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Application of economic and financial feasibility analysis in a residential condominium inside Amazonas

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***Abstract*—** *This work aims to highlight the relevance of the application of the economic and financial feasibility study in civil construction. And for contribution in the academic environment, as well as for the new civil construction companies, it is relevant to study and outline the planning until the execution of an economic and financial feasibility analysis, being that this study was carried out of a real enterprise, whose project was of a residential condominium in the interior of Amazonas, municipality of Iranduba. Starting from a feasibility study, using as a method, with regard to nature, an applied and quali-quantitative research was approached; as for the purposes, there was a bibliographic survey and interviews and data analysis and as for the means, it was classified as bibliographic, documentary and field. Data were collected from the construction company and developer in the development & new business sector. Some variables were addressed in the risk analysis, such as Cash Flow, Minimum Attractiveness Rate (TMA), simple and discounted Payback, Net Present Value (NPV), Internal Rate of Return (TIR) and Modified Internal Rate of Return (TIRM) . The results showed that the studied enterprise is economically viable, and offers great potential. The simulation was carried out with the sale of 20% of the project's units by the tenth month of execution and the remainder until the completion of the work in the 38th month. The commercialization hypothesis resulted in a NPV of R $ 702,043.50, an IRR of 1.91%, a discounted payback of 35.99 months and a profitability index of 1.10. Based on these data, it was possible to demonstrate as possible flaws in the execution of the project that there is a need to sell real estate in the plant, with the application of economic viability indicators in the project's cash flow in order to verify that the return on investment is better when the units are sold in a short period of time after the launch of the project. It was also understood the panorama in which this type of business is inserted and stands out as the biggest advantage, the initial investment. The scenarios proved to be profitable and consistent in terms of their financial health and an interesting alternative for the investor, since all the analysis methods applied showed a very positive result over the analyzed monthly periods, indicating a reasonably quick financial return.*

I. INTRODUCTION

The economy of any country, in terms of local and global markets, is a vital indicator of the nation's well-being. High employment, business confidence and efficient use of natural and human resources contribute to a country's wealth. Investment is often the key to the success of a construction and government firm, policies and spending can have very real effects in terms of producing steady growth and minimizing the impact of recessions.

In the last few years, the construction industry in Brazil has undergone a strong transformation, from little investment to a lot of money being invested. This change was intensified mainly due to government investments, new laws that make it easier for investors to recompose unpaid houses and apartments, obtain new money on the stock exchange and the Brazilian Quality and Productivity Plan (PBQP-H) that was disseminated through industry concepts of total quality management. Because of this, new organization and models of technological innovation have been used by the industry (DIAS et al., 2020).

The construction industry consists of a very complex series of activities with different levels of complexity, which are linked to a very diverse number of products. Each product with different technological processes is linked to different types of demands. The sector has very intensive capital and technology segments such as cement, steel mills, etc. (FIESP, 2015).

There are also many Small and Medium Enterprises (SMEs) in services that have a small technological content. It can be said that in the civil construction sectors the main characteristic is to be very heterogeneous (Amorim, 2015; Mello, 2017). The construction industry is responsible for a very important portion of the Gross Domestic Product (GDP), participating with 13.8% (FIESP, 2015).

Civil construction is a very important sector of the economic scenario and is responsible for a salary amount of R $ 15.5 billion, 5.2% of GDP, and approximately 9% of the employed population (IBGE, 2015). The industry's GDP is approximately R $ 184.54 billion and the intermediate consumption value of this, according to the Getúlio Vargas Foundation (FGV, 2016), is approximately R $ 181.69 billion. Almost 55.6% of the added value generated by the industry is due to the informal sector and 37% is due to the formal sector, which pays taxes of almost 45.69% (CBCC, 2015).

Despite a very unstable scenario in the last 5 years, we sought to present a theme that would satisfy academic and scientific issues, stressing that any major project involving engineering will probably require a lot of time, money and effort. Before making such a commitment, it is advisable to carry out a feasibility study. Feasibility studies can make a difference, providing valuable project feedback and analysis, which can define how the project is managed, identify potential problems and even save money in the future. Before investing in a project, it is essential to conduct a feasibility study.

Given the above, the objective of this article is apply the economic and financial feasibility analysis in a Residential Condominium in the Interior of Amazonas.

II. LITERATURE REVIEW

2.1 INVESTMENT ANALYSIS

The activity of any company, in one way or another, associated with an investment of resources in various types of assets, the acquisition of which is necessary for the exercise of the main activity of this company is paramount. But to increase the company's profitability it can also invest resources temporarily available for various types of assets, revenues, but it does not participate in the essential activities. This activity is called an investment company, and management of such activities (investment management company), (AMORIM, LIMA and MURCIA, 2012).

Recently, the economy still did not have a clear understanding of holistic investment analysis as an independent field research within the framework of economic analysis. In the course of formulating and solving complex problems related to the problems of implementing long-term investments, analytical studies are necessary at the same time as financial, investment and operational decisions (DAMODARAN, 2010).

