Private Company New Share Acquisition Analysis Using Monte Carlo Simulation: A Case Study

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Abstract

New Share Acquisition in the form of equity investment is a corporate action that enables a company to grow inorganically due to new capital used for expansion and the investor/acquirer market position & technology. Besides, consolidating two entities generally will create more value from the investor perspective than two separate entities due to the synergy effect. This research will develop a hypothetical case study of a new share acquisition done by a Telco company in Indonesia. The model and concept can be applied in real acquisition situations. Monte Carlo simulation will be used to analyze the acquisition cash flow and determine the effect of synergies based on the revenue increase, market positioning, and cost-saving in the financial acquisition model. Those synergies effect will treated as the variable of the Monte Carlo Simulation. The study aims to minimize the risk of failed M&A by determining if the result of the consolidated acquisition model projection will achieve the pre-determined acquisition success factor metric such as Investment Internal Rate of Return (IRR), and the acquirer's potential market capitalization/Net Present Value (NPV) after acquisition. This simulation produces the probability of achieving those targets and helps the investor manage the risk of unsuccessful acquisitions.

Keywords
Mergers & Acquisitions, Monte Carlo Simulations

1. Introduction

A company's financial growth is essential for any business, organically or inorganically. Organic business growth happens by reinvesting profit along the way, and it considers a more conventional way to expand a business. Some large corporations with overflowing capital choose to grow inorganically through mergers and acquisitions ("M&A"). It enables a company to grow exponentially. It is caused by a new business line or capital expenditures that can be executed immediately after fundraising, typically from investors. Relatively instant funding from investors will boost the IRR of a project because of the time value of money factor.

According to Oduru & Agyei (2013), M&A aims to increase the efficiency and profitability of a company due to synergy so that the financial growth can be exponential. Investors in M&A can transfer knowledge, technology, and network to grow the target company's business. Conversely, the target company gives the investor their business starting point/initial market. Vazirani (2012) also stated that the consolidation process between investors and the target company would form a more valuable company combined. The synergy between the acquirer and the investor enables the company consolidation to enhance revenue and save production costs by using each other's resources.

There are two types of share acquisition—new and old shares acquisitions. New Shares acquisitions mean the target company will issue their portfolio stock, and all existing shareholders will dilute their ownership proportion relative to the new owner. In comparison, old shares acquisition is a share takeover from the existing shareholder, and only the shareholders with the stocks that have been acquired will reduce their ownership (Oduro & Agyei, 2013).

The difference between those acquisitions is the cash inflow of the investor. In old share acquisition cases, the money paid by the investors will go earned by the old shareholders. Usually, this acquisition is made when the target company is a mature business. The investor did this because they wanted to earn a steady dividend from the acquired Company. The previous investor wanted to gain capital by selling their ownership or exiting the Company. On the other hand, new shares acquisition money will go to the Company's balance sheet as an additional equity injection. The Company can use the investor's money to expand its business. The case study in this paper will develop a new share acquisition.

According to Koi-Akrofi (2016), KPMG has reported that 75% - 83% of M&A transactions have failed. The transactions cannot fulfill their financial purpose and give more value than the invested capital. This study focuses on the method used to analyze the impact on the M&A investor's financial statement and determine the risk of failed M&A using Monte Carlo Simulations. This paper will develop a case study of an Indonesian Telco Company's strategic acquisitions recommendations.

1.1 Objectives

The study is based on a manufacturing company's new shares acquisitions case study in Indonesia. This research aims to minimize the risk of a failed acquisition transaction, shown by the unachieved success metrics, using Monte Carlo Simulations. The simulation result shows the probability that the cost of acquisition spending will impact the acquirer's financial ratio and other success metrics of the acquisitions.

2. Literature Review

As explained before, mergers and acquisitions can be very important for a company to expand its business inorganically. Since M&A activities could fail, minimizing the risk of failed M&A is important. The Monte Carlo simulation is used to reduce the risk of failed M&A, and it is used to simulate the company synergy parameter.

McKinsey & Company (2022), one of the world's largest management consultants, has stated that some factors will fail the M&A transaction, even though it seems fine in the feasibility studies. One of the reasons will probably be the mistake in the implementation strategy and the value creation planning. Those studies are very crucial as part of the acquisition planning, and on the realization, synergy impact should be leveraged well to achieve the financial transaction purposes. Because of those reasons, analysis of the financial impact after the acquisition, the risk of failing it, and the synergy strategy between both companies will be crucial.

To simulate the financial impact and determine the risk of it can be done by Monte Carlo Simulation. According to Gentle (2010), Monte Carlo is an experiment with random numbers that simulate some of the model parameters, typically distributed to a type of distribution to predict an outcome of a whole model.

