

THE INFLUENCE OF CAPITAL COMPOSITION TO REAL ESTATE INVESTMENT RISK IN GIANYAR BY USING @RISK PROGRAM

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ABSTRACT

Failure or loss in real estate construction services is largely caused by inaccuracy in taking decisions, one of which is determining the capital composition. A study of analyzing investment risks in the real estate in Gianyar has been not found. Therefore, this research is very important to do so it can anticipate the risk of losses in real estate investments in Gianyar. This research aims to know the composition of capital affecting risks of various real estate investment scenarios so it can be useful for investors who will invest their capital and may consider matters relating to possible risks. The method used is the inferensial method, a method for analyzing data from a sample then for making a conclusion about the population. While the risk analysis conducted is quantitative risk analysis by @Risk program. The results of the risk analysis by @Risk program with the distribution diagram shows that the greater the capital itself the greater the probability value $NPV > 0$ and the value of $BCR > 1$ which means that the greater the opportunity to gain greater profits and less chance of losses.

Keywords: *real estate investment, the capital composition and @ Risk program*

A. INTRODUCTION

Every business of real estate construction services will always appear two things side by side that is the opportunity to gain profit and risk of suffering loss, either directly or indirectly. Failure or loss in real estate construction services is largely due to inaccuracy in making decisions, one of which is determining the composition of capital.

The situation is interesting to observe, so the risks that may arise in real estate investment can be minimized and then can be selected some of the most rational investment alternatives. Based on a survey conducted by the Central Bank to businessmen incorporated with the association of REI Bali (Real Estate Indonesia) and AREBI Bali (Real Estate and Broker Indonesia), the area that is still considered prospective to develop especially small to medium type (type 36 to type 70) with the selling price in the range of Rp1 billion or under Rp 1 billion in the buffer zone, such as Gianyar regency. (Anonim, Bisnis.com, 2015)

A study about investment risk in real estate for the condition in Gianyar regency has been not found. Therefore, this research is very important to do so it can anticipate the risk of losses in real estate investments in Gianyar.

This study aims to be able to determine the effect of capital composition affecting the risk of various real estate investment scenarios in Gianyar regency so that it can be beneficial for investors who will invest their capital to invest in real estate in Gianyar regency and it can be used to consider some matters relating to the risks that might happen. The method used is the inferensial method, a method for analyzing data from a sample then for making a conclusion about the population. Quantitative risk analysis was used to analyze the risk by using @ Risk program.

B. LITERATURE STUDY

Based on the market segment targeted in real estate investment in Indonesia, the real estate investment can be divided into three groups: simple class, middle-class and high-end real estate. (Simanungkalit, 2006).

Assessing the financial aspects is one of the most important requirements before investing. In the process of assessing the feasibility of the project or investment from the financial aspect, the conventional approach conducted is to analyze the estimated outflows and incoming cash flows during the project or investment. That is the test by using

selection criteria (assessment method). Cash flow is formed from the first cost estimate, working capital, operating cost, production cost and income (Soeharto, 1995).

Cash flow provides an overview of the amount of available funds at any time that can be used for various operational needs of the company, including the investments, as well as the amount of revenue and expenses.

To determine which investment project proposals will be accepted or rejected, the proposals investment project should be assessed (Halim, 2005). Some of the valuation methods commonly used for assessing project proposals are the Net Value Method (NPV), if NPV is positive, it means that the funds invested in the project can produce PV cash flow higher than the initial PV investment. Conversely, if NPV is negative it means that the funds invested in the project can produce lower cash flow PV than the initial investment value. Thus, an investment project proposal will be accepted if its NPV is greater than zero. Conversely, an investment project proposal will be rejected if its NPV is less than zero. If the NPV is zero, then it should be reviewed whether the interest rate used is relevant in the NPV calculation.

Method of Internal Rate of Return (IRR), this method is the interest rate that can make the NPV equal to zero, because PV of cash flows at the interest rate is equal to the initial investment. An investment project proposal is accepted if the IRR is higher or equal to the cost of capital / interest rate / RRR. In contrast, an investment project proposal is rejected if its IRR is lower than the cost of capital / interest rate / RRR.