According to RAMOS and ZILBER (2015), the financial decision includes questions about which sources, to what extent and under which conditions long-term investments can be financed. Among the investments made is the allocation of own and borrowed resources among the possible areas of economic activity, certain types of assets, what is their structure, turnover period, the appropriate level of risk, etc.

According to SOUZA and CLEMENTE (2008), noting the importance of investment management, it is worth considering investment analysis itself as an independent branch of economic analysis. In addition, it should be presented as a project-oriented economic analysis, the implementation of which will depend largely on the needs of management decisions on specific investment options. The purpose of the analysis is not only an objective assessment of the adequacy of short- and long-term investment, but also the development of benchmarks for the company's investment policy.

In his work VEIGA (2012), he mentions that investment analysis is a process of evaluating the investment proposal to determine its profitability. It is the one that allows you to choose the best investment option by examining your risk, return and resale value. Investment analysis aims to find an investment that best fits a portfolio and adapts to the needs of the investor.

In this process, past investment returns and market trends are properly assessed to predict their future performance. Investment analysis is a very beneficial tool available to investors to identify the best investment option among several alternatives. It can be used to evaluate individual investment securities, large-scale business projects and for investment by startups. Fundamental and technical analysis are two important methods of investment analysis (VEIGA, 2012).

The objectives of the investment analysis according to SOUZA and CLEMENTE (2008), are:

a) Integrated assessment of needs and availability of the necessary conditions for investment;

b) Informed choice of financial sources and their prices;

c) Identify factors (objective and subjective, internal and external) that affect the deviation from the real investment that results from the previously planned;

d) Ideal investment solutions that strengthen the company's competitive advantage and are consistent with its tactical and strategic objectives;

e) Suitability for investor risk and return parameters.

DAMODARAN (2010), reinforces that, based on the analytical study of the nature of managerial decision-making investments, projected investments and future cash flows are evaluated and compared. The analysis of general logic using formal criteria is to compare the magnitude of the investment required with the projected revenues. As the comparisons refer to different moments in time, it becomes a key question of comparability.

SOUZA and CLEMENTE (2008), also mention that the nature of the Investment Analysis consists of:

i. Evaluate securities: the investment analysis examines the securities to choose the appropriate one. It is a tool that helps the investor to evaluate investment proposals before making any investment. The investment analysis aims to choose strategic investment plans that meet all objectives.

ii. Measure risk and return: Measure risk and return on investment plans to determine your overall profitability. The level of risk to be assumed and the cash flows to be received are two important factors that are considered in each project. Investors, through this process, can determine the profitability of different investment alternatives.

iii. Dealing with irreversible decisions: Investment analysis deals mainly with irreversible decisions that are long-term. These decisions affect an investor's earning capacity and growth rate. In case of any wrong decision, it can cause huge losses and adverse effects in the long run.

iv. Predict the future performance: This process is used to predict the future performance of the securities in order to know their credibility. Various graphing and information tools such as past returns, market trends, economic conditions, etc., are studied to estimate future returns.

v. Investor needs: The investment analysis aims to match the investment with the preferences and objectives of the investors. First, it adequately analyzes the capacity and individual requirements to perform the securities analysis. Projects are examined to ensure that they are suitable for the investor or not.

According to DAMODARAN (2010), the Investment Analysis Scope comprises:

1) Security of the principal: the investment analysis guarantees the security of the principal, adequately reviewing the stock before investing any amount. It assesses the risk involved in securities, which helps to reduce the risk of loss of capital and income.

2) Building a strong portfolio: choosing the right type of shares leads to the formation of a strong portfolio. Investment analysis studies different types of securities to find the one that best fits the portfolio. It focuses on combining the securities with the objectives of the portfolio to achieve the desired results.

3) Increase the return: the investment analysis has an efficient role in increasing the general return of the investors. Put more emphasis on the degree of risk involved and the amount of return to determine the profitability of the shares. Investment analysis helps you select investment plans with the most stable income and the lowest risk.

4) Transmitting financial knowledge: improves the general financial understanding of individuals looking for a strategic investment plan. When evaluating titles, several tools and techniques are used, which provides a lot of useful information. This information allows the investor to make rational investment decisions with the best return and minimum risk.

2.2 ECONOMIC AND FINANCIAL FEASIBILITY STUDY

Economic and financial analysis during the design, evaluation and implementation of the project plays a key role in obtaining the desired economic results and in increasing the likelihood of sustained economic benefits from a project (KASSAI, 2015).

According to HOJI (2013), the main objective of financial analysis is to examine the financial returns for project participants (beneficiaries, project entity, institutions and governments), in order to demonstrate that all actors have sufficient financial incentives to participate. Economic analysis is carried out to assess the efficiency of projects in terms of their net contribution to national economic and social well-being.

Economic and financial analysis of investment projects is an assessment requirement of most governments and Financing Institutions. It provides the basis for decision making on investment financing for a proposed project based on its financial and economic viability. Although Financial Institutions and governments require that economic and financial analysis be conducted in the project evaluation phase, it is also increasingly considered to be an important instrument for the identification, design, implementation and ex post evaluation of investment programs and projects (RAMOS and ZILBER, 2015).

