Investment Analysis Provided for Developers in the Housing Sector Using the Internet

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Abstract

Real estate Brazilian industry is now dealing with innovations in project finance that requires more advanced techniques to generate information for the decision-making process, if compared to those currently used to uphold investment decisions. We can clearly state that decisions can no longer be supported by past experiences nor by adopting the same successfully ideas or projects former used. Nowadays, to repeat old formulas cannot guarantee project fund nor market penetration.

In the 80' was created in the Polytechnic School of University of São Paulo the Real Estate Research Group. This group is dedicated to studying, researching and teaching, at under-graduate and graduate programs, issues specially related to real estate economics and finance, valuation, portfolio securitization, funding systems, risk analysis, modeling and project finance. This set of studies conducted by researches of the Real Estate Research Group permitted to settle a strong relationship with the real estate business community in Brazil. As a matter of fact, we can say that the main goal of the Real Estate Research Group is precisely to produce and to transfer knowledge in the real estate affairs to the Brazilian business community.

In Brazil is well known that small and medium sizes firms have significant participation in the Real Estate business, specially concerning housing sector. Usually, office buildings, shopping centers, hotels, etc. have been developed in the Brazilian market by big developers, whereas great part of the projects in the housing sector have been successfully developed by small and medium sizes corporations due to the possibility of funding the project by selling it during its construction. On the other hand, frequently those small firms don't have well structured planning systems to support the decision-making process neither have financial conditions to contract specialist advisors.

Under this kind of scenario, The Real Estate Research Group of the Polytechnic School - University of São Paulo has prepared a system for investment analysis in the housing sector and offer it to the Brazilian developers community using the internet through www.realestate.br website. This paper starts reviewing and focusing the need of appropriated information in making better decisions in the Real Estate market. A second approach on this manuscript is related to identifying and explaining how Brazilian developers must proceed to contract The Real Estate Research Group of the Polytechnic School to provide them Investment Analysis toward housing sector. Finally, this paper describes briefly a prototype of a report generated by the system.

1. Introduction

Real estate Brazilian industry is now dealing with innovations in project finance that requires more advanced techniques to generate information for the decision-making process, if compared to those currently used to uphold investment decisions. We can clearly state that decisions can no longer be supported by past experiences neither adopting the same successfully ideas nor projects former used. Nowadays, to repeat old formulas cannot guarantee project fund nor market penetration.

In a modern economy perspective, the use of securitization systems as a new way for funding real estate projects in Brazil has resulted in better practices on the enterprise planning. In special, the gains are related to (a) the definition of well sustained financial equations, (b) the results are supported by validated scenarios and (c) the decision-maker can count on rigorous risk analysis to support investment decisions. At large, real estate developers have no planning skills, neither to deal with the sophisticated information demanded by their own decision processes, nor to show up the advantages of the particular project to the potential investors or financial agents[1]. In fact, according to Liu and Mei [1], real estate investors tend to become apprehensive about the future when news on future cash flow is not so good, and thus they demand higher expected future returns.

Nowadays, recent real estate projects changed in what concerns to the relations among developers and investors. Two different examples can be showed: [i] in the case of apartment units served by a hotel operator, instead of selling apartment units, the current products are hotel secured bonds, [ii] banks do not finance residences implementations anymore, but once the enterprise achieved a satisfactory selling performance it becomes possible its financing through the generation of mortgage backed securities, suitable to risk averse investors.

These kinds of relationships among developers and investors must be more sophisticated than a simple buyer-seller transaction due to the rules of the Brazilian Security and Exchange Commission, which establishes that any Initial Public Offering must include a solid investment analysis to provide accurate risk perception for the investors.

As developers must produce hard information to supply regulatory agencies requirements, they learn and get used to work with it as a support for their own decisions, gathering a higher quality level in the decision-making process. It causes a new step on the real estate industry, even taking into account the co-existence of informational and non-informational exchange, that takes place in the speculative markets for real estate assets, as can be found in Cooper, Downs and Patterson [2].

