Financial Assessment and Risk Analysis for Airport Hotel

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Abstract

In this thesis a financial feasibility assessment and risk analysis is applied on an airport hotel for Isavia. The purpose of this thesis is to give Isavia a tool to work on future studies for this investment. The airport hotel is a part of a Masterplan that Isavia has conducted as a response to the increase of tourism in Iceland. Isavias owns Keflavik airport and is responsible for operating the airport. Isavia´s analysis and prediction of number of passengers travelling through Keflavík airport indicates that the number of tourists will continue to increase in coming years. The tourist industry in Iceland is seasonal, the high season is over the summertime June, July and August. In recent years the supply of hotel rooms in Iceland has been growing. The main goal of this thesis is to analyze three different cases, each having a different approach in building and operating an aiport hotel at Keflavik airport. The first case shows results if Isavia builds and operates the hotel, the second case shows results if Isavia builds and outsources the operation to a contractor. The third case shows results where Isavia designs the hotel and outsources the land to a contractor, the contractor would build and operate the hotel. The results are evaluated from various assumptions. One of the main results of the thesis is that Isavia should outsource the land based on the financial feasibility assessment and risk analysis with respect to given assumptions.

Keywords: Financial Assessment, Risk Analysis, Airport Hotel Investment, Engineering Management

Arðsemismat og áhætturgreining á flugvallarhóteli

Hrönn Skaptadóttir

Desember 2016

Útdráttur

Þessi rannsókn fjallar um arðsemismat og áhætturgreiningu á flugvallarhóteli fyrir Isavia. Markmið verkefnisins er að gera verkfæri fyrir Isavia sem hægt að nota til frekar greiningar á fjárfestingunni.Flugvallarhótel er hluti af áætlun sem Isavia hefur unnið að til að svara þeirri aukningu ferðamanna sem hefur verið á Íslandi undanfarin ár. Isavia er eigandi og rekstraraðili Keflavikurflugvallar. Samkvæmt greiningum og spám gerir Isavia ráð fyrir að aukning haldi áfram næstu árin í farþegafjölda sem ferðast í gegnum Keflavíkurflugvöll. Ferðamannaiðnaðurinn hefur miklar árstíðasveiflur og er háanna tími ferðamannaiðnaðsins yfir sumartímann þ.e. júní, júlí og ágúst. Framboð á hótelherbergjum hefur aukist undanfarin ár og hefur nýting hótelherbergja ennig aukist á sama tíma. Markmiðið með þessari rannsókn er að bera saman þrjú mismunandi tilfelli. Hvert tilfelli hefur mismunandi forsendur hvað varðar byggingu og rekstur hótelsins. Í tilfelli 1 er gert ráð fyrir að Isavia byggi og reki hótelið. Í tilfelli 2 er gert ráð fyrir að Isavia byggi hótelið en leigi reksturinn út. Í tilfelli 3 er gert ráð fyrir að Isavia hanni hótelið en leigi út landið til rekstraraðila sem byggir og rekur hótelið. Þessi tilfelli byggja á áætluðum rekstrarkostnaði og -tekjum. Þegar þessi tilfelli eru skoðuð með tilliti til kostnaðar og tekna sem var áætlað fyrir hvert tilfelli, kemur tilfelli 3 best út þegar tekið er tillit til áhættu og arðsemi.

Lykilorð: Arðsemismat, Arðsemi, Áhætturgreining, Fjárfesting í Flugvallarhóteli, Rekstrarverkfræði

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Master of Science

I dedicate this to my children Breki Hrafn and Hrafnhildur Lilja.

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First I would like to thank my supervisor, Páll Jensson professor at Reykjavik University for the guidance and support regarding this study.

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1 Introduction

Isavia is the operator and owner of Keflavik airport. According to Isavia there were nine airlines offering scheduled flights to Iceland in the summer of 2009, but in the summer of 2016, there were 25 airlines offering scheduled flights to Iceland. The frequency of flights to Iceland increased by 17% from 2010 to 2015 [1].

In this thesis a financial feasibility assessment and risk analysis will be applied to three different cases of construction and operations on an airport hotel for Isavia. In case 1 Isavia designs, constructs and operates the airport hotel. In case 2 Isavia designs and constructs the hotel building, a contractor rents the building and business from Isavia, the rent consist of both fixed rent and revenue related rent. In case 3 Isavia designs the hotel building and a contractor constructs, own and operates the airport hotel, he pays fixed and revenue related rent to Isavia for the land.

In the past 10 years tourism has been increasing worldwide. According to the World Tourism Organization, the annual increase worldwide was 3,5% on average between 2005 and 2014 and in 2015, there was an increase of 4,4% [1]. In Iceland, the increase is also apparent, and much higher than worldwide. Statistics for Iceland from 2010 to 2015, show that the annual increase was on average 22,4%. Looking at the forecast for increase in tourism in Iceland for 2016 and worldwide Íslandsbanki expects 29% increase in tourism in Iceland but the World Tourism Organization is expecting 4% increase worldwide in 2016 [1]. This increase is reflected in the passengers traveling through Keflavik airport in past years see Figure 1. According to Icelandic Tourist Boards, around 96% of tourist that visit Iceland goes through Keflavik airport [2].

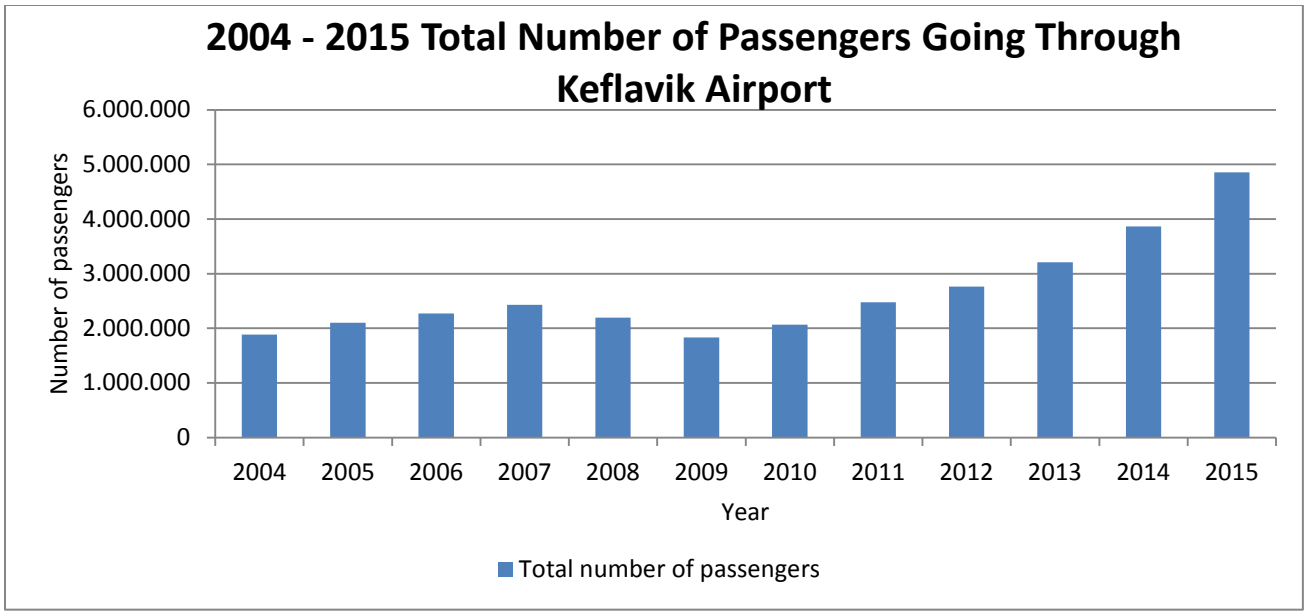


Figure 1 The trend of passengers travelling through Keflavik airport 2004 to 2015 [3].

When looking at Figure 1 we see that around 2,07 million passengers went through Keflavík airport in 2010, and in 2015 they were around 4,86 million. This is an increase of around 135%. If we look back to 2004 when passengers were around 1,9 million, that is an increase of around 158% in these 12 years. When looking at a long-term prediction from Isavia, it shows that these numbers are not getting smaller see Figure 2.

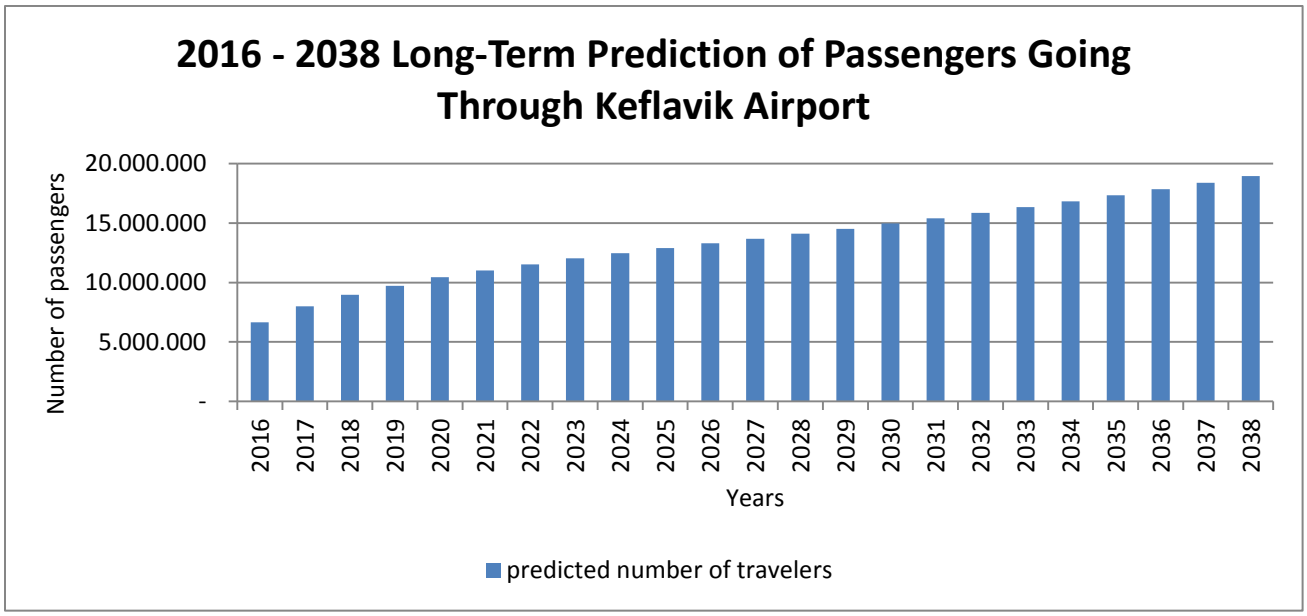


Figure 2 The long-term prediction from Isavia on number of passengers that goes through Keflavik airport [4].

Figure 2, shows how the number of passengers according to Isavia prediction, is expected to

increas from around 6,7 million passengers in 2016 to almost 18,8 million in 2038.

The increase of tourism in Iceland has had an extensive effect on the Icelandic economy. It has become a major factor in strengthening the economy in recent years and has made its mark on the Icelandic society over all. In competitive terms, Iceland is in a good position when looking at tourism. However, the challenge for Iceland is to follow up on this increase by building up the infrastructure including hotels and entertainment for those visiting the country. [1]

In Iceland, tourism has been seasonal, and the high season has been the summer time in June, July and August. Looking at the numbers from 2010, around 50% of tourists arrived during those three months. With combined efforts of stakeholders in the tourism industry in Iceland they have been able to increase the number of tourists on off-season periods more than the high season. The increase in these three high season months is around 16% to 20% from 2010 to 2015 while the numbers of tourists in months like November and December has increased over 30% for 2010 to 2016. [1]

Because of this significant increase in tourism, Isavia has made a Masterplan, which was first presented to stakeholders in October 2015. The plan is a construction plan for the airport area until 2040. It is divided into several parts and construction is supposed to start at the end of 2016. In the Masterplan there are plans to expand the airport and for building hotels right next to the airport and more [5].

The supply of hotel rooms in Iceland has been growing in recent years. At the same time the utilization of available rooms has also been growing and the demand of hotel rooms is more than the increase of hotel rooms. In an analysis from Arion Banki from 11 of August 2015 it is stated that in the high season the demand for rooms is close to tolerance limits of the supply of hotel and motel rooms available [6].

1.1 Isavia

In May 2010, the Minister of Transport, Communication and Local Government established the limited state-owned company Isavia Ltd. Today, the company operates all airports and air navigation services in Iceland. Isavia is a combination of older companies and was established to combine their businesses [7]. Isavia vision is that Iceland will be the center of flights between the three continents, North America, Europe and Asia. Today 2016, there are around 1.200 people

working at Isavia and its subsidiaries [8].

1.2 The Thesis Purpose

The idea for this project came from the Isavia Masterplan that was mentioned before. One of the objectives in the Masterplan is to build hotels right next to the airport building. Isavia wants to know what business model would be most feasible for them and would give the most profit. To study that the author of this thesis decided in cooperation with Isavia and the supervisor to apply a financial feasibility model and then use risk assessment to study closer these different cases and to find out which variables have the highest impact on the results from the model. It is assumed that the hotel has 200 rooms and is a four star hotel. The goal is to find the best operating model for both a long term and a short-term period, and to give Isavia a tool for further studies. We will look at three different cases.

- **Case 1:** Isavia designs, builds and operates the hotel.
- **Case 2**: Isavia designs and builds the hotel. The operation of the hotel will be outsourced to a contractor for 10 to 20 years.. In this case Isavia revenues are two folded; a) that is fixed rent and b) revenue related rent, from the contractor.
- **Case 3** Isavia designs the hotel. They outsource the land under the hotel to contractor that builds, owns and operates the hotel for 10-20 years. The contractor pays fixed rent per month and fixed proportion of the revenues from the hotel business each month for the land. In this case Isavia revenues are two folded; a) fixed rent and b) then revenue related rent, from the contractor.

For each case a financial feasibility study will be developed and the results for each case will be compared. Risk assessment will be conducted for each case with scenario analysis and sensitivity analysis. The goal is to find the most efficient operating model for Isavia to use when designing, building and operating an airport hotel for long-term and short-term. These questions will be answered at the end; a) which of the three cases is most profitable for Isavia? And b) which case has the lowest risk?

It is important to consider that the most of the figures used in this thesis are predicted into the future. The results give us idea of how this would be if the assumptions are near to the reality. The purpose of this thesis is to give Isavia a tool for further studies of this subject.

1.3 Overview

This thesis is constructed as followed. Chapter 2 gives an overview of the methods used and the model itself. That chapter was written in cooperation with Anna Sigga Lúðvíksdóttir, the author of the thesis Financial Assessment and Risk Analysis for Airport Parking Investment. Chapter 3, describes the data used for the model that is revenues, operating cost etc. Chapter 4, contains the results from the financial feasibility assessment for case 1, case 2 and case 3 as well as the results for the risk assessment. Chapter 5, includes a further discussion of the results and comparison for these three cases. The future work is also discussed.

2 Methods

When a business idea is in its first stages, it is very important to conduct an analysis to find out whether the investment is financially viable or not. A financial feasibility analysis is a powerful tool to evaluate the profitability of the investment. [9]

2.1 Feasibility Studies

When investing in a project, it is not enough to meet special technical and other relevant requirements, it also needs to be profitable. The concept “return on investment” is appropriate for this investment project. Isavia expects the cash flow from the operation to be sufficient to pay for the investment and operation cost, along with an acceptable rate of return. [10]

When evaluating investment it is important to consider different variables like revenues, operating cost, taxes, financing etc. Thus, a financial assessment model will be used in order to determine, which of the three cases mentioned above is the most feasible way for Isavia to build and operate the hotel. The three cases will be compared with respect to revenue, cost and risks. When estimating the risk, it is necessary to find the variables that have the highest impact on the results from the model and will therefore have the biggest effect on the operation.

