Generic and formalized investment proposal model at the corporate level

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Laurea University of Applied Sciences **Abstract**

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The purpose of this thesis was to provide a new investment proposal model for the employer which supports the development of leading of asset management and can be used at the corporate level to enhance decision-making. During the thesis process there were two models formed to correspond to the needs for investment proposals of the company. Keravan Energia Ltd. is the employer of this thesis and is an energy company operating in Finland. Objective of the thesis was to examine which are the essential factors that affect to the evaluation and decision-making. There were two investment proposal models provided to the employer as a result of this thesis. With models the structure of the proposals was systemized and there is certainty for decision-making that all the essential factors are considered in the proposal.

This thesis is a functional study and represents the approach of qualitative research. Before presenting the research, the thesis discusses of the theory concerning capital budgeting and investment process. Theoretical framework includes investment categories and factors affecting the investment's evaluation. Unstructured and semi-structured interviews were chosen as research methods for this thesis due to the possibility to get extensive and profound results regarding the subject of the research. There were continuous discussion and many interviews during the thesis process in order to get results that are most beneficial for the employer. The thesis was delimited to consider smaller and midsized investments of which the models were provided. The largest investments made in the company, such as acquisitions and new power plants, were confined out of this thesis. These investments are notably larger processes as a whole and sparsely made. During the thesis process a need for more specific investment categorization emerged and new investment categorization as well was provided as a result for the employer to support investment process. Investment proposal models were made with close collaboration with the employer and models were provided with the consideration of usability and visuality which were enhanced to personalize models for the employer and brought additional value. The result of this thesis is generic and represents the development of working life. Results of this thesis can be applied among other companies as a support of investment process and hence, it represents portability.

Investment proposal models were presented to the management in January 2021 where models got initial approval. In the end of the thesis process the final and perfected models were presented to the Directors of business lines and Chief Executive Officer of the company. Chief Executive Officer of the employer approved the models and models are to put to use from beginning of March 2021.

Keywords: capital budgeting, investment process, investment proposal, evaluation

Laurea-ammattikorkeakoulu **Tiivistelmä**

Liiketalouden koulutusohjelma

Tradenomi (AMK)

Henna Lehto

Geneerinen ja virallinen investointiesitysmalli konsernitasolla

Vuosi 2021 Sivumäärä 76

Tämän opinnäytetyön tarkoituksena oli luoda toimeksiantajalle uusi investointiesitysmalli, jolla tuetaan omaisuudenhallinnan johtamisen kehittämistä ja jota voidaan geneerisemmin hyödyntää konsernitasolla päätöksenteon tehostamiseksi. Opinnäytetyöprosessin aikana mallista muodostui kaksi versioita vastaamaan yhtiön tarpeita investointiesityksille. Opinnäytetyön toimeksiantajana toimi Keravan Energia Oy, joka on Suomessa toimiva energiayhtiö. Opinnäytetyön tavoitteena oli tutkia, mitkä ovat tärkeimmät tekijät, jotka vaikuttavat investointien arvioimiseen ja päätöksentekoon. Opinnäytetyön tuloksena toimeksiantajalle luotiin kaksi investointiesitysmallia, joiden avulla investointiesitysten rakenne saatiin systemaattiseksi ja luotiin varmuus päätöksenteolle, että tärkeimmät tekijät on huomioitu esityksessä.

Tämä opinnäytetyö on toiminnallinen tutkimus ja edustaa laadullista tutkimussuuntaa. Ennen tutkimuksen esittämistä opinnäytetyössä käsitellään pääoman budjetointiin ja investointiprosessiin liittyvää teoriaa. Teoriaosuudessa käsitellään investointiluokkien määritelmiä sekä investoinnin arvioimiseen vaikuttavia tekijöitä. Opinnäytetyön tutkimusmenetelmiksi valittiin avoimet ja teemahaastattelut, joiden avulla saatiin kattavaa ja oleellista tietoa tutkimukseen aiheeseen liittyen. Opinnäytetyöprosessin aikana käytiin jatkuvaa keskustelua ja useita haastatteluita, jotta lopputuloksesta saatiin mahdollisimman hyödyllinen toimeksiantajalle. Opinnäytetyö rajattiin koskemaan pienempiä ja keskisuuria investointeja, joille luotiin investointiesitysmallit. Suurimmat investoinnit, kuten yritysostot ja uudet voimalaitokset, rajattiin opinnäytetyön ulkopuolelle, koska ovat prosesseina huomattavasti laajempia ja harvemmin toteutettuja. Opinnäytetyöprosessin aikana nousi esille tarve selkeämmälle investointiluokittelulle ja lopputuloksena tuotettiin myös uusi investointiluokittelu tukemaan investointiprosessia yrityksessä. Investointiesitysmallit tehtiin tiiviissä yhteistyössä toimeksiantajan kanssa sekä mallit luotiin toimeksiantajalle huomioiden käytettävyyttä ja visuaalisuutta, joiden avulla personoitiin malli toimeksiantajalle ja tuotiin lisäarvoa tulokselle. Opinnäytetyön lopputulos on geneerinen ja edustaa työelämän kehittämistä. Malli on hyödynnettävissä myös muissa yhtiöissä.

Investointiesitysmallit esitettiin johtoryhmälle tammikuussa 2021, jolloin mallit saivat alustavan hyväksynnän. Opinnäytetyöprosessin lopulla lopulliset mallit esitettiin liiketoiminnan johtajille sekä toimitusjohtajalle. Toimeksiantajan toimitusjohtaja hyväksyi mallit ja ne otetaan yrityksen käyttöön maaliskuun 2021 alusta lähtien.

Asiasanat: pääoman budjetointi, investointiprosessi, investointiesitys, arviointi

Contents

1 Introduction

Energy industry has been working to reduce emissions for a long time and in year 2020 the 80 percent of Finland's electricity production is emission-free and climate emissions from district heating have decreased by 35 percent during the last ten years. Energy industry is going through a major turning point and the next leap towards carbon-neutral Finland in the 2030s is built by energy companies. To achieve carbon-neutral society investments concerning climate are required. According to the Chairman of Board of Directors of Energiateollisuus Ry, Jussi Laitinen, to create a world's most competitive investment environment must be set for objective. This means creating and restricting of requirements. (Laitinen, Energiateollisuus ry 2020.)

Energy industry is by far the largest investor among all manufacturing industries (Leskelä, Helen Oy 2020). Additionally, companies that have been operating in forestry and paper industry have expanded their operations also in the fields of energy solutions, for example UPM Energy is part of the corporation of UPM Kymmene and according to the company's websites UPM has energy production in other business areas as well (UPM Energy 2021). The high level of investments in the energy industry contributes to the turning point of the industry.

Investments in energy industry are directed to the energy production and energy networks as mowing towards climate-friendly energy system. This energy system will be further resilient to the effects of climate change and extreme weather conditions. (Leskelä, Helen Oy 2020.) In addition, due to the turning point of the energy industry and trends emerging the energy companies must respond to these changes with additional investments. One of these growing trends is people-centered development due to people's growing interest towards energy production and services. Circular economy and environmentally friendly actions have become even more part of the trends emerging. Another trend that affects deeply to the energy industry concerns the smart home and city solutions where the importance of effective energy services and energy consumption is emerged. Besides all above mentioned trends, the role of data analytics and modern technology is growing and for energy industries it means more effective and coherent combination of different systems. (Lager & Eskola 2020.) Energy companies have innovated new services and solutions to respond to these trends and naturally these innovations require new investments.

This thesis deals with above mentioned issues concerning investments in the energy industry and how different factors affect to the decision-making of the investments in energy companies. This thesis proceeds by presenting the employer of this thesis and additionally the objectives and purposes that are set. Next the chapters concerning the theoretical framework are presented. The theoretical framework discusses of the concept of capital budgeting and investments and related essential factors. Investment evaluation is crucial for companies to success in the competitive markets by making profitable investments in the right time. Different evaluation factors and methods are concerned in the theoretical part of the thesis as well. Understanding of capital budgeting and its process is inevitable.

The progression continues to the execution of the research which includes the used research methods and results. The results are analyzed and attached to the reasonings of the models that are provided to the employer in form of this thesis. After the execution and analyzation of the research the models provided for the employer are performed and conclusions presented. This thesis is concluded in the assessment of the process and the feedback provided by the employer.

1.1 Keravan Energia

Keravan Energia is the employer of this thesis. Keravan Energia is an energy corporation operating in Finland and its main areas of operation are Kerava and Sipoo, but it is offering energy services nationwide. Keravan Energia Ltd. is the parent company and its subsidiaries are Sipoon Energia and Keravan Lämpövoima. The parent company Keravan Energia is wholly owned by its municipal owners of Kerava and Sipoo. (Keravan Energia -yhtiöt 2021.)

The business idea of Keravan Energia is to strengthen their customers' economy and competitive advantage through low-cost energy operations. Keravan Energia's electricity and district heating networks reach from Kerava to Sipoo and the company provides electricity services nationwide. The biggest share of electricity and district heating is produced in the Kerava's biopower plant. Keravan Energia has also a solar power plant, which produces electricity and is one of the largest solar power plants in Finland. In addition, there are several smaller centers for the production of district heating. Keravan Energia has invested in a diverse range of energy solutions. Its operations are constituted in wind, hydro, solar and nuclear power generation. (Keravan Energia -yhtiöt 2021.)

Keravan Energia is a corporation operating in the energy industry and it makes investments annually to secure and develop the business and additionally to decrease environmental damage and to answer its customers' needs.

According to the Keravan Energia company's code of conduct the company delivers high-quality energy products and services in a most reliable way as possible. The expectations of shareholders are corresponded with high-quality, efficient, agile, and environmentally friendly operations. All of this is seen in the investing actions of the company by making investments that correspond to the code of conduct of Keravan Energia. Encouraging and guiding customers to save energy and use energy efficiently are part of the company's policies. (Keravan Energia -yhtiöt 2021.) In company's own operations, the principles of continuous improvement of energy efficiency have been taken into consideration in order to reduce energy consumption. Keravan Energia's goal is to reduce the environmental impact of all its operations and the company has already decreased its carbon dioxide emissions 88 percent by making different investments. (Keravan Energia-yhtiöt 2021; Kettunen 2020.)

Keravan Energia invests in the use of renewable energy in their production by building own production units and through joint ventures. Environmental requirements are considered in the placement and construction of cable networks in an adequate and sustainable manner. The company has committed to reduce environmental impacts of its operations by improving the level of environmental protection and this is seen as well in its investments. In addition, the company is naturally committed to fulfill statutory requirements and other obligations, laws and regulations, and industry standards, regarding their operations. (Keravan Energia-yhtiöt 2021.)

1.2 Purpose and objectives of the thesis

The background for this thesis lays on the asset management which is being renewed in Keravan Energia. The operating model for asset management includes the desired documentation and example models that are provided for the documentation. One of these models is the investment proposal model. The subject for this thesis came from the employer and the purpose of this thesis is to provide enhanced investment proposal models to support the asset management.

Before investment decisions are made, the investment proposal is presented. After the decision to invest is made the process of capital budgeting continues from planning and execution to the post-audit where the investment is monitored. (Järvenpää, Länsiluoto and Partanen 2010, 333.) Thus, the investment proposal has an essential role and with approvals of proposals the funds are allocated. The evaluation of the investment is presented in the proposal and the profitability of an investment must be addressed.

There are many different investments made concerning all the business lines of Keravan Energia. The company has instructions and models to support processes of capital budgeting and compiling investment proposals. Yet there are differences of the structures of investment proposals given for executives to decide to invest. There is a need for more instructive and generic model for investment proposals that could be used at the corporate level.

The objective is to examine which factors affect to the evaluation of an investment and provide generic investment proposal model to assist and further enhance the decision-making process for the employer. This thesis and final result targets investments concerning real assets. However, this thesis does not reach for major investments, such as acquisitions, and new power plants. These larger investments are made in the company more sparsely and require much more documentation covering the description and results of the investigation. Additionally, some investments are confined out of this model due to the redundancy to undergo this investment proposal model. The target of the investment proposal model is to clarify and formalize even more the compiling of investment proposals that concern investments under certain cost ranges.

This thesis is executed as a functional study. Functional study is an approach where the research and practice are executed at the same time (Juuti & Puusa 2020, Chapter 17). This thesis represents the approach of qualitative research. Semi-structured and unstructured interviews are research methods used in order to obtain extensive and profound results. The objective of the interviews is to examine proposals already used in the company, used methods to evaluate investments, and what factors must be presented in the investment proposals. Additionally, with interviews the desired proposal is defined and with the received information the investment proposal is modified.

The following chapters include the theoretical framework which discusses the related aspects and information concerning the subject of capital budgeting and investments. First, the capital budgeting is described with the strategic aspect. Third chapter includes the capital budgeting process which is a key part of this thesis. Additionally, investment categories are discussed in the chapter three. Chapter four concerns the factors that affect to the evaluation of the investment and are essential for the decision-making.

2 Capital budgeting

Investments have a significant role in the business economics because they create possibilities, but additionally unsuccessful investments can bring down a whole company. Investments are related to maintain and develop company’s long-term operations.

Investment planning and execution links to the budgeting where investment budgets targets planning to the annual level. This budgeting ensures that the planned investments are possible to execute with the allocated funds. (Järvenpää et al. 2010, 329; Neilimo & Uusi-Rauva 2007, 206.)

Financial management is mainly concerned with two decisions, investment decisions and financing decision, and the interaction between these two. Investment decision is defined as the decision to obtain assets and is related to the decision of investments in long-term assets. (Pike & Neale 2006, 6; Goel 2015, 11.) Investment decision is sometimes referred to the capital budgeting decision (Pike & Neale 2006, 6), but in this report, it will be discussed as the investment decision. Assets that the investment decision targets to acquire are most often real assets that are applied within the business to produce goods and services or to respond to the demand of customers. Real assets concern both, tangible and intangible assets. Tangible assets are such as equipment, land and buildings, stocks, whereas intangible assets are for example trademarks and patents, and the knowhow of the employees. (Pike & Neale 2006, 6.)

Capital budgeting is a process in which managers make decisions based on the evaluation about whether the long-term investment is worth of execution. Capital budgeting is a continuous process which contains planning, analyzing, selecting, and managing capital investments. Capital budgeting is executed by different functional areas of management. These areas are such as production, engineering, marketing, and financial management. It is one of the most crucial and challenging tasks of the company's management due to its consideration of investment decision. With this investment decision the funds are allocated over time in order to achieve objectives of the company. (Baker & English 2011, 1.)

2.1 The importance of strategy in capital budgeting

Most often methods for evaluating investment decisions are discussed without referring to the issues of corporate strategy. Strategy is generally viewed as being outside the realm of financial economics and it is being discussed only briefly, if at all, in the textbooks of corporate finance and valuation. However, in real life there is an interrelation between strategic, financial, and investment decisions. (Baker & English 2011, 21.)

Capital budgeting has a long-term focus which links to the company's strategy and strategic plan. Strategy has many definitions, but according to Baker and English (2011, 19) strategy is defined as the formulation and implementation of the key decisions within the company. A well-designed strategy includes a statement of the objectives of the company, criteria to decide which activities should be taken and not to take, and a view on how the company should be internally organized and how the company deals with external factors. (Baker & English 2011, 19.)

Strategy must contain an explanation for its logic, which is an explanation for the reasons why the objectives will be achieved by adhering to the strategy. (Baker & English 2011, 19.)

Strategic plan defines how a company has targeted the actions by which expected long-term strategic goals are achieved. Most often capital investments require substantial commitment of company's resources that are directly linked to performance, competitive position, and future direction. Once an investment decision and investment itself have been made, reversion is often difficult or even impossible due to investment's commitment of large amount of funds for lengthy periods. In addition, capital investments are difficult to convert into liquid assets. Therefore, investments must be precisely evaluated before the investment decision. (Goel 2015, 11; Baker & English 2011, 1.)

Strategic approaches

The opportunity to be successful in the competitive world depends widely on the company's ability to reform itself through the profit-enhancing capital investment decisions consistent to the business strategy of the company. Therefore, profitable investments must be made to retain the competitive position and these successful investments enable achievement of competitive advantage. (Pike & Neale 2006, 174.) Puolamäki and Ruusunen remark (2009, 61) that the profitability and adequacy to the strategy are two important factors emerging in investment decisions. Therefore, it is important to evaluate investment's adequacy to the company's strategy.