Within this new business environment big real estate corporations are being advised by specialists while, medium and small ones cannot contract them due to their financial restrictions.

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[1] The large change provided by secured funding models is that bankers are replaced by investors, that share development results through real estate bonds, in risk controlled partnership, to whom the early routines used to show economic performance became lacking. Improvements are need in the patterns the investors interact with all other involved agents, but also new relationship models are required as far as new risk configuration may occur, imposing that all partners must match in what concerns the level of controlled risk for the shared investment.

Group. This group is dedicated to studying, researching and teaching, at under-graduate and graduate programs, issues specially related to real estate economics and finance, valuation, portfolio securitization, funding systems, risk analysis, modeling and project finance. This set of studies conducted by researches of the Real Estate Research Group allowed the settlement of a strong relationship with the real estate business community in Brazil. As a matter of fact, the main goal of the Real Estate Research Group is precisely to produce and to transfer knowledge to the Brazilian business community, in the real estate affairs.

In Brazilian context, it is well known that small and medium sizes firms have significant participation in the Real Estate business, specially in what concerns the housing sector. While office buildings, shopping centers, hotels, etc. have been developed by big developers in the Brazilian market, great part of the projects in the housing sector have been successfully developed by small and medium sizes corporations, especially due to the possibility of the funds provided by units that are being sold during the construction phase. It is exactly in those small firms there is a gap in the availability of structured planning systems to support the decision process, even because those firms have no financial conditions to contract specialist advisors to provided it.

Looking on small and medium corporations, the Real Estate Research Group of the Polytechnic School - University of São Paulo worked out a system for investment analysis in the housing sector. Considering the extent of Brazilian territory the system is available in the net by accessing the www.realestate.br website. This paper starts reviewing and focusing the need of appropriated information in improving decision-making in the Real Estate market. A second approach on this manuscript is related to identifying and explaining how Brazilian developers must proceed to contract The Real Estate Research Group of the Polytechnic School to provide them Investment Analysis in housing projects. Finally, it describes briefly a prototype of a report generated by the system.

2. Planning and Decision

In the real estate business activity, from the act of THINKING to the act of DEVELOPING it, there are two possibilities. The first one is the primitive routine, where the developer simply goes through a path, facing a range of different risky situations; the second way is when PLANNING PATTERNS are used, in order not to cut the risks out, but to make the decision-maker able to recognize the strenght of the impacts in the results that represents different possible branches in a decision network. The modern approach about planning and administration, similarly as treated in Sunder [3], states them as a continuous process of analysis and control, focused on risks mitigation, what can be understood as the management main goal, or in other words, the searching for effectiveness (winning) and efficiency (to be prepared to win continually).

[i] - The primitive way THINKING - DEVELOPING means drawing a straight line, with no deflection, starting with the CONCEPTION OF AN IDEA and going directly to the IMPLEMENTATION OF THE PROJECT.

That procedure brings up the image that the conception itself presents a comprehensive level of certainty that allows the developer (the decision-maker) to start promptly the project, just relying upon the process of thinking out ideas. This biased thought is not only present in the real estate industry, but there we can, at once, clearly point out the negative impacts on the project due to market fluctuations or macroeconomics oscillations. Moreover, real estate projects usually presents low capability of being fit in attempt to new market conditions, as an effort to retrieve initial goals.

When the decision arises from carrying out the primitive routine, any environmental disturbance will reduce the economic performance of the enterprise, allowing a restricted range of possibilities to the manager action. These evidences suggest that the decision process should be conveyed through decision-steps where analysis and critics take place. As a matter of fact, it must enclose a simulation process to either recognize the effects of disturbed situations on project development, or speculate if the project is acceptable considering its risks.