There are many ways to evaluate an investment project like this. The basic and most common types of methods have been categorized into five categories. These categories are [11]:

- Net Present Value methods (NPV)
- Rate of return methods
  - Internal rate of return (IRR)
  - External rate of return (MIRR)
- Ratio methods
- Payback methods
- Accounting methods

In this financial assessment the NPV, IRR and MIRR will be used to compare the cases and decide which way is the most economical advantageous for Isavia. These methods will be described as follows.

2.1.1 Net Present Value

The Net Present Value (NPV) is the value of the investment at the end of given period (i.e. the present value of the in cash flow and out cash flow over that period). The NPV indicates whether the investment has an acceptable return over the period.

To calculate the NPV for the investment, it is necessary to estimate the acceptable return or the Minimum Acceptable Rate of Return (MARR). When comparing different investment options, the investor has to decide the MARR. The MARR is the rate of return that the investor could get when investing in other investments. If the investment is high risk, the investor will set the MARR higher than in low-risk investments. By investing in a high risk investment, it is reasonable for the investor to expect higher return. The MARR is then used for discounting the cash flow over the given period. To calculate the NPV the following formula is used [9]:

$$NPV(r) = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} \tag{1}$$

Where

T is the number of years,

r is the discounting rate (MARR) *and*

C_t is the cash flow during the period t.

The results from the NPV calculations are then examined and if

NPV(r)<0; reject the investment project

NPV(r)=0; remain indifferent to the investment

NPV(r)>0; accept the investment project

2.1.2 Internal Rate of Return

The Internal Rate of Return (IRR) is calculated to find if the investment is acceptable. The internal rate of return can be used to compare the financial strength for various investments.

IRR is the discounting rate when the NPV is set to zero. When the investment is discounted the

IRR shows when the NPV is zero.

To calculate the IRR following formula is used [9]:

$$NPV(r^*) = \sum_{t=1}^{T} \frac{C_t}{(1+r^*)^t} = 0 \quad (2)$$

Where

T is the number of years,

*r** is the Internal rate of return (IRR) *and*

C_t is the cash flow during the period *t.*

The result from the IRR calculations are then examined and if

IRR > MARR; accept in the investment project

IRR = MARR; remain indifferent to the investment

IRR < MARR; reject the investment project

2.1.3 External Rate of Return

The External Rate of Return which is also called; the Modified Internal Rate of Return (MIRR) are calculated to find if the investment is acceptable or not. The difference between MIRR and IRR is that IRR always assumes that the reinvestment rate is the same as the calculated IRR at the end of the project life cycle. The MIRR assumes that the reinvestment rate is fixed by the user. In that case, the reinvestment rate is estimated in a more conservative way, and often the MARR is used as the reinvestment rate when calculating MIRR. In the past the IRR has been more commonly used than the MIRR. The reason for that could be that IRR is a method that has been used for long time but the, MIRR is a more recent method. [12] The results from MIRR calculations are then examined the same as results from IRR in chapter 2.1.2

2.2 The Financial Assessment Model

The structure of the financial assessment model was developed by Páll Jensson professor at Reykjavik University [13]. The model was developed with investment in small and middle scale industries in mind. This model has been used in feasibility studies in Iceland as well as other countries.

The model is built on given assumptions, data from Isavia, Islandshotel and other variables. The time unit used is a year. The main components of the model are shown in Figure 3.

Each component is implemented in a separate Excel sheet in the same workbook. The sheets are an assumptions summary, investment and financing, operation, cash flow, balance sheet, profitability and charts. A detailed description of each sheet is in chapter 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6 and 2.2.7 below and the sheets can be viewed in Appendix 1 [13].

Isavia assumes that the construction and investment takes 2 years. After that, the operational lifetime is 20 years. The results for 10 years (short-term) and then 20 years (long-term) will be calculated, for all the cases.

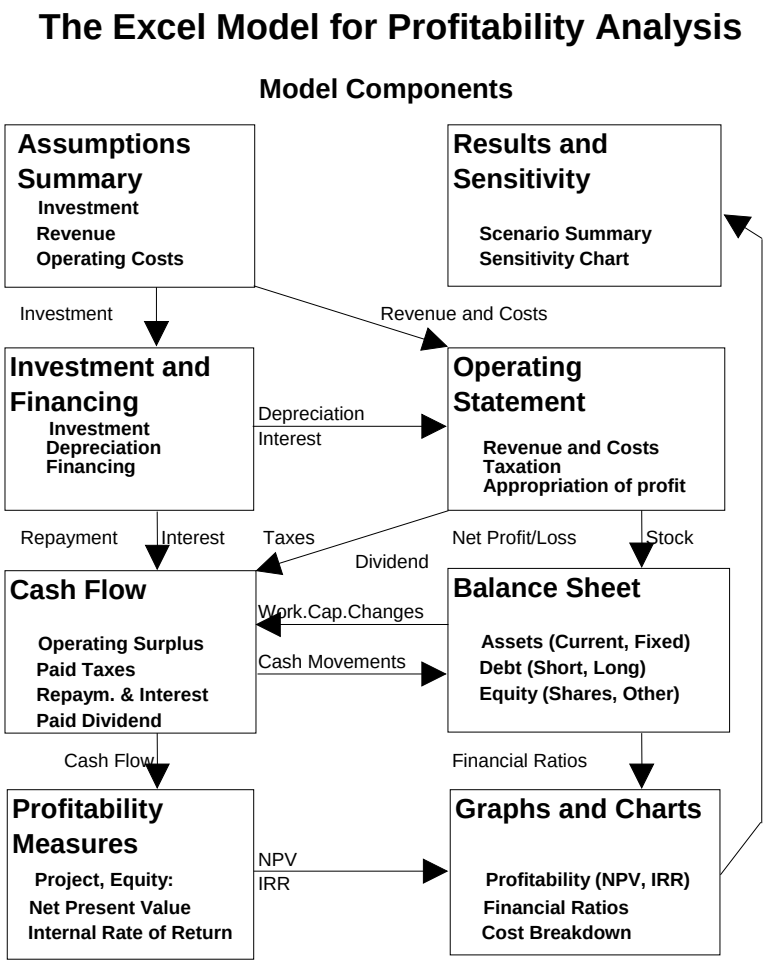


Figure 3 The main components and relationships between them in the financial assessment model [13].

2.2.1 Assumptions Summary

All the assumptions for following calculations are in this excel sheet. The financial cost, the estimated revenue and operational cost, depreciation of the investments, the proportion between equity and loan, interests of loan, loan management fees and loan repayment period are displayed on this sheet. The discount rate (MARR) for the equity and the discount rate for the total investment are displayed on this sheet.

The main results are displayed on this sheet both for 10 years and for 20 years. The main results are from the profitability sheet, described below in chapter 2.2.6. The net present value (NPV) and internal rate of return (IRR) for the investment (i.e. both total capital and equity that are used for comparison) are also shown in this sheet.

The color coding is for the user to determine whether a variable is typed in the model, or if it is a calculated variable. All the assumption variables are blue color coded, and the results from another sheet are yellow. A description of all the assumptions made in this sheet for revenue, investment cost, and long-term prediction can be found in Chapter 3.

2.2.2 Investment and Financing

This sheet shows the breakdown of the investment and demonstrates how much is estimated in buildings, equipment and design investments. The investments are depreciated each year with respect to the initial value of the investment, and that will be used to calculate the income taxes.

This sheet also shows the financing, that is how high loan is required with respect to equity. The repayment of the loan is calculated for the time period. The principal is calculated for each time period by subtracting the repayment from last year's principal, and finally the interest for each time period is calculated with respect to last year principal.

2.2.3 Operation Statement

This sheet shows the EBIDTA (operating surplus), EBIT (operating gain/loss), EBT (profit before tax), profit after tax and net profit/loss. The revenue and operating cost is used to find the EBIDTA (i.e. the difference between the revenue and operation cost).

The taxable profit is calculated. First the loss transfer is found by choosing all years where the EBT is negative. Taxable profit is calculated by adding the loss transfer to next year EBT. Then the profit after tax is calculated by subtracting the income tax from taxable profit. At the end, if Isavia decides to pay dividends the net profit/loss is calculated by subtracting paid dividend from the profit after tax. The calculated Net Profit/Loss is added to the profit and loss balance on the balance sheet, described in the chapter 2.2.5.

2.2.4 Cash Flow

In this sheet the cash flow is calculated. The operating surplus (EBIDTA) is used to calculate the cash flow before tax. First the debtor changes are found by subtracting the last year outstanding receivables from this year outstanding receivable. The outstanding receivable is calculated on the balance sheet as debtors.

Then the cash flow before tax is found by subtracting the debtor changes from the operating surplus from the operating sheet.

Cash flow after tax is then found by subtracting paid taxes from the year before from cash flow before tax.

The net cash flow is found by subtracting repayments of loans and interest from the cash flow after tax. Sometimes the net cash flow is referred to the free cash flow, but this study refers to net cash flow.

To find the total cash movement, working capitals is added to the net cash flow and then subtract the paid dividend.

The source and allocation of funds in the balance sheet summarizes the key components from the model to perform an error check for the model.

2.2.5 Balance

On the balance sheet figures are gathered from the investment, operation and cash flow sheets. These figures are used to calculate year by year, the current assets, total asset, current liabilities, total debt, total capital and debts and capital.

This sheet is used as verification tool for error check, the difference between total assets and debts and capital shall be zero for the verification. If the difference between these two variables is not zero, there is an error in the model.

2.2.6 Profitability

This sheet calculates the net present value, internal rate of return and external rate of return of the total cash flow and capital on one hand and the net cash flow and equity on the other hand. That shows for each year if the investment is profitable and when the investment starts to return profit. The financial ratios are calculated on this sheet and were described above in chapter **Error! Reference source not found.**.

2.2.7 Charts

Is a sheet were some of the parameters are viewed in graphs like the accumulated NPV, Internal rate of return, external rate of return, cash flow and ratios for the time period for the investment.

These graphs can be helpful when reading the results and to explain what is happening throughout the life cycle of the investment.

2.3 Risk Analysis

The results from the financial assessment are considered to be the most likely results. There are more scenarios that are valuable for the investor to evaluate to see what happens under different circumstances. In that case a risk analysis is a powerful tool helping the investor to increase the probability of success [14]. Many various methods can be used in risk analysis, i.e. scenario analysis, sensitivity analysis, simulation etc.

In this thesis, sensitivity analysis and scenario analysis will be used. The variables that have the most impact on the results of the model were found using the sensitivity analysis on model. After that a scenario analysis is used to see what happens in best case scenarios and worst case scenarios in the model (i.e. an optimistic scenario and a pessimistic scenario is created). To estimate the scenarios, the ±20% viability in the long-term prediction Isavia has made will be used [4]. This refers to every cost or revenues used except for the investment where -10% is for optimistic and +20% is for the pessimistic. The estimation for investment cost was found from the price range of the investment Islandshotel assumed.

3 Assumptions for Operational Cost and Revenue

When predicting the future operating cost and revenue, Islandshotel did estimate the figures for 2019 that is assumed to be the first operating year. To see if an increase of passengers through Keflavik airport [4], affects utilization of hotel rooms in Reykjanes [15], it was decided to find if there were correlations between those two variables, numbers of passengers and utilization of hotel rooms in the past. The following correlation function was used to calculate this [16]

$$Correl(X,Y) = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}} \quad (3)$$

Where

x is the annual average utilization of hotel rooms in Reykjanes,

$\bar{x}$ is the sample average of utilization on hotel rooms in Reykjanes,

y is the number of passengers that travels through Keflavik airport and

$\bar{y}$ is the sample average of passengers that travels through Keflavik airport

The correlation between the two variables mentioned above is 96%. Because of the high correlation it was decided to use Isavia long-term prediction of passengers going through Keflavik airport, to predict the future variable cost and revenues [4]. Number of passengers going through Keflavik airport and utilization of hotel rooms can be seen in Figure 4.

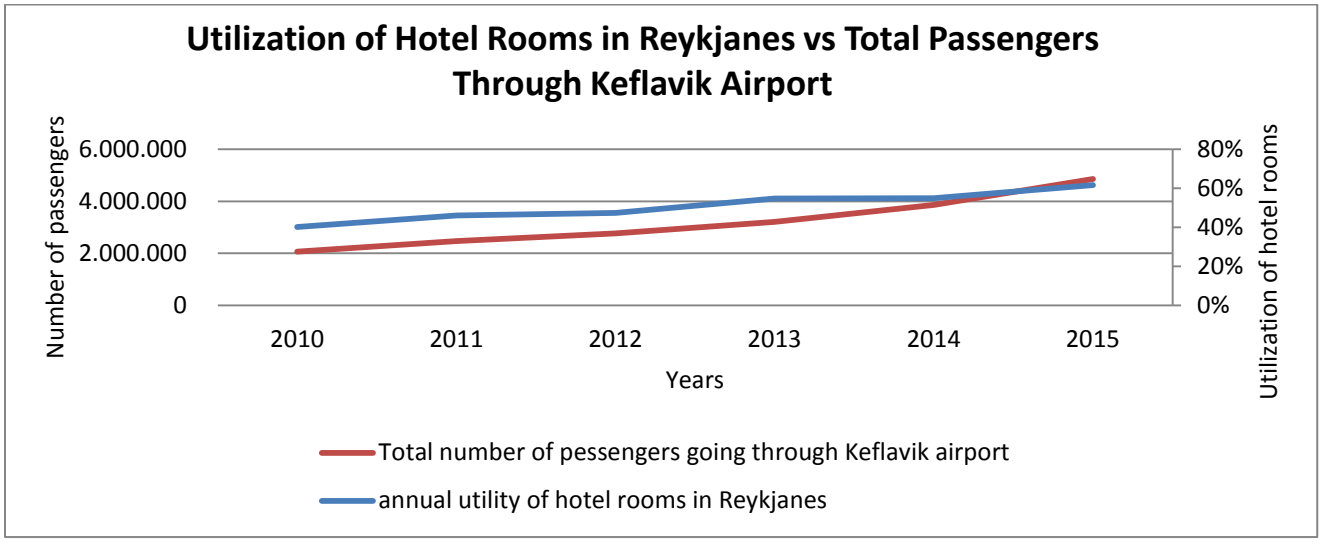


Figure 4 Total number of passengers travelling through Keflavik airport and annual utilization of hotel rooms in Reykjanes from 2010 to 2015 [4] [15].

In Figure 4 we can see how the two lines for these two different variables behave similar and that explains the high correlation. For this matter it was assumed that if passengers travelling through Keflavik airport increases, the utilization of the airport hotel will increase at the same time.

Cost of operating

Cost of operating is divided to two, the variable operating cost and fixed cost case 1 and 2. In case 3 there is no cost for Isavia since the contractor rents the land. When operating cost was predicted, Islandshotel did a business plan, for a four star hotel, with 200 rooms, in Keflavík for the first operating year 2019. They used information and knowledge from their hotel business to predict the operating cost for this hotel. They assumed in the business plan, that the operators were renting the building. Since Isavia is the owner of the building both in case 1 and 2, a maintenance cost, real estate fee and cost of electricity and heat was predicted by the author of this thesis, instead of using the predicted rent from the business plan. These variables will be explained later in this chapter.

The cost was divided into two groups for case 1, fixed cost and operating cost. Case 2 has fixed cost that can be seen in Table 1

Table 1 Coat of operating, divided into two groups, operating cost, and fixed cost.