One way to evaluate the adequacy to the strategy is the Boston Consulting Group Approach. This popular approach consists of assessing investment proposals based on the growth rate and market share and can be presented in the matrix. The matrix is divided into four different sections of product markets in which the company might be operating. These four sections are classified as icons of stars, cash cows, question marks and dogs. (Pike & Neale 2006, 176.)

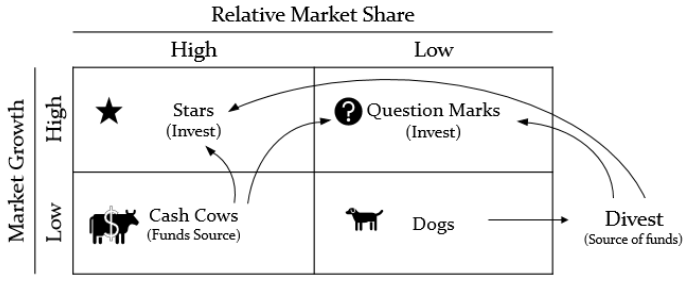

Figure 1: Boston Consulting Group Matrix (Pike & Neale 2006, 176)

Traditionally the progression is presented as a path from a potential product which is represented as a question mark and continues through the other three markets eventually ending to the divest. Pike and Neale (2006, 176) suggest another approach represented as a matrix (Figure 1) above. In this the pattern stars are the main areas to invest due to the offering of high growth and an opportunity to achieve dominance in the markets.

After the dominance is acquired and the investment is seen only necessary to sustain the market share the cash cows generate funds for other areas of growth when the growth rate declines. The dogs in this matrix represent those business ideas that were unsuccessful to achieve market share during the growth phase. These failed ideas are now applicants for divestment and are evaluated correspondingly. (Pike & Neale 2006, 176.) Divestment is made when for example the plant or equipment is disposed (Makkonen 2020). If there is any cash flow generated it should be directed and applied to those sectors operating in high-growth markets. According to this investment strategy approach the management is able to assess the adequacy to the strategic plan of all individual investments. (Pike & Neale 2006, 176.)

Another often used approach is the McKinsey-General Electric portfolio matrix (Figure 2) in which the allocation of resources is based on the analysis of the attractiveness of markets and the competitive advantages of the company. To analyse the market's attractiveness certain factors are concerned, such as the market's growth and size, state of competition, profitability of the industry for strategic business units. Business strength in turn is indicated by factors such as market share of the company and its growth rate, advantages of technology and other comparative areas, and brand loyalty. (Pike & Neale 2006, 174.)

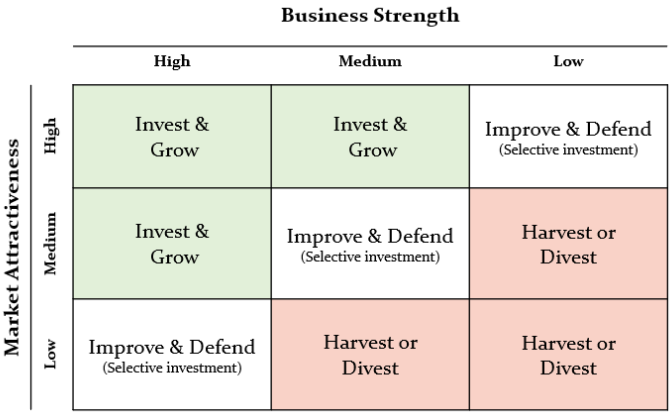

Figure 2: McKinsey-GE Portfolio Matrix (Pike & Neale 2006, 175)

The matrix (Figure 2) consists of 9 different options which to be executed in different situations. The idea of assessing projects within extensive strategic approach focusing on business strength and market attractiveness lead to three basic strategies.

If the business is operating in relatively attractive markets the strategy would be to make investments and strengthen the operations. Second strategy concerns situations where the market is less attractive, and the business is less competitive. Here the strategy is to maximize the results of existing resources and maximize or maintain cash flows. Third strategy is to run down or divest businesses that are strategically any worthy unless there are profitable actions possible to return the attractiveness. (Pike & Neale 2006, 174-175.)

2.2 Capital rationing

Resources to execute all possible investments are limited and thus it is crucial for management to have explicit criteria for approving investments. These criteria are linked strongly to the objectives of the strategy. Due to the shortage of capital and other resources available for investments the prioritisation of investment projects is required. (Gowthorpe 2010, 145.) Baker and English (2011, 95) define capital rationing as a limit of funds that are available in a market to fund an investment project. Management of the company must make choices about which investment projects are worth of funding due to the limitation of capital funding. Capital rationing induces investments to compete and with certain criteria, the investments fulfilling these criteria will "win" the competition and will be funded. (Baker & English 2011, 96.)

According to Baker and English (2011, 97) there are two options of applying capital rationing. The first option is to set a rate that is higher than a cost of capital and works as a hurdle. Therefore, the acceptance of investments that are expected to generate higher returns than the hurdle rate is ensured. Second option is to set a fixed investment budget where investment projects are accepted and funded based on certain criteria of selection. Theoretically, if the hurdle rate is used as an option of capital rationing all the investments with a higher rate than the hurdle are accepted and the number of investments to be funded could be unlimited. Whereas, with the fixed investment budget the total amount of available funds limits the number of investment projects. (Baker & English 2011, 96-97.)

3 Capital budgeting process

In this section different investment categories are presented, and the capital budgeting process is explained by each phase. There are many different classifications for investments but for this report only the main comprehensive categories are chosen due to the understandability and adequacy to this thesis. Typical features concerning investments are the lengthy period of time, extensive impacts, large committed capital, and uncertainty (Ikäheimo, Malmi & Walden 2019, 176).

In this report the investments are classified based on their mission in the company (Shapiro 2015, 9) and additionally to the level of control. The explanation of the phases of the capital budgeting process is inevitable to understand its meaning for the investment decision-making.

3.1 Classification of investments

There are many different classifications of investments in the world of literature, but Shapiro (2015, 9) classifies investments into four categories. The first category is investments regarding **equipment replacement**. According to Puolamäki and Ruusunen (2009, 136) to maintain competitive advantage investments regarding replacement are required. These replacement investments concern plant and equipment that have become obsolete over time and need to be replaced in order to continue business operations. This obsolescence of plant or equipment can be result of a higher cost maintenance of the old equipment or plant, or due to a new technological development that generates more efficient results. Along with higher maintenance costs and technological developments a shift in factor input costs that changes the benefit-cost equation for existing equipment can be an insistence for replacement as well. (Shapiro 2015, 9.)

The second and third category of investments consider investments regarding expansional objectives. Shapiro (2015, 9) classifies expansion investments into investments regarding **expansion to meet growth in existing products** and **expansion generated by new products**. The firstly mentioned includes expenditures to meet the predicted growth in the demand of existing products. Growth in existing markets or a decision to expand sales into new market areas can be reasons for the increase in demand. Expansion generated by new products denotes that there are new products developed in order to achieve growth. Companies expand by introducing new products to the markets and respond to the challenges of the competitive situation. (Shapiro 2015, 9-10.)

The fourth category in Shapiro's (2015, 10) classification is the **investments mandated by law.** Different standards, such as various emission and safety standards, regulate investments in pollution control. In these cases, companies must weigh the cost of complying these regulations against the cost of, for example shutting down a facility. (Shapiro 2015, 10.) If these investments mandated by law are not executed the public authorities will cease the action of the company (Puolamäki & Ruusunen 2009, 23).

Puolamäki and Ruusunen (2009, 24) mention same investment types as Shapiro (2015, 10) but they introduce addedly the categorization according to the level of control. In this categorization there is partition into operative and strategic investments. **Operative investments** consider those investments which strengthen the current operations within the given frame and are in the line of company's strategy.

These investments are usually financed with internal funding. Investments concerning replacement and smaller expansions on capacity, and other maintenance investments are considered as operative investments. **Strategic investments** change the nature of business. Strategic investments consider all the significant investments supporting company's strategy. New business units and major investments that guarantee the developing growth of the company are examples issued as strategic investments. Strategic investments create new prerequisites for operations and change the boarders of the current actions. (Puolamäki & Ruusunen 2009, 24; Ikäheimo et al. 2019, 176.) It can be argued that expansion investments can be seen also as strategic investments due to the objective of growth.

3.2 Capital budgeting process

The capital budgeting process differentiates in different companies and additionally there are differences in the world of literature. For this thesis the process presented by Pike and Neale (2006, 183) was chosen and presented in the following figure (3) and with short descriptions of each phase. Puolamäki and Ruusunen (2009, 134) remark that the business environment may change during the capital budgeting process causing re-evaluation and changes in the process. In addition, changes in ownership, management and organizational structure will affect to the process (Puolamäki & Ruusunen 2009, 134).

The differentiation of capital budgeting processes used in different organizations are due to the order, naming, and number of phases of the process (Järvenpää et al. 2010, 333). However, the investment process in practice cannot be divided into clearly separated phases. The order of these presented phases may vary in practice or the phases might be running at the same time and be strongly dependent of each other. (Puolamäki & Ruusunen 2009, 135.)

Pike and Neale (2006, 182) present capital budgeting process with four stages: determining a budget, searching and development of projects, evaluation and authorization, and monitoring and control. The main objective of capital budgeting process is to ensure the distribution of available capital resources to capital projects that create wealth for the company and contribution to corporate goals. Another objective of the capital budgeting process is to ensure that good investment ideas are not ignored and that there are no insufficient proposals approved and will be led to be further refined.

These four stages of capital budgeting process are presented in the figure (3) below. Additionally, each stage is presented briefly. (Pike & Neale 2006, 182.)

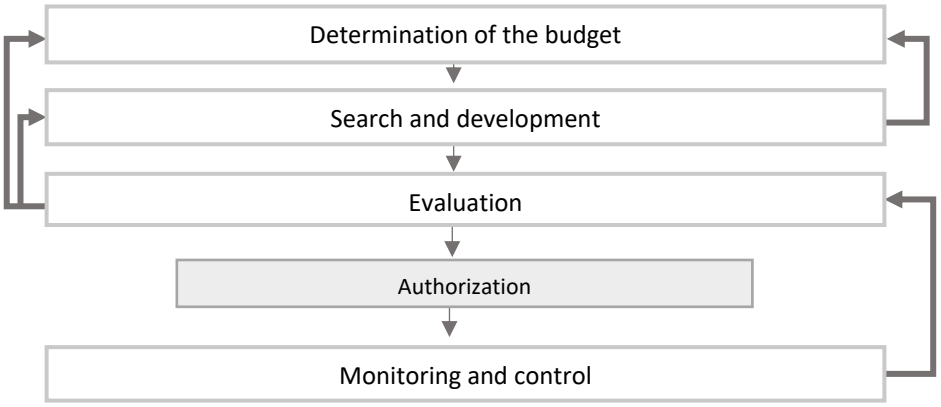

Figure 3: A simple capital budgeting system (Pike & Neale 2006, 183)

The objective of this thesis is to provide investment proposal model to the employer and thesis focuses primarily to the phases where investment proposals are compiled and presented to the management. The compiling of proposals is involved in the first three stages of capital budgeting process and additionally the approval of proposals is involved in the stage of decision-making which is presented as an authorization.

Determining a budget

According to Pike and Neale (2006, 182) the first stage of capital budgeting process is a determination of the budget. In this stage it is determined how much there is funding available for investment projects (Pike & Neale 2006, 182). The planning and budgeting of capital investment projects are included in the long-term planning, and the annual payments resulting the implementation of the investment program must be clarified in order to assemble the cash budget. Cash budget is one of the main budgets beside the revenue budget. The purpose of the cash budget is to ensure that the company settles all its payments during the budget period. Cash budget considers all the revenues and cost payments of share budgets and addedly the financing transactions. (Neilimo & Uusi-Rauva 2007, 236; Jyrkkiö & Riistama 2004, 235.) The investment budget consists of all the larger investments as well as smaller purchases, such as office equipment and restoration projects that are carried out during the budgeting season. (Jyrkkiö & Riistama 2004, 235.) After the budget has been determined the next stage begins.

Searching and development of projects

The second stage of capital budgeting process includes searching, screening, and defining investment projects. In this stage the emerged ideas and needs are searched, costs and benefits that the investment is going to generate are screened and the type of the project is defined. Additionally, the adequacy to the strategy, availability of resources, and risks of the investment project are preliminarily screened. (Pike & Neale 2006, 182-183.) It is remarked by Pike and Neale (2006, 182-183) that the most essential role for management should be to cultivate a culture where managers are encouraged to seek new ideas, and to identify and sponsor emerged investment ideas.

Evaluation and authorization

In the third phase of the capital budgeting process the investment is evaluated and the decision whether to execute, reject, or postpone is involved. Evaluation of the investment is involved with the combination of information of investment calculations and other factors, and the application of criteria that have been specified for investments. (Pike & Neale 2006, 183-186.) In addition, the evaluation stage includes the evaluation of the riskiness of the investment project. Before the investment proposal is given for management to decide to execute there must be examination of review of alternatives, consideration of non-financial costs and benefits, requested finance of the investment project. (Pike & Neale 2006, 183-186.)

After the evaluation the investment proposal goes through various authorization levels within the company's hierarchy until it is decided to approve or reject (Pike & Neale 2006, 186). It is remarked by Pike and Neale (2006, 186) that complete rejections of investment projects are rarely given but the proposals are occasionally led back to be improved.

Monitoring and control

The final stage includes the monitoring and control during the implementation and after the implementation. After the implementation there is a post-auditing of the investment project. In post-audit the investment project is monitored and controlled. Post-audit is defined as a re-examination of the actual performance, including costs, benefits, and forecasts, of a project after the implementation. (Pike & Neale 2006, 183, 188.)

Post-audit has two main aims, one of which being the aim to attempt encouraging future appraisals to be more realistic. This aim seeks to improve the cohesion and quality of the whole capital budgeting process. Another aim of post-audit is to facilitate major corrections of ongoing projects which links to the control of existing projects. (Pike & Neale 2006, 188.)

Baker and English (2011, 3) remark that the most essential benefits that are perceived with post-audit relate to the organizational learning and the enhancement of it. When conducting post-audits there may be important feedback provided which can be used to improve current and future investment projects (Baker & English 2011, 3).

4 Capital investment evaluation

The foremost importance is the limitation of capital as a resource. There is always a constraint of capital rationing and this can affect in the selection of less profitable investment proposals due to the constraint of resources and budget allocation. This leads to the conclusion that it is important for management to be cautious in deciding whether an investment is economically acceptable and within the specified and required limits. The essence of capital budgeting is that the most suitable one or combination of investments that will create value and profitability for the company are identified and decided to implement. (Goel 2015, 14.)

In this chapter different factors affecting investment's evaluation are discussed. According to the research provided by Projekti-instituutti (2017), the foremost emphasized factor is investment's profitability when evaluating an investment from the perspective of decision-making. Additionally, other factors are considered affecting the evaluation of the investment, such as background, definition of content and scope, options, adequacy to the strategy, risks, benefits and disadvantages, and resources and schedule. (Äikäs 2017.) Naturally the profitability is one of the essential factors presented in the investment proposal to ensure the decision-maker of the investment and its reasonings.

The literature of capital budgeting and investment appraisal focuses mainly on the profitability calculations and financing solutions. Due to the energy industry and how there are environmental and obligatory requirements associated to the industry there are other factors considered as well. These factors are essential to take into consideration already in the investment proposal so the benefits or costs that cannot be shown in numbers will not be ignored. Other factors and their meaning are discussed more in the end of this chapter.

4.1 Profitability

The major criterion for selection of an investment is its viability and how it impacts on shareholder's value (Goel 2015, 12). According to Goel (2015, 12) the two most important parameters for evaluating if an investment is worth of investing are the expected cash inflows and outflows. Baker and English (2011, 59) reference that an investment is expected to generate cash flows that not only cover the prime cost of the investment but also generate additional cash inflows.

These additional cash inflows will compensate the risk of the investment. When measuring investment value two economic forces are set against each other, reward and benefits versus risks and cost of the investment. (Baker & English 2011, 59.)

4.1.1 Relevant cash flows

Predicted future cash flows are key factors in the evaluation of the investment. The impact of taking an investment is to make changes in cash flows and evaluate whether these changes generate value to the company. Therefore, it is crucial to decide those cash flows that are relevant. (Ross, Westerfield & Jordan 2008, 302-303.) Additionally, Goel (2015, 53) remarks that cash flows used in evaluation of the investment decisions should always be relevant cash flows. Ross et al. describe that "a relevant cash flow for a project is a change in the firm's overall future cash flow that comes about as a direct consequence of the decision to take that project" (2008, 303). Cash outflow that has already incurred and cannot be removed is a cost that is not a relevant and should not be included in the capital budgeting analysis. These costs are called sunk costs and they cannot be changed. Hence, the sunk costs are excluded from the analysis. (Goel 2015, 53; Ross et al. 2008, 304.)