Benefit Cost Ratio (BCR) method, the use of this method is very well known in evaluating projects for the public interest. This method will give clues if $BCR > 1$ then the project proposal accepted and $BCR < 1$ then the project proposal is rejected.

The results of research on the probability value analysis and the impact of investment risks of upper middle class real estate in Bandung with qualitative risk analysis categorize high risks in real estate investment in the city of Bandung. They are 1) land acquisition and compensation, 2) certainty of funds for investment, 3) market competition (selling price and specifications offered by competitors around the location), 4) low labor productivity, 5) the source and financing structure

used, 6) the added / less work, 7) the complicated negotiations, 8) the bloated operating costs, 9) the inefficient government bureaucracy process, 10) the availability of utility systems around the site, and 11) certification of land and buildings. (Lesmana, 2004)

While the investment financing analysis of housing project of Green Pakis Regency Malang stated that the capital combination, 30% own capital and 70% loan, produced the smallest cost of capital that is 11.1% and generate positive leverage with ratio of ROE and biggest ROR that is equal to 1,98. It is the cheapest financing composition and has the lightest return. (Utomo, 2014)

Risk and uncertainty are two key features of business and government problems that must be understood in order to make decisions. (Vose, 1996)

Risk analysis can be done both qualitatively and quantitatively. Qualitative risk analysis focuses on risk identification and assessment while quantitative analysis focuses on probability evaluation of the occurrence of risk, typically involving more complex analysis techniques using computer programs. (Flanagan & Norman, 1993)

In the quantitative risk analysis begins with a probability analysis of the object under study. Sensitivity analysis done to assess changes in elements of the selected decision. After knowing the sensitivity of the decision taken then continued by creating a model or scenario in which the scenarios made are analyzed by simulation analysis and continued with correlation analysis.

In the research entitled "A multi criteria decision analysis for reinvestment action portfolio selection problem in an Indonesian real estate company" states that a financial feasibility study is very important in decision making. The study provides a better objectivity assessment in assessing the financial performance of a real estate project and says that Monte Carlo simulations as an effective and efficient tool for managing uncertainty in decision making. (Ronyastra, Gunarta, & Ciptomulyono, 2015)

Complex analysis that must be done, then in this quantitative risk analysis is assisted by using a computer program that is @ risk program.

C. METHODOLOGY

The research method used is inferential method. Inferential method is a method to analyze data from a sample to then make a conclusion

about its population (Kountur, 2006). That is, the results of the sample apply to all populations or in other words can be generalized so this method aims to make conclusions from the results of research.

The preparation for the initial collection and survey is a review of government policies related to investment in housing or real estate development in Indonesia and particularly in Gianyar regency, developing questionnaires for developers on financial planning and investments, and creating a work schedule, distributing questionnaires and collecting them back.

For the purposes of collecting data in the field, there are some equipment are required, such as: stationery as a note taking tool, a questionnaire used to determine the conditions of investment and financial planning of some developers who are implementing the project in Gianyar in the same time with the research and computer with @Risk program to analyze the results and to make modeling.

There are 2 models / cash flow scenarios created, which are changing some variables in the cash flow before being analyzed with the @risk program. The variables changed in this study are

focused on the percentage of capital of the real estate project, which are Model 1 (25% own capital and 75% loan capital), and Model 2 (30% own equity and 70% loan capital).

Both cash flow models of real estate investment are then analyzed by comparing each of their investment control variables, namely NPV and BCR with the @Risk program.

The research location is on Small and Medium Type Residential Project in Gianyar. Determination of sample size in this study is to determine the sample size of the limited population, where the population in question is the number of housing with one floor house category especially type 36/100 to type 70/100 which workmanship and sales are done in 2015-2016.

D. RESULT AND DISCUSSION

The sampling of this research data was conducted by census by distributing 30 questionnaires to Gianyar. There were only 22 housing project questionnaires from 2015-2016 with lower middle class collected of the 30 questionnaires distributed (see Table 1.).