		Case1	Case 2
Operating cost	Salaries and related expenses	√	
	Cost of goods	√	
Fixed cost	House expenses	√	√
	Other operating cost	√	√
	Office and management cost	√	√

The predicted operating cost from the business plan made for 2019 was used in case 1. The operating cost was assumed to follow the long-term prediction Isavia made as mentioned earlier in this chapter, after the first operating year 2019. If Isavia predicts a 10% increase of passengers going through Keflavík aiport the operating cost in case 1 increases by 10%. Salaries get higher due to an increase in staff when the hotel gets busier. The same goes for the goods. More guests contribute to better sales of drinks and food that leads to higher cost of goods. Fixed cost is used in both case 1 and 2. This is cost that is assumed to be the same every year. These cost

components are not the same for every case. In Appendix 2, further breakdown of the operating cost can be seen as well as the numbers for case 1 and 2.

Like mentioned before, Islandshotel predicted most of the operating cost. Three components were estimated by the author; a) maintenance cost, b) real estate fee and c) cost of electricity and heating. The real estate fee was estimated by looking at Grand hotel in Reykjavik [17] which is a similar sized hotel, and it was assumed that the real estate valuation would be the same for this hotel. Then the real estate fee was calculated according to real estate fees in Sandgerdi [18] see numbers in Figure 24 and Figure 25 in Appendix 2.

For electricity and heat the author used a known amount for apartments of 112 m^2 were a family of four lives in Reykjavík. The size of the apartment is around 1,1% of the hotel size. With this known number, the price per m^2 was found and was around 135 ISK. It was assumed that it would be two times more use of electricity and heat in the hotel compared to the use in this apartment. Therefore the price per m^2 was doubled, so for the hotel it is 273 ISK per m^2. The price per m^2 was then multiplied by the size of the hotel 10.000 m^2 that is equal to 2.730.000 ISK per month for the hotel. Price per month was then multiplied by 12 months that is equal to 33 MISK for heat and electricity per year.

The maintenance cost was estimated by using booked value of the investment for the eighth year of operating up to 2038. Islandshotel assumed that the maintenance cost would be 3% of the booked value of the investment approx. As the building is new, it is assumed that the first 7 years will be characterized by minor maintenance cost. Total maintenance cost for 13 years is around 666 million ISK, that number was then divided with the number of operating years (20), and from there, it was found that the maintenance cost would be around 33 million ISK on average per operating year.

3.1 Revenues

Revenues were predicted for every case see Table 2.

Table 2 Overview of revenue types for each case.

	Case 1	Case 2	Case 3
Total revenue	√		
Revenue from rent		√	√
revenue related rent		√	√

For case 1 Islandshotel predicted total revenues for 2019. There are many parameters taken into consideration to predict the total revenue for case 1. In Figure 31 in Appendix 3 we see how the revenues are estimated. Revenues are connected to the long-term prediction from Isavia in case 1, the reason for that is the correlation described earlier. So if Isavia predicts a 6% increase for passengers going through Keflavik airport, we assume that the total revenues in case 1 will get 6% higher.

Revenues in case 2 are the rent that the operator pays to Isavia. The rent is twofold; a) fixed rent and 2) revenue related rent. The revenue related rent is a fixed proportion of revenue from the operator minus the fixed rent. For example, if the operator has revenues of 100 million ISK, the fixed rent is 10 million ISK and the fixed percentage of operators revenue is 10%, then Isavia gets 10 million ISK, in rent and $revenue\ related\ rent = (100\ million - 10\ million) * 0{,}1 = 9\ million\ ISK$. In this example Isavia Revenues would be 10 million ISK in fixed rent plus 9 million ISK in revenue related rent that is 19 million ISK in total. When predicting the rent for case 2 assumptions in the business plan from Islandshotel was used as guidance. The model for case 1 was then conducted to the contractor in case 2 to see if the amount of the fixed rent and the revenue related rent would be realistic for the contractor based on the results from the model. From this it was decided for case 2 that the fixed rent would be 486 million ISK per year and the fixed rent proportion would be 10% of revenues after fixed rent.

Revenues in case 3 are the rent that the operator pays to Isavia for the land. The rent was divided to fixed rent and revenue related rent. To estimate the fixed rent and revenue related rent the tariff of Sangerdisbaer was used as guidance [18]. The model from Case 1 was conducted to the contractor to see if the estimated rent was realistic for the contractor based on results from the model. It was decided that the fixed rent would be 70 million ISK and the fixed percentage would be 5% per year for case 3.

3.2 Investment Cost

Islandshotel helped predict the investment cost for the hotel based on their knowledge. The hotel has 200 rooms and is 10,000m^2. Investment cost is divided into building, equipment and design, see Table 3

Table 3 The price per unit for the investment.

	Cost per unit	
Investment	Price	Unit
Building	380.000	per m^2
Equipment	1.800.000	per room
Design	250.000.000	per investment

In Table 3 is the Investment cost divided into three parts. They have different units. Building is per m^2, equipment is per room (includes all equipment needed for the hotel) and design cost is per investment. Total investment cost for case 1 can been seen in

Table 4

Table 4 Total investment cost for Isavia in case 1, building, equipment and design.

Investment	Price	Currency
Building	3.800.000.000	ISK
Equipment	360.000.000	ISK
Design	250.000.000	ISK
Total Investment cost	4.410.000.000	ISK

The investment cost for Isavia in case 1 was predicted to be 4.410.000.000 ISK. The investment cost is divided in to three parts, building, equipment and design, the amount for every part can be seen in the Table 4. In Table 5 is the investment cost for Isavia in case 2.

Table 5 Total investment cost for Isavia in case 2, buildings and design.

Investment	Price	Currency
Building	3.800.000.000	ISK
Equipment	0	ISK
Design	250.000,000	ISK
Total Investment cost	4.050.000.000	ISK

For case 2, the investment cost for Isavia is divided into building cost and design cost.

Equipment cost will be handled by the operator. Total investment cost in case 2 for Isavia is predicted to be 4.050.000.000 ISK. In Table 6 is investment cost for Isavia in case 3 can be seen.

Table 6 Total investment cost for Isavia in case 3, design.

Investment	Price	Currency
Building	0	ISK
Equipment	0	ISK
Design	250.000.000	ISK
Total Investment cost	250.000.000	ISK

For case 3, the investment cost for Isavia is the design cost. In this case, Isavia rents the land, and therefore, it is the operator that builds and buys the equipment. The total investment cost for Isavia in case 3 is estimated to be 250.000.000 ISK for the design.

3.3 Other Assumptions

There are other variables in the model. Isavia gave information about some of them, others are built on Icelandic laws and regulations. An overview of the financing of the investments based on different cases is given in Table 7.

Table 7 An overview of how the investments are financed, in each case.

	Equity [%]	Loan [%]	Interests [%]	Loan and management fee [%]	Repayment period for loan [years]
Case 1	70	30	7	0,2	20
Case 2	70	30	7	0,2	20
Case 3	100				

Table 7 gives an overview of how an investment in each case is financed. Case 1 and 2 is financed by 70% equity and 30% loans, these proportions were decided by Isavia. The loan payment terms for case 1 and 2 can be seen, loan has an interest of 7%, the loan and management fee is 0,2% and the loan repayment period will be 20 years. The information about loan payment terms came from Isavia. In case 3, the investment is the design cost and that will be financed

100% in equity.

It is assumed by Isavia that the construction time will be around 2 years. The minimum acceptable rate of return (MARR) that Isavia usually uses is 7,2 % except for the shopping area that has 9,1%. 7,2% will be used for minimum acceptable rate of return for total capital in this study and 10% for the equity. Depreciation is according to common methods in Iceland, buildings are depreciated by 4% per year, equipment is depreciated by 15% per year down to 10% of its original value, and design is depreciated by 20% per year. Debtors changes are 8,33%, that is 1/12=0,0833. In case 1, these are the bills that customers pays with credit cards and the operator receives the money month later so at the end of the years they have one month outstanding. For case 2 and 3 the revenue related rent is paid afterwards. Income taxes are 20% according to Icelandic laws. [19]

4 Results

Net Present Value (NPV), Internal Rate of Return (IRR) and External Rate of Return (MIRR) for both total capital and equity will be used to evaluate and compare the results of the financial assessment. First case 1 will be analysed followed by case 2 and case 3. After that, risk analysis for every case will be evaluated. In the end, NPV and MIRR for all three cases will be compared as well as risk analysis result. It was decided to use the MIRR since the MIRR is considered to be more conservative than the IRR. [12]

4.1 Case 1

This case assumes that Isavia designs, builds, operates and owns the hotel in case 1. Results for case 1 can be seen in

Table 8.

Table 8 Results from Case 1 for 10 years and 20 years of operating.

Case 1

10 years	Total Cap.	Equity	**20 years**	Total Cap.	Equity
NPV of Cash Flow	-729	-630	NPV of Cash Flow	1.806	851
Internal Rate	3,9%	5,7%	Internal Rate	11,3%	13,0%
MIRR	5,4%	7,7%	MIRR	9,0%	11,3%

Figures for NPV of cash flow are all in millions ISK. The first 10 years are not profitable, results show negative values for NPV and the minimum acceptable rate of return for total capital and equity have not reached their predefined limits. Results for 20 years show better IRR and MIRR for both equity and total capital, they are closer to reaching the predefined MARR. The investment has paid off, NPV of equity is 851 million ISK. These results show that the investment is profitable after 20 years of operation. To see the accumulated NPV for case 1 see Figure 5.

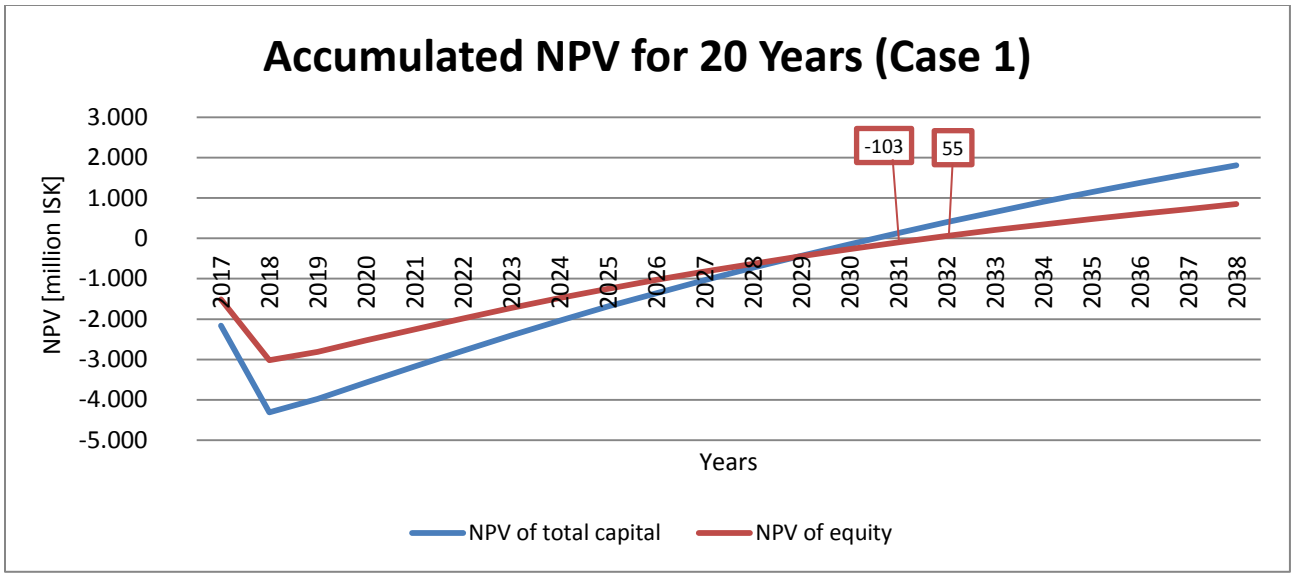


Figure 5 The NPV for case 1 total capital and equity for 20 years in million ISK.

Figure 5 shows the accumulated NPV for the total capital and equity for case 1. The first 2 years show the construction period and after that there are 20 years of operation. When looking at the curve for NPV of equity, it goes from being negative to positive around 2032, showing that the investment has started to gain profit in 2032. According to Figure 5, case 1 is profitable for the 20 years horizon, but not for the 10 years horizon. The trend of the MIRR both for total capital end equity can be seen in Figure 6.

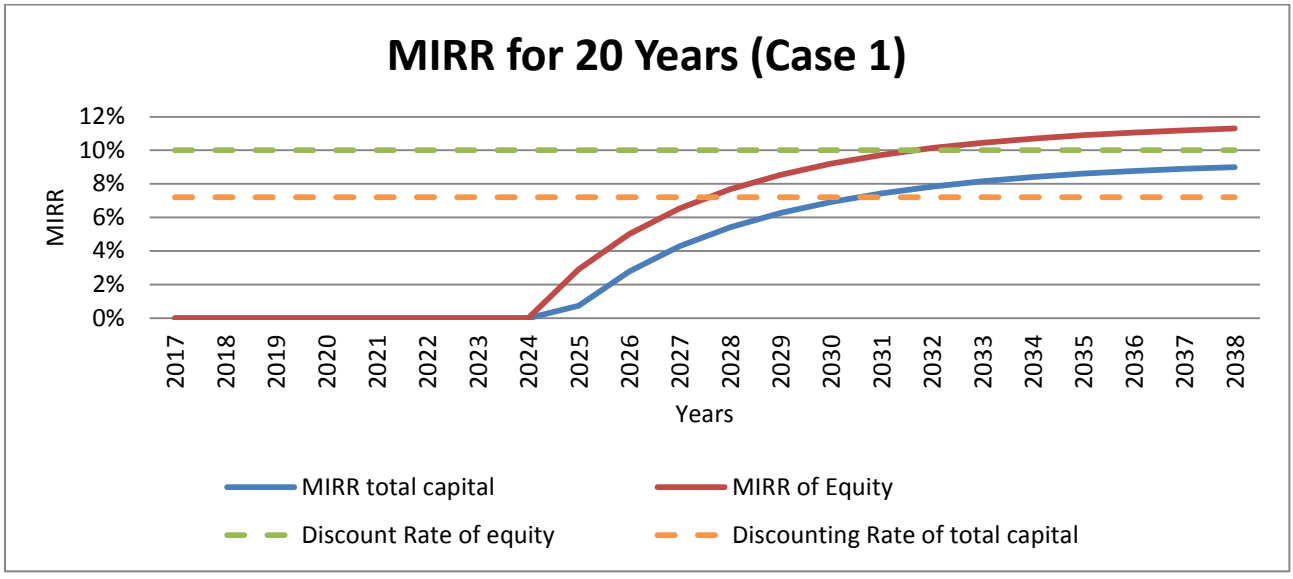


Figure 6 The trend for the MIRR in case 1 both for total capital and equity for 20 years.

Figure 6 shows how the MIRR increases from 2017 to 2038. MIRR of equity shows if the

investment has returned the money spent on the investment. Around 2032 the line for MIRR of equity reaches the minimum acceptable rate of return for equity (MARR) which is 10%. The MIRR keeps increasing after that. In Figure 6 the MIRR for total capital can be seen and the MARR for total capital too. The trend of the MIRR in Figure 6 indicates that the investment is profitable and meets investor's requirements after 2032 for equity.