According to Baker and English (2011, 176) relevant cash flows can be divided into three typical categories: the initial investment, the incremental cash inflows and outflows that are expected for the investment to generate, and investment's expected residual value. Initial investment concerns all those cash outflows that are expected to incur when the investment is completed to its initialization. Expected incremental cash flows are all those cash inflows and outflows that are expected to be generated from the investment. Residual value concerns the value of the asset at the end of the period. (Baker & English 2011, 176-179, 182.)

4.1.2 Investment calculations

There are different calculation methods in evaluating the profitability of an investment and within these methods there are differences and the result may vary remarkably (Ikäheimo et al. 2019, 183). Investment calculations are based on the information of markets, costs and returns caused by the investment, and the need of financing (Neilimo & Uusi-Rauva 2007, 213). Most used methods are net present value, internal rate of return, payback method and accounting rate of return (Puolamäki & Ruusunen 2009, 214). Net present value, Internal rate of return, payback period, and accounting rate of return methods are presented shortly to support this thesis. The way that the investments are calculated, and which calculation bases are used in the company are confined out of this thesis. Therefore, this thesis does not delve into the details of how the investment's profitability is calculated but researches what methods are used in the company and hence, the often-used formulas and methods are presented in the theoretical framework.

It is essential to understand the bases of the calculation methods but for this subject the detailed information is not inevitable. To calculate the profitability of the investment there must be defined an imputed rate of return which is used in the calculations. According to Puolamäki and Ruusunen (2009, 218) the imputed rate of return used in the investment calculations is most often **weighted average cost of capital** (WACC) or required rate of return for the whole capital. WACC is defined by Pike and Neale (2006, 734) as the rate for overall return that the company must accomplish in order to meet its investors' requirements. According to Puolamäki and Ruusunen (2009, 222) WACC expresses the cost of capital after taxes, but naturally it expresses the current situation at the risk level and the structure of the capital.

WACC can be calculated with the following formula (Formula 1):

$$WACC = Rd\frac{D}{V} + Re\frac{E}{V}\ x\ (1 - T)$$

Rd= Total cost of debt
Re= Total cost of equity
D= Market value of total debt
E= Market value of total equity
V= Total market value, debt and equity combined
T= Tax rate

Formula 1: Weighted cost of capital (WACC 2020)

Net present value

Net present value, NPV, determines whether an investment project yields a return in excess of the alternative equal risk investment. NPV can be seen as the most straightforward way of determining this. (Drury 2012, 304.) When using net present value to evaluate investments all costs and revenues occurring due to the investment are discounted with chosen rate of interest into the present time. The investment will be profitable if the net present value as a result is positive. In this situation, the costs of the primary procurement are lower than the net present value of the investment, including the residual value. Alternatively, if the initial cost of the investment is over the net present value including residual value, the investment is unprofitable. (Neilimo & Uusi-Rauva 2007, 218.) According to Shapiro (2005, 14), if an investment has a positive net present value it should be accepted and in turn if the net present value is negative it should be rejected. In addition, the investment with highest net present value is the most profitable one (Neilimo & Uusi-Rauva 2007, 220).

NPV can be calculated with the formula presented below (Formula 2). Here the I is the initial cost of an investment and *CF* the cash flows generated by the investment received in years 1 to *n*. The *k* is the discount rate used to calculate the NPV. (Neilimo & Uusi-Rauva 2007, 220.)

$$\mathrm{NPV} = -I_0 + \sum_{t=1}^{n} \frac{CF_t}{(1+k)^t}$$

Formula 2: Net Present Value (Neilimo & Uusi-Rauva 2007, 220)

Strengths and weaknesses

NPV evaluates investments by considering all cash flows and time value which is the same way of evaluation that investors use. Therefore, the most desirable feature of NPV is that it is consistent with the maximization of shareholders' value. Obeying the value additivity principle is another desirable feature of NPV. This means that managers can consider each investment project on its own because the net present value of a set of investment projects is the sum of net present values of individual investment projects. (Shapiro 2005, 15-17.)

The general weakness of NPV is the challenges of understanding the concept of NPV. It is researched that many corporate executives and nontechnical people find challenges in understanding the opportunity cost of money and present value of future cash flows which leads to the misusage of misunderstood concepts or not using them at all. Another challenge in using net present value is to compute the proper discount rate. (Shapiro 2005, 17.)

Internal rate of return

Internal rate of return, known as IRR, is used as the most important alternative of net present value (Ross et al. 2008, 277). IRR considers the time of value like the NPV. According to Drury (2012, 307), the IRR represents the actual interest rate that is earned on an investment over the duration of its economic life. The internal rate of return is the rate *K* that when is used to discount all the cash flows of an investment, it will equate the present value of the cash receipts to the present value of the outlays of cash. IRR is therefore the discount rate that will cause the result of a zero of the net present value. Hence, the IRR can be described as the maximum cost of capital that being applied to finance the investment project will not cause harm for its shareholders. (Drury 2012, 307.)

The IRR can be calculated by solving the value of the *k* from the formula below (Formula 3) where the I stands for the initial cost of an investment and *CF* the cash flows generated by the investment received in years 1 to *n* (Drury 2012, 307):

$$I^0 = \frac{CF_1}{1+k} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \cdots + \frac{CF_n}{(1+k)^n}$$

Formula 3: Internal Rate of Return (Drury 2012, 307)

The investment projects with the highest rate of return are the best options to invest. The return on investment can be examined by comparing the internal rate of return to the company's rate of interest. The higher rate of return compared to the interest rate, the more profitable the investment is. (Puolamäki & Ruusunen 2009, 235.)

Strengths and weaknesses

According to Shapiro (2005, 23-26) IRR is preferred over NPV in many organizations because managers are seemed to visualize and understand the method easier. In addition, Ross et al. (2008, 285) state that managers often find the concept of a rate of return clearer than the sum of discounted euros that net present value presents. Despite of the attractiveness and widespread use of IRR, the method has many weaknesses.

One of the great weaknesses that IRR encounters is that if an investment has initial cash outflow, a series of positive cash inflows, and at least one additional cash outflow, there is a possibility of more than one internal rate of returns. The amount of possible solutions can be as large as the amount of sign reversals in the stream of cash flows. This means that there can be a shift from a cash inflow to a cash outflow or the other way around. However, the problem of multiple IRRs seldom arises. Secondly IRR and NPV as well can most likely to give contradictory signals when mutually exclusive investment projects are considered, and they differ substantially in the scale or in timing of cash flows. (Shapiro 2005, 23-26.)

Payback method

Payback is one of the widely used investment calculation methods due to is simplicity (Neilimo & Uusi-Rauva, 223). Payback method is defined as the length of time required to retrieve the initial cash outlay required by the investment (Shapiro 2005, 18). The payback period can be calculated by dividing initial cost of investment with the annual net proceeds (Neilimo & Uusi-Rauva, 223).

If the payback period is less than a specified limit the investment projects are acceptable, whereas if the period is over this figure investments are rejected. The limits of acceptable payback periods vary for different investments according to the perceived risk of an investment. (Shapiro 2005, 18.) According to Shapiro (2005, 18), the riskier investment project is, the shorter payback period is required. According to the example presented by Puolamäki and Ruusunen (2009, 237), the formula for payback period can be presented as follows (Formula 4):

$$\text{Payback period} = \frac{Initial\ cost\ of\ an\ investment}{Annual\ cash\ flows}$$

Formula 4: Payback period (Puolamäki & Ruusunen 2009, 237)

Strengths and weaknesses

Payback method is still widely used due to its simplicity and its ease of applying. Despite of these desirable features, the method has major weaknesses. One of the major weaknesses is ignorance of time value of money. Payback method issues the same value to the used currency received at the end as to the one received at the beginning of the investment. Because of this the timing of cash flows is ignored and the opportunity cost of money is disregarded. (Shapiro 2005, 19.) In addition, Ross et al. (2008, 270) remark that the biggest challenge of payback period is to determine the correct cut off period and this number is decided arbitrarily chosen due to the lack of economic rationale.

Due to the weakness of payback method where the time of money is ignored another approach is often preferred. **Discounted payback period** is a method where the cash flows are discounted and therefore the issue of not considering time of money is avoided. Goel describes that "discounted payback period is the number of years taken in recovering the investment outlay on present value basis" (2015, 69). Although the discounted payback period is seen overcoming the limitations of payback period it has a weakness which fails to consider the future cash flows beyond the payback period. (Goel 2015, 17, 69.)

Accounting rate of return

The accounting rate of return, ARR, is another method to evaluate the profitability of a capital investment and is also known as the average return on book value. ARR is the ratio of average net profit of an investment and the initial investment cost. ARR takes depreciation into consideration in the net profit by decreasing it from the net cash flows.

The decision rule of ARR is to accept investments that yield a return that is greater the standard which is the target rate of return specified by the organization. Investments that place under the target rate of return should be rejected. (Shapiro 2005, 19-20.) According to Shapiro (2005, 20) the accounting rate of return for the investment can be calculated with the following formula (Formula 5):

$$\text{Accounting rate of return} = \frac{\sum_{t=1}^{n}(After{-}tax\ profit\ in\ year\ t)/n}{(Initial\ outlay{+}ending\ book\ value)/2}$$

Formula 5: Accounting rate of return (Shapiro 2010, 20)

Strengths and weaknesses

Accounting rate of return is desirable due to its simplicity (Shapiro 2005, 20). Calculating ARR is very straightforward process and it is widely used method. It is also researched that managers with non-financial knowledge find accounting rate of return understandable. (Gowthorpe 2010, 162.)

Regardless of the desirable features of ARR it has notable weaknesses. Firstly, ARR does not take time value of money into consideration. There is too much weight given to the future cash flows when the average profit is used. Additionally, timing is ignored in the calculation of ARR, although the initial cost of an investment is costlier in present value than the one which is required in the given period. Another great weakness of ARR is that it is based on accounting income and not cash flows. The effect of depreciation, an accounting adjustment the timing and nature are included in the ARR, but these factors are determined by management. (Shapiro 2005, 20.) Gowthorpe (2010,162) introduces one additional weakness among weaknesses presented by Shapiro. This weakness of ARR is that it fails to consider the relative size of investment projects competing one another (Gowthorpe 2010, 162).

4.1.3 Real options

Traditional investment evaluation methods consider only those options that are available in the moment of decision-making, and options in the future are ignored. Due to the uncertainty of future events there might be possible options occurred due to changes in circumstances after the investment decision. Therefore, the investment can be moved to another timing of execution or additionally expanded or variegated. There are many options for investments and these options should be examined as an opportunities and uncertainty factors. (Puolamäki & Ruusunen 2009, 272.)

Real options are defined as options which relate to real assets (Ross et al. 2008, 459). Use of real options in planning and evaluating of investments is beneficial for companies because it expands significantly the information produced by the investment calculations. The central principle of real options is that the value of real option is never negative. In addition, real options never lead to a situation where the approval of the initial investment becomes questionable. The net present value of an investment can only increase the amount of the real option's value. Investment is flexible when there are real options associated to the investment. (Puolamäki & Ruusunen 2009, 272-273.) The net present value of a flexible investment, PV_f, can be calculated with the following formula (Formula 6) where the PV is the present value and V_o the value of the real option (Puolamäki & Ruusunen 2009, 272-273):

$$PV_f = PV + V_o$$

Formula 6: Present value, flexible investment (Puolamäki & Ruusunen 2009, 273)

Real options are useful but difficult to evaluate and Bierman and Smidt (2007,352) remark that the one responsible for decisions must attempt to understand the assumptions that affect implicitly to the evaluation.

Classification of real options

Real options can be divided into different categories. One of the real options that is mentioned by Puolamäki and Ruusunen (2009, 279) consider the time aspect. Ross et al. (2008, 460) classify this real option as the investment timing decision. This investment timing decision is to decide when the investment project will be executed (Ross et al. 2008, 460). Real option concerning timing can be in situations where waiting will generate more options to benefit or buy resources or there are uncertainties and issues concerning the execution of the project where additional time can provide better solutions. (Puolamäki & Ruusunen 2009, 279.)

Secondly, real options can be categorized into options concerning options to expand, abandon, and suspend or contract operations. These options are called managerial options. Managerial options are opportunities for managers to exploit if there are additional changes and issues occurred in the future besides those things that were predicted before the launching of an investment project. (Ross et al. 2008, 462-463.) Option to expand is in situations where the markets or technological development is beneficial for the company and this can be exploited to expanding the investment project. Options to suspend or even abandonment are in situations where the option to shut down temporarily or entirely an operation can be seen more profitable than continuing its operations. (Puolamäki & Ruusunen 2009, 280.)

At times there are also options to scale back an operation which is presented by Ross et al. (2008, 463) as an option to contract. This option to contract may be in situations where a new product has failed its success and its production is cut down and the remaining capacity is forwarded in other operations. In other words, option to contract is an opposite to the option to expand. (Ross et al. 2008, 463.) At times there are new projects undertaken by companies simply to examine possibilities and potential strategies for future businesses. Options for these projects are called strategic options which are defined as options concerning the future, related to the products or strategies of the business. (Ross et al. 2008, 464.) Projects which include strategic options may be valuable but in practise the evaluation of these options is extremely difficult or even impossible (Ross et al. 2008, 464; Puolamäki & Ruusunen 2009, 283). An example of projects including strategic options is projects in the field of research and development. Research and development creates options regarding new procedures and products and hence, it is important and valuable for companies. (Ross et al. 2008, 464.)

4.2 Financing

Financing can be a restricting factor for investment decisions. If there is no funding available for the investment the investment will not be implemented, or it will be scheduled to be implemented in the future. Hence, the investigation of the financing solutions for the investment is a critical step in the investment process. (Puolamäki & Ruusunen 2009, 176.)

Investments can be financed with internal financing or capital financing. Capital financing can be divided into equity and liabilities. In some situations, there are possibilities to get direct aids to fund an investment. Internal financing is used mainly to finance the operative investments whereas strategic investments often require debt or equity as a financing solution. There is also mezzanine financing as an option for organizations to finance their investments. (Puolamäki & Ruusunen 2009, 177.) Mezzanine financing has features of both, equity, and debt. Mezzanine financing is often used to achieve goals when the debt borrowing capacity has been maximized and additional capital is needed. (Mezzanine 2020.)

4.3 Risk in investments

According to Hardy (2015, 33) risk is inevitable and is present in daily lives of people and organizations. There are various definitions for risk in use of many industries and organizations, but the most used concept is defined as the uncertainty of outcomes (Hardy 2015, 33). The classification of possible risks is presented differently in literature but yet the content of risks remains the same. For this thesis classification provided by Lam (2014, 31) concerning risk types which are generally recognized by many risk professionals is chosen. These seven major recognized risk types are listed in the table below (Table 1).

Each of the major risk types consists of group of individual risks. One feature of risks is that they come in different sizes and therefore need to be evaluated according to the size and possible consequences. These risk types presented are strategic, business, market, credit, liquidity, operational, and compliance risks. (Lam 2014, 31-32.)

RISK TYPE	DEFINITION
STRATEGIC	Risk concerning the ineffective execution of strategies
BUSINESS	Risk concerning situations where the expectations of stakeholders does not meet the results provided by financial and operational activities
MARKET	Risk in situations where there are negative consequences occurred due to the changes in prices and rates
CREDIT	Risk of neglect of payments for customers', suppliers', or counterparties' part for the organization
LIQUIDITY	Risk of the inability to raise cash to meet requirements in the manner of time and cost-effectiveness
OPERATIONAL	Risk of failure due to actions of people, processes, systems, or external events
COMPLIANCE	Risk concerning the violation of laws and regulations

Table 1: Classification of risks (Lam 2014, 31)

Risk concepts

To understand and evaluate the nature of the risk there should be different risk concepts taken into consideration. First concept concerns exposure which is defined as the maximum damage that will be suffered if the possible risk actualizes. Another risk concept concerns severity that is defined as the damage that is likely to be endured. Third concept is volatility in which the uncertainty of future is concerned, and the variability of potential outcomes is examined. The general principle of volatility is that when the volatility is greater, the higher the risk will be. (Lam 2014, 32-34.)