Table1.Successful Questionnaire Collected

No.	District Location	The number of Questionnaires distributed	The number of Questionnaires collected
1.	Gianyar	30	22
Percentage		100%	73,33%

Of the 22 questionnaires returned, it can be seen the characteristics or profile of respondents with the details as follows (see Table 2.):

Table2.Characteristics of Respondents

Based on Respondent's Position		
a. Pimpinan Leader	5	22.73%
b. Manajer Manager	12	54.55%
c. Staf Senior	5	22.73%
Total	22	100.00%
Based on Work Experience		
a. < 1 year	0	0.00%
b. 1 – 5 years	3	13.64%
c. 6 – 10 years	11	50.00%
d. > 10 years	8	36.36%
Total	22	100.00%

Based on Company Age		
a. < 5 years	3	13.64%
b. 5 – 10 years	15	68.18%
c. 10 – 15 years	4	18.18%
d. > 15 years	0	0.00%
Total	22	100.00%

The respondents in this study were 22 respondents with 22.73% are company leaders, while the remaining 54.55% are managers and 22.73% are senior staff in the developer companies. This data indicates that the questionnaire distribution of this study has been in accordance with the planned, where this research variable applies to respondents who have position at middle management level to upper management.

Based on their work experience, the respondents who filled in the questionnaire are 0% have under 1 year work experience, 13.64%

(1-5years), 50% (6-10 years) and 36.63% have more than 10 years work experience. This data indicates that the questionnaire is filled by respondents who have had sufficient work experience in real estate.

Based on the company's age, the company reviewed was 86.36% of companies that have been engaged in real estate for more than 5 years. This data shows the experience level of the company in dealing with real estate projects.

Of the 22 returned questionnaires, it can be seen the target of housing buyers by real estate developers (see Table 3)

Table 3.Target: Real Estate Buyers

Market share	Total	Percentage
Based on the Origins of Buyers		
a. Bali	18	81.82%
b. Outside of Bali	4	18.18%
Total	22	100.00%
Based on Buyer's Job		
a. Civil servants/SOEs	8	36.36%
b. Private employees	12	54.55%
c. Entrepreneur	2	9.09%
Total	22	100.00%
Based on Buyer's Family Income monthly		
a. < 2 million	0	0.00%
b. 5 million- 10 million	8	36.36%
c. > 10 million	14	63.64%
Total	22	100.00%

Based on buyer's origins, real estate built by developer in Gianyar shows 81.82% of buyers come from Bali and 18.18% come from outside of Bali. This data shows that there are still people who come from outside of Bali wishing to have a house in Bali.

Based on the buyer's job, 36.36% of buyers work as civil servants, 54.55% work as private employees and 9.09% are entrepreneur. This

shows that private employees and entrepreneurs are very interested in owning houses in these areas.

Based on buyer's family income monthly, 36.36% of buyers have 5 million - 10 million income per month and 63.64% of buyers have more than 10 million income per month. These data indicate that monthly family income greatly

affects homeownership by mortgage in the buffer zone of Bali.

The data analysis in this study uses estimation method related to real estate investment especially finance aspect. Based on the results of literature studies, the variables of the financial aspects include the costs to be incurred, income estimates, taxes imposed, sources of financing, selling prices.

All of these variables will be contained in a cash flow of housing project (real estate). In the final stages of financial aspect analysis will be obtained the amount of profitability that

becomes the basis of consideration of a real estate investment.

The data that will be used in cash flow, the probability distribution value is calculated by @Risk program that can be done in 3 (three) ways according to the condition of the data that is RiskNormal (μ , σ); RiskUniform (min, max) and RiskTriang (min, most likely, max).

The data sought by the value of probability distribution is data to be used in the cash flow, as in Table 4.

Table 4. The supporting data of Cash Flow

No.	Data Description	Unit	Value of Probability Distribution	Types of Distribution
1.	Land acquitted	m ²	4,166.67	Triangle
2.	The length of time of land acquisition	month	5,5	Uniform
3.	The land area is used as fasos / fasum	%	24	Triangle
4.	Number of units built according to existing type - Type 36/100 - Type 45/100 - Type 54/100 - Type 60/100 - Type 70/100	Unit	5 7 7 - 5	Uniform Uniform Uniform - Uniform
5.	Time to design a house	month	3	Triangle
6.	Time to build a house for each unit	month	4	Triangle
7.	Time required for marketing	month	12	Normal
8.	House price per unit according to the type - Type 36/100 - Type 45/100 - Type 54/100 - Type 60/100 - Type 70/100	rupiah	513,200,000.00 616,200,000.00 654,300,000.00 - 979,000,000.00	Normal Normal Normal - Normal
9.	Number of units sold each month	Unit/month	3	Triangle
10.	Time used to manage permissions	month	4	Triangle
11.	Mortgage Advance	%	25	Unifom
12.	Interest Rate Credit	%	15	Triangle
13.	Time for disbursement of mortgage funds	month	4	Normal
14.	Design and Supervision Costs	rupiah	76,174,000.00	Normal
15.	Age of Investment	month	14	Normal
16.	Fees for construction work - cut & fill - facilities & infrastructure - buildings	Rupiah/m ³	38,333.33 43,333.33 2,833,333.33	Triangle Triangle Normal
17.	Non Construction Cost		2,550,000.00	Normal