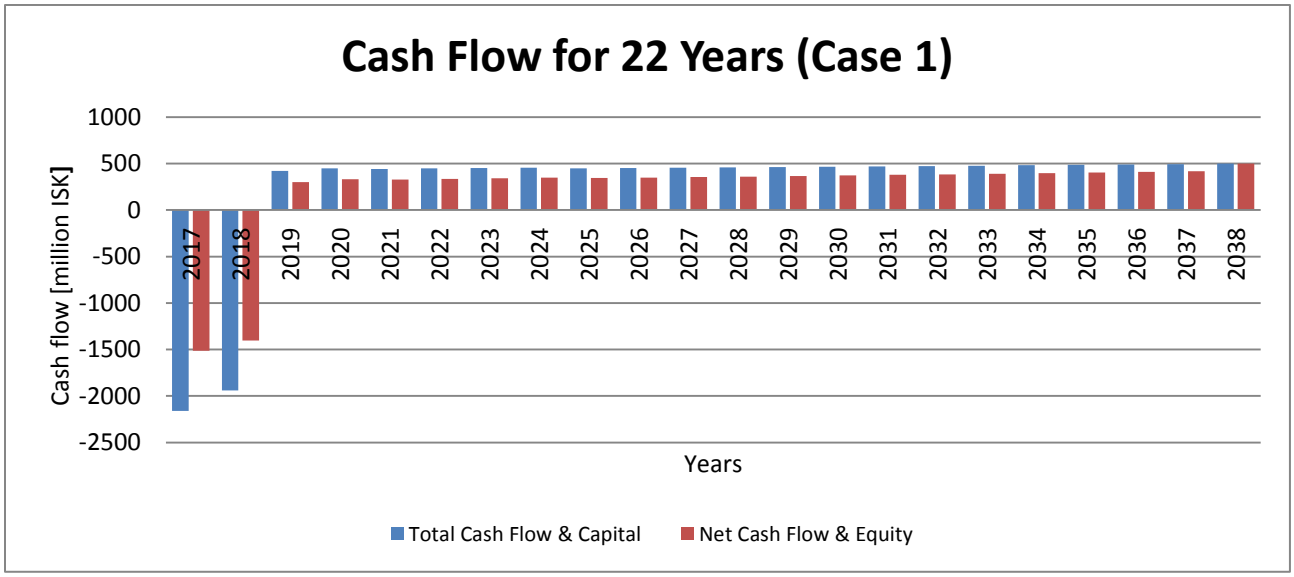


Figure 7 The "total cash flow & capital" and "net cash flow & equity" for 22 years in million ISK for case 1.

Figure 7 shows "total cash flow & capital" and "net cash flow & equity". The first two years are the construction period. In that time period there is only cash outflow. The first operating year is 2019. By that year cash stars to flow in from revenues, of sold rooms and other services, and from that time the cash flow is positive.

Table 8, Figure 5, Figure 6 and Figure 7, show that this investment is profitable, for 20 years of operation. In that time period the investor's requirement like MARR of equity (10%) and capital (7,2%) have been reached. For case 1 the investment is not profitable for short-term horizon (10 years), but it is profitable for long-term horizon (20 years). At the year of 2032 the investment starts to gain profit.

4.2 Case 2

Isavia designs, builds and owns the hotel in case 2. The operation of the hotel will be outsourced to a contractor for 10 to 20 years where the contractors pays rent to Isavia, the rent will be two

fold; a) fixed rent every month (486 MISK per year) and b) revenue related rent with fixed proportion (10%) of the revenues after the fixed rent each month. Results for case 2 can be seen in

Table 9 Results from Case 2 for 10 years and 20 years of operating.

Case 2

10 years	Total Cap.	Equity	**20 years**	Total Cap.	Equity
NPV of Cash Flow	-1.075	-918	NPV of Cash Flow	471	-70
Internal Rate	1,5%	2,5%	Internal Rate	8,6%	9,7%
MIRR	4,2%	6,1%	MIRR	7,8%	9,9%

Results for case 2, the first 10 years of operation and 20 years of operation are in Table 9. Figures for NPV of cash flow are all in millions ISK. The First 10 years are not profitable. The NPV is negative, and the MARR for total capital (7.2%) and equity (10%) have not reached the predefined limits. 20 years give a better result than 10 years, but they have not reached Isavia´s requirements. There is still a negative value for NPV of Equity. The IRR of equity and MIRR of equity have not reached the MARR limit. According to these results, the investment is not profitable for the first 10 or 20 years based on the assumptions for case 2.

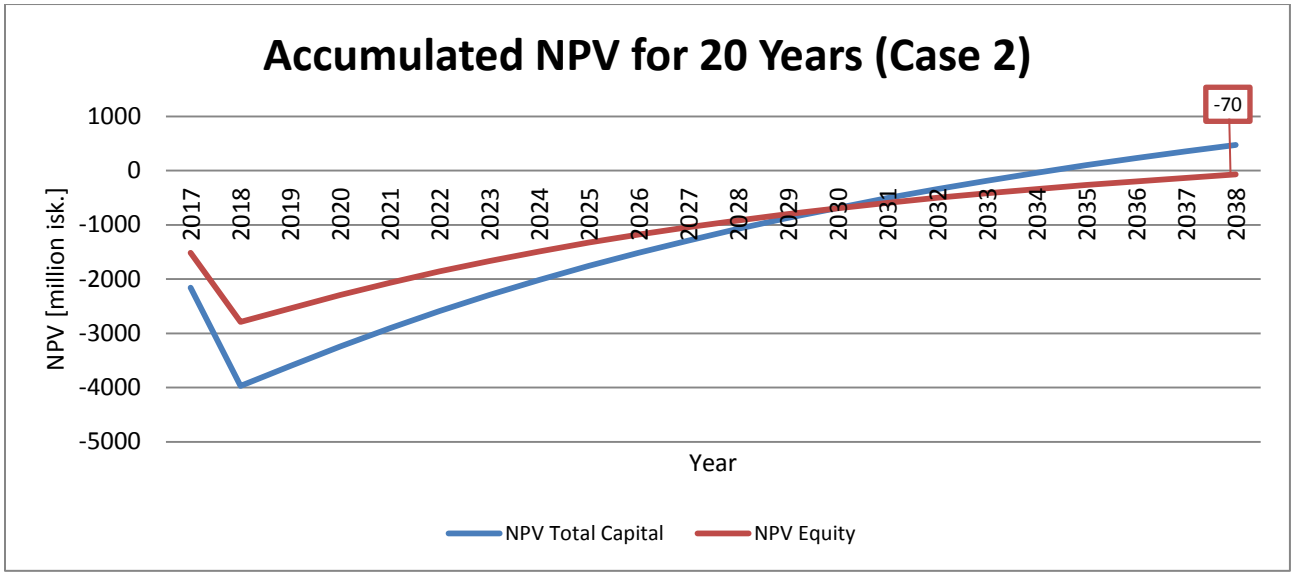


Figure 8 The NPV for case 2, total capital and equity for 22 years in million ISK.

Figure 8 shows the accumulated NPV of total capital and equity for case 2. The first 2 years show the construction period and after that there are 20 years of operation. Looking at the curve

for NPV of equity, the highest value is -70 MISK. That shows that the investment is not profitable for this time period. From this we can assume that Isavia has to rent out the building and the business for longer than 20 years so the investment in case 2 turns to be profitable.

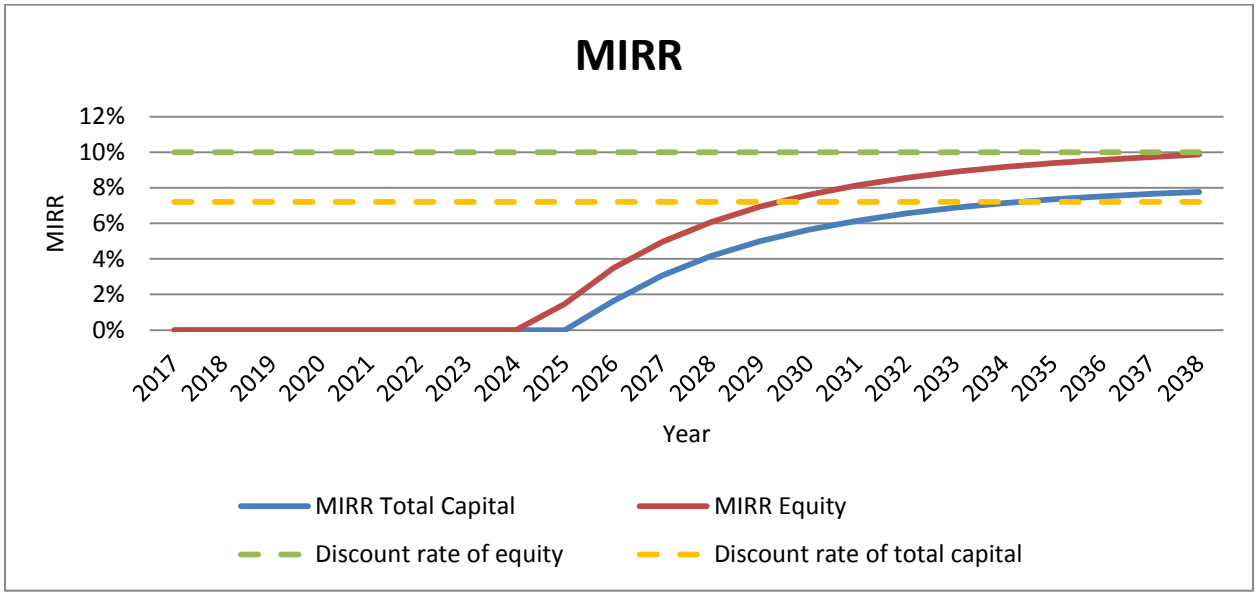


Figure 9 The MIRR in case 2 both for total capital and equity for 20 years.

Figure 9 shows how MIRR increases from 2017 to 2038. MIRR of equity reaches the predefined discount rate (MARR) of equity (10%) in 2038. Through the years the MIRR is increasing and on the twentieth year of operation the MIRR has reached the MARR. That means that Isavia must rent the building and the hotel business for at least 20 years to reach Isavia´s requirements of MARR of equity 10%. The cash flow in case 2 can be seen in Figure 10.

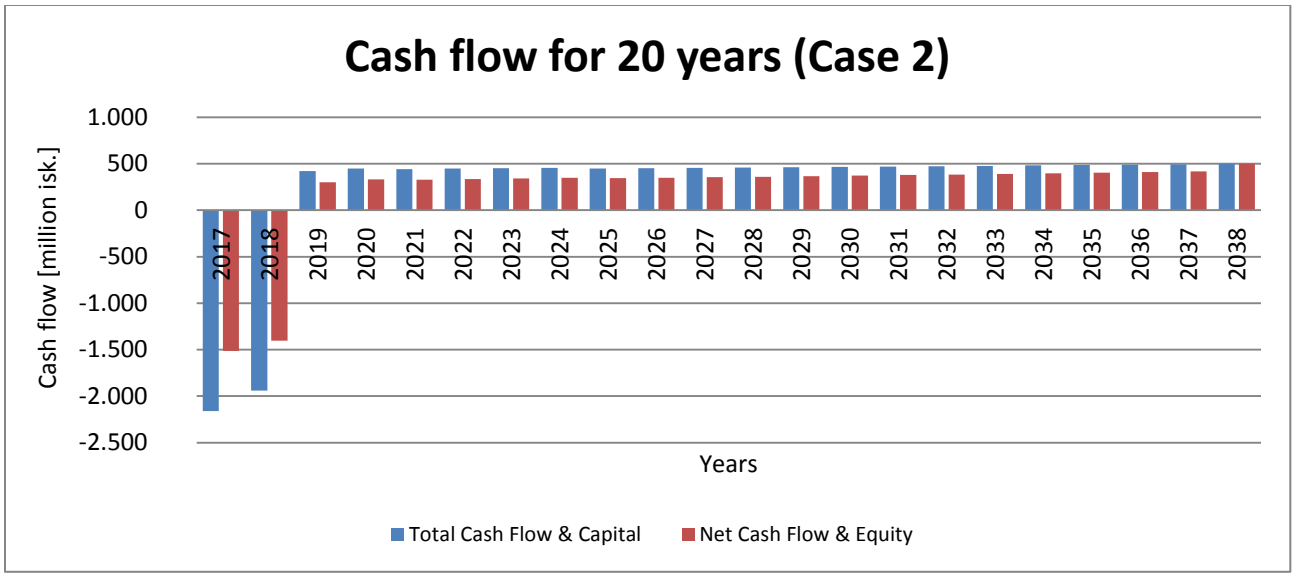


Figure 10 "The total cash flow & capital" and "the net cash flow & equity" for 22 years in million ISK for case 2.

Figure 10 shows "total cash flow & capital" and "net cash flow & equity". The first two years show the construction period. During that time period is only cash outflow, and the cash flow is negative. The first operating year is 2019. By that year cash starts to flow in from rental revenues the operator pays to Isavia, from the year 2019 the cash flow is positive.

Figure 8, Figure 9 and Figure 10 show that the investment is not profitable for the first 10 years of operation, but for 20 years of operation the investment is getting close to being profitable. These results show that Isavia must rent the building and the hotel business to operator for more than 20 years so the investment is profitable.

4.3 Case 3

Isavia designs the hotel building, and then they outsource the land to a contractor for 10 to 20 years in case 3. The contractor builds, operates and owns the hotel. The contractor pays two folded rent; a) fixed rent every month (70 MISK per year) and b) revenue related rent for the land to Isavia. The revenue related rent is a fixed proportion (5%) of the operator's revenue after the fixed cost has been subtracted from the revenues. Results for case 3 can be seen in Table 10.

Table 10 Results from Case 3 for 10 years and 20 years of operating.

Case 3

10 years	Total Cap.	Equity	20 years	Total Cap.	Equity
NPV of Cash Flow	501	394	NPV of Cash Flow	923	674
Internal Rate	32,1%	32,1%	Internal Rate	33,8%	33,8%
MIRR	18,3%	19,7%	MIRR	15,3%	17,0%

Results for case 3, for the first 10 years of opeation and 20 years of operation are in Table 10. All figures for NPV of cash flow are in million ISK. The first 10 years are profitable and 20 years of operation are also profitable. In both cases acceptable rates of return (MARR) have been reached for IRR and MIRR both for total capital (7,2%) and equity (10%). The NPV for total capital and equity is positive in both short-term and long-term periods. The investment in case 3 is profitable after 10 years of operation. To see the accumulated NPV for case 3 see Figure 11.

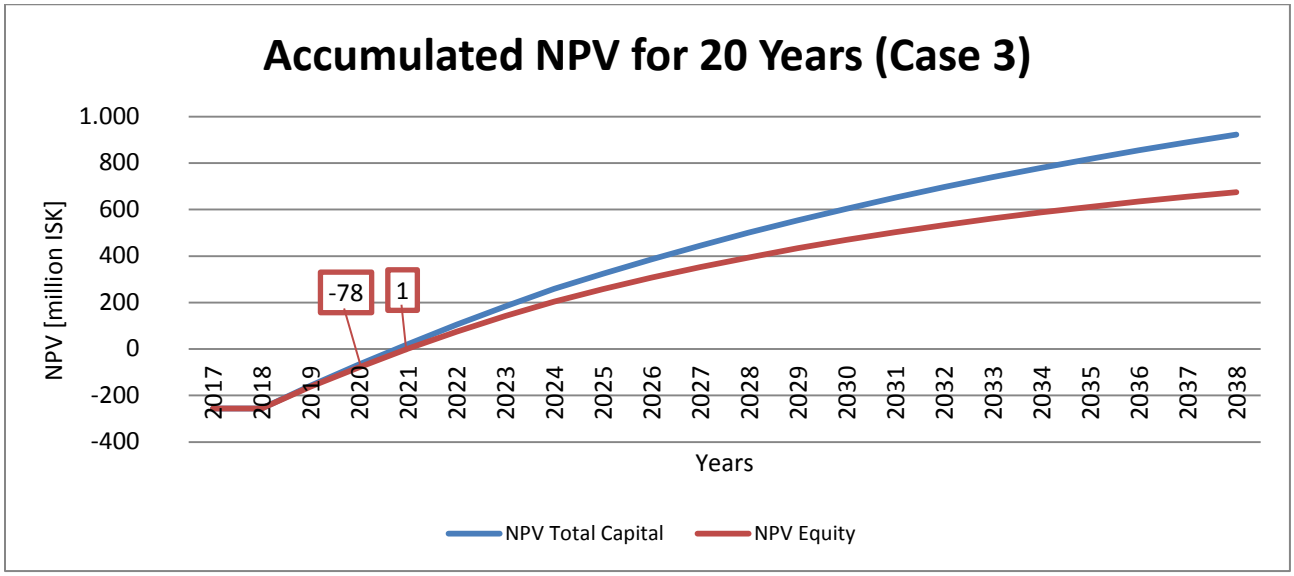


Figure 11 The NPV for case 3, total capital and equity for 22 years in million ISK.