[ii] - From the act of THINKING to the act of IMPLEMENTING there is a complex path to be passed through, that should not be driven only by the decision-maker expectations, but supported by high quality information. The decision-maker, provided by the results of environmental simulations, can recognize risk situations and, thus, choose a competent action route that could help him towards reaching the results as early settled. Hence, it is not only a matter of implementing it, but doing it with quality, searching to achieve the results in an efficient and effective way.

This intricate path is identified as follows:

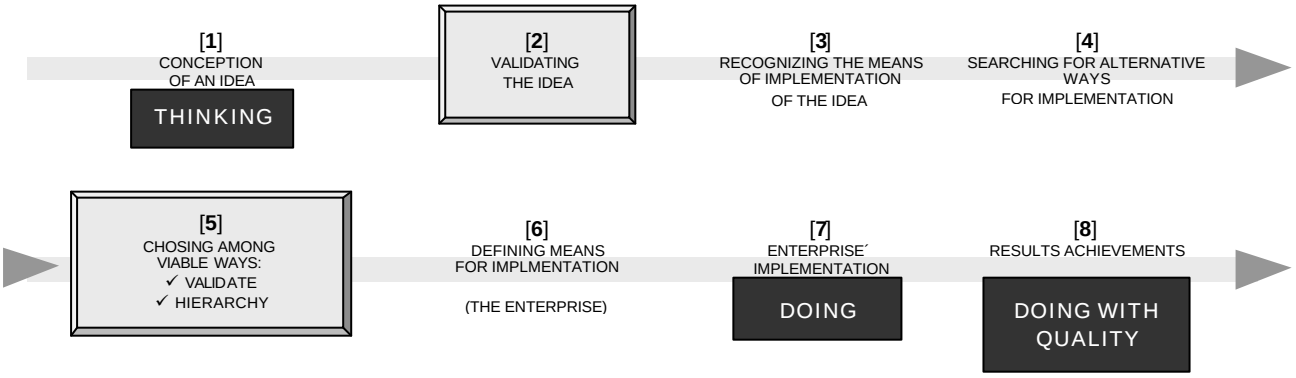


Figure 1: From the act of thinking to the act of implementing - a complex path

Within this first scheme:

- The adoption of the primitive routine, which means going through a straight line from step (1) to step (7), suggests that scattered risks may take place, performing no quality results. the developer will realize about the results - no matter if them will be satisfactory, or not - only when the action is completed, with no chance to bad outcomes to be reverted.
- The steps (2) and (3) on the path are related to strategic planning activities while steps (4), (5) and (6) correspond to planning in intermediate level, that allows risk control. This risk controlling process includes recognition, evaluation, setting up systems or procedures to mitigate risks and to start reviewed actions, so as to adjust or compensate against eventual bad performance.

The route contains two most relevant steps - steps (2) and (5) - specially in what is related to the validation of an alternative path. On the first one, the idea itself is ratified; on the step (5), one project ought to be chosen, or new project propositions should be generated. As far as better decisions are made, better performance levels can be reached. Now, a question is suggested, how do you make better decisions?

On each step, to decide means to make a choice, which expresses the selection of a specific option according to their risk. The option will be more secure as the quality of the information used by the

decision-maker gets higher. The information core includes the evaluation of possible results that can be reached in keeping with the chosen option. This evaluation must describe in terms of probability of expected performances and their related risk.

As the quality of the information handled by the decision-maker becomes better, the decision will become better, too. It is not the case of classifying a decision as a right one or a wrong one, because the decision-making involves choosing to be exposed to a certain range of risks. When risk situation comes true, the losses in expected results can take place; when they do not, the original results are obtained. The core of decisions is precisely the option for being exposed to a set of risk situations and the setting up management systems to mitigate them.

The planning systems generate information to support decisions through the simulation of different possible ways to develop the project. Proper indicators must be chosen so as to express the quality of investing on the project, each possible way of development producing its own results. As the given indicators are produced in a specific referential scenario[2], additional information must be presented, in order to include the fluctuation on those indicators under market disturbances or macroeconomic perturbations.