Not so many previous studies consider using Monte Carlo simulations for M&A analysis. But with a similar usage, some studies use Monte Carlo Simulations for NPV calculations such as Tibor et al. (2020), Wealer et al. (2021), Shaffie & Jaaman (2016), and Gibbons (2005) use the same method to analyze a company's cash flow and simulate the company value. Even though none of these previous papers use Monte Carlo to conduct an M&A analysis, the analysis concept is similar and useful for this study.

Wealer et al. (2021) used Monte Carlo Simulations to determine the NPV of the nuclear energy generator by simulating the cost and revenue factor of the project. Thi method is also using Discounted Cash Flow (DCF) to calculate the NPV using simulated parameters (Rosenbaum et al., 2009)

3. Methods

This study was conducted with the scope of analyzing the New Share Acquisitions analysis using Monte Carlo Simulations to evaluate the risk of failed M&A based on the pre-determined metric. These are some defined steps to achieve the purpose of this study. The general research methods are shown in Figure 1. The research method is described as follows:

1) Identify the problem in the scope of corporate finance, especially in M&A activities which are very important for an inorganic growth of a company. The strategy analysis, including the financial statement and identifying the risk of M&A failure, is crucial for the feasibility development.
2) Conducting a literature review on a similar study. It is found that similar studies have been undertaken to simulate the Company's cash flow and NPV. So, this research is trying to formulate some methods such as Monte Carlo Simulation, DCF/Business Valuation, and Financial Statement analysis on a company after an acquisition transaction
3) Developing a case study based on a real Indonesian public company M&A case. This research will give a hypothetical recommendation for a publicly traded Indonesian Company to make a new Share Acquisition ("acquirer") to a smaller but also publicly listed company in Indonesia ("target company").
4) Pre-determining the acquisition success metric and the post-acquisition parameter in the acquirer's balance sheet impact (revenue enhancement and cost-saving factor) that will become the output and the input of the simulations
5) Determining business valuation of the target company using market comparison, which will be explained more in 3.1
6) Create a consolidated financial model of the acquirer, set up the model parameter for simulation, and determine the M&A failure risk based on pre-determined metrics which will be explained more in 3.2

3.1 Business Valuation

Valuation of the target company can be evaluated by creating a market comparison based on the industry. Steps below describe the process to conduct business valuation of the target company using market multiple analysis by comparing it to another publicly listed company in a similar industry based on their financial ratios (Djaja, 2019).

1) Determining the target company nature of the business to determine the peer's comparison. The peers can be similar publicly listed companies in the same industry.
2) Determining the ratio used for the comparison. Typically, Price/Earnings or Price/Book Value multiple (Deloitte, 2022) (GOH et al., 2021). This study will use a publicly traded company as well as the target company. So, the acquisition valuation will be using the market price.
3) Implement the financial multiple to calculate back the target company's valuation based on their earnings or equity (book value)
4) Then determine the acquisition portion to calculate the transaction price the acquirer should pay. The amount of money paid will be considered as the invested capital.

3.2 Monte Carlo Simulation and Model Building

After determining the target company valuation, the next part is to build the acquirer's financial model with the invested capital on the acquisition and simulate the parameter to obtain the pre-determine success metrics.

1) Building the acquirer's financial model. The model will focus on the free cash flow model, which consists of EBIT, Tax, Net Working capital changes, and capital expenditures. The free cash flow model is the yearly cost and benefit component to calculate the acquirer's NPV
2) Determining the simulation parameter. This parameter will be the experiment variable, simulated with random numbers. The distribution used in this simulation will be uniform distribution.
3) Pre-determine the success metrics of the acquisitions, which will become the output of the Monte Carlo simulations.

3.3 Case & Parameter Definition

The analysis will develop a theoretical case study using real data. This research recommends a publicly listed company in Indonesia to complete strategic new share acquisitions on a smaller company that can bring a synergy value.

1) The acquirer Company will be a publicly listed telco company on Indonesia Stock Exchange ("IDX").
2) The target company will be a publicly listed data center company on Indonesia Stock Exchange. Both companies operate in a similar industry which will bring synergy impact to each other. This study will focus on the acquirer's impact.
3) The valuation of the target company will be using the market value since it is a listed company.

4) The acquisitions will assume a majority stake (more than 90%) in new shares.
5) The Simulation parameter will be potential exit multiple, revenue enhancement, and cost-saving.
6) Pre-determine success metric will be possible acquirer's NPV and the IRR on the invested capital.