The first 2 years is the construction period and after that there are 20 years of operation. Isavia pays for the design cost of 250 million ISK in 2017. Operation starts 2019 that is the first year Isavia gets the rent from the contractor who rents the land from Isavia. When looking at the curve for NPV of equity, it goes from being negative to positive in 2021, the investment has started to gain profit 2021. In case 3 the investment is profitable in both for short-term and long-term. The MIRR bot for total capital and equity can be seen in Figure 12.

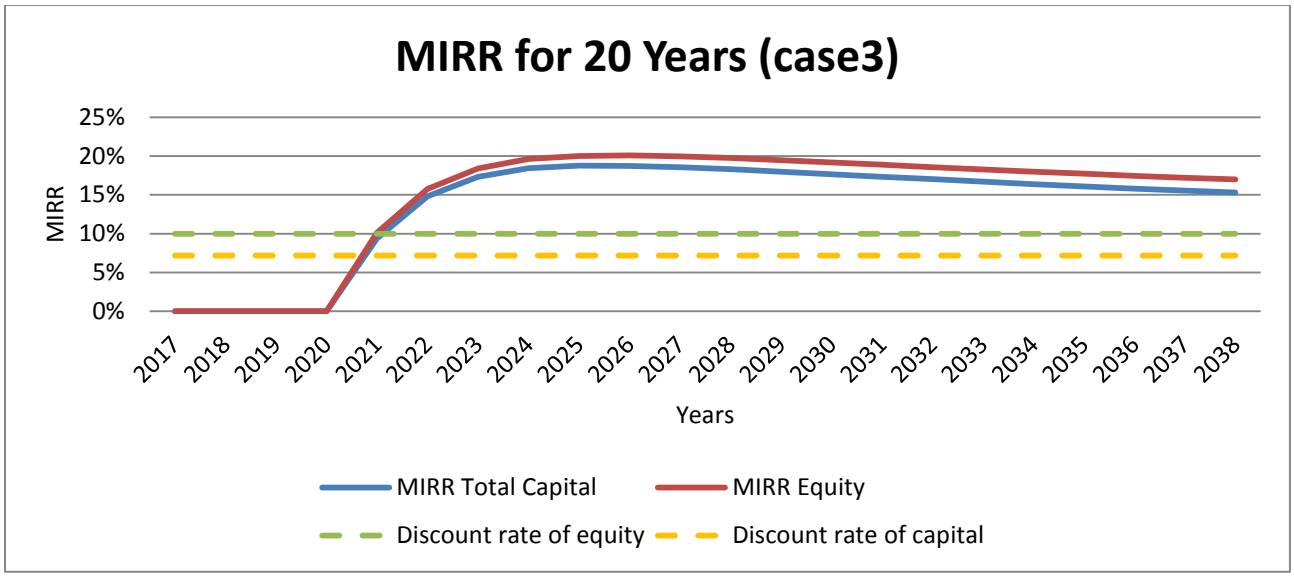


Figure 12 The trend for the MIRR in case 3 both for total capital and equity for 20 years.

MIRR of equity reaches the discount rate for equity (10%) in 2021. Since the investment in case 3 is profitable after 2021, case 3 is profitable both for short-term and long-term period. The cash flow in case 3 can be seen in Figure 13.

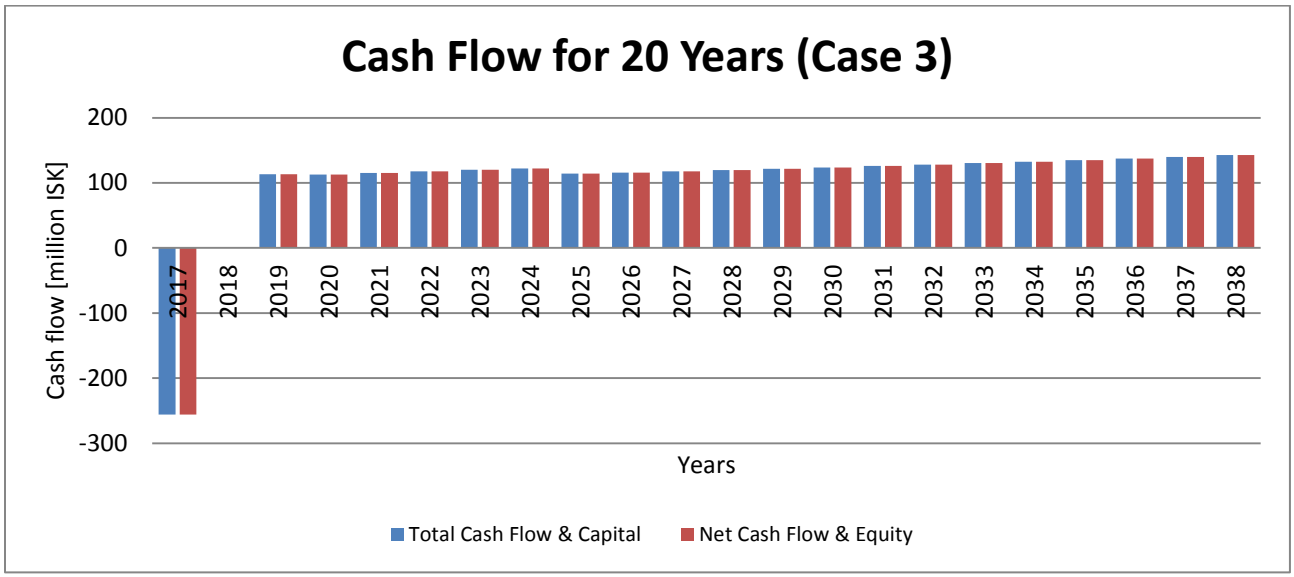


Figure 13 The total cash flow & total capital and the net cash flow & equity for 20 years in million ISK for case 3.

Figure 13 shows “total cash flow & capital” and “net cash flow & equity”. The first operating year is 2019. By that year cash starts to flow in from revenues that the contractor pays to Isavia. From the year 2019 the cash flow is positive.

Table 10, Figure 11, Figure 12 and Figure 13, show that this investment is profitable for both

long-term and short-term period. The investment in case 3 has reached Isavia´s requirement in the first 10 years.

4.4 Risk Analysis

Sensitivity analysis was used to study variables like revenues, investment cost, operating cost and revenues from operator to see which of them has the most impact on the result from the model in each case. By using sensitivity analysis it is possible to see one variable at a time, and the impact it has on the results from the model.

Using scenario analysis, on the same variables as in the sensitivity analysis, it is possible to look at more than one variable at a time. It shows how sensitive they are and the impact they have on the results from the model.

The two methods sensitivity analysis and scenario analysis were used in this study. The results for each case will be explained below with figures and tables in subchapter 4.4.1 and 4.4.2.

4.4.1 Sensitivity Analysis

Sensitivity analysis was used to show the impact certain variables would have on the results for NPV of equity and MIRR of equity in the model. It can be helpful for the investor to see what variables have the most impact on the model. To compare these variables in each case, the data was put into a graph to see the trend of the curve for each variable. The curve with the steepest gradient has the highest impact. The variables reviewed below for case 1, 2 and 3, are the long-term prediction from Isava, initial revenues and investment cost. For case 2 and 3 initial revenues from operator were also studied. The sensitivity coefficient used in all of the cases is 70%-130%.

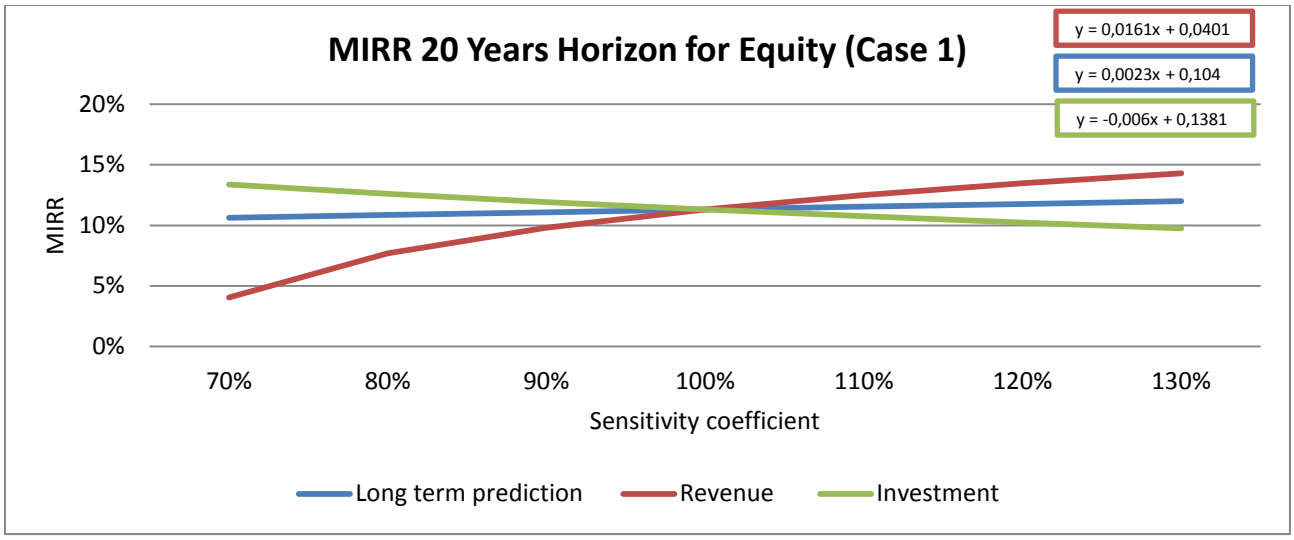


Figure 14 The trend of MIRR for the variables, long term prediction, revenue and investment, for case 1.

Figure 14 shows how the MIRR of equity for case 1 reacts to different values for these three variables as follows. Initial revenue is the variable that has the highest slope and therefor has the highest impact on the result for MIRR of equity in case 1. Investment is in the second place, and long term prediction has the lowest impact on the result for MIRR of equity in case 1. To see what impact the variables have on the MIRR of equity in case 2 see Figure 15

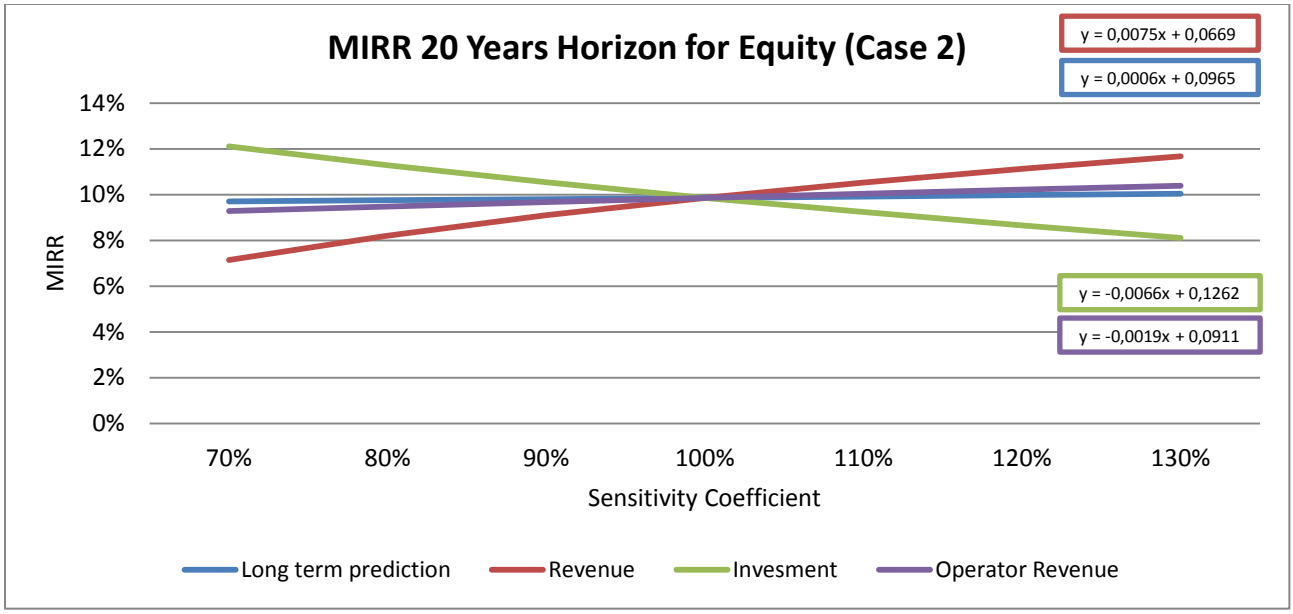


Figure 15 The trend of MIRR for the variables, long term prediction, revenue, investment and operator revenue, for case 2.

In Figure 15, two variables, initial revenue and investment, have the highest impact on the result for MIRR of equity. These variables have similar slope. Long term prediction and operator

revenue have lower slope and there for they have lower impact on the result for MIRR of equity. To see what impact the variables have on the MIRR of equity in case 3 see Figure 16.

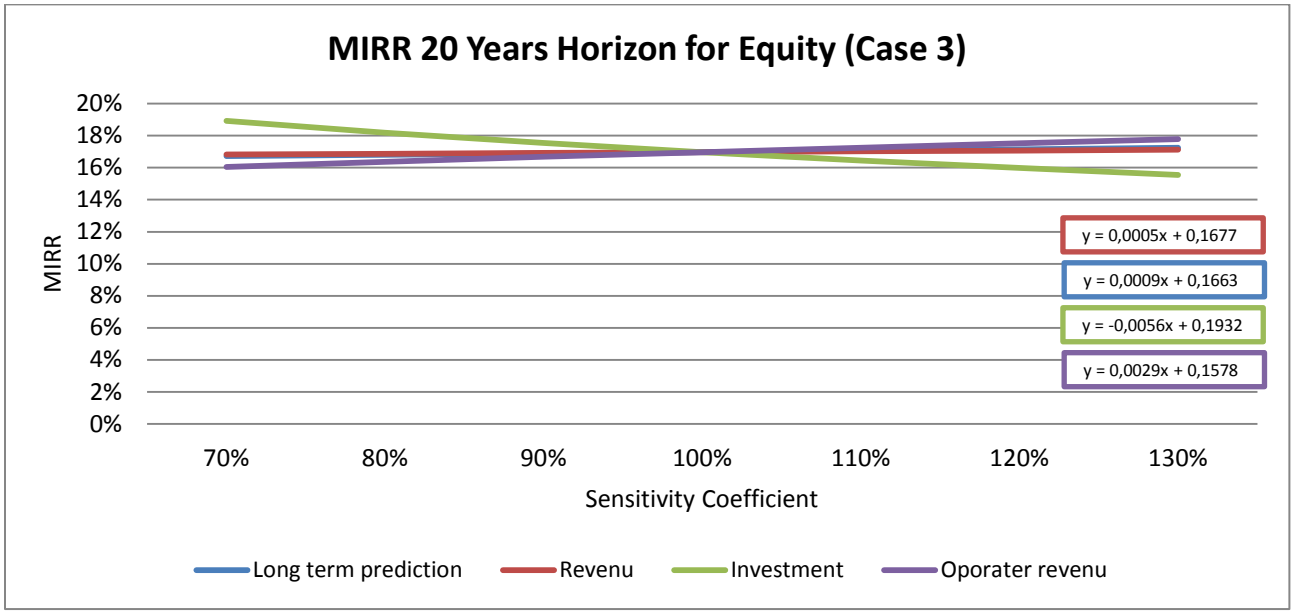


Figure 16 The trend of MIRR of equity for the variables, long term prediction, revenue, investment and operator revenue, for case 3.