One important concept of risk is probability where the odds of actualization of risk are considered. Here the same principle as in volatility occurs: the greater the probability, the higher the risk. Before the risk occurs and the exposure happens the time duration of the exposure should be examined. The shorter the duration is, the smaller the risk will be compared to the risk concerning longer time duration of exposure. Correlation is another factor affecting the risk. Risks are highly correlated if the behaviour of both is similar. When the size of correlation is large the risk becomes higher. (Lam 2014, 34-35.)

Analysing risk

To observe risk in investment projects the predicted profitability of investment is decreased by manipulating one or more factors into the unfavourable way. Increasing the imputed rate of return and reducing cash flows are ways of decreasing the predicted profitability and thus the risk is considered. However, according to Puolamäki and Ruusunen (2009, 244) groundless decreasing of profitability factors does not perform theoretically correctly in the compiled calculation. Another way of observing risks concerns situations where payback period method is used in evaluation. The basic idea is to shorten the required payback period if the investment is seen with high risks. (Puolamäki & Ruusunen 2009, 244.)

There are various methods used to analyse risks in investment projects and sensitivity analysis is one of the methods used widely in worldwide. Sensitivity analysis is valuable method in which the effect of changes in the values of key variables is systematically studied and how it affects to the Net present value. These key variables include costs of construction, production, research and development project, and market size and price. (Shapiro 2005, 119,126.) One of the weaknesses of sensitivity analysis is its ignorance of probability whereas probability is considered in a method called Monte Carlo simulation analysis. Simulation analysis is a powerful tool in which the entire distribution of possible outcomes is mapped in a curve. Therefore, the probability of success can be estimated for the investment project. (Shapiro 2005, 126; Clark, Reed & Stephan 2010, 1.)

4.4 Other factors

Investment decisions will not only rely on the information based on the profitability calculations and there is a need for consideration of other factors affecting business. Companies are operating in a world with constant changes and they must be aware of these current and future changes. There must be additionally understanding of the consequences of these changes and the company must find ways to adapt to the changing environment.

According to Pike and Neale (2006, 180) many capital investments have costs or benefits that cannot be wholly reflected based on the information that has been given by investment calculations, such as net present value. These costs and benefits can be evaluated as an environmental consideration. Environmental consideration has many dimensions, such as economic, technological, political. (Pike & Neale 2006, 180.) These dimensions are linked to the corporate social responsibility and seen as discretionary factors. As mentioned in the introduction the energy industry is going through a turning point and the climate issues are constituted in the challenges of the world. The importance of investments has increased, and energy companies must make actions to reduce the emissions.

Environmental issues are associated with the laws and regulations. Energy industry is highly regulated by different regulations concerning emissions. Additionally, different standards, such as safety standards, strictly monitor industry's operations. Legislation requires actions to prevent environmental damage and to improve energy efficiency which is naturally considered in the investments and additionally stakeholders often want to exceed beyond the statutory requirements. Evaluating and quantifying the benefits of investment that cannot be strictly presented with numbers is challenging. One example of situation where benefits are worth of higher costs, is a situation where an investment may be costly but will provide great value at the social responsibility in a long-term and thus giving value for the company. (Pike & Neale 2006, 180.)

5 Research methods and execution of the research

This chapter contains the execution of the research where information is gathered with research methods. This thesis follows the structure of the figure (4) presented below. Here the research continues after the issue of the study is identified to the execution of the research methods chosen for this research. First, the literature review covers the explanation of essential information to support the thesis. To provide new investment proposal model for the employer the internal documents are used to support and enhance the execution of this thesis. These internal documents enable the author to become more familiar with the subject within the company. The main method to gather information is the interviews. After the execution of the research methods the results are analyzed, and the final model is presented. Lastly, the conclusions concerning the research are provided.

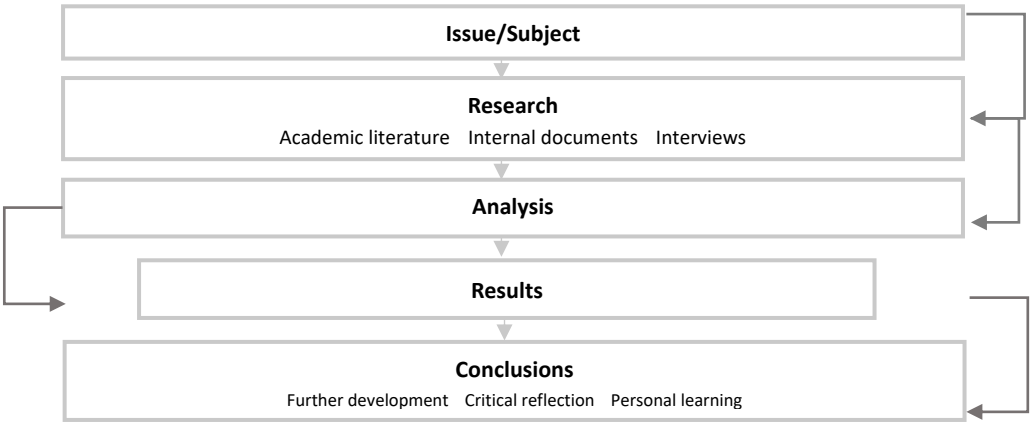

Figure 4: Structure of the research

Research subject is wide and challenging and requires plenty of interpretation and familiarization to the subject. Qualitative research enables to understand and describe the subject. To get deep within the subject is not possible with quantitative methods and thus, the qualitative methods are chosen. Qualitative research does not pursue to achieve reliable information of how often and how much the subject occurs. The objective of qualitative research is to discover different perspectives. (Juuti & Puusa 2020, Preface.)

To collect information the qualitative interviews are executed. Qualitative interviews are beneficial due to the flexibility. Interviews enable the possibility to repeat questions, correct misunderstandings and to have discussion with the interviewee. Flexibility is important when the subject is complicated and needs interpretation. Interviews are seen to be most beneficial for this subject because it is possible to reach interviewees who compile investment proposals and those who make final investment decisions. Hence, interviews enable broad discussion with those who have wide knowledge of the subject. (Tuomi & Sarajärvi 2008, 73; Edwards & Holland 2013, 29.)

Capital budgeting process concern many areas of the company and hence interviews are performed with specialists of different operations within the company. Primarily Directors are responsible of compiling investment proposals that are required of approval of Chief Executive Officer or Board, but additionally Managers compile proposals for Directors to approve. Therefore, interviewing CEO and Directors of business lines is essential. Research for this thesis also requires familiarization into marketing and legal demands and thus interviews with Marketing Manager of Keravan Energia and Attorney of Mäkitalo are performed. Additionally, investments are related to the financial management of the company and therefore discussion with Financial Manager and Chief Financial Officer is inevitable.

Some of the interviews are executed as semi-structured (theme) interviews where the interview proceeds with themes chosen in advance and related questions. The objective is to find meaningful answers that concern the research and problem setting (Tuomi & Sarajärvi 2008, 73, 75). Semi-structured interviews enable to decide when questions are performed and how the interviewee can respond to them. With semi-structured interviews the dialogue and discussion are ensured, and additionally there is some structure, but interviewees are able to answer in their own terms. (Edwards & Holland 2013, 29.)

Unstructured interviews are also used in this research in order to allow interviewees to answer based on their own perspectives which are built with their frame of reference and ideas familiar to them (Edwards & Holland 2013, 30). There are only open questions asked and only the discussed subject is defined.

The objective is to as an interviewer deepen the answers by assembling the continuation of the interview based on the answers. (Tuomi & Sarajärvi 2008, 75-76.) Unstructured interviews are held with following people during the thesis process:

Director of Production
Director of Electricity Networks
Director of Technology Services
Financial Manager
Chief Financial Officer
Director of Sales
Planning Chief/Controller
Operations Manager/Controller
Manager of Risk Management

Most of the interviews are conducted in Finnish and therefore, direct quotes are more sparsely given. The results of interviews are translated into English so that the information is available for reader.

5.1 Execution of the research

To begin with the research, familiarization into capital budgeting and investments was conducted. After the familiarization, study was started by mapping the objective and the need for the investment proposal models. The ideation with the Financial Manager and Chief Financial Officer was performed. This ideation consisted of different ideas that were pointed out by each in order to clarify the desirable result and to define the proceeding of further steps. This ideation performed as a pre-survey.

After the ideation phase, the first interviews with the Directors of business lines of Production and Electricity Networks were performed. These interviews were carried out as semi-structured interviews due to the importance of continuation of mapping the need and expectations for the investment proposals. To map further there were themes concerning investment proposals and different investments discussed. With semi-structured interviews the discussion was fluent and there were plenty of space for new ideas and opinions, but the discussion was related to the themes chosen in advance. Objectives for these interviews were to uncover the expectations for the models and if different classification of investments would assist this project. In addition, the Chief Executive Officer was interviewed. The CEO is in charge of approving and rejecting certain investment proposals and hence it was important to ascertain the expectations and opinions concerning the investment proposal of his.

5.1.1 Mapping and ideation

The Director of Production business line introduced the need for two separate models. The first model would cover those investments under a certain cost category and the other crossing this cost category. Additionally, he presented the concept of asset management and how the investment proposal models would be one of the documents to enhance and support the asset management. (Hapuli 2020.)

Director presented his vision of an investment proposal model in which there is a clearly presented table of contents. This table of contents would include all those critical factors that need to be taken into consideration in evaluating the investment's profitability. At the same time, the table of contents would work as an instruction and hereby the making of an investment proposal would become easier. (Hapuli 2020.)

According to the Director of Electricity Networks there are different investments made in their field of operations of some of which that are not reasonable to carry out through large and extensive investment proposal models and remarked that the boarders for investments that will go through these models should be clearly expressed. During the interview there was presented an idea of proposal model which would contain certain instructions and criteria. In his opinion the instructiveness of a proposal would be a useful and preferable feature. (Auvinen 2020.)

The preliminary ideation which was executed in the beginning resulted an approach where the investment types and different required factors are presented in a matrix (Appendix 3). This matrix consisted of factors that are essential for evaluating an investment. These factors were formed based on the theory of capital budgeting and conducted interviews. Investments were divided into four types: replacement, expansion, mandatory, and strategic. The matrix was presented to Directors to ascertain the correctness of the factors and the identifiable investment types. This information was gathered as unstructured interviews due to the objective to discover new ideas for the matrix and purpose to let interviewees answer and give opinions openly. The matrix was further modified based on the results. The investment proposal model was modified and developed based on these results and the results are narrated in the basis of justification for the final model and thus, the presentation of the results is given in the chapter 6.

5.1.2 Interview with the CEO

It was essential to interview the CEO about the importance of investment proposals in the decision-making. Interview with the CEO was performed as a semi-structured interview and in English. The interview consisted of few key questions but there was space left for an open discussion.

The interview began with a question of how investments are classified in Keravan Energia.

> *"There hasn't been a clear classification for investments. However, we have many investments which concern expansion, repair, or are just purely strategic or made due to the requirements of the law. So, still the different investment types are identified." (Lehto 2020.)*

The CEO (2020) remarked that there is a need for more specific and clearer classification of investments. According to the CEO the desirable investment proposal model would include a description where the investment type is included but the investment model would be reasonable to modify based on cost category instead of the investment type. At the same time the investment type will be given reasons and explanations why this must be done.

The interview proceeded with a question concerning the main objectives of capital budgeting in the company. The action to not to take restructuring debt is one of the strategic values of Keravan Energia.

> *"Here in Keravan Energia we are not taking any restructuring debt, so we do not allow the condition of the property deteriorate." (Lehto 2020.)*

According to the CEO (2020) the investments that concern operative actions, are financed mainly with the internal financing. An investment budget is compiled for the following year where all the planned investments will be located. In company's financial statement it will be planned how the investments will be funded. Investment budget acts as a plan and the investment budget is monitored during the year according to the needs of business lines if needed. This additionally means that financial statement must be resettled. If there is presented an investment that is outside of the budget and is targeted to achieve growth, for example big development projects, these opportunities will not be ignored and will be financed with external funds. (Lehto 2020.)

In Keravan Energia the CEO is responsible of approving certain investments and thus it was essential to ascertain reasons for approval or rejection of investment proposals. After the reasons were discussed the desired proposal of the interviewee was inquired.

> *"The chance for the rejection for a proposal is extremely rare because when the person makes the investment proposal, he or she must notice if the investment will turn out to be unprofitable based on the information that is gathered to evaluate the investment. Therefore, unprofitable investment proposals should never end up on my table." (Lehto 2020.)*

If the investment proposal is rejected it is due to the insufficiency of the information and thus the proposal is led back to the presenter and broader presentation is required. Another reason for rejection is the overlap of the investments at the corporate level. (Lehto 2020.)

The CEO wished that every investment proposal brought to him for approval would follow the same structure. This proposal should be visual and informative and only few pages long. Hence, the investment proposal process will become more systematic, time saving, and the humane risk reduces. (Lehto 2020.)

> *"Some kind of executive summary, compact model. Of course, there must be many research, analysis and calculations behind this summary." (Lehto 2020.)*

5.2 Initial model and preliminary testing

After the first interviews it was chosen to provide two investment proposal models for the employer: one for larger investments and one for smaller investments. First the model was built for larger investments from where the proposal model for smaller investments was modified as being more abridged version. The initial model was compiled based on the interview results and as well as theory of the subject. Additionally, there was left space for the author to present own perspectives of which factors should be presented in the enhanced proposal model. The initial model included factors presented below:

Factors:	Description of the investment
	Reasonings for the investment
	Profitability
	Financing
	Estimation of risks
	Permission and law
	Environmental analysis
	Project's schedule
	Post-audit

Table 2: Presented factors

The initial model was presented for the Directors of Production and Electricity Networks in the form of unstructured interviews. Idea was to examine if the proposal should include presented factors and to find out additional perspectives and ideas of the Directors to develop the model further.

The Director of Production agreed that the presented factors are relevant for the proposal. While factors were presented step by step the Director remarked that the environmental analysis is most often referred as a factor called environmental impacts and responsibility. Additionally, the environmental analysis that was presented included the marketing and communication aspect which was suggested to be a separate phase by the Director. During the interview he remarked that the presented factors could be included in the model for larger investments and for the other model some factors would be better to include with less attention or even omit when the length and structure would be smaller. (Hapuli 2020.)

The factors were presented for the Director of Electricity Networks and he as well agreed to the relevance of each factor. During the interview different investments in the business line of electricity networks were discussed and how these could be categorized. He remarked that there are investments that can be categorized into expansion investments but at the same time the investments must be made due to the legislative requirements and hence is seen as mandatory investment as well. These investments are called as reliability of delivery investments. Addedly he mentioned that there must be definitions for each investment categories that will be chosen for the investment proposal. (Auvinen 2020.)

New factors that were presented as new additions for investment proposal models were permission and legislative requirements, marketing and communication, and environmental analysis, and post-audit which included the monitoring of the investment project. These factors got support from these interviews and Directors found especially the aspect of post-audit as a beneficial addition to the proposal model.

The initial model was presented also for the Director of Technology Services and interview got supporting to all the factors but additionally there were new aspects brought to the investment proposal. Firstly, the categorization of investments was discussed, and he remarked that there are also investments that are made to improve the current operations, machines et cetera during the maintenance. These investments do not locate directly to the investment categories concerning replacement, expansion, or mandatory investments and therefore the fifth category could be for these investments. These investments are called investments of improving maintenance. In addition, he supported the category of strategic investments and stated that when compiling the investment proposal there must be chosen the category that represents the main reason for the execution of the investment. (Kotimäki 2021.)

5.3 Reliability and validity of the research material

Semi-structured and unstructured interviews enabled to get answers to the research issues concerning what factors affect the evaluation of the investment and which factors should be included in the investment proposal.

Interviews resulted information which represents the knowledge of expertise that has been obtained with experience. The willingness to cooperate and flexibility of the employer enabled multiple interviews and discussions with experts of the subject and hereby made it possible to assemble new investment proposal models. The research was executed with close collaboration with the employer and there were many discussions and unstructured interviews which were not reasonable to literate in this result section. These results are narrated in the outcome of this thesis in order to support and reason the investment proposal model in the chapter 6.

This thesis obeys the norms of responsible conduct of research (HTK-ohje 2012). The research is made with meticulousness, transparency and accuracy with presenting and analyzation of the results. Results of the interviews were collected by writing down and some were recorded via Teams-meetings with the permission of the interviewees. Research was conducted with methods that comply with the criteria of scientific research and results were presented openly and correctly but in a way that the information gathered for this thesis can be published without any harm for the employer. Additionally, the references were made correctly and to honor the work made by authors.