To improve decision-making so as to enhance returns on investments means that decisions may take place using quality information, generated by effective planning systems.

The investment analysis system for the housing sector, shortly exposed in this paper, was designed regarding to steps (2) and (5). On step (2), where the project general idea is validated, the system generates synthetic information, using a project prototype. On step (5), where a specific project evaluation is focused, the output is an analytic package of information.

3. The Developer Interaction with the System

All the transaction between the developer and the system can be done getting into the website www.realestate.br or mailing to realestate@pcc.usp.br. On accessing this website, the developer can read not only a description of the services offered, but also manuscripts produced by the staff of the Real Estate Research Group.

The main procedures to contract the services of investment analysis proposed are listed below:

- In the website www.realestate.br there is an example of the report generated by the investment analysis system. The files can be downloaded at no cost;
- In the same website, a free tutorial file is available, explaining how the tables and graphs on the reports are to be used;
- Also in www.realestate.br the standard contract can be downloaded, including the rated fee, payment schedules, routines for signing on the contract and the mailing to the Group;
- After signing on the contract and paying the fee, the developer has to fulfill a standard spreadsheet, according to the instructions presented in the tutorial, both the spreadsheet and the tutorial, available for downloading; then, the fulfilled spreadsheet file is to be e-mailed to realestate@pcc.usp.br.

[2] In this scenario there are some assumptions related to the market conditions and macroeconomic performance.

The Real Estate Research Group will input the received spreadsheet data into a specific generated model, which produces, as an output, an electronic report related to the specific project, that will be sent to the developer in 48 hours, to his (her) e-mail address.

4. Some Topics of the Report

The complete standard report produced by Real Estate Research Group comprehends 31 pages showing tables and graphs related to the investment performance of the project. Besides, the report also presents, in graphic format, sensitive analysis for each individual variable and risk analysis based on Monte Carlo's method. As said before, the website contains a tutorial for help clearly understanding the report.

Some aspects of the report are presented as follow:

Table 1: simplified project budget

	values in R$ thousand			
	BUDGET			
SITE ACQUISITION - SIT		2.500	*17,3%*	
PRE-IMPLEMENTATION COSTS		1.100	*7,6%*	
IMPLEMENTATION COSTS				
.CONSTRUCTION COSTS BEFORE SALES		1.670	*11,5%*	
.CONSTRUCTION COSTS AFTER SALES		8.820	*60,8%*	
PRE-OPERATIONAL COSTS		400	*2,8%*	
		TICOSTS		
TOTAL IMPLEMENTATION COSTS		14.490	*100,0%*	*76,3%*
	PARAMETER			
CONSTRUCTION MANAGEMENT	8,0% *TICOSTS - SIT*	950		*5,0%*
MARGIN FOR COVERING RISKS	6,0% *TICOSTS - SIT*	720		*3,8%*
MARGIN OF PROFIT	10,0% *TICOSTS - SIT*	1.200		*6,3%*
PROJECT MANAGEMENT	3,0% *PIMPLA*	580		*3,0%*
TAX (1)	4,0% *SIT*	100		*0,5%*
TAX (2)	[5,0%x40%] *IMPRICE - SIT*	330		*1,7%*
TAX (3)	3,95% *IMPRICE - SIT*	650		*3,4%*
		IMPRICE		
IMPLEMENTATION PRICE		19.020		*100,0%*