Figure 16 shows that there are two variables that have higher impact on the MIRR than the others. These two variables are the investment cost with the highest slope and then it is operator revenue in second place. The others two are revenue and investment cost, they have almost the same slope that is very low and therefore they have low impact on the MIRR in case 3. To see the order of how much impact each variable have on the MIRR in every case see Table 11.

Table 11 The impact of variables on MIRR labeled for every case from 1-4.

Variable	Case 1	Case 2	Case 3
Revenue	**1**	**1**	**4**
Investment	**2**	**2**	**2**
Operator revenue	**x**	**3**	**1**
Long term prediction	**3**	**4**	**3**

Table 11 shows the variables labeled from 1-4, where 1 the variable that has the highest impact on the result of MIRR, in case 1, 2 or 3. In Table 11 we can see that initial revenue, is the variable that has the highest impact on the MIRR of equity both in case 1 and 2. In case 3

operator revenues was the variable that had the most impact of the result for MIRR of equity. Investment is the variable in second place in all of the cases.

Looking at these variables and how they affect MIRR of equity in each case, we see that case 3 has the lowest impact over all on the MIRR of equity because the variables in case 3 have on average lower slope than in case 1 and case 2.

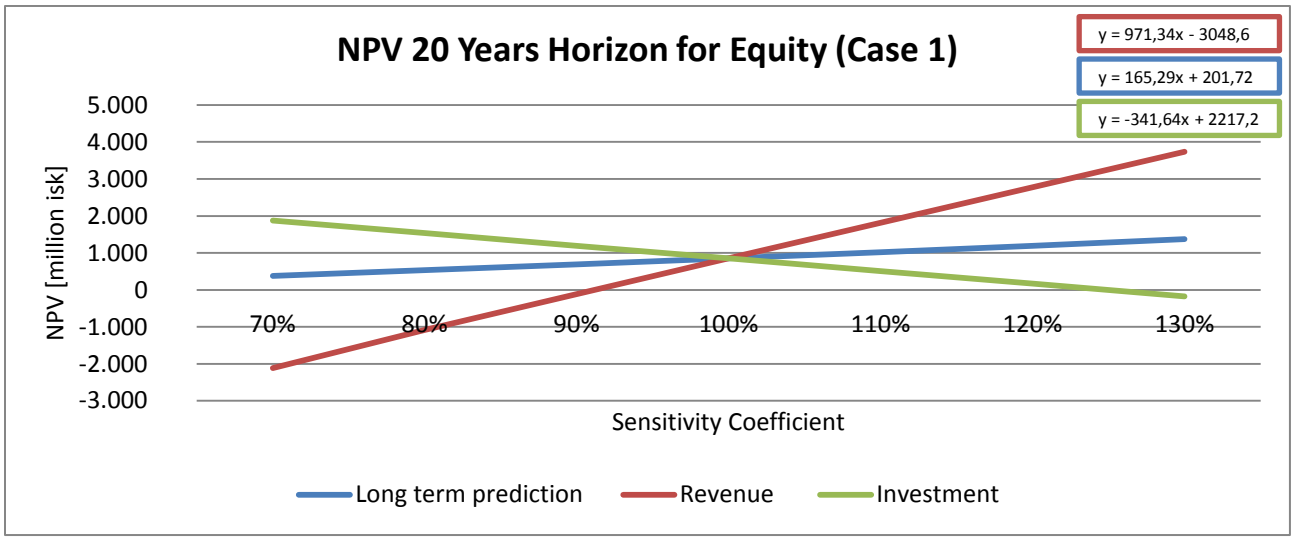


Figure 17 The impact on NPV of equity for the variables; long term prediction, initial revenues and investment, in case 1.

Figure 17 shows how the NPV of equity for case 1 reacts to different value of these three variables as follows. Initial revenue is the variable that has the highest slope and therefore has the highest impact on the results for NPV of equity in case 1. Investment is the second place. Long term prediction is the variable that has the lowest impact on the result for NPV of equity in case 1.

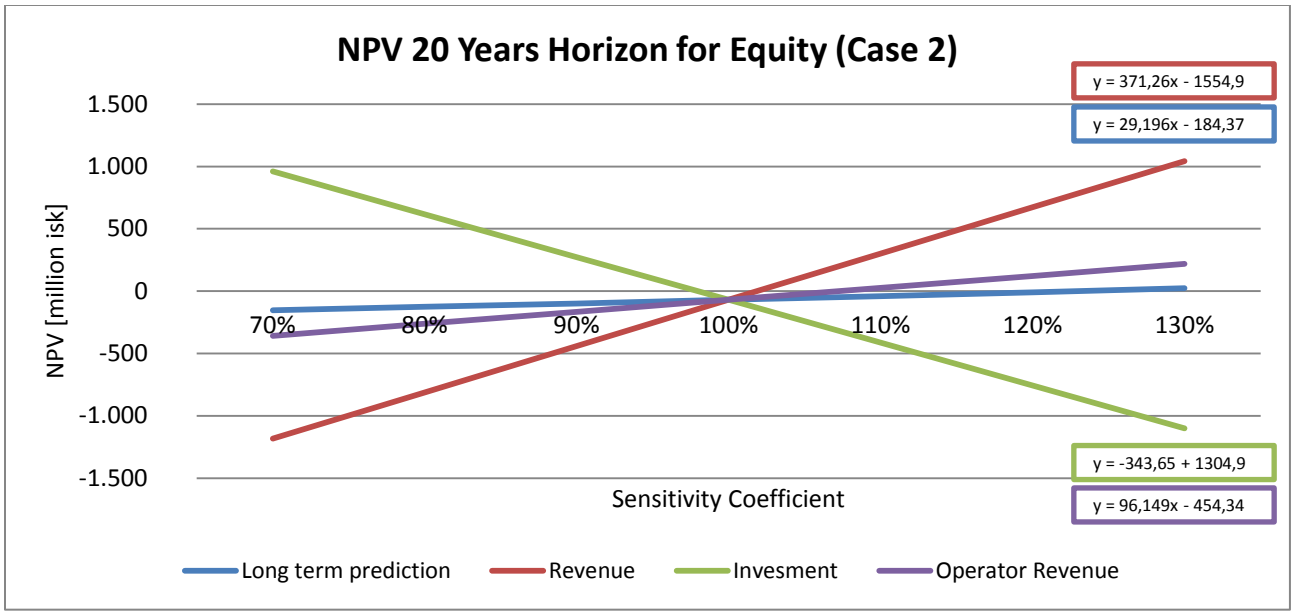


Figure 18 The trend of NPV of equity for the variables; long term prediction, initial revenues and investment, in case 2.

In Figure 18, two variables, initial revenue and investment, have both more impact on the result of NPV of equity than the others. These variables have a similar slope. Operator revenue and long term prediction have a lower slope and therefore the lowest impact on the result of NPV of equity. To see what impact the variables have on the NPV of equity in case 3 see Figure 19.

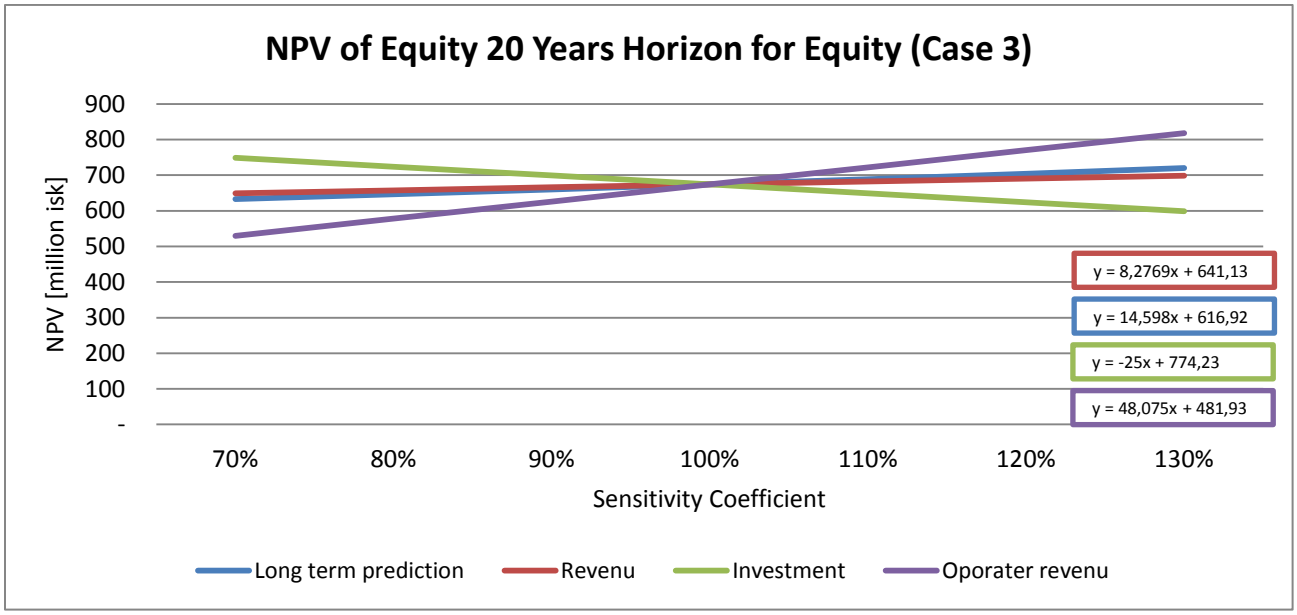


Figure 19 The trend of NPV of equity for the variables; long term prediction, initial revenues and investment, in case 3.

Figure 19 shows two variables that have the highest impact on the result for NPV of equity, these two variables are the Revenues from operator with the highest slope and the investment is in

second place. The other two are long-term prediction and initial revenue, they have almost the same slope that is very low and therefore they have the lowest impact of the result for NPV of equity in case 3. In Table 12 are all the variables for every case.

Table 12 The impact of variables on NPV labeled for every case from 1-4.

Variable	Case 1	Case 2	Case 3
Revenue	1	1	4
Investment	2	2	2
Operator revenue	3	3	1
Long term prediction	x	4	3

Table 12 shows the variables labeled from 1-4, where 1 is the variable that has the most impact on NPV of equity, in case 1, 2 and 3. In cases 1 and 2 initial revenues is the variable that has the most impact on the result of the NPV. In case 3, the operator initial revenue is the variable that has the most impact on the result for NPV of equity. Investment is the variable in second place for all of the cases. The variables that have the lowest impact on the result for NPV of equity for cases 1 and 2 are long-term prediction which is also the second lowest in case 3. The variable with the lowest impact in case 3 are the initial revenues.

Case 3 has the lowest impact on the result for NPV of equity over all, the variables in case 3 have on average lower slope than case 1 and 2, therefore case 3 has the lowest impact on the result for NPV of equity. Case 1 has on average the highest slope and therefor has the highest impact on the result for NPV of equity. Case 1 has the highest total investment cost for Isavia and case 3 has the lowest total investment cost for Isavia.

4.4.2 Scenario Analysis

When using scenario analysis it is possible to see how more than one variable affects the result. Scenario analysis was conducted on all the cases to see results for the optimistic and pessimistic predictions. The worst case scenario and best case scenario will be viewed. Total investment, long-term prediction and initial revenues are taken into consideration in the following tables. For the optimistic scenario it is assumed that total investment cost are 10% lower and long-term prediction and initial investment are 20% higher than the most likely value that was used in the financial assessment model. The pessimistic scenario for total investment cost is assumed to be

20% higher, long-term prediction and initial revenues are assumed to be 20% lower than the most likely values in the financial assessment model. The results from the financial assessment model are quoted as current values in the following tables, and they are the most likely values. In Table 13 we see the scenario analysis for case 1.

Table 13 The scenario analysis for case 1 optimistic, pessimistic and current values, for a 20 years horizon.

Scenario analysis case 1 for 20 years horizon			
	Current Values:	**Optimistic**	**Pessimistic**
Changing Cells:			
Total Investment	100%	90%	120%
Long term prediction	100%	120%	80%
Initial Revenue	100%	120%	80%
Result Cells:			
NPV Total Capital	1.806,2	5.143,2	-1.394,9
IRR Total Capital	11,3%	17,8%	3,7%
MIRR Total Capital	9,0%	11,4%	5,4%
NPV Equity	850,7	3578,9	-1982,5
IRR Equity	13,0%	22,0%	2,5%
MIRR Equity	11,3%	14,5%	5,9%

Changing these three variables has a huge impact on the results of NPV, IRR and MIRR both for optimistic and pessimistic prediction. After 20 years of operation the results from the financial assessment model, assumes that the investment in case 1 is profitable when using the most likely value. Results for the optimistic give us of course a better result than for the most likely. Results for the pessimistic gives that NPV for equity is negative -1.982,5 MISK, the MIRR of equity is 5,9% that is under the MARR of equity 10%. The investment is no longer profitable if the worst case scenario occurs

The results of the scenario analysis for case 2 are in Table 14.

Table 14 The scenario analysis for case 2 optimistic, pessimistic and current values, for 20 years horizon.

Scenario analysis case 2 for 20 years horizon			
	Current Values:	Optimistic	pessimistic
Changing Cells:			
Total Investment	100%	90%	120%
Long term prediction	100%	120%	80%
Predicted operator revenue	100%	120%	80%
Revenue from rent	100%	120%	80%
Result Cells:			
NPV Total Capita	470,7	2.207,0	-1.473,9
IRR Total Capital	8,6%	13,6%	3,1%
MIRR Total Capital	7,8%	9,7%	5,3%
NPV Equity	-69,7	1.334,2	-1.689,6
IRR Equity	9,7%	16,2%	2,4%
MIRR Equity	9,9%	12,3%	6,4%

Changing these three variables will have an impact on the results of NPV, IRR and MIRR both for optimistic and pessimistic scenarios. After 20 years of operation the results from the financial assessment model, assumes that the investment in case 2 is not profitable based on the most likely value. Results for the optimistic give us a better result than the most likely result, according to the optimistic plan the investment for case 2 is profitable. Results for the pessimistic gives worse results than the most likely scenario according to that the investment in case 2 is not profitable. The investment in case 2 is only profitable for the optimistic prediction.

The results of the scenario analysis for case 3 are in Table 15.

Table 15 The scenario analysis for case 3 optimistic, pessimistic and current values, for 20 years horizon.

