withholding tax and social security payments	(544,260)	(813,612)	(1,160,638)	(1,464,009)	(1,847,594)	(2,319,610)	(3,122,658)	(9,914,510)
TyEL (pension) + unemp. ins. (incl. YEL)	(253,230)	(813,612)	(1,160,638)	(1,464,009)	(1,847,594)	(2,319,610)	(3,122,658)	(9,914,510)
Other operating expenses	(432,497)	(985,980)	(1,131,130)	(1,186,448)	(1,226,353)	(1,279,511)	(1,342,115)	(6,165,557)
Interest Payment	(2,500)	(2,500)	(2,500)	(2,500)	(2,500)	(2,500)	(2,500)	(12,500)
Income Tax Payment	-	-	(248,951)	(1,096,077)	(1,939,927)	(2,810,814)	(3,427,106)	(9,522,875)
VAT Payment	2,797	47,957	(331,028)	(2,346,015)	(3,695,732)	(5,179,374)	(6,737,995)	(18,290,143)
Total Operating Cash Out	**(1,946,560)**	**(5,279,788)**	**(7,903,676)**	**(12,439,090)**	**(16,718,349)**	**(21,643,454)**	**(28,163,893)**	**(86,868,462)**
Total Net Cashflow used in Operating Activities	**(1,518,060)**	**(4,550,988)**	**(1,079,292)**	**(661,218)**	**868,380**	**2,260,849**	**2,343,237**	**4,841,122**
INVESTING CASHFLOW								
Investing Cash In (e.g selling assets)	-	-	-	-	-	-	-	-
Purchase Office Equipment	(12,000)	(12,000)	(12,000)	(12,000)	(12,000)	(12,000)	(12,000)	(60,000)
Purchase Computers and Phones	(56,700)	(50,400)	(161,700)	(10,500)	(6,300)	(6,300)	(10,500)	(195,300)
Total Net Cashflow used in Investing Activities	**(68,700)**	**(62,400)**	**(173,700)**	**(22,500)**	**(18,300)**	**(18,300)**	**(22,500)**	**(255,300)**
FINANCING CASHFLOW								
Onwers' Investment	-	-						-
Capital Funding	250,000	-						-
Estimated Funding from Tekes	200,000	-						-
Other Financing Cash In	48,000	-						-
Repayment of Loans	(17,000)	(51,300)	(51,300)	(10,000)	(10,000)	(10,000)	(10,000)	(176,900)
Other Financing Cash Out								
Total Net Cashflow used in Financing Activities	**498,000**	**(51,300)**	**(51,300)**	**(10,000)**	**(10,000)**	**(10,000)**	**(10,000)**	**(176,900)**
Total Cashflow	**481,000**	**(4,664,688)**	**(1,304,292)**	**(693,718)**	**840,080**	**2,232,549**	**2,310,737**	**(3,964,369)**
Opening Cashflow	53,601	7,000	7,000	7,000	7,000	847,080	3,079,629	
Ending Cashflow (Should be at least 7000)	**7,000**	**7,000**	**(1,297,292)**	**(686,718)**	**847,080**	**3,079,629**	**5,390,366**	
Extra Cash Needed	*1,067,559*	*4,664,688*	*1,304,292*	*693,718*	*-*	*-*	*-*	*9,347,735*

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Appendix 8: Cash flow summary 2018-2024

OPERATING ACTIVITIES	2018	2019	2020	2021	2022	2023	2024
Total cash in	428,500	728,800	6,824,383	11,777,871	17,586,729	23,904,304	30,507,130
Total cash out	(1,946,560)	(5,279,788)	(7,903,676)	(12,439,090)	(16,718,349)	(21,643,454)	(28,163,893)
Operating cashflow balance	(1,518,060)	(4,550,988)	(1,079,292)	(661,218)	868,380	2,260,849	2,343,237
INVESTING ACTIVITIES							
Total cash in	-	-	-	-	-	-	-
Total cash out	(68,700)	(62,400)	(173,700)	(22,500)	(18,300)	(18,300)	(22,500)
Investing cashflow balance	(68,700)	(62,400)	(173,700)	(22,500)	(18,300)	(18,300)	(22,500)
FINANCING ACTIVITIES							
Total cash in	250,000	-	-	-	-	-	-
Total cash out	(17,000)	(51,300)	(51,300)	(10,000)	(10,000)	(10,000)	(10,000)
Finance cashflow balance	233,000	(51,300)	(51,300)	(10,000)	(10,000)	(10,000)	(10,000)
Opening cashflow	53,601	7,000	7,000	(1,297,292)	(686,718)	847,080	3,079,629
Ending cashflow	7,000	7,000	(1,297,292)	(686,718)	847,080	3,079,629	5,390,366

Appendix 9: Key customer-profitability metrics (2018-2024)

Monthly Recurring Revenue (MRR)	Total 2018	Total 2019	Total 2020	Total 2021	Total 2022	Total 2023	Total 2024
Total Product Revenue	707,500	3,183,346	6,971,113	12,468,124	18,380,931	24,833,428	31,390,364
Total Customers Mid-month	28	141	262	432	602	754	896
Average Revenue per Account (ARPA)	**25,727**	**22,553**	**26,604**	**28,829**	**30,516**	**32,940**	**35,032**
Customer Acquisition Cost/Customer (CAC/C)							
Salesperson salaries	230,000	752,000	903,600	1,211,760	1,492,656	1,729,768	2,096,006
Marketing and other sales Costs (with personnel)	397,249	1,711,973	2,261,011	2,794,598	3,330,906	3,795,284	4,500,114
Total Customer Acquisition Costs	**627,249**	**2,463,973**	**3,164,611**	**4,006,358**	**4,823,562**	**5,525,052**	**6,596,120**
Total New Customers	72	144	192	228	228	228	252
CAC/C	**8,712**	**17,111**	**16,482**	**17,572**	**21,156**	**24,233**	**26,175**
Customer lifetime value (CLV)							
Average Revenue per Account (ARPA)	25,727	22,553	26,604	28,829	30,516	32,940	35,032
Cost to Serve							
Hosting + Other COGS	59,500	84,000	85,000	90,000	100,000	110,000	115,000
Costs of Customer Success	50,000	210,000	330,000	435,600	638,880	702,768	869,675
Customer support salaries	47,549	195,000	297,000	399,300	479,160	570,999	676,414
Total Costs to Serve per Customer	*(5,711)*	*(3,464)*	*(2,717)*	*(2,139)*	*(2,022)*	*(1,835)*	*(1,854)*
Gross Margin %	78%	85%	90%	93%	93%	94%	95%
Annual churn rate	**10%**	**10%**	**10%**	**10%**	**10%**	**10%**	**10%**
CLV	**200,164**	**190,884**	**238,863**	**266,907**	**284,934**	**311,047**	**331,787**
CLV/CAC Ratio	23	11	14	15	13	13	13

Appendix 10: List of sheets in the final excel file

List of sheets in this workbook:

Sales budget (1)

Expense budget (2)

Cash flow budget (3)

Income statement budget (4)

Customers' payment details (5)

Sales summary

Costs summary

EBIT sensitivity analysis

EBIT scenario analysis

SaaS revenue metrics

Cash flow runway analysis

Other:

Actual sales

Actual expenses

Variance analysis