Land acquisition	Rupiah/m ²	15,000,000.00	Normal
Entry Exemption	Rupiah	-	
Permissions			
- Lot Permits	Rupiah/lot	2,960,000.00	Uniform
- IMB tipe 36/100	Rupiah/unit	2,823,000.00	Uniform
- IMB tipe 45/100	Rupiah/unit	3,000,000.00	Uniform
- IMB tipe 54/100	Rupiah/unit	3,125,000.00	Uniform
- IMB tipe 60/100		-	
- IMB tipe 70/100		3,000,000.00	Normal
Marketing	Rupiah	40,000,000.00	Normal
Sales Fee	% / unit	0.05	Normal
Tax	%	10	Normal
Contributions to village areas	Rupiah/lot	2,600,000.00	Normal
Over Head	Rupiah/unit	2,120,000.00	Normal
Notary fees	Rupiah/lot	4,600,000.00	Normal
Office Operational Cost	Rupiah/month	13,960,000.00	Normal

The data that has been searched for its distribution value can be used as data in the cash flow of the housing project.

The cash flow of the housing project consists of three parts:

- Cash in is the amount of cash receipts consisting of two parts: capital (own capital and loan capital) and home sales (down payment and settlement).
- Cash out, is the cost incurred during the investment age. Costs incurred istailored to the needs. Cash entry consists of: land purchase, clearance of entry, design and supervision costs, licensing fees including fees for notaries, BPHTB (Acquisition of Land and Building Rights), clearance permits and building permits, construction costs consisting of fees for cutting& filling, construction of facilities and infrastructure, and construction house, marketing costs, advertising costs in print and electronic media, sales fees, contribution fees

to villages, overheads, office operating expenses, bank administration discounts, adjusted for agreement between bank and customer, bank loan interest, and taxes (VAT and income tax)

- Balance, is the result of the total of cash inflow minus the total of outgoing cash.

In preparing the cash flow, it is required assumptions in the dissemination of data on the cash flow. The assumptions are adjusted to the cash flow model that will be made.

After establishing those assumptions, then the data is processed in cash flow. The cash flow made is controlled by the Net Present Value (NPV) and Benefit Cost Ratio (BCR). If it is in accordance with the investment assessment, then the NPV and BCR values are simulated with the @Risk program to determine the probability and sensitivity risks of each assessment.

The following are the results obtained from the cash flows of each model, as shown in Table 5.

Table 5. Control to Real Estate Investment Rating

MODEL OF CASH FLOW	INVESTMENT ASSESSMENT CONTROLS	
	NPV	BCR
Model 1	753,053,350.58	1.03
Model 2	1,537,453,495.09	1.059

The simulations on the @Risk program will display graphs / diagrams in accordance with the model of cash flow that is made. The chart chosen to analyze the investment assessment criteria from each cash flow made is the distribution diagram.

This diagram shows the probability of each investment criterion (net present value-NPV and benefit cost ratio-BCR).

