

**Financing options for the renewal of the permit
for the operation of
Luftseilbahn Küssnacht – Seebodenalp**



by

Florian Süss

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Department of Management, Technology and Economics

Chair of Entrepreneurial Risks

Supervisors:

Prof. Dr. Didier Sornette

Dr. Peter Cauwels

Christina Annen

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Abstract

The main goal of this MAS thesis is to discuss the profitability for different scales of investments (strategic options) for the renewal of the Luftseilbahn Küssnacht – Seebodenalp and to value various kinds of financing the investments (financing options).

We outline different strategic options for the future operation and calculate the necessary investments. The analysis of the financial situation of the company shows how much of the investments can be financed with available equity. With the net present value method, the profitability of the investment project is calculated for various scenarios under different assumptions. To finance the gap between the available capital and the necessary investments, we describe and discuss different financing methods and apply them to the different strategic options.

The calculations show that it is difficult to finance anything on the top of the absolutely necessary investments. However, collecting the necessary funding to continue operation seems realistically achievable.

Content

Abstract	2
Content	3
List of tables	5
Acknowledgements	6
1 Introduction	7
1.1 History of the company	7
1.2 Goal	7
1.3 Assumptions	8
1.4 Constraints	8
2 Strategic Options	9
2.1 Different options.....	9
2.1.1 Option A: Status quo	9
2.1.2 Option B: Operating with higher speed.....	9
2.1.3 Option C: Operating with bigger cabin	10
2.1.4 Closing down.....	10
2.2 Necessary investments.....	10
2.3 Capacity per option.....	11
2.4 Depreciation on new investments.....	12
3 Financial situation	14
3.1 Current financial identifiers.....	14
3.1.1 Income statement 2012.....	14
3.1.2 Balance sheet 2012	15
3.1.3 Capital distribution	16
3.1.4 Development 2006 to 2012	16
3.2 Estimation capital at the end of 2017	17
3.3 Capital needs per strategic option.....	20
4 Investment project evaluation	22
4.1 Calculations option A	24
4.1.1 Scenario 1	24
4.1.2 Scenario 2	25
4.1.3 Scenario 3	26
4.1.4 Scenario 4	26

4.1.5	Summary.....	27
4.2	Calculations option B	28
4.2.1	Scenario 1	28
4.2.2	Scenario 2	29
4.3	Option C	29
4.3.1	Scenario 1	29
4.3.2	Scenario 2	30
4.4	Conclusion.....	31
5	Financing possibilities	32
5.1	Share capital	32
5.1.1	Description	32
5.1.2	Discussion.....	32
5.2	Bank loans	32
5.2.1	Description	32
5.2.2	Discussion.....	33
5.3	Non bank loans	33
5.3.1	Description	33
5.3.2	Discussion.....	34
5.4	Other Sources	34
6	Application to LKS.....	35
6.1	General considerations	35
6.2	Comparable companies	36
6.3	Financial ratios proposed by Seilbahnen Schweiz	36
6.4	Financing examples	37
6.4.1	Option A	37
6.4.2	Option B	40
6.4.3	Option C	40
6.5	Conclusion.....	41
7	Further activities	42
7.1	Marketing possibilities	42
7.2	Open points.....	42
7.3	Next steps	42
	References.....	43

List of tables

Table 1: Costs cable car	10
Table 2: Costs building infrastructure	11
Table 3: Total costs	11
Table 4: Capacity per strategic option	12
Table 5: Depreciation rate for investments	12
Table 6: Depreciation amount per year	13
Table 7: Income statement 2012	14
Table 8: Balance sheet 2012	15
Table 9: Comparison income statements 2006-2012	16
Table 10: Income statement forecast	18
Table 11: Balance sheet forecast	19
Table 12: Sensitivity test: growth revenues 2.5%, growth expenses 0%	20
Table 13: Sensitivity test: growth revenues 0%, growth expenses 2.5%	20
Table 14: Capital needs per option	21
Table 15: Option A – Scenario 1	24
Table 16: Option A – Scenario 2	25
Table 17: Option A – Scenario 3	26
Table 18: Option A – Scenario 4	27
Table 19: Option B – Scenario 1	28
Table 20: Option B – Scenario 2	29
Table 21: Option C – Scenario 1	30
Table 22: Option C – Scenario 2	31
Table 23: Example viability	35
Table 24: Financial ratios in combination with strategic options	37
Table 25: Bank loan option A	39

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This thesis was a great opportunity to get an insight into the business of cable cars and the difficulty of financing investments from a theoretical and practical view. I hope the results presented in this thesis help to find a decision about the direction of the future operation of the Luftseilbahn Küssnacht – Seebodenalp.

1 Introduction

The Luftseilbahn (cable car) Küssnacht – Seebodenalp AG (further called ‘LKS’) has to renew the operating concession (Betriebskonzession) in order to get the operating approval (Betriebsbewilligung) to continue with the operation. The current concession is valid until the end of 2017. To get the new operating concession for the next 25 years, several investments to the infrastructure of the cable car and the valley respectively mountain station are required.

In this thesis, different renewal options (strategic options) are described and the consequences for the financing of the required investments are discussed (financing options).

This section gives an overview of the current situation of the LKS and the necessity for the investments in the near future.

1.1 History of the company

The LKS was put into operation on the 31st of July in 1954. The company is organized as a stock corporation. The shares are widely distributed, most of them to local persons and companies. The shareholders do not hold the shares to make a profit out of the investment, but mainly as a sponsorship or sympathetic contribution to the LKS. This gives it a crowd-sourcing type of business model ‘avant la lettre’.

During the almost 60 years of operation, the LKS passed through several renewal tasks, starting with the enhancement to cabins holding 10 persons in 1957, followed by regular improvements and maintenance works.

In the year 1997, the LKS was renewed for the last time. The total investment of CHF 830'000 were used, beside the general maintenance for the engines and brakes, basically for 2 points: the complete renewal of the electrical control equipment and the video surveillance. The investments were financed (beside own means and provisions) with a short-term loan from a bank, a contribution of the canton and an interest-free loan from the government.

1.2 Goal

The goal of the thesis is to discuss the different strategic options for the renewal and to outline different financing options. The strategic options are valuated and checked if they can be executed economically profitable. Finally, a suggestion about the strategic option and a proposal how to finance it are made.

1.3 Assumptions

The following assumptions are central to the calculations and reasoning of the numbers:

- The renewal takes place at end of 2017 / beginning of 2018. All capital must be available at the end of 2017.
- The annual growth of the revenues and expenses is 1%.
- The renewal leads to a bigger turnover because of the bigger capacity of the cable car. The size of the increase varies in the different scenarios.
- The renewal works are executed in the off-season, where there is almost no traffic, and the timespan when the cable car is not operating does not exceed the current maintenance time by much. Together with some expected additional rides after the re-opening, the revenues are not expected to drop in 2017 and 2018 because of the renewal works.

All assumptions are described in detail in the section where it comes into consideration.

1.4 Constraints

An unresolved issue for the LKS is the problematic with the parking spaces – there are not enough parking spaces available near the valley station. This problematic is not discussed in detail in this thesis, but briefly mentioned in section 7.2.

The road to the Seebodenalp has a big impact on the number of persons travelling by cable car. The future treatment of this road (renewal, quota of cars, etc.) is a political issue and is not considered in this thesis. It is assumed, that the road stays as it is.

Out of scope are extended marketing activities that could influence the course of business heavily.

2 Strategic Options

The board of the company initiated a study of the possibilities to go on with the business of the LKS (see [3]). As a result of this study, three strategic options were identified. An additional possibility is to close down the business. The different options are described in the following sections, and table 3 compares the financial needs for each option. Details on the necessary investments can be retrieved in section 2.2.

Currently, the cable car (Pendelbahn) has two cabins with a capacity of 12 persons each, but due to regulations from the last operating concession and because the facilities are quite old, the LKS is allowed to transport only 10 persons per ride.

The necessary investments for the different options and the consequences in regards to the capacity of the LKS are computed in this section.

2.1 Different options

2.1.1 Option A: Status quo

This option is called status quo because only the necessary investments to get the new operating concession are executed. The investments with this option are moderate, but as not all facilities are renewed, some additional tasks may be necessary in the future to keep the operation running.