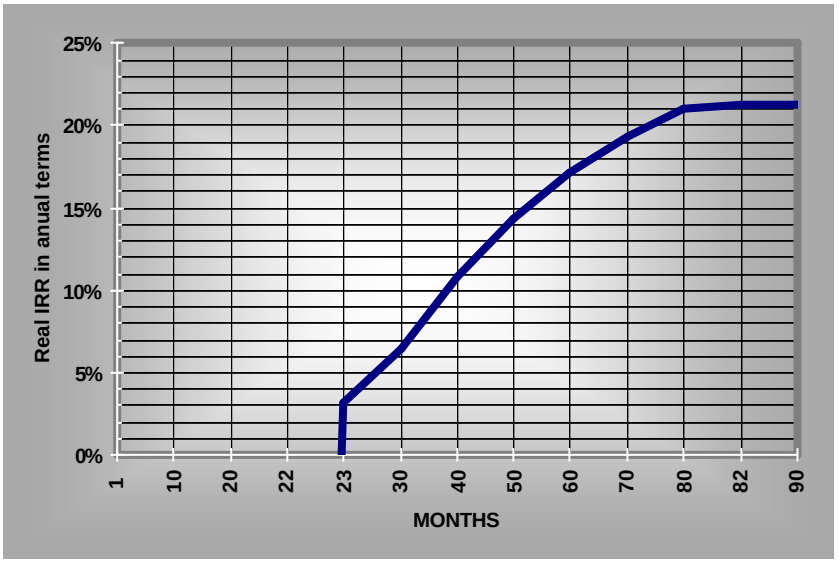
The system is able to handle considering the development of a housing project either when building firms are contracted, or when the construction falls to the developer himself; in this case, the entries must be "zero" values in all blanks below total implementation cost, at table 1.

On examining table 2, it contains the balance sheet of the overall operation. The main points are "total revenue", "investment required", "return and profit achievements". Next graph shows up both "payback" and "internal rate of return" of the project.

Table 2: proje ct balance sheet

values in R$ thousand					SALES	
TOTAL SALES				100,00%	25.624	100,00%
ACCORDING TO PRICES TABLE						
TYPE [F]		30,00%	7.794			
TYPE [R]		70,00%	18.189			
INFLATIONARY LOSSES			(359)			
anual inflation expected = 6,0%						
FIRST PAYMENT		100,00%	3.351	13,08%		
. TYPE [F]	1.169	34,89%				
. TYPE [R]	2.182	65,11%				
INSTALLMENTS		100,00%	10.262	38,64%		
. TYPE [F]	6.625	64,56%				
. TYPE [R]	3.637	35,44%				
FINANCING			12.370	48,28%		
INFLATIONARY LOSSES			(359)	-1,40%		
INTERESTS					1.043	4,07%
PROMOTION COSTS					(780)	-3,04%
DEALERS SERVICES					(1.297)	-5,06%
TAXES					(1.054)	-4,11%
FINANCING COSTS					(309)	-1,21%
					LRS	
LIQUID REVENUE ON SALES					23.227	90,65%
IMPLEMENTATION PRICE					(19.020)	-74,23%
					PROFi	
PROJECT`S PROFIT					4.207	16,42%
TOTAL INVESTMENT REQUIRED				12.392		
TOTAL RETURN				(16.599)		