There are no unequivocal instructions for evaluating the reliability of a qualitative research, but Tuomi and Sarajärvi (2011, 140) remark that the research is evaluated as a whole where the internal consistency is emphasized. According to the presentation made by Järvenpää (2006) there are different aspects that can be used to evaluate the reliability of qualitative research. These are trustworthiness, portability, certainty, and confirmation. (Järvenpää 2006, 37). This research and results correspond with the information collected from interviews, documentation, and theory from reliable sources. Additionally, the results of this thesis can be applied with other operatives as a support and hence, it represents portability. Results are truthful and based on the interviews and not preconceptions of the author. Lastly, the theory and previous research are used to support the thesis and results.

Interviewees were chosen inside the company due to the knowledge of company's operations and practices and therefore the results are reliable and complementary for the research. It was also important to provide models for the employer which represents the company and are beneficial and easy to compile for the employees within the company.

6 Final investment proposal model

This chapter discusses more of the research results and how the new investment proposal models were built based on this research. This chapter presents the concrete results of this thesis which are the investment proposal models provided for the employer to enhance the decision-making process. Models were made with close collaboration with the people in Keravan Energia and the objective of the author was to make models to answer the needs and expectations of the employer and people who are working with the investment proposals.

This thesis resulted two investment proposal models of one of which is for investments beyond the cost range and another under this cost range. This cost range is chosen based on the authorization levels within the company, where the model for smaller investments require approval of Directors and larger the approval of CEO. There is three authorization levels within the company: Board, CEO, and Directors of business lines. In this thesis, the models do not reach for investments that require approval of the Board. The specific number of the cost range is left without mentioning due to the internal value for the employer. However, it can be noted regarding to the model for smaller investments that procurements of a few thousands are confined out of the model and follow the instructions of procurement given by the company. Additionally, the investment proposal model for larger investments do not apply to investments worth of many tens of millions.

Intrinsically there may occur some required changes to the models when they are put to use and with this use the models will further develop. During the thesis process the model went through a testing with one investment which was planned to be presented as a new investment proposal. This testing was carried out in the production business line and the model served as an effective checklist where all the essential factors were considered. This testing was a preliminary and with future investments the models are tested and further enhanced if necessary. The Director of Production remarked that the model served well as a checklist and all factors were found relevant. He also mentioned that the new models will provide structure and systematic to the future investment proposals. (Hapuli 2021.) During the preliminary testing there did not emerge any need for changes for the model. The models provided for the employer are presented in this chapter and the concrete models are attached in this thesis as appendices 5 and 7.

6.1 Investment proposal model for larger investments

In this section the factors that were chosen to be included in the investment proposal model for larger investments are presented (Table 3). Based on this model for larger investments the model for smaller investments was modified.

Factors are presented with descriptions and results of interviews are attached as reasonings to support the decision to include factors in the model. Material collected from interviews is analyzed by dividing results into themes. These themes are supported with the theory of the subject. Classification into themes emphasizes what have been said about each theme and in semi-structured interviews the themes are intrinsically modified into the collected material (Tuomi & Sarajärvi 2011, 93). Due to semi-structured and unstructured interviews used in this research the classification into themes is substantially most beneficial analyzing method chosen for this research.

Factors of the final model:	Description of the investment
	Reasonings for the investment
	Profitability
	Financing
	Permission and law
	Risk analysis
	Environmental impacts and responsibility
	Marketing and communication
	Project's schedule
	Post-audit
	Project card

Table 3: Factors of the final model

Previous model used in the company was used as a foundation for the investment proposal model, but the model was built entirely as a new. This new model will act as a more generic and formalized investment proposal model which can be used at the corporate level. The main idea is that the investment proposal model acts as a summary where all the essential information is gathered compactly. The factors and instructions are presented in the model to support the compiling of the investment proposal and more specific instructions are left outside of this model due to the assumption that the compilers of the investment proposals have already this knowhow and expertise.

The idea of this model is to provide a structure to the proposal and give short instructions of what each phase should contain. The model assists the presenter with support questions and the content of each phase must be put into the investment type's perspective and the proposal is built based on the information which is seen necessary. Some of the phases may be irrelevant to the concerned investment and hereby can be left with smaller importance and examination or even out of the proposal.

The main idea is that the presenter of the investment proposal identifies all the key factors and perspectives with the model and takes them into consideration when preparing the investment proposal. Consequently, the decision-maker also has the certainty that the essential factors have been considered.

It must be remembered that this model will not be necessary to all investments and some investments are outside of the realms of this model. Additionally, some factors are more inevitable than others depending on the nature of the investment when some factors are given less noteworthiness.

The presented factors below are related to the first proposal model which is made for larger investments and for investments that require the approval of the CEO. Factors are presented in the same order as they appear in the model. Second model for smaller investments is presented in the end of this chapter.

Description of the investment

Before the actual description of the investment, the category of the investment is chosen. The investment category is chosen based on the main reason why this investment is executed. There might be for example, investments that are made to replace but additionally there are regulations that force the investment to be made. In these situations, the investment category is chosen based on the reason that has the biggest value.

According to the interviews the main categories that were used in the classification of investments in the company were new investments (including expansion investments), replacement investments, and mandatory investments. In addition, in the previous investment proposal model there was a category of an investment where the investment is made to achieve clear economic results. The investment categories chosen for the models were chosen based on the interviews and the definitions were discussed during an interview with the Chief Financial Officer and Financial Manager and are presented below:

New/expansion investment:

Investments that are made to invest into a wholly new, for example new machines and equipment. Investment that are made to expand current operations by investing in existing products, assets, services, or to maintain/improve competitive position of the company.

Replacement investment:

Investments that are made to replace or renew an old, for example machines that have become obsolete over time. Replacement investments also consider investments that are made to maintain operations and capacity. These investments are made to increase effectivity and to maintain the capacity of production that is lost due to the obsolescence or ceasing of whole operation.

Mandatory investment:

Investments that the company is obliged to make due to the legislative requirements and other regulations. These investments may not offer distinct financial return but without these investments the operations will end. Additionally, at times permissions are updated when requirements change, and mandatory investments must be made in order to obtain current operations.

Investments that concern the areas of which the company is committed, for example promises of reduction of emissions where the investment must be made to accomplish these commitments.

Investment of improving maintenance:

Investments that clearly improve efficiency in the maintenance. Maintenance is carried out systematically as planned, existing machines and equipment are maintained and if this maintenance is clearly made to improve its operations the expense becomes into an investment. This improvement is made for example, to lower the maintenance costs, elongate the lifetime of the equipment or machine. The purpose of improving maintenance is to improve the reliability and/or maintainability of an asset without altering the function of the operation.

Strategic investment:

Strategic investments concern new areas of investments where the benefits are expected to extend beyond the investment itself. Strategic investments bring new opportunities and are strategic choices to be involved in something new, for example new operation areas.

These areas are expected to bring profitability and new opportunities in a long-term. Most often strategic investments may not be profitable by themselves but with other investments they bring opportunities and are seen beneficial for the company. Strategic investments require reasonings of future events.

After the investment category is chosen, there must be a description of the investment. Here it will be explained what will be done in the investment. Additionally, the objectives and background, and scope of the investment will be explained in the description phase.

It was clear from the beginning that the description is the primary and essential factor in the proposal. Research results also showed that description has been requirement for the investment proposal before and is inevitable for approval. In the previous investment proposal model, there were only the categories concerning new, replacement, and mandatory investments mentioned but during the interviews there emerged a need for additional investment categories which would include the investments that cannot be located into the mentioned categories. Therefore, there are new investment categories included in the models.

Reasoning for investment

Reasonings for the investment was a factor that appeared in the interviews and was identifiable in the investment proposal model which was in use in the company. The purpose and reasonings for investment are those key parts which convince the acceptor of the necessity of the investment at the start of the proposal. Reasons for the investment to be executed are presented and the purpose behind the investment. In this phase, there must be explained why this investment should be executed and reasons why now. Estimated benefits are presented and the adequacy to the strategy of the company. During the interviews and especially with the CEO the importance of the adequacy to the strategy occurred strongly. Strategic aspect was already included in the previous model and was seen essential to include in the new models as well.

In this phase, the reasons why this option was seen more profitable than the alternative options must be presented shortly. The evaluation and comparison of the options was a new addition for the proposal and got support from the interviews with Directors. There may be times when there are no options considered before the investment decision and later have been realized that another option would have been more profitable. With mention of valuation and comparison of different options the executives are ensured that the proposed option is seen to have the best worth of execution.

Profitability

The profitability is an essential factor when evaluating investments. With profitable investments the success of the business is ensured. However, there are investments concerning customers' needs and regulatory demands where the profitability cannot always be ensured. Still the evaluation of investment's costs and returns must be presented and thus the company can monitor its cash flows.

Costs of investment are important factor in evaluating an investment project's profitability and it places an objective for the execution of the investment (Puolamäki & Ruusunen 2009, 165). Additionally, the profitability of the investment is evaluated with different methods. For this phase following information must be presented:

- Initial cost of an investment
- Total costs
- Results of profitability/investment calculations
    - Required rate of return
    - IRR, NPV, ROI, Payback Period
- Annual costs and revenues, cash flows

The presentation of the costs and revenues related to the investment have been weighted factor in the investment evaluation and interviews results concurred that there should be all above mentioned factors considered. Additionally, interviews resulted that there is higher need for presenting the cash flows and often times cash flow statement has been left with less importance in the investment proposals. In addition, during an open discussion concerning topic of profitability with the CEO it emerged that there must be presentation of cash flows and if the cash flows are negative for certain period time and additional figures are always desirable because with figures the whole picture is easily perceived (Lehto 2021).

Research results showed that the investment calculation methods used in the company are primarily internal rate of return, net present value, and payback period with discounted cash flows. Additionally, return on investment, ROI, is often used key ratio and hence, it is included in the model. The results of these calculation methods must be presented as well as the required rate of return. Here the results are essential, and that the investment is presented resulting as a profitable investment. This phase also includes a short explanation of this results if necessary.

It must be remarked that during the interviews the difference between the business lines emerged and that for business line of electricity networks the calculation of investment's profitability cannot be evaluated in the same way as in other business lines where using traditional investment calculation methods can be used. Therefore, the principle that the model is filled based on the nature of the investment emphasizes and the section where the description of the results is included can be addressed how the investment is seen profitable.

For this thesis, there is no absorption into the details of calculations due to the limitations of this thesis and presumably there is documentation, analyzation, and calculations behind this investment proposal and only the results are informed in the proposal.

Financing

Investments that concern operative actions are budgeted for the year and the investment budget is included in the cash budget. With budgeting it is ensured that the planned investments are possible to execute with the allocated funds. In the financing section of the investment proposal it must be addressed if the investment is inside of the realms of the investment budget and the funds that are reserved to fund investments are resilient for this proposed investment or is outside of the budget when the additional financing is required. If the investment can be included in the investment budget this section can be left without any additional consideration.

If the investment needs additional financing the different options must be considered. For Keravan Energia there are mainly two options: taking bank loan or leasing to fund the investment. For this decision the financial department is required to be as guidance. For additional financing different factors must be presented in the proposal, such as the amount, length, and price of the loan and how this is guaranteed. Additionally, there may be finance aids that the government shares to achieve objectives concerning for example, environmental aspects and reducing the impacts of climate change.

Permission and law

Energy industry is highly regulated and there is much legislation concerning the industry. To enhance the decision-making process the section concerning the legislative requirements and different permissions to execute the investments are included in the model. This factor was presented as a new factor which was not clearly included in the previous proposal model for the interviewees and the results of interviews showed that this sector is relevant and needs to be addressed in the proposal. Legislative requirements and permissions have always been considered in company's actions but for the investment proposal these aspects should be informed clearly. During the research and interviews it became very visible that there is and must be legislative requirements taken into consideration and additionally most often times permissions applied to execute the investment.

To find comprehensive and precise information concerning the juridical aspects concerning investments and decision-making the interview with the Attorney-at-Law, Ville Vyyryläinen, was performed. According to Vyyryläinen (2021) there is many permissions often needed to execute investments in the energy industry and during the process of getting the permissions there is many risks. In Finland, there is right to complaint in the processes of getting permissions and often this right is used to object the investments. Due to these possible complaints there may be a significant delay on the progression of the implementation of the investment and this in turn has many negative consequences. Until all the permissions are received there are major uncertainties regarding the investment.

One additional remark that occurred during the interview was that the time regarding the processing of the complaints lasts very long time. (Vyyryläinen 2021.) Attorney Vyyryläinen (2021) associated permissions to risks and remarked that it is important and essential to consider the legislative aspect in the decision-making concerning investments. Due to this author found it better to have permissions and legislative requirements considered in the model before the risks. Hereby the progression of compiling the proposal continues to presentation of risks where risks concerning permissions and legislative requirements can be attached clearly as well as the other identified risks.

In Finland, the energy industry is highly regulated and additionally the directives from EU have an impact to the requirements concerning investments. However, Vyyryläinen (2021) remarked that the situation in Finland regarding the changes in legislative requirements is stable and there are no rapid changes. Investments in energy industry are generally lengthy and future events are difficult to predict and thus it is essential to pay attention to the future also from the perspective of legislation. Changes in the legislation are part of the risks concerning investments in the long-term and often these changes require additional investments that can be very costly for the company. (Vyyryläinen 2021.)

Energy industry is associated in many different areas of legislation, such as environmental statutes, statutory requirements concerning safety at work and data privacy. Environmental requirements are in a key position in investments concerning energy production but for example, in investments of new systems the protection of data and privacy arises greatly. Vyyryläinen (2021) stated that in every investment there is some kind of legislation regulating it. Due to the importance of legislation it is essential to reflect the impacts concerning permissions and legislative requirements in the proposal. For the proposal it must be addressed if there are certain legislative requirements affecting to it and if there are any permissions needed for the implementation.

Risk analysis

Every investment has risks and it is important that the major risks and possible consequences are identified and evaluated. When interviewing Manager of Risk Management, the main categories of risks in the energy industry were discussed. Based on the interview the main categories incurring in the energy industry are economic, operative, technological, political, environmental, and risks during the project. Risks differentiate based on the investment type and scope and risks must be evaluated according to this.

There must be a presentation of the major risks that have been identified in the risk matrix which shows risks according to the probability and effect of the risk (Kangas 2017, 6).

The wish and idea of risk matrix emerged during the interview with the Director of Production. Risk matrix is included in the model due to its effectiveness to perceive possible risks. In this phase there must be also an explanation of how the risks are considered in calculations, in the imputed rate of return or in the payback period, or in other ways. In addition, there must be presented ways by which are used to prepare for the occurring of the risks.

There can be risks that are unavoidable and hence, these are the risks that need to be prepared for. If risks are high and there is higher probability for occurring preparation can be executed by taking insurances or certain agreements. For investments concerning energy industry there have to be certain risks evaluated more precisely, for example environmental risks and technological risks. Investments in energy industry most often are lengthy when technology involves and to follow this development becomes a challenge. Often political risks lean on the technological development which brings political risks into bigger consideration. Additionally, the importance of risks occurring during the project was emphasized during the interviews and how these should be considered already in the investment proposal.

Sensitivity analysis is already used in the company to evaluate risks. Sensitivity analysis is effective tool to analyze risks and in this investment proposal the sensitivity analysis is required. Additionally, according to the interview with the CEO the figure of this sensitivity analysis is desired and therefore figure of sensitivity analysis is required to be presented.

Environmental impacts and responsibility

Nowadays the importance of corporate responsibility and environmental impacts have arisen significantly, and these are factors that must be considered when making investments. Especially energy industry has larger responsibility in providing sustainable solutions and additionally customers have become more aware of the impacts of climate change and how it can be prevented, and this seen in their decisions. Besides the profitability calculations it should be examined what are the discretionary factors concerning the investment. Discretionary factors are non-measurable factors but often times have a significant meaning for companies. In this section investment's impacts are reflected based on economic, environmental, and social perspectives. This is a phase which has more importance when larger investments are concerned.

During the interviews the reflection of the environmental impacts and responsibility were presented as a new additional factor in the investment proposals and interviewees found it relevant and supported with new aspects and opinions. Naturally in companies operating in the energy industry the environmental impacts are in a key position and it is seen beneficial to have these written and pondered in the investment proposal. Additionally, environmental impacts may affect to the final decision.