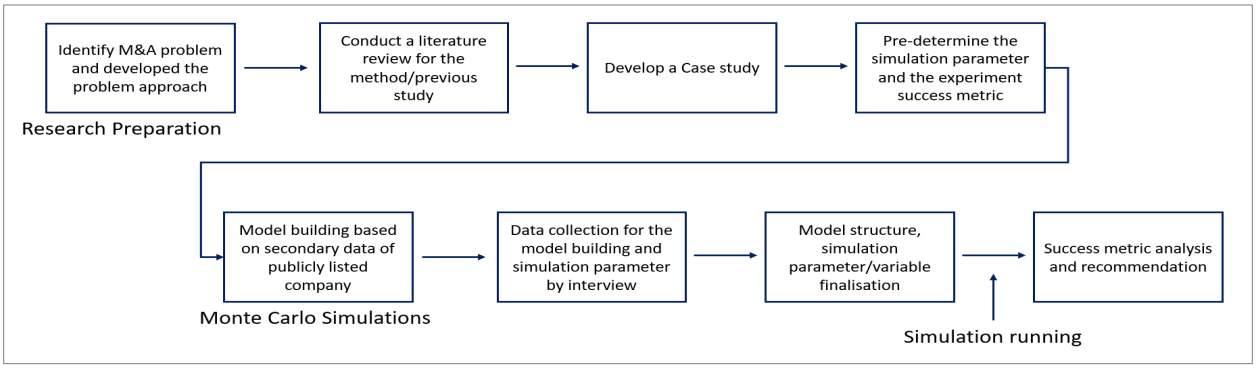

Figure 1. Research Method Flowchart

4. Data Collection

The primary and secondary data were collected during the experiment. Preliminary data were obtained by interviewing experts on financial analysis from some investment banking professionals in Jakarta. (Table 1) While secondary data was collected from the IDX website for publicly listed Company

1) While determining the experiment parameter, this research has a chance to interview some investment banking professionals in Jakarta. The purpose of the interview is to have their point of view about the potential synergy between the target company and the acquirer, especially about the possible revenue enhancement and the cost-saving. The data format to collect the primary data can be seen in Table 1. There are 4 interviewees for this data collection process.
    a. Assistant Vice President, Multinational Investment Banking Firm based in Jakarta
    b. Investment Senior Associate, Infrastructure Investment Firm based in Jakarta
    c. Investment Banking Senior Associate, Local Investment Banking firm, own by the largest private bank in Indonesia
    d. Investment Banking Manager, one of the largest State-Owned Enterprise financial advisory/ investment banking firm based in Jakarta

    All these respondents have an extensive experience in handling M&A activities, including Infrastructure/Telco Industry in Indonesia.
2) The model building will use publicly available data for target and acquirer companies, and the financial statement for both can be downloaded from Indonesia Stock Exchange. Since the acquirer company is a large corporation with mature cash flow income, the projection will be made internally and conservative growth.

Table 1. Primary data

No	Interviewee	Parameter	Upside	Downside
1	Interviewee 1	Exit Multiple		
		Revenue Enhancement		
		Cost Saving		
2	Interviewee 2	Exit Multiple		
		Revenue Enhancement		
		Cost Saving		

The financial model of the acquirer company can be shown in Figure 2, which consists of an income statement and a DCF model. The Revenue and OPEX or cost projection are made until 2027 with conservative assumptions, and the acquisition assumption is more than a 90% stake in 2022 for IDR 8 trillion. The synergy effect is shown in the green cell. The probability distribution used for Revenue Synergy, cost savings, and exit multiple is uniform.

Income Statement (000.000.000s)	Historical			Projection								Synergy Effect		
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		min	max
Revenue	128.256	130.784	135.567	138.278	142.965	147.979	150.367	152.960	155.644	158.378	161.162			
Rev - Synergy Effect					4.358	4.511	4.583	4.663	4.744	4.828	4.913	3%	-3%	9%
Operating Expense	-63.877	-70.533	-69.995	-82.967	-86.075	-89.187	-90.719	-92.375	-94.021	-95.674	-97.358			
Opex - Synergy Effect					1.898	1.967	2.001	2.037	2.074	2.110	2.147	2%	1%	3%
amortization/depreciation	-20.446	-21.406	-23.178	-22.292	-22.292	-22.292	-22.292	-22.292	-22.292	-22.292	-22.292			
EBIT	**43.933**	**38.845**	**42.394**	**33.019**	**40.854**	**42.978**	**43.940**	**44.993**	**46.149**	**47.349**	**48.572**			

DCF (000.000.000s)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029			
EBIT			42.394	33.019	40.854	42.978	43.940	44.993	46.149	47.349	48.572			
Tax			-10.316	-6.917	-8.767	-9.078	-9.098	-9.254	-9.322	-9.515	-9.600			
Depreciation & Amortization			23.178	22.292	22.292	22.292	22.292	22.292	22.292	22.292	22.292			
Working capital			0	4.843	482	433	235	237	220	215	217	exit multiple		
Capex			-38.317	-16.593	-19.028	-17.954	-18.044	-18.355	-18.677	-19.005	-19.339	6,6	5	8
FCF to Equity			16.939	28.644	35.833	38.671	39.324	39.913	40.661	41.336	42.142	52.808,9	min	max
Invested Capital Net Cashflow				**-8.000**	**6.256**	**6.478**	**6.584**	**6.700**	**6.818**	**6.938**	**7.060**	**52.809**		