For HOJI (2013), the study of economic and financial viability begins with the analysis of the main objectives and goals of the proposed project that need to be reflected in the logical structure of the project. This is followed by the monetization of the relevant benefits of the project and its associated costs. This study basically consists of two main steps: first, an assessment of the project's financial profitability and sustainability to determine whether other stakeholders will have sufficient incentives to participate in the project; and, second, an assessment of its economic viability from the point of view of the national economy.

The economic and financial feasibility study should also examine the expected impact of a project on the government's budget to ensure its fiscal sustainability. In addition, it usually includes an assessment of the impact of a project on employment and poverty, as well as an analysis of the distribution of benefits (HOJI, 2013).

The stage of determining the viability indicators covers the decision of which indicators will be used in the investment analysis process, the most common being: the net present value (NPV), the internal rate of return (IRR), the minimum rate of attractiveness (TMA) and investment payback (KASSAI, 2015).

After determining the indicators, they must be analyzed considering, among so many variables, the objectives and structure of the organization that intends to implement or produce this innovation, as the viability must meet the demands of the organization and this involves not only questions of economic and financial values , but also the interest in taking the risk of investing in the new product or project (ROSS et al., 2012).

As highlighted by LOCATELI (2015), when defining the methods of economic engineering analysis for investments in facilities, it is important to emphasize that not all impacts on facilities can be easily estimated.

Companies can choose to minimize the environmental impacts of construction or facilities in search of a triple financial result: economic, environmental and social. By reducing environmental impacts, the company can reap the benefits of an improved reputation and a more satisfied workforce. However, a rigorous economic assessment can help in making decisions for quantifiable and qualitative impacts of the facilities (LOCATELI, 2015).

According to LOCATELI (2015), it is important to distinguish between the economic evaluation of alternative physical facilities and the evaluation of alternative financing plans for a project. The first refers to the cash flow assessment that represents the benefits and costs associated with the acquisition and operation of the facility, and this cash flow over the planning horizon is called economic cash flow or operating cash flow. The latter refers to the assessment of the cash flow that represents income and expenses as a result of the adoption of a specific financing plan to fund the project, with this cash flow in the planning horizon called financial cash flow.

For LOCATELI (2015), the economic and financial evaluation are carried out by different groups in an organization, since the economic evaluation is related to the design, construction, operations and maintenance of the installation, while financial evaluations require knowledge of financial assets, such as stocks, bonds, notes and mortgages.

The separation of economic and financial assessment does not necessarily mean that one must ignore the interplay of different projects and funding requirements over time, which can influence the relative suitability of specific project / funding combinations. In practice, however, the division of labor between two groups of specialists generally leads to sequential decisions without adequate communication to analyze the interaction of various design / financing combinations due to the time of separate analyzes (LOCATELI, 2015).

As long as the importance of the interaction of design / financing combinations is understood, it is convenient to first consider the economic assessment and the financial assessment separately and then combine the results of both assessments to reach a final conclusion (BRAGA, 2019).

III. METHODOLOGY

The methodology used to obtain the results of the research that had been developed and carried out, estimates a more adequate path for the understanding and resolution of the pointed out problem. Thus, for better understanding, the objective of this study is to apply the analysis of economic and financial feasibility in a Residential Condominium in the Interior of Amazonas.

The studied enterprise is located in Iranduba, which is a municipality in the state of Amazonas, belonging to the metropolitan region of Manaus and the central Amazon region. According to the Brazilian Institute of Geography and Statistics (IBGE) the population of the municipality is 48,250 inhabitants, which places the municipality as the 11th most populous in Amazonas. The municipality is located on the left bank of the Rio Solimões, at the confluence with the Rio Negro, located south of Manaus. See figure 1.

Fig. 1: Map of the municipality of Iranduba.

Source: Google Maps (2020).

The project is located in the Ramal da Prainha, Cacau Pirera neighborhood, 150 meters from the Manoel Urbano Highway, kilometer three, approximately 20 minutes from the center of Manaus, a relatively short time compared to the distance between the city center and other regions, such as the North Zone (35 minutes), and the East Zone (40 minutes). The route to the development is surrounded by nature, allowing the resident to decompress the stress of everyday life, see figure 2.

Fig. 2: Location of the development.

Source: Google Maps (2020).

To carry out the data survey, this research used various materials and internal information from the construction company, as the research was a case study, there was a data survey, analysis and improvement proposal. In such a way that the schematic order of the study is detailed according to the flowchart shown in figure 3.

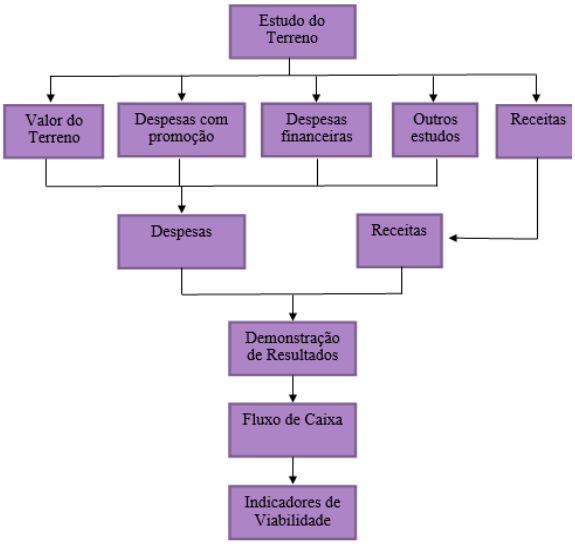

Fig. 3: Flowchart of the study steps.