Keravan Energia is a very responsible energy company and environmental impact and responsibility are considered strongly in all the actions made by the company. Therefore, it is essential to inform issues concerning environmental and responsibility aspect in the proposal. According to Keravan Energia's responsibility report there are objectives (Table 4) that are reached to achieve (Vastuullisuusraportti 2019):

Economic	Ecological	Social
Corporate finance is managed sustainably and responsibly in order to preserve the value of companies	Energy production provided by the company is effective	Responsible customer service
Customers are provided with competitive products and services	Protection of the environment and prevention of the environmental damage	Energy guidance
Transmission of electricity is maintained as in reasonable prices	Investing in domestic wood as an energy source	Personnel, safety at work
Investments	Versatile energy production	Sponsoring local projects, events, sport and culture
	Improving energy efficiency	Media, image, reputation
	Responsible supply chains	

Table 4: Economic, ecological, social objectives (Vastuullisuusraportti 2019)

During the interviews with Directors and Controllers, there were new aspects arisen, such as investment's impacts on energy efficiency and security of supply. Improving energy efficiency is one of the objectives that the company is committed to with their actions and hence it becomes relevant in the decision-making of investments. Security of supply is described as an ability to maintain the economic operations of society which are inevitable to secure the citizens' viability, economic life of the nation, operability and securing of the society, and national defence (Pöyry 2019, 20). Energy industries are part of ensuring the security of supply and thus this aspect is necessary to be considered in the decisions that the company makes.

During the interview with the Director of Technology services the Director remarked that one of the essential aspects when considering the impacts of the investments is how the stakeholders respond to them (Kotimäki 2021). This aspect locates to the social responsibilities and needs great consideration. In this section the investment's possible consequences to the company's image and reputation must be observed.

Marketing and communication

Investments have a role also in company's marketing and communications. Marketing is an essential part of the company's business. With marketing the customers are informed about its products and services and additionally marketing enables to differentiate from competitors. (Bergström & Leppänen 2018, Chapter 1.)

Investments most often have potential for marketing needs due to their benefits and how these benefits can bring visibility for the company. Company's actions and investments shape customers' images and expectations of the company and with beneficial investments this image can be enhanced.

To get familiar to the marketing and communication within the company the semi-structure interview was performed with the Marketing Manager via Teams on 8th of January 2021. Discussion was lead with questions concerning marketing actions made in Keravan Energia regarding investments and how the investments are informed internally and externally.

According to Heistman, the Marketing Manager of Keravan Energia, internal communication channels used to inform about new investments are company's intranet, Microsoft Teams, email, and info televisions which are located in the office. These are the channels by which the information about a new investment is informed internally. To inform customers and other external parties different channels are used according to the need. If the investment has a great communication value the channels used to inform externally are press release, customer newspaper, newsletter, and the news in the company's websites. There are also releases in the social media to support the advertising. Keravan Energia has social media channels in Facebook, Linkedin and Instagram. (Heistman 2021.)

Marketing and communications were a new aspect brought to the investment proposal model and interviews resulted agreement for marketing and communication as a factor in the model. At times, there is a possibility that the value and need for marketing and communication are ignored and might be perceived later when the pressure for marketing team becomes great and there are coordination issues encountered. This leads to the conclusion, that there must be deliberation if the investment should be informed internally or externally, or both. Additionally, the CEO (Lehto 2021) remarked that one of the strategic key points of Keravan Energia is to tell about actions, not only words and plans, and therefore marketing and communication aspect is seen essential already in the phase of the investment proposal.

Interview with the Marketing Manager resulted that there must be also a consideration if the marketing needs require paid advertising and how this have been budgeted in the proposal. The company uses at times paid advertising to support the marketing and to reach larger target group. These paid advertisement channels are Youtube, Google, and paid Facebook advertisement. (Heistman 2021.)

In this phase there must be reflected if the investment should be informed either internally or externally, or both. Additionally, this phase must include a mention if there is seen a need for paid advertising and how much it would cost.

Some investments have greater value regarding marketing and communication aspect than others and hence, this section is filled according to the need. There is no need for separate description of the content of the marketing and communication because the information for this can be gathered from other sections of the proposal However, there is a section for additional information concerning marketing and communication where for example, chosen channels can be presented.

Project's schedule

Interviews showed that the initial schedule for the investment project is required and was already part of the investment proposal model used in the company. In this section there must be a presentation of the project's schedule where the main phases of the project as well as the interphases are presented. Additionally, the objectives for interphases must be explained briefly. Estimation of the duration of the project is also included in this phase.

Besides the schedule of the project the planning of project's execution is presented very briefly in this phase. This includes the needed resources and other required factors, such as supplier estimation.

Post-audit

Previous investment proposal model used in the company did not have a mention concerning monitoring of the investment project and the post-audit is one of the new factors to be included in the investment proposal model. Based on the interview results this post-audit in the investment proposal is seen as a beneficial factor and was supported, and thus is included in this model. Interviews resulted that this monitoring and post-audit should concern the warranty period which is often two years of time and additionally the monitoring of the execution after the implementation. Following monitoring after warranty period is included in the project management in the company and therefore left outside of this model.

This phase includes a brief presentation of planning concerning post-audit and the evaluating the execution of the investment. The report of investment's execution is compiled instantly after the implementation. In this report the execution is compared to the approved plan, and the main sections are schedule, costs and estimate of technical and productional objectives. In the report of the monitoring after the warranty period the actualized numbers are compared to the information of reasoning and factors given in the original investment proposal which lead to the approval. Additionally, the person in charge of monitoring the project must be named.

Reasoning for including planning of monitoring of the project in investment proposal is due to the importance of monitoring and that it will not be omitted. In addition, it consequently allows executives to ensure that the investment is confidently monitored during and after the implementation before the investment decision.

Project card

During the final interviews and discussions there was a new aspect emerged where the information of the investment proposal is summarized in a "text box" which would be named as the project card. The idea of the project card was presented by the Director of Technology Services. The idea behind this project card is to assist the viewing of different investments and to enhance the decision-making process and additionally it would assist the project management (Kotimäki 2021). Based on the interviews with the Financial Manager the project card is included with one additional information which concerns the depreciation time for investment. This depreciation time has an impact to the results of investment calculations if depreciation is considered in the calculations. In addition, when considering the economic lifetime of the investment this can be the first impulse to the updating of the depreciation plan. This information is needed when the investment project is activated. (Nummela 2021.)

Project card got support also from the marketing and communications perspective. Project card enables to quickly have an idea of what the investment concerns and if there is any marketing value behind the investment.

6.2 Presenting the initial model for the management

The factors of the model were presented to the management on 21st of January 2021 in the form of review of the procession of the thesis. The factors and the initial model were presented via Teams-meeting and with a PowerPoint-presentation. The PowerPoint-presentation included the short introduction to the subject and objectives of this thesis, the factors of the investment proposal model, and the initial model for the investment proposals. The objective of this presentation was to get endorsement for the factors and additionally to inform the procession of the thesis. The whole management were able to attend the meeting.

The meeting with the management resulted support for the factors and the initial model. During the meeting there were different aspects arisen that need more discussion when the investment proposal model is taken into use. These aspects were outside of this thesis but are affecting the whole investment process, including the investment proposal. These aspects concerned the limits of authorization and how it will be instructed that which investments are left outside of this model.

However, during the meeting, there was pointed that the objective is not to have certain investments made without any documentation which requires approval but there needs to be discussion on how this process could be eased with certain investments.

The visualization and usability of the models were improved with collaboration with Marketing Manager and Marketing Specialist of Keravan Energia and results are presented at the end of this chapter.

6.3 Investment model for smaller investments

Interviews resulted that two separate models for different sized investments is seen more desirable than on generic model that could be used for both, smaller and larger investments. Reasonings for two models were due to the redundancy for smaller investments to go through all of the factors presented just as accurately in the initial model. Additionally, according to the interviews the compiling of the investment proposal needs to be efficient and it was seen that the time and effort to compile the same model for smaller investments is more ineffective and time-consuming.

The model provided for smaller investments consider those investments that are made mainly to support the operative actions and do not need additional financing. These investments are approved by Directors. The model was modified based on the larger investment proposal model and additionally with support of the previous model used in the company.

The model for smaller investment has same factors as the model for larger investments, but the compiling needs less descriptions and reasonings and thus the proposal is naturally shorter. This means that factors are filled briefly and in relation to the nature of the investment. For example, profitability is described briefly and additionally risks are considered but naturally, larger investments require more familiarization and examination into calculations and risk analysis than smaller and hence, the descriptions are smaller.

The idea of the second model is not to leave any factors without consideration but to make the compiling more effective and beneficial for the company. This is why all the same factors are included in the model, but the support questions are diminished, and some factors are combined into same phase. The model provided for smaller investments is presented in the appendices as the appendix 7.

The model for smaller investments was presented for the Directors of Production and Technology Services and during the interview the model got support and Directors found it relevant and beneficial. During the interview it was pondered if the project card should be included in the model for smaller investments.

According to Directors the project card is not necessary to be included in this model and due for this project card was confined out. Additionally, during the interview it was remarked that the number of the project should be informed in the proposal. This project number is included in the excel where projects are monitored inside of the company and therefore, the number of the project was included in the proposal model as a field where it must be filled in both of the models.

6.4 Visualization and usability

During the thesis process the layout and the visual feature of the models changed multiple times. After the factors were agreed and attached to the models there was an interview performed with Heistman, the Marketing Manager, and Kuusisto, the Marketing Specialist of Keravan Energia, to modify further models' visual outlays and usability. Interview was performed as an unstructured interview and via Teams. The objective was to find ideas and perspectives to modify the models further and to enhance the models' usability. It was found most beneficial to interview Marketing team due to their knowledge and know-how for visuality and usability of different documents. Additionally, the objective was to provide models that match with the visual image of Keravan Energia.

Usability and visual outlays of the two investment proposal models were modified following the perspectives and opinions occurred in the interview. However, there was left plenty of space for author to bring own visual aspects into models and the models were built from the beginning by the author, naturally following suggestions and assistance from interviewees. In the beginning of the thesis process it was discussed whether the model should be in the form of Excel, Word, or something else. Previous model used in the company was in the form of Word document and based on the interviews the Word document was seen more suitable for investment proposals. It was argued by some interviewees that during the whole investment process Excel is used continuously and the purpose of the investment proposal is to summarize essential information mainly with verbal descriptions. Due to these reasonings the models were built in the form of Word document.

Usability

To enhance the usability of the models the Marketing Manager suggested using the form tools which is one of the features of Word. There was guidance given from Marketing Manager concerning the usage of form tool. Using form tools allowed to make a form which is easy to fill.

During the interview the initial investment proposal model was presented. One of the suggestions from the interviewees was that the support questions should be always visible and in their own columns. People who are going to fill the model should always be aware which are the questions and where the answers will be placed. Additionally, text control should be in every section to make the compiling coherent. (Heistman & Kuusisto 2021.) One of the presented questions for the interviewees was that should there be separate ready given fields where the results of investment calculations could be presented, or just informally presented.

Heistman (2021) remarked that it would be possibly better that the results are presented clearly in some field that is ready given, but a verbal explanation of the results should be included as well. Another suggestion occurred in the interview was to divide section concerning environmental impact and responsibility into two different sections where the text is inserted. This makes the proposal clearer and easier to perceive both of the aspects for the decision-maker. (Heistman & Kuusisto 2021) The models include following features which were built with the form tool:

- *Text control*= Text controls were added for inserting the text. Text controls guide where the text must be added. These text controls were included in every phase.
- *Check box*= To make choosing certain factors easier and faster check boxes were included. Check boxes were found very beneficial because then verbal descriptions were not needed. Thus, the compiling of the investment proposal became quicker.
- *Refillable boxes*= These boxes were inserted for the results of investment calculations. This way the results can be clearly seen and presented.

Before filling the investment proposal according to the presented factors, the model has a section where the business line, the name for the investment project, the compiler, and date are written. Additionally, here the number of the project is included. This information is essential so that the decision maker is immediately aware of in which business line the investment is located and where the costs are allocated.

This section also maintains the systematic of documentation and in the end of the investment proposal model is the section where the information of the compiler of the proposal is written as well as the person who has verified the proposal. This section also has the results of approval. There are three options: approval, postponed, or rejection. In addition, there is a field where can be inserted comments concerning the decision of the investment and the distribution of the investment’s information.

Need for clearer distribution arise during interviews and therefore the distribution is briefly included in the model by giving a comment section where it can be addressed if the information concerning investment need to be distributed immediately when the investment is approved. Additionally, in this section the name of the decision-maker and the signature are included.

Visuality

The objective of the interview was also to get opinions, new aspects and suggestions concerning the initial outlay and visuality of the model. According to Heistman and Kuusisto (2021) the outlay is very clear and has many good elements, such as headings stand out and appearance of blue, which reflects the color of the company, is a nice addition to the model. In addition, interview resulted that the background and how the model is built guide effectively the compiling of the proposal. Heistman (2021) remarked that clarity is the most important feature in models like the investment proposal model.

The goal for the models was to make them distinctive for the use of the employer and that the models reflect the colors of the company. Blue color was chosen to reflect one of the main colors of Keravan Energia and to be the most visible one. Another main color, green, was additionally included in the model. During the interview Kuusisto (2021) added a need for a logo in the model and how the logo will make the model more official and at the same time it personalizes the model for Keravan Energia. Interview results showed that the visuality makes the model more individual and brightens the outlay.

7 Conclusion

This thesis was made in close collaboration with the employer and the results clearly represent the development of working life. There were multiple discussions with the Financial Manager who acted as a mentor of this research. Additionally, there was much support and guidance during this thesis given from the instructor from University of Applied Sciences.

One of the biggest challenges of harmonization of the investment and project processes is the lack of unified tools and operating models (Äikäs 2017). This is also seen as a challenge in Keravan Energia and the one of the objectives of renewing the asset management is to strengthen the harmonization between investment and project processes. The objective of this thesis was to provide investment proposal models for the employer and this objective is seen achieved by the author and the employer. In this chapter the conclusions occurred during the thesis are presented as well as the critical reflections and personal learning.

Research of this thesis adduced that there is a need for more documentation instructions within the corporation and that the new investment proposal models are required to enhance the asset management. Interviews resulted that the new investment proposal models should be consistent and with this consistency the decision-making process will be strengthened and become more systematic. One of the challenges in providing investment proposal models for the employer was the differences between the business lines of production and electricity networks. Business line of electricity networks is highly regulated and for example the profitability of these investments cannot be evaluated in the same way as in investments concerning production. Investment proposal models were modified as best as possible to respond to the needs of each business line. However, with use and further discussion between the Directors of business lines the models can be further enhanced if necessary.

During the thesis process there were new discussion emerged and some aspects that were left less importance were pointed out to be discussed further but were outside of the thesis. During the thesis process it was discussed what were the limits of authorization within the executives of the company and how the investment proposal models should be divided into different cost ranges. The cost ranges for investments were attached for this thesis but due to the emerged discussion and need for new limits of authorization the cost ranges may change in the future.

One of the aspects that emerged during the interviews was the consistency of the calculation bases that are used to calculate investment's profitability. Interviews resulted that the calculations are made with Excel and there are bases which are used to calculate Net present value, cash flow statements et cetera. These calculation bases differentiate among business lines and there was discussion if these calculation bases should be more systematic. Delving into these calculations was confined out of this thesis but it is clear that the information that how the investment's profitability is calculated can be shown when needed.

Investment proposal models

The whole thesis process was made closely with the employer and the models are made based on the results which arise within the collaboration and additionally theory and perspectives of author supported the outcome. During the process author found new aspects to be included in the investment proposals and with further discussion and agreement of interviewees the aspects were included in the final models as factors affecting to the decision-making. These new aspects brought additional value for the investment proposals and especially the importance of post-audit and monitoring arise during the thesis. Investments are monitored partly in the company but the need for more systematic and broader post-audit emerged.

Although the post-audit is a small part of the investment proposals, the purpose is that the investment is planned and will be monitored and the person in charge is named in advance.

In addition, aspect of marketing and communication got much valuation. Aspect concerning permissions and legislative requirements was also supported and including consideration of discretionary factors was seen relevant and adding value for proposals. All the factors were chosen to be included in the models with the agreement of the interviewees. To provide most adequate models for the employer the factors and required information were discussed multiple times with the interviewees.

One of the results provided for the employer in form of this thesis was a new classification of investment categories. The amount of investment categories was increased based on the interviews and how there are investments that require new categories. Additionally, the investment categories were opened with descriptions which was also required during the interviews.