Graph 1: project payback

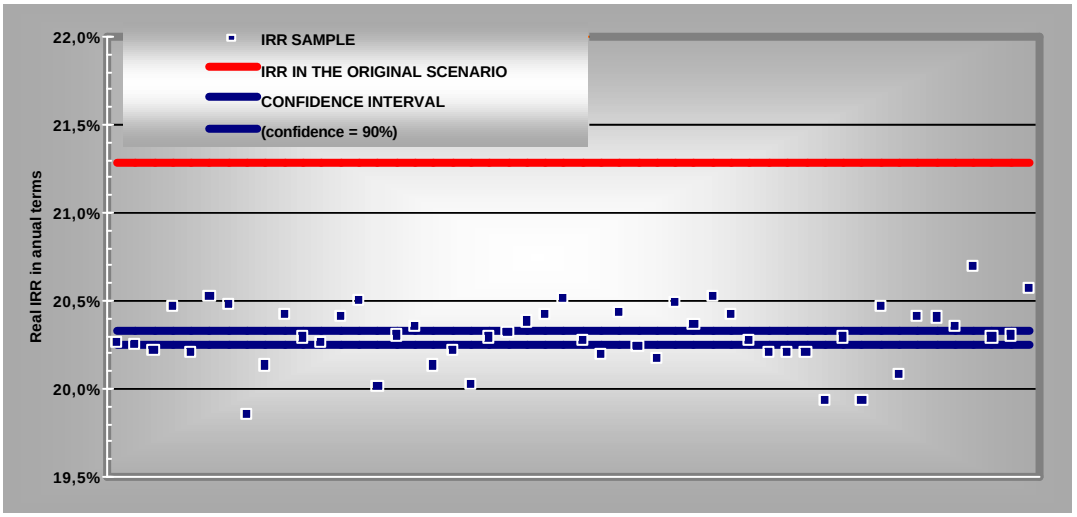


4.1 Risk Analysis

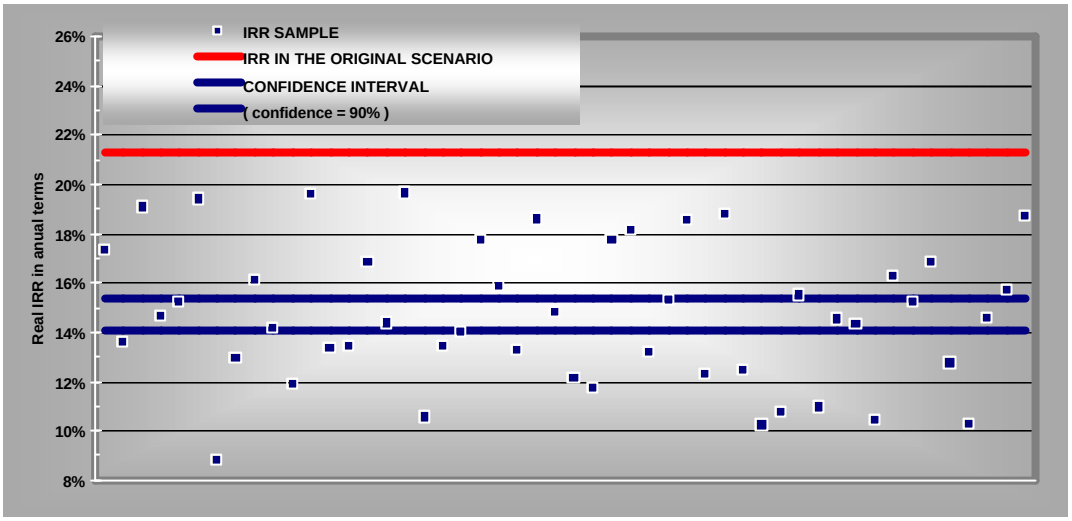
The risk analysis is produced by the system in three modes. The first one shows the sensitive analysis; using the following graph 2 as an example, sales speed is varying according to its original expected position. The second mode is the dispersion effects analysis, which is based on Monte Carlo's simulation, see Hughes [4]. At same way, the system provides risk analysis based on Monte Carlo's approach as well, toward simultaneous dispersion effects in different variables. These two modes of risk analysis are shown at graphs 3 and 4.

Graph 2: Sensitive analysis of Sales speed on Investments (INVincrease), Return (RETdecrease), Return on Sales (Rsales) and IRR

Graph 3: Confidence interval for IRR –Inflation increase dispersion effects



Graph 4: Confidence interval for IRR – Simultaneous dispersion effects



5. Final Remarks

The main aspects that deserve to be pointed out are the following:

- In adopting this investment analysis system, the developer is able to offer outstanding information for potential investors on the housing sector;
- Small and medium sizes developers can contract the service cheaper and faster than contracting specialist advisors;
- As far as more developers use the system a data base of the sector can be built for future proposals in academic researches and public surveys;
- In often handling the system outputs, developers can steadily improve the quality of their own decisions.

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