Source: Adapted by the authors (2020).

When starting a project launching process and subsequently analyzing the results, the study of the land is first analyzed, that is, the company maps the land in the city and observes possible points of interest, in the case of the studied company, generally the construction company is the one who arouses the interest of the landowner's sale, through direct negotiation of purchase and sale, this fact explains the best launching locations in the cities.

The location, dimensions, need for deforestation are checked, that is, if all criteria are suitable for the type of

property, if the land analyzed, fits a low, medium or high standard condominium.

After this verification, the data from the economic and financial feasibility study were collected, in this way, the value of the land was determined through direct negotiation, survey of all expenses and values adopted through predetermined premises; in the case of the construction company studied, data were collected on works already carried out to project total expenses.

Expenses with preliminary studies are related to costs with projects, decorations, sales stands and architecture. Concomitantly, the sale price was determined, generally linked to the cost of architecture, as the architecture and leisure items in the condominium resulted in the property's standard, being low, medium and high standard.

The enterprise under study fits in medium standard, because it is a property with two bedrooms, with 42m2 of built area, selling price around one hundred and sixty thousand reais (R$ 170,000.00), closed condominium, with an area common room, party room and swimming pool.

Finally, the income statement and cash flow projection were calculated to analyze economic viability indicators and determine the project. In a feasibility study, this is the best time to carry out a project's decision making, as the construction company or developer had no cost, making the feasibility study very relevant for the construction companies.

IV. RESULTS AND DISCUSSION

4.1 SCENARIO ANALYSIS

The economic crisis that occurred in mid-2014 in Brazil, resulted in one of the strongest economic recessions in the country, there was a decline in GDP (Gross Domestic Product) for two consecutive years and generated a high rate of unemployment, with a rate 14% per year, which represented 14.5 million unemployed Brazilians.

The civil construction sector was the most affected by the crisis, which had previously registered high growth rates between 2009 and 2014, but has shut down one (01) million workers since the beginning of the recession; during the economic crisis process, few activities suffered more than civil construction. However, Civil Construction in Brazil has been showing great growth.

The sector is heated by high consumer demand, easy access to credit and government subsidies. These factors have ensured a good level of sales and a considerable increase in prices over the past few months, according to a survey conducted by CBIC, real estate indicators had a considerable increase in the quarters of 2019 compared to the quarters of 2018, with regard to residential units launched by region, as shown in figure 4.

REGIÃO PESQUISADA	1° TRIMESTRE 2018	2° TRIMESTRE DE 2018	3° TRIMESTRE DE 2018	4° TRIMESTRE DE 2018	1° TRIMESTRE DE 2019	2° TRIMESTRE DE 2019	3° TRIMESTRE DE 2019	VARIAÇÃO (%) TRIMESTRE ANTERIOR	VARIAÇÃO (%) TRIMESTRE ATUAL E ANO ANTERIOR
NORTE	0	900	1.228	300	220	900	1.756	95,1%	43,0%
NORDESTE	6.063	5.844	5.485	4.276	4.502	2.955	4.565	54,5%	-16,8%
CENTRO-OESTE	657	2.077	1.453	2.756	1.598	3.649	2.236	-38,7%	53,9%
SUDESTE	6.874	15.844	14.075	30.373	7.441	21.942	21.054	-4,0%	49,6%
SUL	1.242	3.759	4.558	3.008	3.203	2.435	3.588	47,4%	-21,3%
TOTAL	14.836	28.424	26.799	40.713	16.964	31.881	33.199	4,1%	23,9%

Fig. 4: Residential units launched by region.

Source: CBIC / CII (2020).

According to Figure 4, an index that stood out was the variation of the last quarter compared to the penultimate quarter of 2019 in the North region, which had an increase of 95.1%, such result shows that the builders and developers believe in the potential and development of the region. Another survey shows the accumulated 12 months of residential units launched in the country, which also confirms the constant increase and good prospects for civil construction, as shown in figure 5.

Fig. 5: Accumulated 12 months of residential units launched.

Source: CBIC / CII (year).

Studies claim that since the last economic crisis, the sector has been suffering in its performance and going through a process of stagnation, according to research carried out by the Brazilian Institute of Geography and Statistics (IBGE), the loss indicators show worrying results, as shown in figure 6.

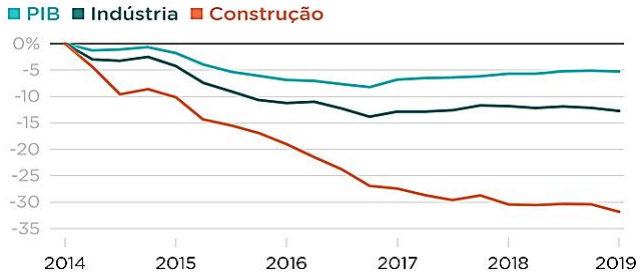

Fig. 6: Accumulated variation since the beginning of the crisis.