To provide additional value for the employer the models were compiled by enhancing the usability and visuality. Compared to the previous investment proposal model used in the company the usability and visuality are enhanced greatly. It must be remarked that the models are attached to this thesis as appendices and the usability cannot be clearly experienced due to them being only as illustrations of the results. However, the actual models are built using the Word's form tool and the compiling of the proposals is easy and effective. The usability and visuality got valuation on behalf of the employer. The structure and usability of the models can be applied as a support to enhance other documentation.

The final investment proposal models were presented to the Directors of Production, Technology Services, and Electricity Networks. Directors found models beneficial and effective and approved the work provided by the author. Additionally, the final model was presented for the Financial Manager and Chief Financial Officer and got approval and support. The final models were presented to the CEO and the CEO gave an official approval to the models and remarked that the company will put the models to use. There is a final presentation to the management in the beginning of March where the author will present the final outcomes.

7.1 Further development

During the thesis process there were many aspects emerged during the interviews and open discussions. One of the areas where further development is required concerns the post-audit and how the investments are monitored after the implementation and during the warranty period. Based on the interviews the investments are monitored but mostly based on only costs and there is a need for more systematic and formalized monitoring.

With post-audit the company will learn if the investments are evaluated realistically and the implementation has been made effectively. With broader monitoring the company can act differently in following investments to prevent challenges that may have occurred in the previous investments. Additionally, with monitoring the successful decisions can be seen and continued with following investments. Post-auditing is part of the project management and hence was only a briefly presented in this thesis. Project management is also enhanced within the company and including post-audit as an additional factor to the investment proposal was seen beneficial. Due to the importance and benefits of post-audit the author included it in the model as a start to the planning of project's implementation and its monitoring.

Due for being outside of the boarders set for this thesis there were not delving into the calculations of investment's profitability within the company. However, during the process the author was able to see examples of investment calculations and how the excel bases are used to calculate the ratios, NPV and IRR et cetera. During the interviews it emerged that the calculation bases differentiate among business lines and if the calculations should be more compatible among business lines. It was remarked during the interviews that the profitability and how it is calculated differs especially in investments among production and electricity networks and hence, the calculation bases could not be similar. However, one further development suggest is that the calculation bases could be built to follow more systematic structures. Hereby the calculations could be easier to perceive by other.

Other area that require further development based on the interviews and emerged aspects is systematization of documentation and instructions. There are instructions within the company but during the thesis process a need for more clearer documentation emerged and that it should be more systematic. Additionally, instructions are required in order to make the documentation more systematic and enhanced.

7.2 Critical reflection

In general, the thesis has been successful from the perspective of the author and the objectives set by the employer have been achieved. Naturally, the models have a need for further development and with use they will be developed even more to be most effective and beneficial for the employer. The basis for the two models were provided for employer by getting familiar with the theory to support the model and most importantly the subject was researched within the company to provide most effective model to support the needs of the employer.

Theoretical framework was built by many different resources, most of them being resources from literature. At first, there were challenges in seeking literature available for the subject mainly because subjects concerning investments and capital budgeting were inside of the textbooks concerning accounting and corporate finance and often times were only briefly discussed. Another challenge was to include all the essential information concerning the subject without crossing the boarders that were set for the thesis. Additionally, the theoretical framework could not be too heavy. Regardless of the challenges the author feels that the theoretical framework is built well by presenting essential information by making it available for reader to understand and not being too heavy compared to the full length of this thesis. The author decided to include both, Finish and English, literature to support the thesis and the objective was to compile information that will support the results of the thesis.

During the thesis it became even clearer that the qualitative research methods are most beneficial for this research. There were many interviews and discussion required in order to provide models that will be effective for the use of the employer and quantitative research methods were seen not to give any additional value for the research. However, during the research it was challenging to clearly see the difference between semi-structured and unstructured interviews due to the objective of interviews to map ideas and perspectives. Additionally, the author found it difficult to compile strict question structures and hence, found it more effective to discuss subject more openly than with strict question patterns. Close collaboration and employment with the employer enabled this kind of more open and continuous discussion to meet the objectives of this thesis.

Another challenge that was encountered during the process concerned the analyzation of the interview results and how these results should be presented. After pondering, it was decided by the author that the results are partly opened in own chapter and additionally partly narrated to the reasonings when presenting models. This way was found to be most suitable to present the results and also to support the reasonings to the model.

During the thesis process the world was going through a pandemic which affected the opportunities to meet interviewees face-to-face. Due to the Coronavirus there was a command to move to work distant and hence most of the interviews were conducted remotely. Although the interviews were effectively conducted remotely there would have been possibly more discussion with interviewees, and interviews would have been more fluent. Remote meeting also has one notable weakness where it is impossible to see how people are corresponding with their appearance and often times using cameras was seen complicating meetings especially when there was documentation presented by sharing screens.

7.3 Personal learning

During the studies certain theories were taught in courses and thus, some of the information gathered as a theory and own experience were already familiar for the author. However, this thesis deepened this knowledge ever more and additionally brought new aspects. There was also new information for the author and the theoretical framework gave much valuable learning for the author. Furthermore, the execution of research of this length was entirely new experience which widened the know-how of execution of researches.

Before the opportunity to make this thesis for Keravan Energia the energy industry was only little familiar and during the process the author was amazed of the interestingness and diversity of the industry and also the importance of energy companies and their actions concerning investments. It was a great opportunity to get deeply familiarized with the operations made in the company and how the company is changing the world to better with responsible actions. Additionally, the author gained valuable experience about business operations generally and got to hear perspectives and knowledge from experts.

During the thesis and employment experience in Keravan Energia author got to see how an energy corporation as Keravan Energia operates in the changing environment and how they make actions to provide efficient energy solutions for their customers and how the company answers to their customers' needs. During this thesis process Keravan Energia made an investment with Sinebrycoff to stop using peat as an energy source and in turn using wood as an energy source (Kettunen 2020). It was one of the concrete examples of the responsible actions made in Keravan Energia.

Author strongly believes that all of the experience that were gained during this process will be used in the future to support the learning and knowledge of the author. Additionally, author feels that the investments and financial management in general is even more the area of which she wishes to be employed in the future.

Assessment is one part of the thesis process and next the feedback from the employer is presented and the process assessed by the author. The author wants to express great gratitude towards the employer and the close collaboration with them and values greatly the feedback given by them.

8 Feedback and assessment

The new formalized investment proposal models will be taken into use at the corporate level by the employer. The models provided by the author for the employer support the continuous development of asset management. Models will clarify the compiling of investment proposals, ease directing and increase transparency of decision-making. Research and conducted interviews were comprehensive and with these the results were given important criterion. Approved investment proposal gives solid foundation for the information needed for the project management and for execution of monitoring and control calculations. (Nummela 2021.)

According to the feedback given by the employer the author was consistent and unprompted with the research during the whole thesis process. In addition, with the goal-directed approach, ability of listening and seeing whole picture of the subject, the results were provided effectively to the employer.

Assessment

The process of providing this thesis for the employer proceeded consistently and guidance from the employer and instructor from University of Applied Sciences was requested regularly. Author strongly feels that the report is built with well thought structure which leads the reader to the end of this thesis providing information, results with reasonings, conclusions and perspectives given by interviewees and the author as well. Due to the subject and the opportunity to get many interviews and discussions the length of this became longer than expected. However, with comprehensive plan the thesis was effectively written and from the perspective of the author the thesis is clear, interesting, and available for reader.

In the beginning of the thesis process it was pondered if there should be quantitative methods used to examine the subject. With pondering and discussion, the quantitative methods were not seen producing any additional value and were seen only to possibly consume time and effort with any genuine value. Research methods were described and reasoned to comport with the subject and additionally objectives of this thesis. Qualitative interviews that were chosen for this research turned out to be effective and beneficial. Different resources used to compile the theoretical framework for this thesis were used diversely and from reliable resources. Resources were searched with time, caution, and critically. Additionally, resources were used to support reasonings.

The purpose of this thesis was to provide new investment proposal models for the employer which would enhance the decision-making and support the asset management. Author feels that the models provided for the employer reflect the interview results and are built for the needs of the employer and achieve the purpose and objectives given for the thesis.

The objective was to examine what factors should be included in the investment proposals and with interviews and theory the factors were chosen and with these factors the models were modified. There were support questions included in the models to make the compiling of investment proposals easier and more coherent. In addition, during the thesis process a wish to include some visual aspects in the model was arisen and this wish was fulfilled with including logos and colors in the models with keeping it still simple and official. Additionally, the author endeavored to provide models that are easy to fill and hence usability was strongly considered.

The main objective for the author was to provide a thesis that strongly reflects the objectives given by the employer and additionally reflects the motivation and eagerness of the author. Intrinsically there were some challenges during the thesis process but in general the author experiences the process to be successful as a whole and that the objectives were achieved.

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Figures

Formulas

Tables

Appendices

Appendix 1: Interview questions, semi-structured interview with CEO

Interview with the Chief executive officer was performed in 9th of December 2020. There were following questions asked to support the discussion:

1. What are the principles and objectives of capital budgeting?

   How the investments are financed?

2. How are the limits of authorization defined concerning investment decision-making?

3. How investments are classified in Keravan Energia?

4. What are the factors that must be presented in the investment proposal?

   What are the arguments for approval/rejection?

5. What kind of investment proposal would you prefer to receive?

   a. Content

   b. Structure

   c. Form

   d. Length

Appendix 2: Semi-structured interviews with the Marketing Manager and Attorney-at-Law

Interview with the Marketing Manager of Keravan Energia was executed on 8th of January 2021. Interview was a semi-structured interview and included following questions:

- How previous investments have been marketed in the company?
    - What marketing methods have been used?
- How investments are informed inside of the organization?
- How investments are informed externally?
- Is there additional value in presenting marketing and communication aspect in the investment proposals?

Interview with the Attorney-at-Law was executed on 28th of January 2021. Interview was a semi-structured interview and included following questions:

- How the legislative requirements are seen in the energy companies like Keravan Energia and generally in energy industry?
- What are those aspects concerning regulations and laws that should be considered in the phase of decision-making of investments?
- How the permissions affect to the investments?

Appendix 3: Matrix of investment categories in English

Investment type		Replacement	New/Expansion	Mandated by law	Strategic investments
Description	Description of the investment Investment type	What will be done? Investment type? Objectives?	What will be done? Investment type? Objectives?	What will be done? Investment type? Objectives?	What will be done? Investment type? Objectives?
Reasoning for investment	Purpose Benefits and adequacy to strategy Evaluation of alternative options	-Why is done and why now? -Achieved benefits? -Adequacy to strategy? -Evaluation of options	-Why is done? -Achieved benefits? -Adequacy to strategy? -Evaluation of options	-Why is done? -Impacts and possible benefits? -Regulatory demands involved in reasonings.	-Why is done? -Achieved benefits? -Adequacy to strategy? --Evaluation of options
Profitability Calculations and key ratios	Initial cost Costs and revenues Lifetime and residual value Imputed discount rate Internal Rate of Return, NPV Payback Period	Presentation of costs and revenues, lifetime, and residual value of the investment Net present value IRR > Imputed discount rate Payback Period </-n	Presentation of costs and revenues, lifetime, and residual value of the investment Net present value IRR > Imputed discount rate Payback Period </-n	Calculations may turn out unprofitable. Examination of profitability in long-term Comparison of costs and revenues of different alternatives.	Presentation of costs and revenues, lifetime, and residual value of the investment Net present value IRR > Imputed discount rate Payback Period </-n
Financing	Internal financing (budget) Equity and debt Other support funding	Applicability to investment budget? Need for additional financing? (Amount, price, duration)	Applicability to investment budget? Need for additional financing? (Amount, price, duration)	Applicability to investment budget? Need for additional financing? (Amount, price, duration)	Need for additional financing? Comparison of options for financing (Amount, price, duration)
Risk analysis Economic and non-economic	Risk matrix Sensitivity analysis Recognition and preparing	Most significant risks described and how risks are considered. Sensitivity analysis (with figure)	Most significant risks described and how risks are considered. Sensitivity analysis (with figure)	Most significant risks described and how risks are considered. Sensitivity analysis (with figure)	Most significant risks described and how risks are considered. Sensitivity analysis (with figure)
Permission & law	Laws and regulations, permissions	Adequacy to regulatory demands	Adequacy to regulatory demands	Adequacy to regulatory demands	Adequacy to regulatory demands
Environmental impacts & social responsibility	Corporate social responsibility Energy efficiency Security of supply	Description based on needs	Description based on needs	Description based on needs	Description based on needs
Marketing & Communication	External communication Internal communication Marketing methods	Communication and marketing possibilities and needs	Communication and marketing possibilities and needs	Communication and marketing possibilities and needs	Communication and marketing possibilities and needs
Project's schedule Execution Estimate of resources	Main phases Interphases Estimate of supplier Required resources	Schedule of phases and the procession of the project The planning of project's execution	Schedule of phases and the procession of the project The planning of project's execution	Schedule of phases and the procession of the project The planning of project's execution	Schedule of phases and the procession of the project The planning of project's execution
Post completion audit	Monitoring after the implementation and after warranty period	Plan of monitoring -Designated person in charge	Plan of monitoring -Designated person in charge	Plan of monitoring -Designated person in charge	Plan of monitoring -Designated person in charge

Appendix 4: Matrix of investment categories in Finnish

Investointiluokka		Korvausinvestoinnit	Uus-/Laajennusinvestoinnit	Pakolliset investoinnit	Strategiset investoinnit
Investoinnin kuvaus	Kuvaus investoinnista Investointiluokka	Mitä tehdään? Investointiluokka? Tavoitteet?	Mitä tehdään? Investointiluokka? Tavoitteet?	Mitä tehdään? Investointiluokka? Tavoitteet?	Mitä tehdään? Investointiluokka? Tavoitteet?
Perustelut investoinnille	Tarkoitus Hyödyt ja liitäntä strategiaan Vaihtoehtojen arviointi	-Miksi tehdään, miksi nyt? -Saavutettavat hyödyt? -Yhteensopivuus strategiaan?	-Miksi tehdään, miksi nyt? -Saavutettavat hyödyt? -Yhteensopivuus strategiaan?	-Miksi tehdään, miksi nyt? -Investoinnin vaikutukset sekä mahdolliset hyödyt?	-Miksi tehdään, miksi nyt? -Saavutettavat hyödyt? -Yhteensopivuus strategiaan?
Kannattavuus Investointilaskelmat/ Tunnusluvut	Hankintakustannus Tuotot ja kustannukset Pitoaika ja jäännösarvo Käytetty laskentakorkokanta Sisäisen korkokanta, NNA Takaisinmaksuaika	Kustannukset ja tuotot lueteltuna sekä pitoaika ja estimoitu jäännösarvo Nettonykyarvo IRR > laskentakorkokanta Takaisinmaksuaika </= n	Kustannukset ja tuotot lueteltuna sekä pitoaika ja estimoitu jäännösarvo Nettonykyarvo IRR > laskentakorkokanta Takaisinmaksuaika </= n	Investoinnin laskelmat voivat osoittautua kannattamattomiksi, Tarkkailtava kannattavuutta pidemmällä aikavälillä Eri toteutusvaihtoehtojen kustannusvertailu	Kustannukset ja tuotot lueteltuna sekä pitoaika ja estimoitu jäännösarvo Nettonykyarvo IRR > laskentakorkokanta Takaisinmaksuaika </= n
Rahoitus	Tulorahoitus Pääomarahoitus Tukirahoitus	Sopivuus investointibudjettiin? Lisärahoituksen tarve? (Määrä, hinta ja pituus), vakuus	Sopivuus investointibudjettiin? Lisärahoituksen tarve? (Määrä, hinta ja pituus), vakuus	Sopivuus investointibudjettiin? Lisärahoituksen tarve? (Määrä, hinta ja pituus), vakuus	Sopivuus investointibudjettiin? Lisärahoituksen tarve? (Määrä, hinta ja pituus), vakuus
Riskien arviointi Taloudelliset ja ei-taloudelliset	Riskimatriisi Herkkyysanalyysi *Riskin huomioiminen/varautuminen*	Kuvaus merkittävimmistä riskeistä ja miten on huomioitu Herkkyysanalyysi (kuva lisäksi)	Kuvaus merkittävimmistä riskeistä ja miten on huomioitu Herkkyysanalyysi (kuva lisäksi)	Kuvaus merkittävimmistä riskeistä ja miten on huomioitu Herkkyysanalyysi (kuva lisäksi)	Kuvaus merkittävimmistä riskeistä ja miten on huomioitu /laaja kuvaus Herkkyysanalyysi (kuva lisäksi)
Luvat ja lainsäädäntö	Lainsäädäntö ja asetukset, luvat	Sopivuus juridisiin vaatimuksiin	Sopivuus juridisiin vaatimuksiin	Sopivuus juridisiin vaatimuksiin	Sopivuus juridisiin vaatimuksiin
Ympäristövaikutus ja vastuullisuus	Yhteiskuntavastuullisuus: Vaikutus energiatehokkuuteen: Huoltovarmuus	Kuvaus tarpeiden mukaan	Kuvaus tarpeiden mukaan	Kuvaus tarpeiden mukaan	Tarkka kuvaus
Markkinointi ja viestintä	Ulkoinen viestintä Sisäinen viestintä Markkinointikeinot	Viestintä- ja markkinointimahdollisuudet ja tarpeet	Viestintä- ja markkinointimahdollisuudet ja tarpeet	Viestintä- ja markkinointimahdollisuudet ja tarpeet	Viestintä- ja markkinointimahdollisuudet ja tarpeet
Projektin aikataulu Projektin toteutus Resurssiarvio	Päävaiheet Välivaiheet Toimittaja-arviointi, Vaadittavat resurssit	Aikataulutus vaiheista ja projektin kulusta Projektin toteutuksen suunnitelma	Aikataulutus vaiheista ja projektin kulusta Projektin toteutuksen suunnitelma	Aikataulutus vaiheista ja projektin kulusta Projektin toteutuksen suunnitelma	Aikataulutus vaiheista ja projektin kulusta Projektin toteutuksen suunnitelma
Jälkiseuranta	Implementoinnin jälkeen ja takuuajan seuranta Toteutumisraportti ja seurantaraportti	Suunnitelma seurannasta ja raportoinnista -Vastuuhenkilö	Suunnitelma seurannasta ja raportoinnista -Vastuuhenkilö	Suunnitelma seurannasta ja raportoinnista -Vastuuhenkilö	Suunnitelma seurannasta ja raportoinnista -Vastuuhenkilö