The current cabin of the cable car is kept (it can be re-painted to be perceived as renovated), and the capacity of the cabins stays at 12 persons (but the full capacity of 12 persons can be used again after the renewal works). As some regulations changed since the last renewal of the LKS, infrastructure work is required at the valley and the mountain station.

The total investments for this option result to CHF 2'481'000. Details about the necessary investments can be found in section 2.2.

2.1.2 Option B: Operating with higher speed

In this option, investments to operate the cable car with a higher speed ('Schneller fahren') are calculated (additionally to the necessary investments to go on with the business). This requires no new engine and cabins, but several adaptations to the infrastructure. The current cabins are kept, but with the faster rides, the total capacity of the cable car can be enhanced. Some additional works to switch to a bigger cabin in a later stage are included in the investments for this option.

The total investments for this option result to CHF 4'945'000.

2.1.3 Option C: Operating with bigger cabin

With this option, additionally to the investments necessary for options A and B, bigger cabins are acquired with a capacity of 16 persons each. A new engine is needed for that.

The total investments for this option result to CHF 7'820'000.

2.1.4 Closing down

An additional possibility would be to close down the business. This option is not considered in the thesis. When closing down the business, the current installations are more or less worthless. Closing down the business is not likely to be performed because of the importance of the LKS for the district and the region.

2.2 Necessary investments

The following tables summarize the necessary investments for the strategic options A, B and C. The numbers are retrieved from the board of the company and outlined in [3]. If the table states 'included' for a specific topic, the costs for this part are included in another part.

Table 1: Costs cable car

Costs in CHF 1'000	Option A	Option B	Option C
Pylons (Stützen)	1'250	Included	Included
Supporting ropes (Tragseile)	80	Included	Included
Pull ropes spanning weights (Zugseilspanngewichte)	345	345	345
Cabin	10	10	Included
Cable car infrastructure valley and mountain station maintenance	208	Included	Included
Static works	8	-	-
Additional Costs for 'Faster operation'	-	4'010	4'010
Additional costs for new cabin and engine	-	-	2'585
Total cable train infrastructure	1'901	4'365	6'940

The costs for pylons come from the pylon construction itself and the headers to hold the ropes. Currently, the cable car is built with 6 pylons. For all three strategic options, the number of pylons is reduced to 3, in order to minimize maintenance costs.

For option A, no new pull ropes are necessary, but some maintenance costs to treat the current pull ropes apply. For the other options, new pull ropes and stronger supporting ropes are necessary.

Table 2: Costs building infrastructure

Costs in CHF 1'000	Option A	Option B	Option C
New constructions valley and mountain station	500	500	800
Sanitary installations	80	80	80
Total building infrastructure	580	580	880

Because of new regulations, construction work in the valley and mountain station is necessary, independently of the option. For option C, the bigger cabin leads to bigger construction costs.

Table 3: Total costs

Costs in CHF 1'000	Option A	Option B	Option C
Total cable car infrastructure	1'901	4'365	6'940
Total building infrastructure	580	580	880
Total costs	2'481	4'945	7'820

Table 3 summarizes the total costs per strategic option. All calculations are made in 2012 from the technical responsible of the company and estimate the necessary investment for the execution of the renewal in 2017 / 2018.

All three options are big investments for the company, even if only the necessary tasks are performed. Compared to the last big renewal in 1998, option A is about 3 times bigger, option C more than 7 times. No matter which option is executed, it will be the biggest renewal investment ever for LKS.

2.3 Capacity per option

Currently, only 10 persons are allowed in the cable car per ride because of security regulations. With the new investments, this restriction is reversed and the cabin can be filled again to its full capacity of 12 persons. In option C, the new cabin will give space for up to 16 persons. Together with the different operating speed of the cable car, this

leads to an increase of the persons that the cable car can transport per hour. Table 4 outlines the new capacity per strategic option and compares it to the current capacity.

Table 4: Capacity per strategic option

	Current situation	Option A	Option B	Option C
Persons in cabin	10	12	12	16
Speed pylons (m/s)	5.5	5.5	6	6
Speed field (m/s)	6	6	7	7
Persons / hour	77	92	102	137
Increase to current capacity		19%	32%	78%

There is an increase of the capacity of the cable car of 19% even with the investments only for status quo. With the big expenditure of option C, the capacity can be increased by 78%.

2.4 Depreciation on new investments

The depreciation rates on the cable car equipment are regulated by the federal law, described in [2]. All current infrastructure (cable car, buildings) is depreciated to 0 by the end of 2017, so for the following years, only the new investments need to be considered for the depreciation.

The following depreciation rates are defined for cable cars in [2]:

- 4%: buildings, pylons, spanning weight
- 10%: cabins, electrical and mechanical equipment, supporting ropes
- 15%: roles, pylon headers
- 20%: security installations, supporting ropes

Table 5 shows the depreciation rate for the different parts of the investments:

Table 5: Depreciation rate for investments

In CHF 1'000	Total Option A	Total Option B	Total Option C
4%	1575	1575	1875
10%	306	2070	3945
15%	600	600	600
20%	0	700	1400

With these numbers, the depreciation amount per year can be calculated as outlined in table 6:

Table 6: Depreciation amount per year

In CHF 1'000	Total Option A	Total Option B	Total Option C
Year 1 – 5	183.6	500	839.5
Year 6	183.6	360	559.5
Year 7	153.6	330	529.5
Year 8 – 10	93.6	270	469.5
Year 11 - 25	63	63	75

3 Financial situation

In this section, the current financial situation of the company is discussed and the available capital at the end of 2017 for investments is estimated.

3.1 Current financial identifiers

3.1.1 Income statement 2012

Table 7 shows the income statement from the annual report (see [1]):

Table 7: Income statement 2012

	2012		2011	
	(CHF)	%	(CHF)	%
Operating revenues	349'208	100	355'607	100
Transport revenues	287'970		290'774	
Other income	40'660		43'746	
District contribution	25'000		25'000	
Decrease in profits	-4'422		-3'913	
Operating expenses	-278'771	80	-254'356	72
Trade goods expenses	-3'445		-3'602	
Personnel expenses	-184'764		-171'041	
Building expenses	-4'545		-3'923	
Maintenance and renewal	-23'942		-16'789	
Leistungen durch Dritte	-366		0	
Insurances	-19'975		-20'697	
Energy and disposal	-13'281		-13'673	
Administration	-15'295		-15'894	
Marketing	-12'683		-7'987	
Other expenses	-475		-750	
EBITDA	70'437	20	101'251	28
Depreciation	-9'100		-45'000	
EBIT	61'337	18	56'251	16
Financial income	4'904		5'001	
Financial expenses	-419		-377	
Disposal of provisions	0		102'080	
Extraordinary revenues	0		18'086	
EBT	65'822	19	181'041	51
Taxes	-9'462		2'085	
Profit / loss	56'360	16	183'126	51

The numbers are compared to the year 2011 and come up to a quite average performance (see section 3.1.4 for a comparison of more years). On the revenue side, there are no special items to find. On the expenses side, there is a onetime expenditure for the social security of the employees of CHF 12'000 (included in personnel expenses). The item disposal of provisions corresponds to a liquidation of provisions made in 2006.

Starting in 2012, the company pays a contribution of CHF 5'000 to the RigiPlus AG, a company that centralizes the marketing activities for the touristic region of Rigi. It is expected that this leads to more passengers for the LKS in the long run.

3.1.2 Balance sheet 2012

Table 8 shows the balance sheet of the LKS at the end of 2012 (see [1]):

Table 8: Balance sheet 2012

	2012		2011	
	(CHF)	%	(CHF)	%
ASSETS	800'049	100	756'521	100
Current assets	631'458	79	582'320	77
Liquid assets	450'622		448'687	
Accounts receivable	8'684		3'088	
Debtor SBB	156'350		106'906	
Stock	353		1'422	
Accrued income	15'449		22'217	
Fixed assets	168'591	21	174'201	23
Securities	100'000		100'000	
Participation RigiPlus AG	3'000		0	
Cable car	36'001		45'001	
Office equipment	390		0	
Immovable properties	29'200		29'200	
Equity and liabilities	800'049	100	756'521	100
Short-term liabilities	48'084		50'915	
Accrued payables	32'019		27'699	
Accrued expenses	16'065		23'216	
Long-term liabilities	43'920		53'920	
Loan government	0		10'000	
Provisions	43'920		43'920	
Equity	708'045	89	651'686	86
Share capital	440'000		440'000	
Reserves	14'000		4'250	
Accumulated profit 01.01.	197'685		24'310	
Profit / loss	56'360		183'126	

The balance sheet shows that the company itself is almost completely funded by the shareholders (equity/debt-ratio is around 90%) and that currently there are no long-term debts. The position 'debtor SBB' is an account at the SBB, which can be turned into money at any time. The installations are almost completely depreciated. The item 'securities' is a long-term investment which can be turned into money at the end of 2017.