Scenario analysis case 3			
	Current Values:	Optimistic	Pessimistic
Changing Cells:			
Investment	100%	80%	120%
Long term prediction	100%	120%	80%
Operator Revenue	100%	120%	80%
Revenue from Rent	100%	120%	80%
Result Cells:			
NPV Total Capital	923,1	1.166,9	702,0
IRR Total Capital	33,8%	45,1%	25,7%
MIRR Total Capital	15,3%	17,3%	13,5%
NPV Equity	674,2	874,8	490,6
IRR Equity	33,8%	45,1%	25,7%
MIRR Equity	17,0%	19,0%	15,1%

Changing these three variables will have an impact on the results of NPV, IRR and MIRR both for optimistic and pessimistic scenarios. After 20 years of operation the results from the financial assessment model, assumes that the investment in case 3 is profitable for the most likely value. Results for pessimistic and optimistic scenarios assume that the investment in case 3 is profitable. This result indicates that case 3 has the lowest risk compared to results for case 1 and case 2. Case 3 is the only case that stays profitable despite a pessimistic scenario.

5 Discussions and Conclusion

5.1 Summary of the results

We now compare the results of the three cases, both from the financial feasibility assessment model and the risk analysis, looking for answers to the questions; a) which of the three cases are the most profitable for Isavia? And b) which case has the lowest risk? First we look at Table 16 were the results for NPV and MIRR of equity from the financial feasibility assessment are displayed. The minimum acceptable rate of return for equity was 10%.

Table 16 Results for NPV of cash flow and MIRR of equity, for 20 years horizon all figures for NPV of Cash Flow are all in million ISK.

20 year	Equity		
	case 1	case 2	case 3
NPV of Cash Flow	851	-70	674
MIRR	11,3%	9,9%	17,0%

According to the results in Table 16, answer to question a) is case 1, since it has the highest NPV of cash flow of equity and the MIRR reaches the discount rate. However according to the MIRR case 3 has MIRR of 17 % and the NPV of cash flow for equity is positive like in case 1. When taking these two cases into consideration, it is important to evaluate the risk for both cases, and to do that we have to answer question b). The answer to question b) is case 3 according to the result in chapter 4.4.1 and 4.4.2. Case 1 has the highest risk of the cases according to chapter 4.4.1 and 4.4.2, of the three cases. Therefore to answer these two questions built on the assumptions made in this study, the recommendation to Isavia would be to use case 3, which is renting the land to a contractor, who would build and own the hotel. In the scenario analysis, case 3 was still profitable despite the pessimistic scenario. Case 1 had high impact on the results according to the pessimistic scenario, and it was no longer profitable for that scenario.

When evaluating results, other considerations have to be taken, like in case 1 where the results give higher NPV but the risk is higher than in case 3. In case 1 Isavia is supposed to be both investing in the hotel building and operating the hotel. As Isavia is a publicly owned company and their obligation and role is to operate and run airports and air navigation in Iceland, a hotel

business would hardly fit into that role and is not their specialty. For that matter it is natural to presume that it would be better for Isavia to consider outsourcing this business to someone with this knowledge like in case 2 and 3.

Case 2 did not give a positive result in this study. The residual value was not calculated and therefore not taken into consideration. However if the residual value would be taken into consideration it could have impact on the results.

5.2 Future work

One of this thesis purpose was to give Isavia a tool to work with on further studies for an airport hotel investment. This thesis gives results based on the assumptions predicted in chapter 3. These predictions will change as time goes as for example the long-term prediction is always changing. More analysis can be done in this area on for example supply and demand. Market analysis could help predicting how much the customers would be willing to pay for the rooms. These analysis could give better and more accurate figures to work with in the same model.

The location of the hotel is unique as it is next to the airport. It can be assumed that the utilization of hotel rooms will be more stable than in other locations in Iceland due to the traffic of passengers through the airport. For case 2 it would be interesting to see what future contractor would be willing to pay both in fixed rent and revenue related rent for the airport hotel. In that case if the contractor would be willing to pay a higher rent than is assumed in this thesis, the results would be different. It would also be interesting to see how much a contractor would be willing to pay both as fixed rent and revenue related rent for the land in case 3.

When looking at the result and after working on this thesis there are many questions to be stated. These questions could be used as an imput for other studies. What would be interesting to do as next steps is:

- Market research
  - Gain better knowledge in demand and supply in this area.
  - Explore what the customer is willing to pay for a room
- Make a Revenue Model
  - Built on the knowledge from the market research

  - Demand and supply
- What size of hotel would be ideal in Keflavik airport
  - Built on the knowledge from the results of the market research and the revenue model

It would be interesting to see the results from these questions above, and see if it would have a major impact on the results of this study.

References

[1] Greiningardeild Íslandsbanka, "islandsbanki.is," 29 2 2016. [Online]. Available: https://www.islandsbanki.is/library/Skrar/Fyrirtaeki/Ferdathjonustuskyrsla%202016.pdf. [Accessed 1 10 2016].

[2] Ferðamálastofa, "Ferðamalastofa," [Online]. Available: http://www.ferdamalastofa.is/is/tolur-og-utgafur/fjoldi-ferdamanna. [Accessed 31 10 2016].

[3] Isavia, "Keflavikurflugvöllur," [Online]. Available: http://www.kefairport.is/Um-felagid/Tolur-um-farthegafjolda/Arstolur/. [Accessed 31 10 2016].

[4] D. H. F. Þorsteinsson, V. Halldórsson and I. Sverrisson, "Isavia," 2016. [Online]. Available: http://www.isavia.is/files/storidja-i-stodugum-vexti_skyrsla_isavia_aton.pdf. [Accessed 1 11 2016].

[5] Isavia, "kefairport," 2015. [Online]. Available: http://betterairport.kefairport.is/masterplan/. [Accessed 7 9 2016].

[6] Greiningar deild Arion banka, "Arion banki," 8 11 2015. [Online]. Available: https://www.arionbanki.is/library/Skrar/Greiningar/Markadspunktar-/110815_hotelnyting.pdf. [Accessed 5 9 2016].

[7] Isavia, "Isavia," [Online]. Available: http://www.isavia.is/um-isavia/saga-isavia. [Accessed 7 9 2016].

[8] Isavia, "Isavia," [Online]. Available: http://www.isavia.is/um-isavia. [Accessed 2 11 2016].

[9] A. R. Björnsdóttir, "Financial feasibility assessments," january, Reykjavík, 2010.

[10] F. Bennet, The management of construction: A project life cycle approach, Burlington: Butterworh-Heinemann, 2003.

[11] Donald S. Remer and Armando P. Nieto, A Compendium and comparison of 25 project evaluation techinques., Claremont: International Journal of Production Economics, 1st. edition, 1995.

[12] F. Lefley, "MODIFIED INTERNAL RATE OF RETURN: WILL IT REPLACE IRR?," *Management Accounting: Magazine For Chartered Management Accountants,* vol. 75, no. 1, p. 64, 1997.

[13] P. Jensson, "Profitability assessment modesl, workshop on fisheries and aquaculture in southern africa: Development and management," August 2006.

[14] M. Merková, J. Drábek and D. Jelacic, "Application of risk analysis in business investment decision-

making," *Drvna industrija,* vol. 64, no. 4, pp. 313-222, 2013.

[15] Hagstofa Íslands, "Hagstofa Íslands," 9 2016. [Online]. Available: http://px.hagstofa.is/pxis/pxweb/is/Atvinnuvegir/Atvinnuvegir__ferdathjonusta__Gisting__1_hotelgistiheimili/SAM01104.px/. [Accessed 9 2016].

[16] Microsoft, "Microsoft," [Online]. Available: support.office.com/en-us/article/CORREL-function-995dcef7-0c0a-4bed-a3fb-239d7b68ca92?ui=en-US&rs=en-US&ad=US. [Accessed 27 10 2016].

[17] Fasteignaskrá, "Þjóðskrá Íslands," [Online]. Available: http://www.skra.is/default.aspx?pageid=e4db60a3-50f1-4e6d-88f0-37ad9dfb371f&selector=streetname&streetname=Sigt%C3%BAn+38&submitbutton=Leita. [Accessed 6 10 2016].

[18] Sandgerðisbær, "Sandgerdi," 2016. [Online]. Available: http://sandgerdi.is/wp-content/uploads/2015/10/gjaldskra-2016.pdf. [Accessed 30 9 2016].

[19] RSK Skatta og gjöld, "Ríkisskattstjóri," [Online]. Available: https://www.rsk.is/atvinnurekstur/framtal-og-alagning/alagningarsedill-og-forsendur/2016#tab1. [Accessed 20 10 2016].

Appendix 1

All the sheets showed here below I shows number for the first 10 operating years.

Summary sheet

Here we have the results for both 10 years and 20 years. We can only see revenues and cost figures for the first 10 years of operating.

amounts in millions		Assumptions and Results	
		2017	2018
Investment:		MISKR	
Buildings	100%	1900	1900
Equipment	100%	0	360
Other	100%	250	0
Total	100%	2150	2260
Financing:			
Working Capital	100%	10	40
Total Financing		2160	2300
Equity	100%	70%	
Loan Repayments	100%	20	years
Loan Interest	100%	7%	

Discount Rate of equi	10%	
Discounting Rate	7%	MARR
Planning Horizon	10	years

10 years	Total Cap	Equity
NPV of Cash Flow	-729,1	-630,4
Internal Rate	3,9%	5,7%
MIRR	5,4%	7,7%

Total Investment	2017	2018
Buildings	3800,0	50%	50%
Equipmer	360,0	0%	100%
Other	250,0	100%	0%

20 years	Total Cap.	Equity
NPV of Cash Flow	1806,2	850,7
Internal Rate	11,3%	13,0%
MIRR	9,0%	11,3%

Operations:			2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Long term prediction		100%		7,4%	5,6%	4,7%	4,3%	3,7%	3,4%	3,0%	3,0%	3,0%
Revenue		100%	1141,0	1225,4	1294,1	1354,9	1413,1	1465,4	1515,2	1560,7	1607,5	1655,8
Cost		100%	488,0	524,1	553,5	579,5	604,4	626,8	648,1	667,5	687,5	708,2
Fixed cost		100%	178,0	MISK/year								
Inventory Build-up		0										
Debtors	8%	of turnover										
Creditors	0%	of variable cost										
Dividend	0%	of profit after taxis										
Depreciation Building	4%											
Depreciation Equipm.	15%											
Depreciation Other	20%											
Loan Managem. Fees	0,2%											
Income Tax	20%											

Investment sheet

Investment

		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Investment and Financing				1	2	3	4	5	6	7	8	9	10	
Investment:														
Buildings		1900	3800,00	3648	3496	3344	3192	3040	2888	2736	2584	2432	2280	
Equipment (búnaður)		0	360,00	306	252	198	144	90	36	36	36	36	36	
Other		250	250,00	200	150	100	50	0	0	0	0	0	0	
Booked Value		2150	4410,00	4154	3898	3642	3386	3130	2924	2772	2620	2468	2316	
Depreciation:														
Depreciation Building	4%			152	152	152	152	152	152	152	152	152	152	1368
Depreciation Equipm	15%			54	54	54	54	54	54					324
Depreciation Other	20%			50	50	50	50	50						250
Total Depreciation		0	0,00	256	256	256	256	256	206	152	152	152	152	1942
Financing:		2160	2300,00											
Equity	70%	1512	1610,00											
Loans	30%	648	690,00											
Repayment	20		0	32	32	32	32	32	32	32	32	32	32	292
Principal		648	1338	1306	1273	1241	1208	1176	1144	1111	1079	1046	1014	
Interest	7%		45	94	91	89	87	85	82	80	78	76	73	807
Loan Managem. Fee	0,2%	2,7												3

Operation sheet

Operations

		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Operations Statement														
Revenue				1.141	1.225	1.294	1.355	1.413	1.465	1.515	1.561	1.608	1.656	12.577
Variable Cost														0
Operating Cost				488	524	553	579	604	627	648	668	688	708	
Fixed Cost				178	178	178	178	178	178	178	178	178	178	1602
Diverse Taxes														0
Operating Surplus EBITDA		0	0	475	523	563	597	631	661	689	715	742	770	4.854
Inventory Movement														
Depreciation			0	256	256	256	256	256	206	152	152	152	152	1790
Operating Gain/Loss EBIT		0	0	219	267	307	341	375	455	537	563	590	618	3.064
Financial Cost (Int+LMF)		3	45	94	91	89	87	85	82	80	78	76	73	734
Profit before Tax EBT		-3	-45	125	176	217	255	290	372	457	485	514	544	2.330
Loss Transfer	0	-3	-48	0	0	0	0	0	0	0	0	0	0	
Taxable Profit		0	0	77	176	217	255	290	372	457	485	514	544	
Income Tax	20%	0	0	15	35	43	51	58	74	91	97	103	109	
Profit after Tax		-3	-45	110	141	174	204	232	298	366	388	412	435	
Dividend	0%													
Net Profit/Loss		-3	-45	110	141	174	204	232	298	366	388	412	435	8577

Cash Flow sheet

Cash Flow

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Cash Flow												
Operating Surplus EBITD	0	0,00	475	523	563	597	631	661	689	715	742	770
Debtor Changes		0,00	95,08	7,04	5,72	5,07	4,85	4,36	4,15	3,79	3,90	4,02
Creditor Changes		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Cash Flow before Tax		0,00	380	516	557	592	626	656	685	711	738	766
Paid Taxes		0	0,00	15,46	35,19	43,49	50,91	58,03	74,47	91,43	97,08	102,90
Cash Flow after Tax	0	0,00	380	501	522	549	575	598	611	620	641	663
Financial Costs (interest+LMF)	3	45,36	93,66	91,39	89,12	86,86	84,59	82,32	80,05	77,78	75,52	73,25
Repayment	0	0,00	32	32	32	32	32	32	32	32	32	32
Net Cash Flow	-3	-45,36	254	377	400	430	458	484	498	510	533	557
Paid Dividend												
Financing - Expenditure	10	40,00										
Cash Movement	7	-5,36	253,86	377,03	400,17	429,59	457,99	483,56	498,11	509,80	533,10	557,03

Source and Allocation of Funds

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Source of Funds												
Profit before Tax	-3	-45	125	176	217	255	290	372	457	485	514	544
Depreciation	0	0	256	256	256	256	256	206	152	152	152	152
Funds from Operations	-3	-45	381	432	473	511	546	578	609	637	666	696
Loan Drawdown	648	690,00										
Equity Drawdown	1512	1610,00										
Funds for allocation	2157	2255	381	432	473	511	546	578	609	637	666	696
Alloction of Funds												
Investment	2150	2260										
Repayment	0	0	32	32	32	32	32	32	32	32	32	32
Paid Taxes	0	0	0	15	35	43	51	58	74	91	97	103
Paid Dividend	0	0	0	0	0	0	0	0	0	0	0	0
Total allocation	2150	2260	32	48	68	76	83	90	107	124	129	135
Changes Net Curr. Assets	7	-5	349	384	406	435	463	488	502	514	537	561
Analysis of Changes Current Assets												
Cash at start of year	0	7	2	256	633	1033	1463	1921	2404	2902	3412	3945
Cash at end of year	7	2	256	633	1033	1463	1921	2404	2902	3412	3945	4502
Changes in Cash	7	-5	254	377	400	430	458	484	498	510	533	557
Debtor changes	0	0	95	7	6	5	5	4	4	4	4	4
Stock Movements												
Changes in Current Assets	7	-5	349	384	406	435	463	488	502	514	537	561
Liabilities												
Creditor changes	0	0	0	0	0	0	0	0	0	0	0	0
Changes Net Curr. Assets	7	-5	349	384	406	435	463	488	502	514	537	561
Error check	0	0	0	0	0	0	0	0	0	0	0	0