Source: IBGE.

However, in the last few months, the sector's expectations in the economy have been improving, with the Minha Casa Minha Vida Program, maintained by the new federal government and called "Casa Verde e Amarela" and the release of subsidies for middle and low-income families. Civil construction is reheating the market, builders and developers are recovering and business confidence has improved in recent months, another survey carried out by the Brazilian Institute of Geography and Statistics (IBGE) demonstrates confidence in the construction sector, as shown in figure 7.

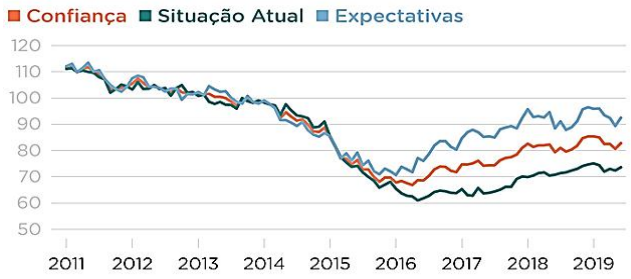

Fig. 7: Construction sector confidence indices (in points).

Source: IBGE.

4.2 PROJECT COSTS

Costs can be analyzed in Figure 8.

RESUMO DAS CONTAS			$/1000
Data Base: Agosto /2019	Total Indexado	Total VP	%VGV
Venda de Unidades	**54.000**	**42.893**	**100,0%**
Receita c/ Vendas	54.000	42.893	100,0%
Outras Receitas	**4.200**	**3.477**	**7,8%**
Retorno de Aporte DM CEF	4.200	3.477	7,8%
Despesas c/ Financiamento	**85**	**66**	**0,2%**
TAO	80	62	0,1%
Juros PJ	5	4	0,0%
Terreno	**5.766**	**4.675**	**10,7%**
Permuta Financeira	4.467	3.548	8,3%
IPTU	121	96	0,2%
Pagamento de Terreno (R$)	788	763	1,5%
ITBI	95	94	0,2%
Correção Monetária	295	174	0,5%
Obra	**25.384**	**20.010**	**47,0%**
Custo de Obra Raso	23.822	18.860	44,1%
Assistência Pós-Obra (%)	357	220	0,7%
Projeto (R$)	270	226	0,5%
Seguro (Obra)	191	160	0,4%
Não Incidentes/Habite-se	120	95	0,2%
INCC/DI Obra Raso	624	448	1,2%
Despesas Comerciais	**5.928**	**4.898**	**11,0%**
Comissão s/ Venda	2.322	1.855	4,3%
Propaganda (% Propaganda)	1.080	931	2,0%
Relacionamento com Cliente	270	187	0,5%
ITBI e Registro Unidades	1.716	1.451	3,2%
Stand de Vendas: Construção	270	248	0,5%
Stand de Vendas: Custo Fixo	270	226	0,5%
Incorporação	**3.790**	**3.043**	**7,0%**
Taxa de Administração s/ Carteira	2.700	2.145	5,0%
Desp. de Incorporação (R$)	1.090	899	2,0%
Outras Despesas	**4.200**	**3.525**	**7,8%**
Aporte p/ Demanda Mínima CEF	4.200	3.525	7,8%
Impostos	**2.160**	**1.700**	**4,0%**
RET	2.160	1.700	4,0%
Saldo	**10.887**	**8.452**	**20,2%**

Fig. 8: Project Costs.

Source: Case study, 2019.

4.3 BALANCE SHEET

The balance sheet is a report version of the accounting equation, in which assets always equal liabilities plus equity capital. Investors and creditors often analyze the balance sheet and infer about how efficiently a company can use its resources and how effectively it can finance them.

Balance sheet analysis can reveal a lot of important information about a company's performance. The importance of the balance sheet is listed below:

- It is an important tool used by investors, creditors and other interested parties to understand the financial health of an entity.

- The growth of an organization can be known by comparing the balance sheet for different years.

- It is an essential document that must be sent to the bank to obtain a commercial loan.

- Stakeholders can understand the entity's business performance and liquidity position.

- The ability to carry out expansion projects and meet unforeseen expenses can be determined by analyzing the company's balance sheet

- If the company is financing its operations with profit or debt, it can be known.

Table 1 presents the data related to the Balance Sheet (assets and liabilities) of the project under study.

Table 1 - Balance Sheet.