3.1.3 Capital distribution

Currently, the share capital is divided into 1'200 shares of a nominal value of CHF 100, 500 or 1'000, and the top 13 shareholders hold 36.18% of the total share capital. The LKS never paid dividends to the shareholders, the share capital is not considered as an investment in its proper sense but more as a sympathetic contribution to the LKS and the touristic region of central Switzerland.

3.1.4 Development 2006 to 2012

Table 9 compares the income statements of the LKS for the years 2006 to 2012:

Table 9: Comparison income statements 2006-2012

In CHF	2006	2007	2008	2009	2010	2011	2012
Transport revenues	256'564	268'735	247'381	305'200	249'233	290'774	287'970
District contribution	25'000	25'000	25'000	25'000	25'000	25'000	25'000
Other income	48'103	40'753	38'602	50'745	41'912	43'746	40'660
Decrease in profits	-3'822	-2'893	-4'289	-5'110	-3'333	-3'913	-4'422
Operating revenues	325'845	331'595	306'694	375'835	312'812	355'607	349'208
Trade goods expenses	-11'164	-8'827	-8'604	-7'397	-6'971	-3'602	-3'445
Personnel expenses	-158'516	-175'697	-177'123	-199'129	-174'492	-171'041	-184'764
Operational expenses	-73'965	-61'093	-75'063	-84'208	-74'956	-79'713	-90'562
Operating expenses	-243'645	-245'617	-260'790	-290'734	-256'419	-254'356	-278'771
EBITDA	82'200	85'978	45'904	85'101	56'393	101'251	70'437
Depreciation	-36'150	-64'199	-46'454	-46'450	-46'450	-45'000	-9'100
Provisions	-40'000	0	0	0	0	0	0
EBIT	6'050	21'779	-550	38'651	9'943	56'251	61'337
Financial expenses	0	-184	-1'694	-396	-377	-377	-419
Financial income	461	3'032	4'088	7'265	6'218	5'001	4'904
EBT	6'511	24'627	1'844	45'520	15'784	60'875	65'822
Extraordinary profit	0	0	0	0	0	120'166	0
Taxes	-1'265	-18'372	-1'935	-1'485	-1'329	2'085	-9'462
Profit / loss	5'246	6'255	-91	44'035	14'455	183'126	56'360
Free cash flow	81'396	70'454	46'363	90'485	60'905	228'126	65'460

The free cash flow is calculated by considering only the cash flow relevant positions (see [5] for more information about the cash flow calculation), in this case it is the profit respective loss plus the depreciation and provisions, as these are the only positions in table 9 that are not cash flow relevant.

The operational revenue is divided into winter and summer revenue, usually the summer revenue corresponds to around 75% of the total revenue. Therefore the LKS is not dependent of snow conditions as many other cable car companies. But of course, the weather conditions during the year have a big impact to the financial success as for most of the companies that operate in the touristic sector. Table 9 shows that the transport revenues can change quite a lot between the years, this deviation is a result of the weather conditions.

With the numbers in table 9, 2012 can be considered as a reference year in matters of the revenues, as it is quite arbitrary on the revenue side based on the last few years and because the weather conditions in 2012 were quite average. On the expenditure side, in the year 2012, there was made a one-time expenditure for personnel costs (social security) of CHF 12'000.-. This expenditure will not occur regularly in the future.

The compound annual growth rate (CAGR, details for the calculation see in [8]) is the geometric mean growth rate for given time period. For the operating revenues, the CAGR for the years 2006 to 2012 results to 1.16%. The CAGR for the expenses for the years 2006 to 2012 (if from the value for 2012, the extraordinary items for the social security of CHF 12'000 and RigiPlus of CHF 5'000 are subtracted), results to 1.20%.

3.2 Estimation capital at the end of 2017

With the numbers and explanations in section 3.1, a forecast about the financial situation at the end of the year 2017 is carried out. This estimates the availability of own funds for the investments and shows the necessary additional capital for the different strategic options.

Tables 10 and 11 show the predicted income, free cash flow and capital until 2017 for an expected annual growth rate of the revenues of 1.16% and of the expenses of 1.20% (same growth rate as the CAGR for the last 6 years, see above). All future revenues except the district contribution and all future expenses are calculated with that annual growth rate. The numbers for 2012 are taken from the annual report.

Table 10: Income statement forecast

	2012	2013	2014	2015	2016	2017
Transport revenues	287'970	291'310	294'690	298'108	301'566	305'064
District contribution	25'000	25'000	25'000	25'000	25'000	25'000
Other income	40'660	41'132	41'609	42'091	42'580	43'074
Decrease in profits	-4'422	-4'475	-4'529	-4'583	-4'638	-4'694
Operating revenues	349'208	352'967	356'770	360'616	364'508	368'444
Trade goods expenses	-3'445	-3'486	-3'528	-3'571	-3'613	-3'657
Personnel expenses	-184'764	-174'837	-176'935	-179'058	-181'207	-183'382
Operational expenses	-90'562	-91'649	-92'749	-93'862	-94'988	-96'128
Operating expenses	-278'771	-269'972	-273'212	-276'490	-279'808	-283'166
EBITDA	70'437	82'995	83'558	84'126	84'699	85'278
Depreciation	-9'100	-9'100	-9'100	-9'100	-9'100	0
Provisions	0	0	0	0	0	0
EBIT	61'337	73'895	74'458	75'026	75'599	85'278
Financial expenses	-419	-424	-429	-434	-439	-445
Financial income	4'904	4'961	5'018	5'077	5'136	5'195
EBT	66'660	79'280	79'905	80'537	81'174	90'918
Taxes	-9'462	-9'576	-9'690	-9'807	-9'924	-10'044
Profit / Loss	57'198	69'704	70'215	70'730	71'250	80'874
Free cash flow	66'298	78'804	79'315	79'830	80'350	80'874

For the personnel expenses, the value for 2013 and the following years is smaller than the value for 2012, because the one-time expenditure of CHF 12'000 for social security of the employees will not be paid in future. The profit for the years 2013 to 2017 is generally bigger than in the years before, because the cable car is almost completely depreciated and not much depreciation cost is due in the next years. However, this does not affect the cash flow.

Table 11: Balance sheet forecast

ASSETS	2012	2013	2014	2015	2016	2017
Liquid Assets	450'622	624'360	703'575	783'305	863'555	944'430
Accounts Receivable	165'034	70'000	70'000	70'000	70'000	70'000
Stock	353	353	353	353	353	353
Accrued Income	15'449	15'449	15'449	15'449	15'449	15'449
Current Assets	631'458	710'162	789'377	869'107	949'357	1'030'232
Securities	100'000	100'000	100'000	100'000	100'000	100'000
Cable Car	36'001	27'001	18'001	9'001	1	1
Shares	3'000	3'000	3'000	3'000	3'000	3'000
Office Equipment	390	390	390	390	390	390
Immovable Properties	29'200	29'200	29'200	29'200	29'200	29'200
Fixed Assets	168'591	159'591	150'591	141'591	132'591	132'591
Total Assets	800'049	869'753	939'968	1'010'698	1'081'948	1'162'823
EQUITY AND LIABILITIES	2012	2013	2014	2015	2016	2017
Accounts Payables	32'019	32'019	32'019	32'019	32'019	32'019
Accrued Expenses	16'065	16'065	16'065	16'065	16'065	16'065
Short-Term Liabilities	48'084	48'084	48'084	48'084	48'084	48'084
Provisions Ropes	28'920	28'920	28'920	28'920	28'920	28'920
Provisions Maintenance	15'000	15'000	15'000	15'000	15'000	15'000
Long-Term Liabilities	43'920	43'920	43'920	43'920	43'920	43'920
Total Liabilities	92'004	92'004	92'004	92'004	92'004	92'004
Share Capital	440'000	440'000	440'000	440'000	440'000	440'000
Reserves	14'000	14'000	14'000	14'000	14'000	14'000
Accumulated Profit 01.01.	197'685	254'045	323'749	393'964	464'694	535'944
Profit / Loss 31.12.	56'360	69'704	70'215	70'730	71'250	80'874
Equity	708'045	777'749	847'964	918'694	989'944	1'070'819
Total Equity and Liabilities	800'049	869'753	939'968	1'010'698	1'081'948	1'162'823
Equity / Debt ratio	88.5%	89.4%	90.2%	90.9%	91.5%	92.1%