Here is a diagram of the distribution of each cash flow model analyzed by @ Risk program:

A. Cash Flow Model 1

- NPV

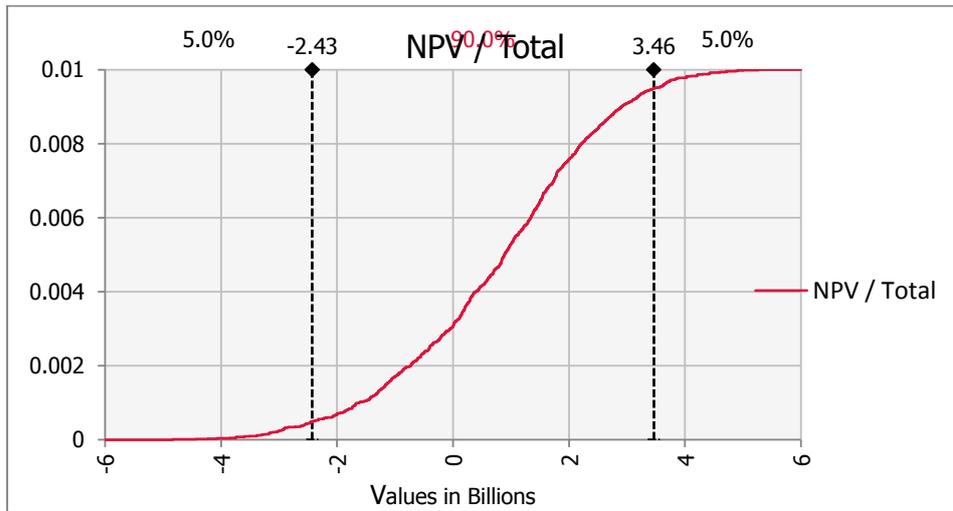


Figure 1.NPV Distribution of Cash Flow Model 1

The diagram above shows that investment with capital composition: 25% own capital and 75%

loan capital has probability of $NPV \leq 0$ is 30.7% and the probability of $NPV > 0$ is 69.3%

- BCR

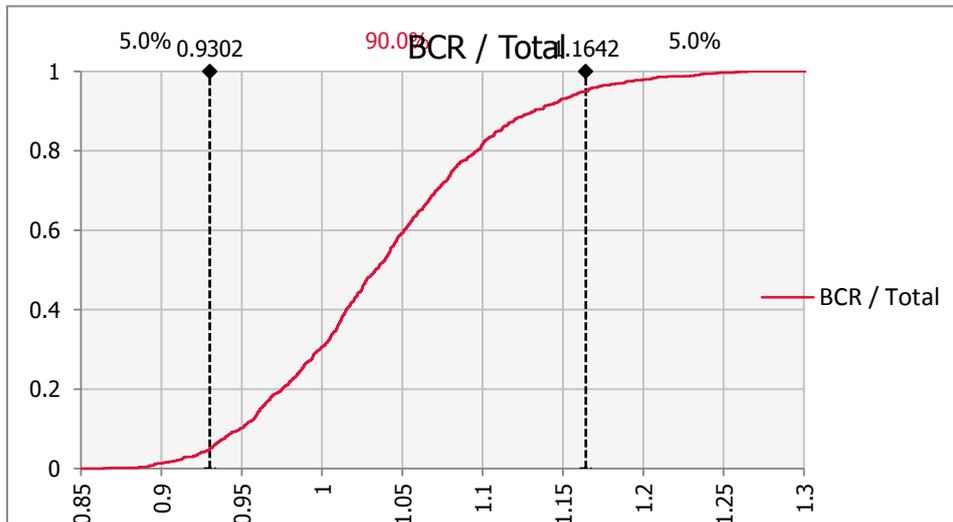


Figure 2.BCR Distribution of Cash Flow Model 1

The diagram above shows that investment with capital composition: 20% own capital and 80% loan capital has a probability of $BCR \leq 1$ is 30.8% and the probability of $BCR > 1$ is 69.2%