Balance sheet

Balance

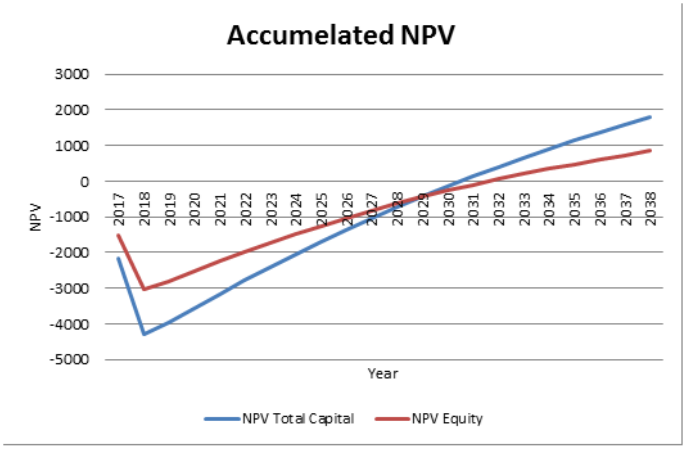
Balance Sheet		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Assets													
Cash Account	0	7	2	256	633	1033	1463	1921	2404	2902	3412	3945	4502
Debtors	8%	0	0	95	102	108	113	118	122	126	130	134	138
Stock	0	0	0	0	0	0	0	0	0	0	0	0	0
Current Assets		**7**	**2**	**351**	**735**	**1141**	**1576**	**2038**	**2526**	**3029**	**3542**	**4079**	**4640**
Fixed Assets		2150	4410	4154	3898	3642	3386	3130	2924	2772	2620	2468	2316
Total Assets		**2157**	**4412**	**4505**	**4633**	**4783**	**4962**	**5168**	**5450**	**5801**	**6162**	**6547**	**6956**
Debts													
Taxes Payable		0	0	15	35	43	51	58	74	91	97	103	109
Creditors	0%	0	0	0	0	0	0	0	0	0	0	0	0
Next Year Repayment		0	32	32	32	32	32	32	32	32	32	32	32
Current Liabilities		**0**	**32**	**48**	**68**	**76**	**83**	**90**	**107**	**124**	**129**	**135**	**141**
Long Term Loans		648	1306	1273	1241	1208	1176	1144	1111	1079	1046	1014	982
Total Debt		**648**	**1338**	**1321**	**1308**	**1284**	**1259**	**1234**	**1218**	**1203**	**1176**	**1149**	**1123**
Equity		1512	3122	3122	3122	3122	3122	3122	3122	3122	3122	3122	3122
Profit & Loss Balance		-3	-48	62	203	377	580	812	1110	1476	1864	2276	2711
Total Capital		**1509**	**3074**	**3184**	**3325**	**3499**	**3702**	**3934**	**4232**	**4598**	**4986**	**5398**	**5833**
Debts and Capital		**2157**	**4412**	**4505**	**4633**	**4783**	**4962**	**5168**	**5450**	**5801**	**6162**	**6547**	**6956**
error check		0	0	0	0	0	0	0	0	0	0	0	0

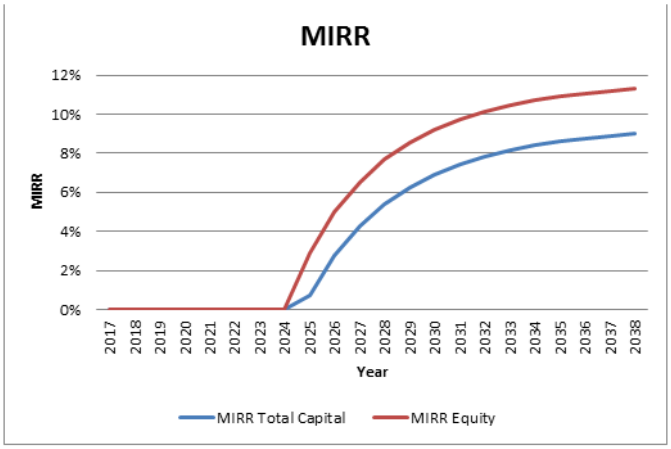
Profitability sheet

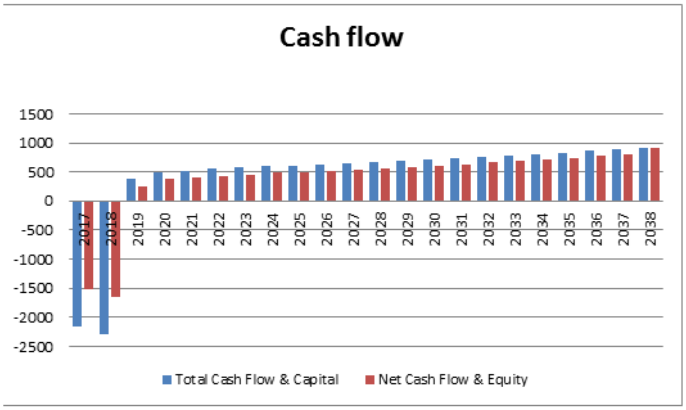
Profitability

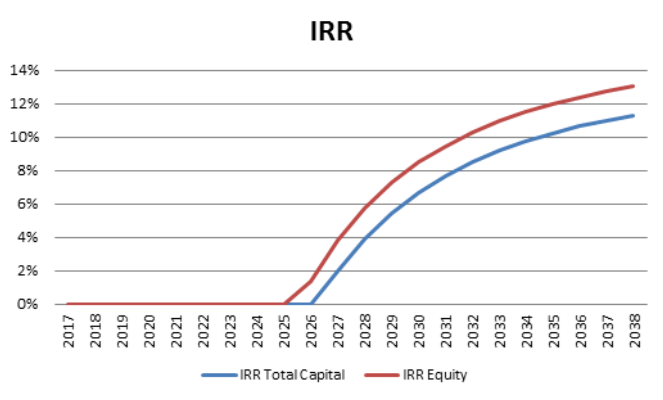
Profitability Measurements		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
NPV and IRR of Total Cash Flow													
Cash Flow after Taxes		**0**	**0**	**380**	**501**	**522**	**549**	**575**	**598**	**611**	**620**	**641**	**663**
Loans		**-648**	**-690**										
Equity		**-1512**	**-1610**										
Total Cash Flow & Capital		**-2160**	**-2300**	**380**	**501**	**522**	**549**	**575**	**598**	**611**	**620**	**641**	**663**
NPV Total Cash Flow	7%	**-2160**	**-4306**	**-3975**	**-3568**	**-3173**	**-2786**	**-2407**	**-2039**	**-1689**	**-1357**	**-1038**	**-729**
IRR Total Cash Flow		**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**2%**	**4%**
External Rate of Return (MIRR)		**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**1%**	**3%**	**4%**	**5%**
NPV and IRR of Net Cash Flow													
Net Cash Flow		**-3**	**-45**	**254**	**377**	**400**	**430**	**458**	**484**	**498**	**510**	**533**	**557**
Equity		**-1512**	**-1610**										
Net Cash Flow & Equity		**-1515**	**-1655**	**254**	**377**	**400**	**430**	**458**	**484**	**498**	**510**	**533**	**557**
NPV Net Cash Flow	10%	**-1514,7**	**-3019,5**	**-2809,7**	**-2526,5**	**-2253,2**	**-1986,4**	**-1727,9**	**-1479,8**	**-1247,4**	**-1031,2**	**-825,64**	**-630,406**
IRR Net Cash Flow		**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**1%**	**4%**	**6%**
External Rate of Return (MIRR)		**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**3%**	**5%**	**7%**	**8%**
Financial Ratios													
CR (Capital/Debt+Capita)l			**70,0%**	**69,7%**	**70,7%**	**71,8%**	**73,1%**	**74,6%**	**76,1%**	**77,7%**	**79,3%**	**80,9%**	**82,4%**
Net Current Ratio			**0,1**	**7,3**	**10,9**	**15,0**	**18,9**	**22,5**	**23,6**	**24,5**	**27,4**	**30,1**	**32,8**
Liquid Current Ratio			**0,1**	**7,3**	**10,9**	**15,0**	**18,9**	**22,5**	**23,6**	**24,5**	**27,4**	**30,1**	**32,8**
Debt Service Coverage			**0,0**	**3,0**	**4,0**	**4,3**	**4,6**	**4,9**	**5,2**	**5,4**	**5,6**	**5,9**	**6,3**
loan life cover ratio 20 years		**9,43**	**4,90**	**5,38**	**5,59**	**5,72**	**5,83**	**5,93**	**5,99**	**6,04**	**6,06**	**6,06**	**6,03**
Acceptable minimum		**1,5**	**1,5**	**1,5**	**1,5**	**1,5**	**1,5**	**1,5**	**1,5**	**1,5**	**1,5**	**1,5**	**1,5**
NPV of cash flow after taxes 20 years		**6111,7**	**6551,8**	**7023,5**	**7121,9**	**7097,8**	**7049,6**	**6968,8**	**6854,2**	**6706,3**	**6534,7**	**6340,6**	**6109,9**

Charts sheet









Appendix 2

Case 1 Operating Cost and Fixed Cost

Operating cost	
Cost of goods	122.879.577
ratio rawmaterial vs. Total operating cost	18%
saleries and related expenses	365.526.938
ratio saleries vs. Total operating cost	55%
sum of operating cost	**488.406.515**
ratio operating cost vs total opporating cost	**73%**
Fixed operating cost	
House expenses	126.569.085
ratio house expenses vs. Total operating cost	19%
Other Operating cost	47.160.167
ratio other vs. Total operating cost	4%
Office and management cost	4.000.000
ratio Office vs. Total operating cost	0,6%
sum of Fixed operating cost	**177.729.252**
ratio fixed cost vs total operating cost	27%
Total Operating cost	**666.135.766**
Operating surplus before depreciation	**475.267.742**

Figure 20 Total Operating cost brake down case 1.

Operating cost.

Raw Material & Drinks 2019	
	Total
increas	
sold food	317.906.650
35%	
food expenses	**111.267.328**
increas	
sold drinks	30.558.550
38%	
drink expenses	**11.612.249**
sum	**122.879.577**

Figure 21 Cost of goods brake down for food expenses and drink expenses case 1.

Saleries and related expenses 2019	
	sum
Reception and management	78.379.930
Kitchen	63.777.384
The maidservants	116.604.261
Waiters	98.150.843
Other Jobs	0
Holiday and December suppleme	6.142.396
Summer vacation	2.472.124
samtals	**365.526.938**

Figure 22 Salaries and related expenses brake down case .

Fixed Cost Details.

House exspeses 2019	
month	
Real Estate	61.493.095
Maintainance cost	20.000.000
Heat and electricity	33.000.000
Other cost	12.075.990
sum	**126.569.085**

Figure 23 House expenses details case 1.

Real Estate Tables of Calculations

Grand hotel		
Construction year	2010	
Display year	9.940,0	m^2
Real Estate fee	2.546.850.000	kr
Þar af lóðamat	189.250.000	kr
Grand/Isavia	99%	
Hotel Isavia		
Construction year	2017/2018	
Display size	10.000	m^2
Real Estate 2017	2.562.131.100,00	kr
plot assessment	190.385.500,00	kr

Figure 24 Estimated real estate using numbers for Grand hotel case 1.

Sangerðisbær real estate fee and other		
		Isavia Hótel greiðir
Real estate tax	1,65%	42.275.163,15
Rent for land	2,00%	3.807.710,00
Drain fee	0,43%	11.017.163,73
Water fee	0,17%	4.355.622,87
Waste collection fe	14225	14.225
Deplation of waste	23210	23.210
	sum	61.493.094,75

Figure 25 Calculations of real estate fee case 1.

Case 2 Operating Cost and Fixed Cost

Here below the operating cost for Case 2 will be showed in following figures.

Fixed opporating cost	
House expenses	81.493.095
ratio house expenses vs. Total revenue	95%
Office and management cost	4.000.000
ratio Office vs. Total revenue	5%
sum of Fixed operating cost	85.493.095

Figure 26 Predicted operating cost for case 2

Hous exspenses 2019	
Real Estate	61.493.095
Maintainance cost	20.000.000
Heat and electricity	33.000.000
Rent	416.354.402
Other cost	12.075.990
Sum	81.493.095

Figure 27 House expenses details.

Grand Hotel		
Construction year	2010	
Displayed size	9.940,0	m^2
Real Estate fee	2.546.850.000	ISK
plot assessment	189.250.000	ISK
Grand/Isavia	0,994	
Hotel Isavia		
Construction year	2017/2018	
Displayed size	10.000	m^2
Real estate fee	2.562.131.100,00	ISK
Plot assessment	190.385.500,00	ISK

Figure 28 Real estate fee for case 2

Sangerðisbær Real estated fee		
		Isavia Hotel pays
Real estate tax	1,65%	42.275.163
Rent for Land	2,00%	3.807.710
Drain fee	0,43%	11.017.164
Water fee	0,17%	4.355.623
Waste collection fee	14225	14.225
Seplation of waste	23210	23.210
	sum	61.493.094,75

Figure 29 Real estate for hotel Isavia according to Sandgerdisbær

Appendix 3

Total Revenues and how they were estimated for case 1.

operating income	
Revenue from sold rooms	778.764.097
Ratio revenue sold room vs. Total revenue	68%
other	362.639.412
Ratio revenue other vs. Total revenue	32%
Total Revenue	**1.141.403.509**

Figure 30 Revenues for case 1 estimated for 2019.

Revenue of sold rooms and revenue from food/drinks/other. The table have been divided to two parts, fist the first 6 month of 2019 are estimated and in the second you can see the last 6 months of 2019 and the total number for 2019.

	2019					
month	1	2	3	4	5	6
number of rooms	200	200	200	200	200	200
number of days operating	31	28	31	30	31	30
availible rooms	6.200	5.600	6.200	6.000	6.200	6.000
utilization this month	41,41%	60,89%	70,48%	56,81%	63,95%	88,43%
sold rooms	2.568	3.410	4.370	3.409	3.965	5.306
average price per night	13.207	12.162	13.562	13.380	18.819	23.563
Revenues from sold rooms	33.910.173	41.474.522	59.264.042	45.611.951	74.620.944	125.025.485
Sold Food per month	20.979.298	22.443.003	34.871.286	25.920.151	23.648.152	29.505.444
sold drinks per month	2.045.620	2.229.978	4.770.363	2.415.429	1.804.449	1.411.624
Sold goods/service per month	1.595.228	1.610.371	1.625.596	882.013	1.192.804	1.388.643
Revenues from food/drink/othe	24.620.146	26.283.352	41.267.245	29.217.593	26.645.405	32.305.711
operational revenuse	58.530.319	67.757.874	100.531.287	74.829.544	101.266.349	157.331.196

	2019						
month	7	8	9	10	11	12	Total/average
number of rooms	200	200	200	200	200	200	
number of days operating	31	31	30	31	30	31	365
availible rooms	6.200	6.200	6.000	6.200	6.000	6.200	73.000
utilization this month	91,29%	78,85%	57,12%	49,57%	41,31%	42,84%	61,93%
sold rooms	5.660	4.888	3.427	3.073	2.479	2.656	45.211
average price per night	22.029	22.572	18.174	12.899	11.504	12.571	25.246
Revenues from sold rooms	124.682.436	110.339.778	62.286.613	39.645.443	28.513.435	33.389.275	778.764.097
Sold Food per month	30.778.628	26.400.061	22.010.659	21.826.035	22.291.606	37.232.327	317.906.650
sold drinks per month	1.217.797	1.103.182	1.240.665	1.823.458	2.822.597	7.673.388	30.558.550
Sold goods/service per month	1.271.892	934.459	813.509	668.845	988.451	1.202.401	14.174.212
Revenues from food/drink/othe	33.268.317	28.437.702	24.064.833	24.318.338	26.102.654	46.108.116	362.639.412
operational revenuse	157.950.753	138.777.480	86.351.446	63.963.781	54.616.089	79.497.391	1.141.403.509

Figure 31 Prediction of revenues in case 1.