In order to see what happens if the growth rates change, tables 12 and 13 display the same calculations for an annual revenues growth rate of 2.5% and an expenses growth rate of 0%, respectively revenues growth rate of 0% and expenses growth rate of 2.5%:

Table 12: Sensitivity test: growth revenues 2.5%, growth expenses 0%

	2012	2013	2014	2015	2016	2017
Operating revenues	349'208	357'424	365'845	374'477	383'324	392'393
Operating expenses	-278'771	-266'771	-266'771	-266'771	-266'771	-266'771
EBITDA	70'437	90'653	99'074	107'706	116'553	125'622
Profit / Loss	57'198	77'536	86'083	94'844	103'823	122'127
Free cash flow	66'298	86'636	95'183	103'944	112'923	122'127

	2012	2013	2014	2015	2016	2017
Current Assets	631'458	717'994	813'078	916'921	1'029'744	1'151'871
Fixed Assets	168'591	159'591	150'591	141'591	132'591	132'591
Total Assets	800'049	877'585	963'669	1'058'512	1'162'335	1'284'462
Total Liabilities	92'004	92'004	92'004	92'004	92'004	92'004
Equity	708'045	785'581	871'665	966'508	1'070'331	1'192'458
Total Equity and Liabilities	800'049	877'585	963'669	1'058'512	1'162'335	1'284'462

Table 13: Sensitivity test: growth revenues 0%, growth expenses 2.5%

	2012	2013	2014	2015	2016	2017
Operating revenues	349'208	349'097	348'984	348'868	348'749	348'627
Operating expenses	-278'771	-273'440	-280'276	-287'283	-294'465	-301'827
EBITDA	70'437	75'657	68'708	61'585	54'284	46'800
Profit / Loss	57'198	62'192	55'011	47'650	40'106	41'473
Free cash flow	66'298	71'292	64'111	56'750	49'206	41'473

	2012	2013	2014	2015	2016	2017
Current Assets	631'458	702'650	766'661	823'312	872'418	913'890
Fixed Assets	168'591	159'591	150'591	141'591	132'591	132'591
Total Assets	800'049	862'241	917'252	964'903	1'005'009	1'046'481
Total Liabilities	92'004	92'004	92'004	92'004	92'004	92'004
Equity	708'045	770'237	825'248	872'899	913'005	954'477
Total Equity and Liabilities	800'049	862'241	917'252	964'903	1'005'009	1'046'481

The comparison of these different growth scenarios shows, that the available funds at the end of 2017 are quite sensitive to the assumed growth rates. The total assets change by almost CHF 240'000 if we change the scenario from a growth in revenues to a growth in expenses.

3.3 Capital needs per strategic option

With the estimations in section 3.2, the necessary additional capital for the strategic options can be calculated. The calculation is done with an expected annual growth rate of revenues of 1.16% and expenses of 1.20% according to the CAGR of the last six years (see section 3.1.4).

The total capital, available at the time of the investment, is expected to be close to CHF 1'162'000, whereof around CHF 32'000 are fixed assets, so CHF 1'130'000 are available and can be made into money at any time. The necessary working capital for the operation is quite low, as there is no stock required. To have some reserves and to guarantee the liquidity of the company, a necessary working capital of CHF 180'000 can be assumed, which results to about 60% of the expenses for a year.

As a result, around CHF 950'000 of the investments can be financed with available equity, which leads to the following capital needs per strategic option:

Table 14: Capital needs per option

In CHF 1'000	Investment	Available liquid assets	Required additional capital
Option A	2'481	950	1'531
Option B	4'945	950	3'995
Option C	7'820	950	6'870

4 Investment project evaluation

This section estimates the future cash flow for the different strategic options outlined in section 2 and values the renewal projects with different assumptions, independently of the capital sources and financing options.

The following parameters differ between the scenarios:

- **Raise of revenues by 2018:**

Generally, there is a growth of the revenues expected after the renewal, because of the following reasons:

- Most of the turnover is made in nice-weather summer days, when the cable car runs at full capacity. During these days, the number of persons who want to use the cable car exceeds the current capacity. Therefore, with the bigger capacity, more persons can ride with the LKS on these days.
- A new / renewed cable car is likely to attract more people than if the business just goes on.
- There are ongoing and new marketing activities, for example the participation in RigiPlus.

The different scenarios use values from a small growth up to a growth proportional to the increased capacity of the cable car.

- **Raise of expenses by 2018:**

The expenses are not likely to grow in the same proportion as the revenues because of the following reasons:

- During operational hours, the current staffing of the company will be adequate also for a double amount of passengers (personnel cost will not grow as much as income).
- The operational cost for the cable car will grow because of more transported persons. However, the costs will not grow proportionally to the income, because the number of rides almost stays the same (for options B and C there are some more rides because of the faster operation).

The scenarios deal with expenses growths that are generally smaller than the revenues growth.

- **Annual growth of revenues and expenses:**

In agreement with LKS, to have simpler numbers, the annual growth of the revenues and expenses for the years after 2018 is assumed to be 1% in the scenarios below. This value is close to the CAGR for 2006 to 2012 (see section 3.1.4), but

a bit more conservative than using the exact numbers as long as the revenues are more than 25% higher than the expenses (because the difference of the exact CAGR compared to using 1% for expenses is 25% higher than the difference of the exact CAGR for revenues compared to using 1%).

- **Discount factor:**

The discount factor varies between the scenarios. The following ideas influence the chosen value of the discount factor:

- In [7], Pablo Fernandez, Javier Aguirreamalloa and Pablo Linares performed a survey to get information about the commonly used discount factor. Answers were collected from companies active in different sectors and from professors, in many different countries. The answers from Swiss companies and professors showed an average risk-free rate of 1.3%, and an average risk premium of 5.6%.
- Equity usually is expensive capital for investments. In the special case of a regional cable car, the equity often is cheap, for the LKS even for free (no dividends are paid and the shareholders do not hold the shares to earn money with them).
- For small amounts, a bank credit can be retrieved for moderate conditions because the loan can be secured with land properties.

Therefore, the scenarios are based on a discount factor of 1.5% to 4%.

The big amounts of depreciation often lead to a loss for the company in the first years after the investments. For the more expensive financing options, some of the investments might not be activated in the balance sheet, what could lead to smaller depreciation. Or it might be possible not to depreciate the complete amount, what would lead to a longer time span until all the investments are depreciated. Because of the high depreciation and therefore no profit in the income statement, the tax expenses will be close to zero for a long time. It is possible, that after the investments are depreciated to big parts, there are higher tax expenses in later years. The tax expenses are not considered in the calculations.

The depreciation is included in the calculations as proposed by the government. Because the depreciation is not cash flow relevant, it doesn't change the cash flow calculations and the project valuation.

The following sections estimate the future cash flows and results of the operation of the business for the different strategic options and value the investment projects. For all scenarios, the net present value (NPV) is calculated (sum of all net inflows minus the sum of all net outflows). The future cash flows are discounted with the chosen discount rate. The calculations are made for 25 years, which corresponds to the duration of the new operation concession. So, the net present value of a scenario can be calculated by

subtracting the investment costs (not discounted, as they are due at the beginning of the project) from the discounted cumulated free cash flow at the end of 2042. Details about the calculation of the net present value can be found in the publication by Prof. Dr. Christoph Lengwiler and Prof. Dr. Philipp Lütolf in section 2.2 [5].

The net present value (negative or positive) determines if the investment project with the chosen assumptions is profitable.

4.1 Calculations option A

For option A, the total investments are CHF 2'481'000. In the following tables, the cash flow is calculated for several scenarios with different assumptions.

4.1.1 Scenario 1

In scenario 1, the calculations are made with the following assumptions:

- Raise of revenues by 2018: 10%
- Raise of expenses by 2018: 5%
- Annual growth of revenues and expenses: 1%
- Discount factor: 4%

The raise of revenues by 2018 of 10% is realistic because of the bigger capacity of the cable car, the raise of expenses of half of the raise of revenues seems adequate because the staffing and the number of rides will not change after the renewal for this scenario. The discount factor of 4% is small in case of an investment with a monetary motive, because the average risk free rate and the average risk premium added results to 6.9% for Switzerland (see above). But for the special case with cheap equity and moderate interest for loans, 4% is probably too high. The annual growth of revenues and expenses after 2018 is assumed to be 1%. Table 15 shows the calculations for scenario 1:

Table 15: Option A – Scenario 1

In CHF	2017	2018	2019	2020	2030	2040	2042
Operating revenue	363'659	404'025	408'065	412'146	455'266	502'897	513'005
Operating expenses	-280'758	-297'744	-300'721	-303'729	-335'505	-370'607	-378'056
EBITDA	82'901	106'281	107'344	108'418	119'760	132'290	134'949
Depreciation	0	-183'600	-183'600	-183'600	-63'000	-63'000	-63'000
Provisions	0	0	0	0	0	0	0
EBIT	82'901	-77'319	-76'256	-75'182	56'760	69'290	71'949
Profit / Loss	77'924	-77'319	-76'256	-75'182	56'760	69'290	71'949
Free Cash Flow	77'924	106'281	107'344	108'418	119'760	132'290	134'949
Cumulated Discounted Free Cash Flow		106'281	209'332	309'249	1'155'711	1'777'343	1'880'255

The net present value for the project results to CHF -600'745 (investments subtracted from cumulated discounted free cash flow in 2042). With these assumptions, the project is clearly not profitable.

4.1.2 Scenario 2

In scenario 2, the calculations are made with the following assumptions:

- Raise of revenues by 2018: 10%
- Raise of expenses by 2018: 5%
- Annual growth of revenues and expenses: 1%
- Discount factor: 1.5%

All numbers are equal to scenario 1 (see section 4.1.1), except the discount factor changed to 1.5%. This is a very low discount factor, but for the special conditions that could fit the LKS (investments partly funded with cheap capital, low interest costs for loans because of securities), it is realistic to achieve a medium discount factor for the total capital as low as 1.5%.

Table 16 shows the calculations for scenario 2:

Table 16: Option A – Scenario 2

In CHF	2017	2018	2019	2020	2030	2040	2042
Operating revenue	363'659	404'025	408'065	412'146	455'266	502'897	513'005
Operating expenses	-280'758	-297'744	-300'721	-303'729	-335'505	-370'607	-378'056
EBITDA	82'901	106'281	107'344	108'418	119'760	132'290	134'949
Depreciation	0	-183'600	-183'600	-183'600	-63'000	-63'000	-63'000
Provisions	0	0	0	0	0	0	0
EBIT	82'901	-77'319	-76'256	-75'182	56'760	69'290	71'949
Profit / Loss	77'924	-77'319	-76'256	-75'182	56'760	69'290	71'949
Free Cash Flow	77'924	106'281	107'344	108'418	119'760	132'290	134'949
Cumulated Discounted Free Cash Flow		106'281	212'015	317'205	1'339'759	2'310'857	2'499'131

The parameters are still moderate, but the discount factor is adapted to the availability of cheap equity. The net present value of the project results to CHF 18'131, a small profitable outcome.

If the annual growth for revenues and expenses after the year 2018 changes to 0.5%, the cumulated discounted free cash flow results to CHF 2'347'611, making the project loss-making with a net present value of CHF -133'389. Changing the annual growth to 1.5%, the cumulated discounted free cash flow is CHF 2'662'989, what results to a profitable project with a net present value of CHF 181'989.

4.1.3 Scenario 3

In scenario 3, the calculations are made with the following assumptions:

- Raise of revenues by 2018: 15%
- Raise of expenses by 2018: 7.5%
- Annual growth of revenues and expenses: 1%
- Discount factor: 2%

The assumptions in this scenario are moderate optimistic, with a raise of revenues by 15% in 2018, and a raise of expenses by half of that. The discount factor is assumed to be 2% in this scenario, half of a percent higher than in scenario 2. The annual growth of the revenues and expenses after 2018 is set to 1%

Table 17 shows the calculations for scenario 3:

Table 17: Option A – Scenario 3

In CHF	2017	2018	2019	2020	2030	2040	2042
Operating revenue	363'659	422'390	426'614	430'880	475'960	525'755	536'323
Operating expenses	-280'758	-304'833	-307'881	-310'960	-343'493	-379'430	-387'057
EBITDA	82'901	117'557	118'732	119'920	132'466	146'325	149'266
Depreciation	0	-183'600	-183'600	-183'600	-63'000	-63'000	-63'000
Provisions	0	0	0	0	0	0	0
EBIT	82'901	-66'043	-64'868	-63'680	69'466	83'325	86'266
Profit / Loss	77'924	-66'043	-64'868	-63'680	69'466	83'325	86'266
Free Cash Flow	77'924	117'557	118'732	119'920	132'466	146'325	149'266
Cumulated Discounted Free Cash Flow		117'557	233'915	349'086	1'438'122	2'421'039	2'605'817

Comparing the investment cost and the cumulated discounted free cash flow, this scenario shows a profitable net present value of CHF 124'817.

If the discount factor is set to 1.5%, the resulting cumulated discounted free cash flow in 2042 results to CHF 2'764'270. If the annual growth after 2018 changes to 0% (additionally to changing the discount factor to 1.5%), the resulting cumulated discounted free cash flow changes to CHF 2'441'619. These additional calculations show that there is a very fine line between a profitable and a loss-making outcome for the project.

4.1.4 Scenario 4

In scenario 4, the calculations are made with the following assumptions:

- Raise of revenues by 2018: 19%
- Raise of expenses by 2018: 9.5%
- Annual growth of revenues and expenses: 1%
- Discount factor: 2%

The assumptions in this scenario are optimistic, with a raise of revenues of 19% in 2018. This value corresponds to the growth of the capacity of the cable car for option A (see table 4). The expenses are expected to rise by half of the revenues in 2018. The other assumptions are equal to scenario 3.

Table 18 shows the calculations for scenario 4:

Table 18: Option A – Scenario 4

In CHF	2017	2018	2019	2020	2030	2040	2042
Operating revenue	363'659	437'082	441'453	445'867	492'515	544'043	554'978
Operating expenses	-280'758	-310'504	-313'609	-316'745	-349'884	-386'490	-394'258
EBITDA	82'901	126'577	127'843	129'122	142'631	157'553	160'720
Depreciation	0	-183'600	-183'600	-183'600	-63'000	-63'000	-63'000
Provisions	0	0	0	0	0	0	0
EBIT	82'901	-57'023	-55'757	-54'478	79'631	94'553	97'720
Profit / Loss	77'924	-57'023	-55'757	-54'478	79'631	94'553	97'720
Free Cash Flow	77'924	126'577	127'843	129'122	142'631	157'553	160'720
Cumulated Discounted Free Cash Flow		126'577	251'864	375'872	1'548'474	2'606'813	2'805'769

For these optimistic assumptions with a raise in revenues according to the raise in capacity of the cable car, the net present value is CHF 324'769 and therefore shows a clearly profitable outcome.

If the annual growth after 2018 is changed to 0%, the net present value drops to CHF 3'773. Again, this shows that there is a small edge in the assumptions to stay on the profitable side for the investment project.

4.1.5 Summary

The calculations in the different scenarios for option A show that it is difficult to make a profitable project on the investments. The returning cumulated discounted free cash flow exceeds the necessary investments of CHF 2'481'000 only if the assumptions are on the edge. So the parameters need to be set quite optimistic to result in a positive return on investments.

With a **discount factor of 4%** (which is too low in case of investments to make money, but too high in the case of free equity capital), the revenues have to rise by 19% and expenses by only 5% in 2018 to make the project profitable.

With a **discount factor of 2%**, an increase of the revenues by 12% and of the expenses by 6% would just be profitable. Given a **discount factor of 1.5%**, an increase of the revenues by 10% and of the expenses by 5% would make the project profitable.

The additional calculations for scenarios above for the **annual growth after the year 2018** show that the net present value for the project is very volatile to the chosen value. Even a small change as described in scenario 2 can switch the project from being profitable to loss-making.

4.2 Calculations option B

For option B, investments of CHF 4'945'000 are necessary.

4.2.1 Scenario 1

In scenario 1, the calculations are made with the following assumptions:

- Raise of revenues by 2018: 20%
- Raise of expenses by 2018: 10%
- Annual growth of revenues and expenses: 1%
- Discount factor: 4%

The increase in the revenues of 20% by 2018 seems realistic because of the increased capacity of the cable car, the increase in expenses of 10% (half of the increase in revenues) is also suitable because the staffing and the number of rides doesn't change significantly. The chosen discount factor of 4% is realistic, because for the big increase of the investment volume compared to option A, it cannot be expected that the capital can be gathered for the same cost of capital.

Table 19 displays the calculations for scenario 1:

Table 19: Option B – Scenario 1

In CHF	2017	2018	2019	2020	2030	2040	2042
Operating revenue	363'659	440'755	445'162	449'614	496'653	548'614	559'642
Operating expenses	-280'758	-311'922	-315'041	-318'192	-351'482	-388'254	-396'058
EBITDA	82'901	128'833	130'121	131'422	145'172	160'360	163'583
Depreciation	0	-183'600	-183'600	-183'600	-63'000	-63'000	-63'000
Provisions	0	0	0	0	0	0	0
EBIT	82'901	-54'767	-53'479	-52'178	82'172	97'360	100'583
Profit / Loss	77'924	-54'767	-53'479	-52'178	82'172	97'360	100'583
Free Cash Flow	77'924	128'833	130'121	131'422	145'172	160'360	163'583
Cumulated Discounted Free Cash Flow		128'833	253'749	374'867	1'400'935	2'154'468	2'279'216

The net present value results to CHF -2'665'784, a big loss of money. With this scenario, it is impossible to legitimate the investments from a financial point of view. Therefore, in scenario 2 a very optimistic calculation is shown.

4.2.2 Scenario 2

In scenario 2, the calculations are made with the following assumptions:

- Raise of revenues by 2018: 32%
- Raise of expenses by 2018: 10%
- Annual growth of revenues and expenses: 1%
- Discount factor: 2%

The raise of revenues by 2018 of 32% corresponds to the increased capacity of the cable car for option B (see table 4). This assumption is very optimistic itself, and additionally the raise in expenses of only 10% is quite optimistic as well. The discount factor is set to 2% for this scenario, difficult to realize but feasible with cheap equity capital.

Table 20 displays the calculations for scenario 2:

Table 20: Option B – Scenario 2

In CHF	2017	2018	2019	2020	2030	2040	2042
Operating revenue	363'659	484'830	489'678	494'575	546'319	603'476	615'606
Operating expenses	-280'758	-311'922	-315'041	-318'192	-351'482	-388'254	-396'058
EBITDA	82'901	172'908	174'637	176'383	194'837	215'221	219'547
Depreciation	0	-183'600	-183'600	-183'600	-63'000	-63'000	-63'000
Provisions	0	0	0	0	0	0	0
EBIT	82'901	-10'692	-8'963	-7'217	131'837	152'221	156'547
Profit / Loss	77'924	-10'692	-8'963	-7'217	131'837	152'221	156'547
Free Cash Flow	77'924	172'908	174'637	176'383	194'837	215'221	219'547
Cumulated Discounted Free Cash Flow		172'908	344'052	513'451	2'115'255	3'560'974	3'832'753

Even with these optimistic numbers, the net present value for the project shows a loss of more than CHF 1 million. If the calculations are done with a discount factor of 0, the resulting cumulated discounted free cash flow is CHF 4.8 million, so even if all capital is free of capital cost, the net present value is negative.

These calculations make option B not realizable from a financial point of view.

4.3 Option C

For option C, investments of CHF 7'820'000 are necessary.

4.3.1 Scenario 1

In scenario 1, the calculations are made with the following assumptions:

- Raise of revenues by 2018: 40%
- Raise of expenses by 2018: 20%

- Annual growth of revenues and expenses: 1%
- Discount factor: 4%

The raise in revenues by 40% is optimistic, but achievable with the bigger cabin and the big increase in the capacity of the cable car. The raise of expenses of 20% seems realistic because the current staffing and number of drives does not change significantly. The discount factor of 4% seems feasible if a good part of the investments can be financed with cheap equity money.

Table 21 shows the calculations for scenario 1:

Table 21: Option C – Scenario 1

In CHF	2017	2018	2019	2020	2030	2040	2042
Operating revenue	363'659	514'214	519'356	524'550	579'429	640'050	652'915
Operating expenses	-280'758	-340'279	-343'681	-347'118	-383'435	-423'550	-432'064
EBITDA	82'901	173'935	175'674	177'431	195'994	216'500	220'851
Depreciation	0	-183'600	-183'600	-183'600	-63'000	-63'000	-63'000
Provisions	0	0	0	0	0	0	0
EBIT	82'901	-9'665	-7'926	-6'169	132'994	153'500	157'851
Profit / Loss	77'924	-9'665	-7'926	-6'169	132'994	153'500	157'851
Free Cash Flow	77'924	173'935	175'674	177'431	195'994	216'500	220'851
Cumulated Discounted Free Cash Flow		173'935	342'583	506'103	1'891'384	2'908'719	3'077'140

These assumptions are legitimate and quite defensive. They result to a big loss on the project, the net present value is almost CHF -5 million. Therefore, scenario 2 calculates the project with optimistic assumptions.

4.3.2 Scenario 2

In scenario 2, the calculations are made with the following assumptions:

- Raise of revenues by 2018: 78%
- Raise of expenses by 2018: 25%
- Annual growth of revenues and expenses: 1%
- Discount factor: 2%

The raise of revenues of 78% is very optimistic and corresponds to the raise in capacity for option C (see table 4). The raise of expenses of 25% is very low compared to the raise in revenues and therefore optimistic as well. The discount factor of 2% is very low in reference to the big investment amount and difficult to realize.

Table 22 shows the calculations for scenario 2:

Table 22: Option C – Scenario 2

In CHF	2017	2018	2019	2020	2030	2040	2042
Operating revenue	363'659	653'786	660'324	666'927	736'703	813'778	830'135
Operating expenses	-280'758	-354'457	-358'002	-361'582	-399'411	-441'198	-450'066
EBITDA	82'901	299'329	302'322	305'346	337'292	372'580	380'069
Depreciation	0	-183'600	-183'600	-183'600	-63'000	-63'000	-63'000
Provisions	0	0	0	0	0	0	0
EBIT	82'901	115'729	118'722	121'746	274'292	309'580	317'069
Profit / Loss	77'924	115'729	118'722	121'746	274'292	309'580	317'069
Free Cash Flow	77'924	299'329	302'322	305'346	337'292	372'580	380'069
Cumulated Discounted Free Cash Flow		299'329	595'605	888'859	3'661'817	6'164'568	6'635'057

Even with these very optimistic growth assumptions, the net present value of the project is CHF -1'184'943. To make it profitable, the discount factor (besides the very optimistic other assumptions) needs to be set to 0.5%.

Given all these calculations, it makes no sense to go for strategic option C from a financial point of view.

4.4 Conclusion

The calculations in this section show that it is very difficult to get a positive return on investment for the project. This is no surprise, as many similar cable car companies struggle with the same problems and have trouble showing profitable operational results.

For options B and C, from a financial point of view, there is no positive return on investment to expect, not even with the very optimistic assumptions in scenario 2 of each of these options – even if the cost of capital is zero, it is almost impossible to get a positive return on investments. However, this covers only the financial view. There might be other reasons that could legitimate to go for these options.

For option A, the calculations show that it is difficult to get a positive return on investment, but with specific assumptions, it is possible to get a profitable project. The edge is quite close, and the investments are not free of risk.

As a result, only option A could make sense from an entrepreneurial point of view.

5 Financing possibilities

This section outlines different financing possibilities and compares them. Basically, there exist 2 different kinds of financing: equity financing (for example with share capital) and debt financing (for example with a bank loan).

Of course all available reserves and equity can be used for the investments. They are not listed below because these capital sources have to be used anyway to get enough foreign capital for any investment.

5.1 Share capital

5.1.1 Description

As a public company, LKS can issue more shares to expand the share capital.

5.1.2 Discussion

For common companies, equity capital is more expensive than debt capital (because in case of bankruptcy, the equity capital is the money that is paid back last – higher risk requires higher return), this can make several percentage of cost for the capital. The shareholders are paid out with dividends.

For the LKS, the situation is exactly the other way around: here the debt capital is expensive because of the interest payments, and the equity capital is ‘for free’. The reason is that the LKS never paid dividends up to now, and therefore has no costs for the share capital. The shareholders of the LKS do not see themselves as investors in its proper sense, but more as sponsors. Most of the shareholders are locals that have an emotional connection to the company or to the mountain, or profit in an indirect way from the cable car (gastronomy or supplier for example).

In order to finance the necessary investments, it is important that the share capital is seen as ‘free’ capital in future as well. In case of an increase of the share capital, the new shareholders should not expect any monetary return on their investment.

5.2 Bank loans

5.2.1 Description

Bank loans can be a good capital source, but it is usually quite difficult to get, especially when the future process of the business operation is unclear. For a bank, it is important

that the loan can be secured to minimize the risk of losing the money, therefore the lending politics are quite defensive.

5.2.2 Discussion

A meeting with the Cantonal Bank of Schwyz (with Walter Rupf on 11.07.2013) showed the conditions to get a loan from the bank.

For unsecured loans (security for the bank only with future cash flows), the following conditions apply:

- The lending company must be able to repay the complete loan within 7 years (viability – Tragbarkeit). It is possible to get a loan life span of more than 7 years, the viability only defines the maximal amount of credit.
- The current interest rate is around 4.5% per year.

If the loan can be covered (e.g. by land property), the conditions change in the following way:

- The company still has to be able to repay the complete loan within 7 years (no change in the maximum amount of credit), unless the secured items create more cash flow (this is usually not the case for land property of a cable car company).
- The interest rate is around 2% lower than for unsecured loans.

Section 6.1 contains a calculation of the amount of credit that could be received depending on specific assumptions.

5.3 Non bank loans

5.3.1 Description

Loans can come from other sources than from banks, for example from **private persons**. If a private person accepts looser conditions than a bank, some money on top of the maximum acquirable bank loan could be collected. In the realm of possibilities is also that **another company** can be persuaded to invest some money into the LKS, for example one of the touristic companies in the region of Rigi that has an interest in the future of the LKS.

Another source of capital could come from the **district of Küssnacht** (they already donate an annual amount of money for the operation of the LKS). For such a big and necessary investment project as the renewal of the LKS, the district could decide to help to finance the investments with a loan, a premium rate loan, an interest-free loan or a subsidy.

Another possibility, which is specific to touristic companies, is a premium interest **governmental loan**. On average, the Swiss cable car companies have around 9% of the total capital as interest-free loan from the government, distributed from the different REVs (Regionaler Entwicklungs-Verband) to the single companies (details see in [5]). Some conditions apply to get such money, but as for the last renewal, the LKS could finance a part of the investments with an interest-free governmental loan, it might be that this will be the case again.

5.3.2 Discussion

Beside bank loans, especially no interest or premium interest loan from the government and investments from the district of Küssnacht have to be taken into consideration. Up to now, the LKS never took a loan from a private person or another company, however it is imaginable that there are private persons or companies that are willing to buy bonds of the LKS with some return on their money. But it would be better for the LKS if these subjects could be convinced to buy shares instead of bonds.

5.4 Other Sources

Another financing possibility could be to **lease some equipment**. It is quite common for cable car companies to lease for example the cabins, but this only applies for cable cars with standard components as cabins that can be used for other companies as well. For the LKS, the equipment is very specific, therefore it is not likely that some of it can be leased.

In the realm of possibility could be to have some **cross-subsidization**. The LKS owns land properties in the center of Küssnacht, which is quite wanted. It would be possible to finance a part of the investment costs by building accommodation properties for example on the land and to integrate the cable car into the project. Examining the possibility of cross-subsidization is not in the scope of this thesis.

6 Application to LKS

This section brings the calculations in sections 4 and 5 together. The financing possibilities are applied to the specific case of the LKS and different alternatives are discussed.

6.1 General considerations

Generally, it is a good idea to gather as much capital as possible from the equity side (shares), as in this special case of a regional positioned cable car, the equity (share capital) is cheaper than debt capital (in the current situation, it is even for free). The limiting factor for equity capital is the number of persons that are willing to buy shares. It is important for a share capital increase that the new capital is not gathered from profit-oriented investors. The attitude of the shareholders must not change, because if the share capital has similar costs as debt capital or even more in the future, the total capital would change completely and the LKS could not operate profitably in the future.

The financing with a bank loan (the case was discussed with the cantonal bank of Schwyz, see section 5.2) is dependent on the future cash flows and the viability (Tragbarkeit). With the available land property of the LKS, the bank loan can be secured and the capital costs are moderate, but the amount of available loan is restricted. Table 23 shows an example of a calculation of the viability with a free cash flow of CHF 100'000 per year and an interest rate of 2.5% (the current interest rate for secured loans, see section 5.2.2):

Table 23: Example viability

Year	Amount 01.01.	Interest	Amortization	Amount 31.12.
1	650'000	16'250	83'750	566'250
2	566'250	14'156	85'844	480'406
3	480'406	12'010	87'990	392'416
4	392'416	9'810	90'190	302'227
5	302'227	7'556	92'444	209'782
6	209'782	5'245	94'755	115'027
7	115'027	2'876	97'124	17'903
8	17'903	448	99'552	-81'650
9	-81'650	-2'041	102'041	-183'691
10	-183'691	-4'592	104'592	-288'283

The free cash flow is used for interest payments and to repay the loan. The total loan has to be repaid within 7 years.

This example shows, that with these identifiers, the maximum bank loan expected is around CHF 650'000, because this is the amount that could be paid back within 7 years.

Finally, premium financing possibilities as loans with premium interest rates or interest-free loans should be used with first priority.

It is difficult to find other financing possibilities than the described ones. The cable car business is not considered as profitable in general, therefore, investors with clear financial aims are not likely to invest in this business.

6.2 Comparable companies

The Luftseilbahn Adliswil – Felsenegg ([10]) made renewal investments for a bigger cable car, but comparable to the investments now discussed for LKS. In 2008, the cabins (with 30 persons each), supporting ropes and different other parts were replaced (see [4]). The total investments for these renewals were CHF 3'432'425. Therefore, the investments were somewhere between strategic option A and B for LKS, but the LAF has a capacity (and therefore a possible cash flow) of around 2.5x the capacity of LKS.

The financing of the investments was as follows:

- Equity financing 312'547
- Bank loan 1'600'000
- Interest revenue 69'028
- District, commune, privates 1'450'850

Almost half of the total investments were financed by a bank loan (with a linear repay within 15 years and no premium conditions), and 42% came from private or communal sponsors.

This example shows that it is difficult to finance an investment for a cable car without the help from sponsors from private, commune, district or government.

6.3 Financial ratios proposed by Seilbahnen Schweiz

The federation of the Swiss cable cars (see [6]) proposes in its publication about the financial situation of cable car companies (see [9]) ranges in which important financial ratios should be to allow a successful operation. The ratios mainly apply for bigger companies, but most of them are also valid for small companies such as LKS.

The most important ratios are:

- Free cash flow / investment cost > 3.8%:
For the year 2012, this ratio cannot be computed for LKS. The free cash flow / total equity is 8.18%, what is a similar calculation and fulfills the proposal.
- Free cash flow / revenues > 28%:
The value for LKS in 2012 is 18.74%, below the proposed range.

- Equity / total capital > 40%:
The value for LKS in 2012 is 87%, this proposal is by far fulfilled.

Table 24 displays the fulfillment of the proposal for these ratios for the different strategic options. The most realistic scenario from section 4 is chosen for every option (scenario 2 for option A, scenario 1 for option B and C), and the ratios are calculated for the year 2018. The total capital is set to the investment costs for the specific option plus CHF 200'000 working capital, and it is assumed that, beside the currently available equity, the investments are financed with debt capital.

Table 24: Financial ratios in combination with strategic options

	Option A - Scenario 2	Option B – Scenario 1	Option C – Scenario 1
Free cash flow / investments	4.28% ✓	3.49% ✗	2.22% ✗
Free cash flow / revenues	26.3% ✗	29.2% ✓	33.8% ✓
Equity / total capital	42.9% ✓	22.4% ✗	14.3% ✗

The results in table 24 show, that it is difficult to fulfill the proposed results for these financial ratios for all options. For options B and C, a good part of the investments have to be financed by additional equity to stay in the proposed range for the 'equity / total capital' ratio. The 'free cash flow / investments' ratio is in the proposed range for option A only. For option B, the generated free cash flow is shortly below and for option C well below the proposed range. The 'free cash flow / revenues' ratio is fulfilled for options B and C, but marginally not fulfilled for option A.

6.4 Financing examples

The following sections show financing examples for the different strategic options. The calculations for option A are outlined in detail, for options B and C, only the resulting values (with similar calculations as in option A) are stated.

6.4.1 Option A

Summary for option A:

- Total investments CHF 2'481'000
- Available equity CHF 950'000
- Missing capital CHF 1'531'000

In the next sections, exemplary calculations are made for the different capital sources. Scenario 2 of option A (see section 4.1.2) is taken as base scenario, because it is moderate from the assumptions (small rise in revenues of 10%, raise in expenses of 5%) and results to a small positive net present value for the project (the assumed discount factor of 1.5% is still at the upper limit, given a big part of the required capital can be retrieved as equity with no capital cost).

6.4.1.1 Interest-free governmental loan

At the last renewal in 1998, the REV (Regionaler Entwicklungs-Verband, distributor of governmental loans) contributed with an interest-free loan of CHF 150'000 with a payback timespan of 15 years. As the total amount for the investments was CHF 830'000, the REV financed 18% of the investments.

As currently, 9% of the total capital of cable car companies consists of interest-free loans from the REV, and this is a medium value (not all companies just renewed their infrastructure, so most of them already paid back the loan partly), LKS can expect to get an interest-free loan in the same range.

18% of the investments for option A result to CHF 446'580. To be in a similar range as for the last renewal, the interest-free loan could be something like CHF 375'000 (15% of the total investments). With a similar repay period of 15 years, the annual pay back amount results to CHF 25'000.

6.4.1.2 Bank loan

In scenario 2 of option A, the free cash flow for the first seven years (which is used from the banks to compute the viability) is on average CHF 109'523. For easier computation, CHF 110'000 is taken as average value. As the payback amount for the interest-free loan from the REV reduces the cash flow, the amount of CHF 25'000 is subtracted from the free cash flow, therefore the resulting medium free cash flow is CHF 85'000.

Table 25 shows the obtainable bank loan for the assumptions above and an interest rate of 2.5%:

Table 25: Bank loan option A

Year	Amount 01.01.	Interest	Amortization	Amount 31.12.
1	550'000	13'750	71'250	478'750
2	478'750	11'969	73'031	405'719
3	405'719	10'143	74'857	330'862
4	330'862	8'272	76'728	254'133
5	254'133	6'353	78'647	175'487
6	175'487	4'387	80'613	94'874
7	94'874	2'372	82'628	12'246
8	12'246	306	84'694	-72'448
9	-72'448	-1'811	86'811	-159'259
10	-159'259	-3'981	88'981	-248'241

According to the calculations, the bank will grant a loan of about CHF 550'000 given they accept the assumptions. The repay conditions can be discussed with the bank, it will not be necessary to repay the complete amount within 7 years, which is good for the LKS, because not all cash flow is reserved, and the liquidity of the company can be guaranteed. But of course, the remaining free cash flow cannot be used to cover other loans, because this would influence the maximum amount that the bank would grant.

6.4.1.3 Other sources

After concerning REV and bank loans, there is still a gap of CHF 606'000. This remaining capital has to be gathered from other sources, like an increase in share capital, sponsorships from the district or private persons, or possibly by cross-subsidizing the renewal project.

6.4.1.4 Discussion

The contribution of the REV was not verified during this thesis, this has to be done when the concrete project exists. The cash flow values are realistic, and define the amount of money that can be expected from a bank loan.

The following considerations can influence the calculations:

- It might be possible, that the contribution of the REV doesn't need to be repaid from the beginning, but starting only after some years. This would influence the free cash flow in the first years and lead to an increase of the amount achievable as loan from the banks by CHF 150'000 to CHF 200'000.
- If the missing capital is gathered as equity capital (no capital costs), then the discount factor for the project valuation is around 0.6%. Therefore with these assumptions, the project itself would be profitable.
- Moving to a more optimistic scenario would increase the free cash flow, what could lead to an increase in the maximum accessible bank loan. But, no matter if

a more optimistic scenario is realistic, it is doubtful that the banks would deal with such a scenario. Moreover, it is possible that scenario 2 is already too optimistic for dealing with the banks, what would lead to a smaller amount than the banks are willing to grant as bank loan.

In general, the option A is difficult to finance, but can be possible with the assumptions of a small growth.

6.4.2 Option B

Summary for option B:

- Total investments CHF 4'945'000
- Available equity CHF 950'000
- Missing capital CHF 3'995'000

If the calculations for a contribution of the **REV** are done with 15% of the total investment amount, this results to around CHF 750'000 and a repay amount of CHF 50'000 per year, if the repay period is set to 15 years. This value is very high compared to the amount that LKS got for the last investment, so it is arguable if it is realistic.

Taking a mix of scenario 1 and scenario 2 (realistic and optimistic) leads to a free cash flow of around CHF 150'000 per year. After subtracting the repay amount of the REV contribution, there is a remaining free cash flow of CHF 100'000, what leads to maximum amount that can be retrieved as a **bank loan** of CHF 650'000.

After these transactions, there is still a gap of CHF 2'595'000 that must be financed from **other sources**. Changing the assumptions can move the missing amount a few percentages, but in general, the amount is too big to be financed realistically from own means.

To realize option B, the availability of a sponsor supporting with an amount in the scale of the missing capital is necessary.

6.4.3 Option C

Summary for option C:

- Total investments CHF 7'820'000
- Available equity CHF 950'000
- Missing capital CHF 6'870'000

If the similar calculations as for option A and B are made, this leads to a contribution from the **REV** of CHF 1'173'000 and a yearly repay of CHF 78'200. Considering a mix of scenario 1 and 2 (which is very optimistic) leads to a free cash flow of about CHF

240'000 per year, which results to around CHF 160'000 after subtracting the repay amount. With that, about CHF 1'050'000 can be expected as **bank loan**.

The missing amount that has to be collected from **other sources** is more than CHF 5'500'000.

Even more than for option B, to realize option C, LKS is heavily dependent on a sponsor which finances most of the investments.

6.5 Conclusion

Considering all calculations and discussions outlined in this thesis, in my opinion, only the financing of the investments for option A seems feasible. Already for the necessary investments to go on with the operation of the cable car, there is a gap of around CHF 600'000 that cannot be financed with bank loans, interest-free governmental loans or available equity. I guess it is difficult, but possible, to collect that amount as share capital from private persons and as subsidy or interest-free loan from the district and realize option A.

To go for options other than A, external financing is necessary. The depreciation for options B or C would turn the result of the company to a negative number for many years, if all investments are capitalized in the balance sheet and have to be depreciated.

As a conclusion, option A seems difficult but feasible to me. To realize options B or C, there is another party with non-monetary interests required (for example if the investments are treated as an infrastructure project instead of maintaining the road to the Seebodenalp).

7 Further activities

7.1 Marketing possibilities

To improve the cash flow situation with regard to the renewal, some marketing activities could be imagined. For example, a possibility is to use the road to go sledding in winter (it was used for sledding in the past) or drive down with a scooter (Trottinett) in summer. Another idea is to build a downhill bike track to attract more passengers.

With the collaboration in RigiPlus, the number of passengers is expected to increase in the long run. As that collaboration only started in 2012, the effect cannot be outlined yet.

7.2 Open points

The situation with the missing **parking spaces** is not considered in this thesis. Currently, there exist 80 parking spaces close to the valley station. For strategic option A (with the moderate higher capacity, the board estimates that at around 40 additional parking spaces are required (see [3]), for options B and C even more.

Another open point, but not in the responsibility of the LKS, is the **road to the Seebodenalp**. It is a political issue for the district whether to have the road up there and if the use of the road should be restricted or not (currently, there are no restrictions). At the Seebodenalp, a collection of land-owners supplies parking spaces for persons traveling by car. The road is not in proper conditions anymore, for example if it should be used by busses, investments for the maintenance of the road are necessary.

7.3 Next steps

In a next step, the topic is presented to the population of Küssnacht, to start the public discussion about the future of the LKS. Afterwards, it is time for a leading decision together with the district of Küssnacht, in which direction to go with the LKS.

After having a decision, the concrete financing of the chosen strategic option and the renewal project can be approached.

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