B. Cash Flow Model 2

- NPV

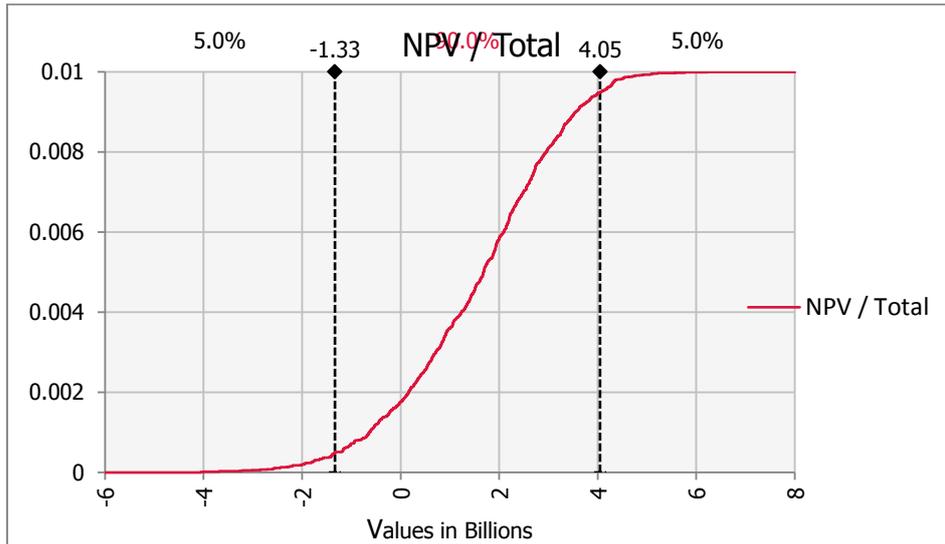


Figure 3.NPV Distribution of Cash Flow Model 2

• BCR

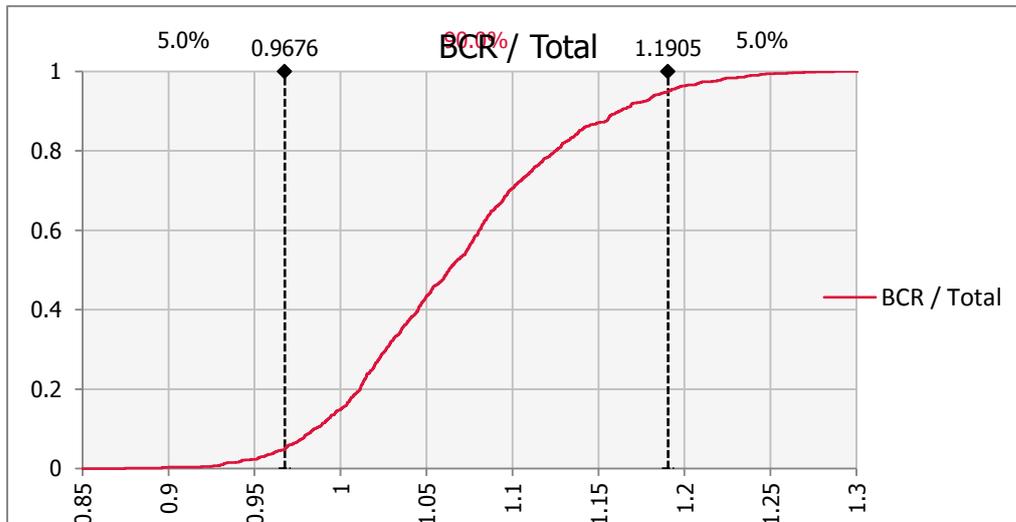


Figure 4.BCR Distribution of Cash Flow Model 2

The distribution diagram of the two cash flow models above illustrates that each model has different probabilities to the NPV and BCR, so that each cash flow model has different opportunities to gain a profit.

The following is an analytical recapitulation of the Distribution Chart for NPV and BCR of each cash flow model shown in Table 6. Probability Values of NPV and BCR

Table 6. Probability Values of NPV and BCR

Model of Cash Flow	Investment Indicator			
	NPV		BCR	
	Probability NPV ≤ 0	Probability NPV > 0	Probability BCR ≤ 1	Probability BCR > 1
Cash Flow Model 1 (25% : 75%)	30,7 %	69,3 %	30,8 %	69,2 %
Cash Flow Model 2 (30% : 70%)	17,6 %	82,4 %	15 %	85 %

The table above illustrates that cash flow model 2 (investment with capital composition: 30% own capital and 70% loan capital) has the greatest probability value to $NPV > 0$ and $BCR > 1$ that is 82.4% and 85%. This means that the cash flow of this model has the greatest opportunity to gain bigger profits rather than the model 1.

E. CONCLUSION

The result of the analysis with the distribution diagram illustrates that cash flow model 2 (investment with capital composition: 30% own capital and 70% loan capital) has the greatest probability value to $NPV > 0$ and $BCR > 1$ that is 82.4% and 85%. This means that cash flow model 2 has the greatest opportunity to earn greater profits.

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