BALANÇOS PATRIMONIAL EM 31 DE DEZEMBRO DE 2019			
VALORES EM REAIS (R$) SEM CENTAVOS			
ATIVO		**PASSIVO**	
ATIVO CIRCULANTE	**7,936,088**	**PASSIVO CIRCULANTE**	**6,829,341**
Caixa e Equivalente de caixa	2,471,777	Contas a pagar a fornecedores e outras	1,571,914
Contas a receber de clientes e outras	4,706,581	Obrigações trabalhistas e sociais	291,479
Estoques	278,809	Obrigações por aquisição de terrenos e adiantam. de clientes	4,544,116
Tributos a recuperar	42,798	Contratos cancelados	61,438
Outros ativos	436,123	Empréstimos e financiamentos	5,905
		Obrigações com pessoas ligadas	
		Obrigações tributárias	347,479
		Outros passivos	7,010
ATIVO NÃO CIRCULANTE	**5,269,914**	**PASSIVO NÃO CIRCULANTE**	**535,509**
Créditos com pessoa ligadas	5,208,185	Tributos diferidos	212,970
Imobilizado	61,729	Provisões	322,539
		Outras obrigações financeiras	-
		PATRIMONIO LÍQUIDO	**5,841,152**
		Capital Social	1,000
		Subscrito	
		Reservas	5,840,152
TOTAL	**13,206,002**	**TOTAL**	**13,206,002**

Source: Case study, 2019.

4.4 STATEMENT OF INCOME FOR THE YEAR

With the Statement of Income for the Year (DRE), leaders and managers at different levels can have concrete knowledge about the company's profit or loss and, consequently, act in order to reverse the negative scenarios in time.

The DRE is more than a report that briefly demonstrates the operations carried out by the company. In it, the accounts of revenue, expenses, investments, costs and provisions are compared, showing the formation of the company's net result at the time.

For legal purposes, the income statement is made annually, but simplified monthly income statement for administrative purposes and quarterly income statement for the monitoring of tax expenditures can be made. The DRE Report must be prepared respecting the accrual basis, that is, depending on the occurrence of the event that generates the accounting record, regardless of the actual receipt of the revenue or the payment of the expense.

Table 2 illustrates the DRE of the project under study.

Table 2 - Income Statement.

LUCRO ANTES DOS EFEITOS FINANCEIROS	**4,711,940**
OUTRAS RECEITAS FINANCEIRAS	**99,815**
Custos de financiamento	- 76,107
Receitas de investimentos	175,922
LUCRO ANTES DA TRIBUTAÇÃO	**4,811,755**
TIBRUTOS SOBRE O LUCRO	**- 541,540**
Contribuição Social Corrente	- 18,056
Contribuição Social Diferida	- 169,071
Imposto de Renda Corrente	- 31,641
Imposto de Renda Diferido	- 322,772
LUCRO DO EXERCICIO	4,270,215
LUCRO LÍQUIDO DO EXERCICIO	4,270,215
RESULTADO ABRANGENTE TOTAL DO EXERCÍCIO	**4,270,215**

Source: Case study, 2019.

4.5 CASH FLOW

Cash Flow is of fundamental importance for companies, constituting an indispensable signaling of the financial direction of the business and providing the administrator with a future view of the company's financial resources, it is built from information related to all expenditures and income inflows. already known and projected boxes.

In order to prepare the Cash Flow, the company needs to have internally organized information that allows viewing of accounts receivable, accounts payable and all disbursements that generate fixed costs.

The way to obtain and organize this auxiliary information involves the use of management tools, the form of which will depend on the type of company, its size and financial availability.

Cash Flow is a large information system to which the financial data generated in different areas of the company converge. The biggest difficulty in having a really effective cash flow is to properly manage this information system.

The cash flow statement will not only serve for the realized flow, but also for projection. The manager will be able to simulate the resources and expenses planned for a given period, thus being able to more easily predict when there will be a cash deficit or surplus.

In accordance with these financial assumptions, a cash flow statement was prepared, projected for the first five years of operation. The items of revenue and disbursement, costs and expenses were classified in operating, investing and financing activities.

Operating activities are those intrinsic to the industry: monthly and usual income and expenses.

Investment activities include those necessary for structuring the business: purchase of furniture, utensils, installations and equipment, as well as works referred to the operation of the business.

The financing activities are those necessary to obtain the financial resources and which allow a positive cash balance each month, as well as amortization of the financing obtained, as shown in table 3.

Table 3 - Cash flow.