Appendix 5: Investment proposal model for larger investments (in English)

Page 1

Investment proposal model and instruction
Keravan Energia -companies

Line of business: Write text here.	Compiler: Write text here.	☐ New/expansion investment
Name of the project: Write text here.	Date: Write text here.	☐ Replacement
Project number: Write text here.		☐ Investment of improving maintenance ☐ Mandatory investment ☐ Strategic investment

Description of the investment	
▪ What will be done? ▪ Objectives? ▪ Background? ▪ Scope of the implementation	Write text here.
Reasonings	
▪ Why and why now? ▪ Benefits? ▪ Adequacy to the strategy? ▪ Evaluation and comparison of options?	Write text here.
Profitability	
▪ Costs	Initial cost of the investment Estimation of total costs
▪ Results of profitability/investment calculations	Required rate of return Internal rate of return, IRR Net present value, NPV Return on investment, ROI Payback period
▪ Description of the results	Description of results and additional information if needed.
▪ Cash flow statement (description of the annual revenues and costs)	Write text here.
Financing	
☐ Included in the budget ☐ Other financing ☐ Bank loan ☐ Leasing ☐ Other ☐ Possible finance aids	Additional information concerning financing, collaterals etc. if needed
Permission and law	
▪ Legislative requirements ▪ Needed permissions (consideration also in risks)	Write text here.

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Investment proposal model for larger investments (in English)

Page 2

Risk analysis	
▪ Risk matrix ▪ How will be protected/ prepared? ▪ Sensitivity analysis (when necessary, picture as an attachment)	Write text here.
Environmental impacts and responsibility	
▪ Environmental impacts ▪ Impacts on energy efficiency	Write text here.
▪ Responsibility: economic, ecological, social ▪ Security of supply ▪ Image, reputation	Write text here.
Marketing and communication	
▪ Marketing channels? ▪ Paid advertising?	☐ No need ☐ Internal communication ☐ External communication Additional information if needed
Project's schedule	
▪ Main phases, interphases ▪ Total duration, beginning and ending ▪ Estimation of supplier ▪ Required resources	Write text here.
Post-audit	
▪ After the implementation: ▪ Warranty time monitoring:	Implementation/end report of the project, person in charge: Write text here. Monitoring report of the investment, person in charge: Write text here. Additional information here if needed.

Project card ▪ Summary ▪ Including estimated depreciation period	Write text here.

Proposition:	Write text here.
Verified:	Write text here.

☐ Approved ☐ Postponed ☐ Rejected	Comments, distribution.	Decision-maker Signature Date:

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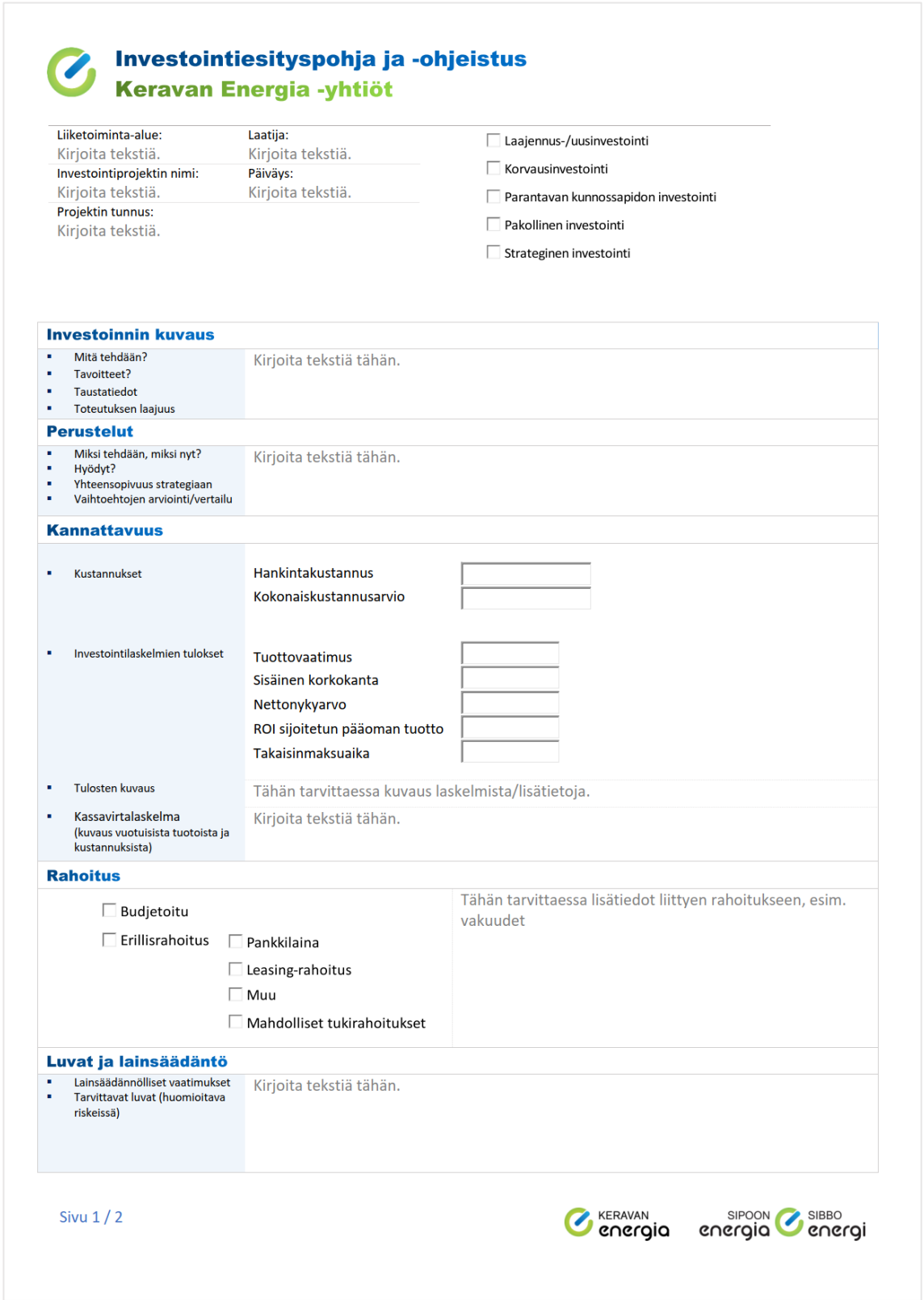
Appendix 6: Investment proposal model for larger investments (in Finnish)

Page 1



Investointiesityspohja ja -ohjeistus
Keravan Energia -yhtiöt

Liiketoiminta-alue: Kirjoita tekstiä.	Laatija: Kirjoita tekstiä.
Investointiprojektin nimi: Kirjoita tekstiä.	Päiväys: Kirjoita tekstiä.
Projektin tunnus: Kirjoita tekstiä.	

- ☐ Laajennus-/uusinvestointi
- ☐ Korvausinvestointi
- ☐ Parantavan kunnossapidon investointi
- ☐ Pakollinen investointi
- ☐ Strateginen investointi

Investoinnin kuvaus

- Mitä tehdään?
- Tavoitteet?
- Taustatiedot
- Toteutuksen laajuus

Kirjoita tekstiä tähän.

Perustelut

- Miksi tehdään, miksi nyt?
- Hyödyt?
- Yhteensopivuus strategiaan
- Vaihtoehtojen arviointi/vertailu

Kirjoita tekstiä tähän.

Kannattavuus

- Kustannukset
  - Hankintakustannus
  - Kokonaiskustannusarvio
- Investointilaskelmien tulokset
  - Tuottovaatimus
  - Sisäinen korkokanta
  - Nettonykyarvo
  - ROI sijoitetun pääoman tuotto
  - Takaisinmaksuaika
- Tulosten kuvaus: Tähän tarvittaessa kuvaus laskelmista/lisätietoja.
- Kassavirtalaskelma (kuvaus vuotuisista tuotoista ja kustannuksista): Kirjoita tekstiä tähän.

Rahoitus

- ☐ Budjetoitu
- ☐ Erillisrahoitus
  - ☐ Pankkilaina
  - ☐ Leasing-rahoitus
  - ☐ Muu
  - ☐ Mahdolliset tukirahoitukset

Tähän tarvittaessa lisätiedot liittyen rahoitukseen, esim. vakuudet

Luvat ja lainsäädäntö

- Lainsäädännölliset vaatimukset
- Tarvittavat luvat (huomioitava riskeissä)

Kirjoita tekstiä tähän.

Sivu 1 / 2

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Investment proposal model for larger investments (in Finnish)

Page 2

Riskien arviointi	
▪ Riskimatriisi ▪ Miten suojaudutaan/ varaudutaan? ▪ Herkkyysanalyysi (tarpeen mukaan, kuva liitteeksi)	Kirjoita tekstiä tähän.
Ympäristövaikutus ja vastuullisuus	
▪ Ympäristövaikutukset ▪ Vaikutukset energiatehokkuuteen	Kirjoita tekstiä tähän.
▪ Vastuullisuus: taloudellinen, ekologinen, sosiaalinen ▪ Huoltovarmuus ▪ Imago, maine	Kirjoita tekstiä tähän.
Markkinointi ja viestintä	
▪ Markkinointikanavat? ▪ Maksullinen mainonta?	☐ Ei tarvetta ☐ Sisäinen viestintä ☐ Ulkoinen viestintä Lisätiedot tarvittaessa tähän
Projektin aikataulu	
▪ Päävaiheet, välitavoitteet ▪ Projektin kokonaiskesto, aloitus ja lopetus ▪ Toimittaja-arviointi ▪ Vaadittavat resurssit	Kirjoita tekstiä tähän.
Jälkiseuranta	
▪ Käyttöönoton jälkeen: ▪ Takuuaikainen seuranta:	Projektin toteutumis-/loppuraportti, vastuuhenkilö: Kirjoita tekstiä tähän. Investoinnin seurantaraportti, vastuuhenkilö: Kirjoita tekstiä tähän. Tähän tarvittaessa lisätietoja.

Projektikortti	Kirjoita tekstiä tähän.
▪ Tiivistelmä ▪ Lisättävä suunniteltu poistoaika	

Esitys:	Kirjoita tekstiä tähän.
Tarkistanut:	Kirjoita tekstiä tähän.

☐ Hyväksytty ☐ Siirretty ☐ Hylätty	Kommentit, jakelu.	Päätöksentekijä Allekirjoitus Päiväys:

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Appendix 7: Investment proposal model for smaller investments (in English)

Investment proposal model and instruction

Keravan Energia -companies

Line of business: Write text here.	Compiler: Write text here.	☐ New/expansion investment
Name of the project: Write text here.	Date: Write text here.	☐ Replacement investment
Project number: Write text here.		☐ Investment of improving maintenance
		☐ Mandatory investment
		☐ Strategic investment

Description of the investment	
▪ What will be now? ▪ Why and why now? ▪ Benefits? ▪ Options?	Write text here.
Profitability	
▪ Estimation of the costs ▪ Results of the profitability/investment calculations ▪ If necessary, the financing is considered	Write text here.
Permission and law	
▪ Legislative requirements ▪ Needed permissions	Write text here.
Risk analysis	
▪ Description of risks ▪ Risk matrix (when needed)	Write text here.
Environmental impacts and responsibility	
▪ Environmental impacts ▪ Impacts in energy efficiency ▪ Responsibility	Write text here.
Marketing and communication	
▪ Marketing/communication?	☐ No need ☐ Internal communication ☐ External communication
Project's schedule	
▪ Schedule, interphases ▪ Estimation of supplier ▪ Required resources	Write text here.
Post-audit	
▪ After the implementation: ▪ Warranty time monitoring:	Implementation/end report of the project, person in charge: Write text here. Monitoring report of the investment, person in charge: Write text here.
Proposition:	Write text here.

☐ Approved ☐ Postponed ☐ Rejected	Comments, distribution.	Decision-maker: Signature: Date:

Appendix 8: Investment proposal model for smaller investments (in Finnish)

Investointiesityspohja ja -ohjeistus

Keravan Energia -yhtiöt

Liiketoiminta-alue: Kirjoita tekstiä.	Laatija: Kirjoita tekstiä.
Investointiprojektin nimi: Kirjoita tekstiä.	Päiväys: Kirjoita tekstiä.
Projektin tunnus: Kirjoita tekstiä.	

- ☐ Laajennus-/uusinvestointi
- ☐ Korvausinvestointi
- ☐ Parantavan kunnossapidon investointi
- ☐ Pakollinen investointi
- ☐ Strateginen investointi

Investoinnin kuvaus ja perustelut	
▪ Mitä tehdään? ▪ Miksi tehdään ja miksi nyt? ▪ Saavutettavat hyödyt? ▪ Vaihtoehdot?	Kirjoita tekstiä tähän.
Kannattavuus	
▪ Kustannusarvio ▪ Vuosittaiset tuotot ja kustannukset ▪ Investoinnin pitoaika ja jäännösarvo ▪ Investointilaskelmien tulokset ▪ Tarvittaessa otetaan kantaa rahoitukseen	Kirjoita tekstiä tähän.
Luvat ja lainsäädäntö	
▪ Lainsäädännölliset vaatimukset ▪ Tarvittavat luvat	Kirjoita tekstiä tähän.
Riskien arviointi	
▪ Kuvaus riskeistä ▪ Riskimatriisi (tarpeen mukaan)	Kirjoita tekstiä tähän.
Ympäristövaikutus ja vastuullisuus	
▪ Ympäristövaikutukset ▪ Vaikutukset energiatehokkuuteen ▪ Vastuullisuus	Kirjoita tekstiä tähän.
Markkinointi ja viestintä	
▪ Tarve viestinnälle?	☐ Ei tarvetta ☐ Sisäinen viestintä ☐ Ulkoinen viestintä
Projektin aikataulu	
▪ Aikataulu ja välitavoitteet ▪ Toimittaja-arviointi ▪ Vaadittavat resurssit	Kirjoita tekstiä tähän.
Jälkiseuranta	
▪ Käyttöönoton jälkeen: ▪ Takuuaikainen seuranta:	Projektin toteutumis-/loppuraportti, vastuuhenkilö: Syötä teksti tähän. Investoinnin seurantaraportti, vastuuhenkilö: Syötä teksti tähän.

Esitys:	Kirjoita tekstiä.

☐ Hyväksytty ☐ Siirretty ☐ Hylätty	Kommentit, jakelu.	Päätöksentekijä Allekirjoitus Päiväys: