THE ANALYSIS OF THE FEASIBILITY OF AN INVESTMENT

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Abstract: *This paper aims to present and evaluate an investment project, which consists of constructing a cinema in Sibiu. The motivation for choosing this subject is based on the lack of an entertainment place of this nature in the city of Sibiu. The research methodology is based on qualitative research. Through the bibliographic research various secondary sources are used, such as diverse scientific articles, books and reports. This investment will be evaluated on the basis of the feasibility indicators and its profitability will be indicated, following the net present value of the investment, the internal rate of rentability, the term of recovery and the profitability index. The positive values of the feasibility indicators suggest the fact that the initial investment is feasible and will be covered on the basis of future cash flows.*

Keywords: *Feasibility, Net present value, Internal rate of rentability, Term of recovery*

JEL Classification: *G_{00}*

1. Introduction

Several investment project alternatives may appear that need to be thoroughly analysed in order to select the most efficient. The development of the whole company depends on the decision to invest in a particular project. As an entrepreneur or as a company that want to grow their activity you must decide on which investment alternative to focus. An investment is defined as a certainly use of capital in present with the purpose to obtain uncertainly benefits in future.

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An investment can be financed through several sources, such as own sources, loans, leasing, bonds, capital increases through cash contribution, by incorporating reserves or through debt conversion. The obtained capital is invested in real assets such as equipment, financial goods, development, shares or others (Caruntu, 2011).

This paper focuses on analyzing the feasibility of the development of a cinema in Sibiu by presenting its net present value, internal rate of rentability, term of recovery and profitability index.

Identifying specific gaps regarding entertainment places, such as cinemas in Sibiu led to the motivation of choosing this subject. The research methodology is based on bibliographic research through various secondary sources, such as scientific articles, books and reports.

2. Description of the investment project

It's being proposed to develop a cinema in a rented space with both 2D, 3D, 4DX, a children's playground, to open a restaurant by contracting collaborators, a popcorn stand and parking spaces. Taking into consideration all expenses the investment is estimated at around 1.558.528 lei. In order to cover the investment a loan of 1500000 lei is contracted for a period of 7 years. The rest of the amount is covered by own financing sources.

Taking into consideration all estimated incomes and costs for a period of time of 10 years, following cash flows have been forecasted:

Table 1. Estimated cash flow

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Income	2712000	1389000	1656000	2304000	2610000	2610000	2304000	1836000	1539000	1272000
Income through sales	996000	1173000	1440000	2088000	2394000	2394000	2088000	1620000	1323000	1056000
Other incomes through company's activity	216000	216000	216000	216000	216000	216000	216000	216000	216000	216000
Contracted loans	1500000	0	0	0	0	0	0	0	0	0
Payments	2456394	892784	892784	890784	902784	902784	902784	890784	890784	890784
Purchase of stocks	280066	279984	279984	279984	279984	279984	279984	279984	279984	279984
Personal expenses	586800	586800	586800	586800	586800	586800	586800	586800	586800	586800
Administrative expenses	0	0	0	0	0	0	0	0	0	0
Transport expenses	0	0	0	0	0	0	0	0	0	0
Marketing expenses	31000	26000	26000	24000	36000	36000	36000	24000	24000	24000
Acquisitions of assets (machines, equipment)	1558528	0	0	0	0	0	0	0	0	0
Debt reimbursement	253565.4	253565.4	253565.4	253565.4	253565.4	253565.4	253565.4	0	0	0
Capital repayments - related to the new credit application	184164.9	184164.9	184164.9	184164.9	184164.9	184164.9	184164.9			
Payment of interest - related to the new credit application	69400.49	69400.49	69400.49	69400.49	69400.49	69400.49	69400.49			
Total payments	2709959	1146349	1146349	1144349	1156349	1156349	1156349	890784	890784	890784
Cash flow (+/-)	2040.6	242650.6	509650.6	1159651	1453651	1453651	1147651	945216	648216	381216

Source: own calculation

3. Feasibility of the investment

Net present value: is the difference between the actual value of the winnings in that project and the initial investment. It represents the sum of the updated values of the future cash flows generated by a project and the initial cost. (Barsan, 2001)

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

Cash flows are liquidity flows available and represent the difference between current earnings and current payments of a company. If the income is higher than the outcome, the company has a positive cash-flow, if the outcome is higher than the income, the company has a negative cash-flow.

The Residual Value (RV): expresses the value that has to be recovered at the end of the investment or economic life of the project.

The Discount Rate (k): represents the opportunity cost that could be earned out of an investment with similar risk. (Albu, 2010)

Io: initial investment

Projects with a positive net present value are believed to increase the company's value. In this way, the rules on decision making based on the net present value specifies that all independent projects with a positive net present value must be accepted. If the net present value is greater than zero the project is acceptable, because the income is high enough to obtain benefit and return the initially invested capital before the end of the investment life. If the net present value is equal to zero, the balance is achieved at the end of its life, and the investment isn't attractive. When it comes to choose from different investment projects, the one with the highest net present value will be chosen. A project with a negative net present value has to be rejected. (Baggini, Bua, 2004)

This investment takes into consideration a discount rate of 1,5% and has been calculated as following:

Table 2. Net present value

Initial investment		1558528
Residual Value		500000
CF/(1+k)^t (t=1...10)	1	2010,4
	2	235583,1
	3	487703,9
	4	1094010,0
	5	1358552,0
	6	1333624,4
	7	1043318,7
	8	843942,9
	9	568610,5
	10	328634,5
RVn/(1+k)^n		431034,5
NPV		**6168496,9**

The net present value is a positive one, which means that the initial investment will be covered on the basis of total cash flows.

Term of recovery: expresses the number of years in which the invested capital (I0) can be recovered through annual cash-flows (CF). This indicator allows you to choose the optimal investment alternative according to the recovery duration of the invested capital. So choosing an investment project depends on the fact that the recovery period should be shorter than the lifetime of the investment. The term of recovery (TR) is determined by following relation:

$$TR = \frac{I_0}{\frac{\sum_{t=1}^{n} \frac{CF}{(1+k)^t}}{n}} \qquad (2)$$

The return on investment for this project is 2.1 years, so that the investment can be recovered in 2 years and 1.2 months through annual cash flows.

Internal rate of rentability: is the minimum profitability level of a project below which it is not efficient. This indicator is the discount rate for which the cost and benefit flows have the current net value equal to 0.(Caruntu 2011)

Rules on internal rate of rentability decisions specify that all independent projects with an internal rate of rentability higher than the discount rate must be accepted. When selecting from several projects, it must beselected the project with the highest internal rate of rentability and also higher than the discount rate.(Baggini, Bua, 2004)

The internal rate of rentability is defined as the solution of the equation Net Current Value equal zero. The Net Current Value is a function of several project variables: its initial investment cost, generated cash flows, its duration and its residual value, but is also a function of the discount rate:

$$NPV = 0 = -I_0 + \sum_{t=1}^{n} \frac{CF_t}{(1 + IRR)^t} + \frac{VR_n}{(1 + ITT)^n} \tag{3}$$

$$I_0 = \sum_{i=1}^{n} \frac{CF_t}{(1 + IRR)^t} + \frac{RV_n}{(1 + IRR)^n} \tag{4}$$

It is noted that the present incomes are equal to current expenses when the internal rate of rentability is 35%. This indicator suggests, because of its high value, that the investment is profitable.

Table 3. Internal rate of rentability

Initial investment	-1558528									
Residual value	500000									
1	2	3	4	5	6	7	8	9	10
2040,6	242650,6	509650,6	1159650,6	1453650,6	1453650,6	147650,6	945216	648216	381216
Internal rate of rentability	35%									

It is noted that the present incomes are equal to current expenses when the internal rate of rentability is 35%. This indicator suggests, because of its high value, that the investment is profitable.

Profitability index

The profitability index (PI) expresses the relative return on investment over its lifetime, respectively the net current value over the initial invested amount. The priority of the projects is determined by the profitability index value. Those with a higher profitability index have priority. This index measures the relative profitability of aproject, taking into account its entire lifetime. It shows what incomes are earned for an invested monetary unit. (Armeanu, Enciu, Poanta, 2011)

$$PI = \frac{NPV}{I_0} \qquad (5)$$

The profitability index has a positive value of 4, which means that the project is a profitable one for which the investment is worth.

4. Conclusions

The investment proposal was based on the construction of a cinema in Sibiu. The cost of investment was financed mainly by a bank loan for a period of 7 years. A ten years' lifetime of the investment has been taken in consideration.

Following the calculation of the investment evaluation indicators, we conclude that the net present value and the profitability index have positive values, suggesting that the project is profitable and the initial investment can

be covered on the basis of cash flows. The investment will be recovered after 2.1 years and the internal rate of rentability is high, higher than the average interest rate on the market, which also shows that the investment is worth doing. In conclusion, the investment project is accepted and a positive evolution of the profit obtained from the cinema activity is anticipated.

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