DEMONSTRAÇÃO DE FLUXO DE CAIXA EM 31 DE DEZEMBRO DE 2019	
VALORES EM REAIS (R$) SEM CENTAVOS	
DAS ATIVIDADES OPERACIONAIS	
LUCRO LIQUIDO ANTES DO IR E CSLL	**4,811,756**
Ajustes para conciliar o resultado às disponibilidades geradas pelas atividades operacionais	
Depreciação e amortização	255,959
Custos de financiamento	76,107
Renda de investimento reconhecida no resultado	- 175,922
LUCRO LIQUIDO AJUSTADO	**4,967,900**
Variação do capital circulante	
Acréscimo/Decréscimo nas contas a receber de clientes e outras	**- 112,262**
Acréscimo/Decréscimo nos estoques	**2,438,618**
Acréscimo/Decréscimo nos tributos a recuperar	33,400
Acréscimo/Decréscimo em outros ativos	5,032,369
Acréscimo/Decréscimo nas contas a pagar a fornecedores e outras	**2,084,778**
Acréscimo/Decréscimo nas obrigações trabalhistas	**202,485**
Acréscimo/Decréscimo nas obrigações tributárias	251,956
Acréscimo/Decréscimo nos tributos diferidos passivos	- 89,073
Acréscimo/Decréscimo em outros obrigações financeiras	- 9,449
Acréscimo/Decréscimo nas provisões para contigências	179,063
Acréscimo/Decréscimo nos demais passivos	56,550
CAIXA PROVENIENTE DAS OPERAÇÕES	802,039
Imposto de renda e contribuição social sobre o lucro	- 541,540
CAIXA LÍQUIDO PROVENIENTE DAS ATIVIDADES OPERACIONAIS	**260,499**
DAS ATIVIDADES DE INVESTIMENTOS	
Juros, royalties e outras receitas de investimento recebidos	175,922
Aquisição de imobilizado	- 2,118
CAIXA LÍQUIDO PROVENIENTE DE ATIVIDADES DE INVESTIMENTOS	**173,804**
DAS ATIVIDADES FINANCEIRAS	
Novos emprestimos	5,905
Juros sobre financiamentos	- 76,107
Emprestimos de partes relacionadas	- 753,383

CAIXA LIQUIDO PROVENIENTE DE ATIVIDADES DE FINANCIAMENTOS	**- 823,585**
VARIAÇÃO DAS DISPONIBILIDADES	**- 389,282**
DEMONSTRAÇÃO DA VARIAÇÃO DAS DISPONIBILIDADES	
Saldo inicial das disponibilidades	**2,861,059**
Saldo final das disponibilidades	**2,471,777**
	- 389,282

Source: Case study, 2019.

The simulation (Figure 9) was carried out with the sale of 20% of the project's units by the tenth month of execution and the remainder until the completion of the work in the 38th month.

n	Etapa %	Vendas	Receitas	Custos	Fluxo	Fluxo descontado	VPL
0				1.375.183,00	-1.375.183,00	-1.375.183,00	-1.375.183,00
1	4,85	0,00	0,00	308.117,81	-308.117,81	-304.644,86	-1.679.827,86
2	4,85	0,00	0,00	308.117,81	-308.117,81	-301.211,05	-1.981.038,91
3	3,06	0,00	0,00	194.400,10	-194.400,10	-187.900,37	-2.168.939,28
4	1,49	0,00	0,00	94.658,87	-94.658,87	-90.462,70	-2.259.401,98
5	3,68	0,00	0,00	233.788,36	-233.788,36	-220.906,32	-2.480.308,30
6	2,39	0,00	0,00	151.835,37	-151.835,37	-141.851,94	-2.622.160,23
7	4,35	0,00	0,00	276.353,09	-276.353,09	-255.272,29	-2.877.432,52
8	2,36	0,00	0,00	149.929,49	-149.929,49	-136.931,53	-3.014.364,06
9	2,75	0,00	0,00	174.705,97	-174.705,97	-157.761,57	-3.172.125,62
10	2,99	2.200.000,00	720.940,00	328.153,04	392.786,96	350.693,38	-2.821.432,24
11	3,50	220.000,00	156.794,00	237.253,06	-80.459,06	-71.026,84	-2.892.459,09
12	3,25	220.000,00	165.594,00	221.370,70	-55.776,70	-48.683,01	-2.941.142,09
13	2,82	220.000,00	167.596,00	194.053,04	-26.457,04	-22.831,94	-2.963.974,03
14	2,67	220.000,00	175.384,00	184.523,62	-9.139,62	-7.798,42	-2.971.772,46
15	3,66	220.000,00	219.802,00	247.417,77	-27.615,77	-23.297,69	-2.995.070,15
16	3,58	220.000,00	233.090,00	242.335,41	-9.245,41	-7.711,86	-3.002.782,01
17	3,39	220.000,00	241.736,00	230.264,82	11.471,18	9.460,58	-2.993.321,43
18	3,60	220.000,00	264.968,00	243.606,00	21.362,00	17.419,22	-2.975.902,20
19	2,40	330.000,00	298.452,00	174.220,67	124.231,33	100.160,18	-2.875.742,02
20	1,94	330.000,00	293.040,00	144.997,12	148.042,88	118.012,64	-2.757.729,38
21	2,43	330.000,00	330.099,00	176.126,55	153.972,45	121.355,95	-2.636.373,43
22	1,61	330.000,00	302.841,00	124.032,41	178.808,59	139.342,47	-2.497.030,96
23	2,18	330.000,00	345.444,00	160.244,19	185.199,81	142.696,30	-2.354.334,66
24	1,82	330.000,00	338.448,00	137.373,59	201.074,41	153.181,39	-2.201.153,27
25	1,17	330.000,00	309.705,00	96.079,45	213.625,55	160.908,68	-2.040.244,59
26	0,88	330.000,00	298.287,00	77.655,91	220.631,09	164.312,28	-1.875.932,31
27	1,32	330.000,00	334.587,00	105.608,87	228.978,13	168.606,53	-1.707.325,79
28	1,15	330.000,00	330.957,00	94.808,86	236.148,14	171.926,15	-1.535.399,63
29	1,16	330.000,00	339.306,00	95.444,16	243.861,84	175.540,90	-1.359.858,73
30	1,15	330.000,00	346.170,00	94.808,86	251.361,14	178.899,72	-1.180.959,02
31	1,52	330.000,00	384.285,00	118.314,76	265.970,24	187.163,70	-993.795,32

Continua...

(Conclusão)

n	Etapa %	Vendas	Receitas	Custos	Fluxo	Fluxo descontado	VPL
32	1,61	330.000,00	402.039,00	124.032,41	278.006,59	193.428,61	-800.366,70
33	1,58	330.000,00	409.992,00	122.126,52	287.865,48	198.030,58	-602.336,12
34	1,28	330.000,00	392.700,00	103.067,69	289.632,31	197.000,23	-405.335,89
35	1,27	330.000,00	400.191,00	102.432,40	297.758,60	200.244,73	-205.091,16
36	1,42	330.000,00	423.423,00	111.961,81	311.461,19	207.098,89	2.007,72
37	2,05	330.000,00	497.244,00	151.985,36	345.258,64	226.984,10	228.991,82
38	10,82	330.000,00	1.436.886,00	709.138,60	727.747,40	473.051,68	702.043,50

Fig. 9: Simulation

Source: Case study, 2019.

The aforementioned commercialization hypothesis resulted in a NPV of R $ 702,043.50, an IRR of 1.91%, a discounted payback of 35.99 months and a profitability index of 1.10.

Table 4 highlights the results of the financial indicators found in the proposed simulation.

Table 4 - Result of the Simulation Financial Indicators.

Simulação	
Período de Comercialização	10-38
VPL	702.043,50
TIR	1,91%
Payback descontado	35,99
Índice de Lucratividade	1,10

Source: Case study, 2019.

In the financial market, there is the possibility of raising funds with a nominal rate of 8.5% a.a. + TR (The value of TR in October 2019 was approximately 0.2% a.m.) Which generates an equivalent rate of 0.88% a.m.

The interest rate described refers to Caixa Econômica Federal's “Production Support” credit method, which has a 36-month term for the project and can be extended for a further 6 months and an amortization term of 24 months, in the period of construction, only interest corresponding to the amounts received is paid.

Sales made through housing financing are automatically amortized in the referred financing and in cases of cash sale of the units, the value corresponding to them must be amortized from the financing by the construction company. In other words, fundraising by third parties is feasible because it presents a lower index than the IRR and lower than the yield on financial investments that have a net yield of 0.93% a.m. when the redemption occurs after two years due to the 15% income tax levied on profitability

V. CONCLUSION

At the end of the work and given the data presented and the results achieved, it is evident that the enterprise, despite all the economic and financial instability in which the country is facing, is still a viable alternative and a model to be implemented by entrepreneurs.

In the course of the work, it was possible to highlight the details of the project, especially in the methodology chapter, and costs involved in the elaboration (presented in the results chapter);

With the data obtained in the case study, it was possible to analyze the economic and financial risk indicators as well as present the Cash Flow, Ebtida, NPV (Net Present Value), IRR (Internal Rate of Return), TIRM (Internal Rate of Return) Modified Return) and Payback to identify and evaluate the project's viability. A simulation was carried out with the sale of 20% of the project's units by the tenth month of execution and the remainder until the completion of the work in the 38th month.

According to the simulation carried out, it was verified that the project is viable, given that the commercialization hypothesis above resulted in a NPV of R $ 702,043.50, an IRR of 1.91%, a discounted payback of 35.99 months and a profitability index of 1.10.

Based on these data, it was possible to demonstrate as possible flaws in the execution of the project that there is a need to sell real estate in the plant, with the application of economic viability indicators in the project's cash flow in order to verify that the return on investment is better when the units are sold in a short period of time after the launch of the project.

It was also understood the panorama in which this type of business is inserted and stands out as the biggest advantage, the initial investment. The scenarios proved to be profitable and consistent in terms of their financial health and an interesting alternative for the investor, since all the analysis methods applied showed a very positive result over the analyzed monthly periods, indicating a reasonably quick financial return.

The present risks cannot be completely eliminated, the monitorable risks are those that can be controlled; however, non-monitorable risks, such as interest on the economy, cannot be eliminated, they can be reduced with a careful analysis of market trends.

Compared with financial market applications, investment becomes unfeasible when the units are sold only at the end of the work or even after completion, that is, it is essential to sell the properties on the plant to increase the return on investment.

The real estate market is always competitive and requires creativity, persistence and audacity to face your difficulties. In the search for evidence in the respective sector, it is extremely important to know the industry, the market segment in which it operates, its competitors, target audience among other factors, especially those related to financial and economic issues. The set of these elements, with the aid of Microeconomic tools, can clearly provide the sector's strengths and weaknesses, how much it can grow and support market offers, in addition to how prepared it must be to achieve maximum success. in business.

Thus, it is suggested that more studies in this segment can be carried out, since there was also a scarce literature on the theme presented, and further discussions about the economic and financial viability of real estate developments should be stimulated and encouraged.

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