Figure 2. Profit & Loss and DCF model of the Acquirer Company

5. Results and Discussion

The model will produce two data from the simulation: the acquirer's possible post-acquisition market capitalization/NPV and the IRR of the invested capital. Market capitalization data shows how far the acquisition will increase the acquirer's potential intrinsic valuation, which will determine by the DCF method. In comparison, IRR from invested capital will determine the return of the acquisitions made through cost-saving, revenue enhancement, and potential exit multiple.

5.1 Numerical Results

Table 2 below shows the result table of the Monte Carlo Simulation, which consists of the potential intrinsic value of the acquirer after the acquisition, and the potential IRR of the invested capital. While Table 3 shows the result of the descriptive statistics (mean, median, max, min) for the impact of the simulations.

Table 2. Monte Carlo Simulation

Trial	Market Cap (IDR bn)	IRR
1	IDR 257.395	154%
2	IDR 214.196	19%
3	IDR 228.360	47%
4	IDR 227.988	55%
5	IDR 217.899	23%
6	IDR 232.618	59%
7	IDR 232.056	52%
8	IDR 232.303	54%
9	IDR 261.120	140%
10	IDR 234.305	60%
11	IDR 260.829	154%
12	IDR 252.875	116%
13	IDR 252.813	111%
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1000	IDR 219.094	28%

Table 3. Rresult of the descriptive statistics

	NPV (IDR billion)	Investment Return
Max	275.172	194%
Min	209.453	11%
Mean	241.441	91%
Median	242.651	92%

5.2 Graphical Results

Figure 3 below shows the graphical data of the acquirer's potential market capitalization based on the acquirer's potential intrinsic value post-acquisition and IRR on the invested capital. The experiment result concluded two things:

1) The current market capitalization of the acquirer's Company as per 19 July 2022 is IDR 412 trillion. The experiment shows that the maximum potential market capitalization based on the intrinsic value is not more than IDR 275 billion. It means that this acquisition is not bringing a significant synergy value impact to the acquirer company (Yahoo Finance, 2022).
2) Even though it is not affecting much of the Company's market capitalization, the invested capital of IDR 8 trillion is generating a significant financial benefit due to the cost savings, with a more than 50% chance of having a 90% internal rate of return.

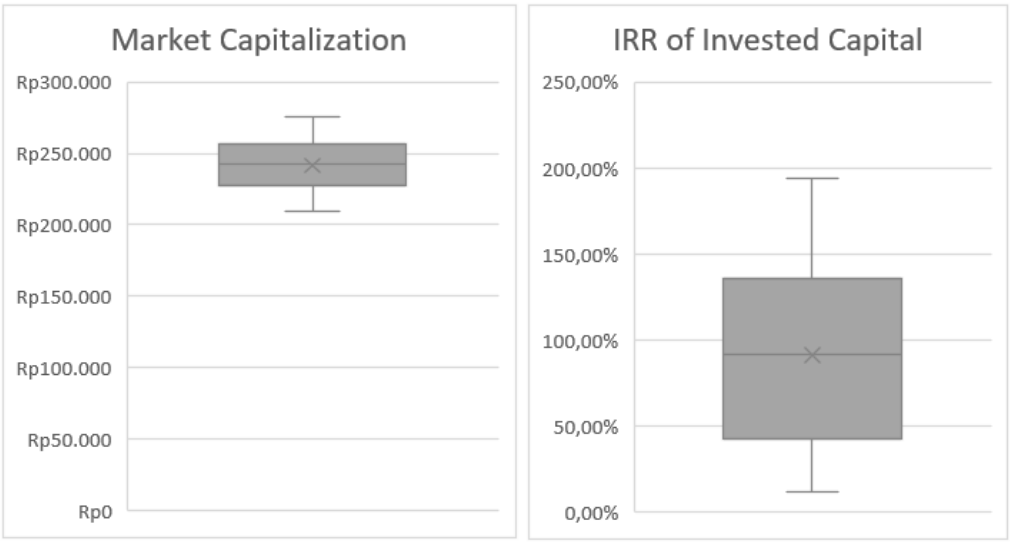

Figure 3. Graphical data of the acquirer's potential market capitalization

5.3 Proposed Improvements

Some improvement in this study can be made is by creating more accurate model assumptions such as:

1) Comparison of Monte Carlo parameter probability distribution. This study only uses uniform distribution due to minimum data from an interview, and the model can be more accurate by comparing several distributions on the parameter.
2) Considering other factors besides revenue enhancement and cost-saving, such as political situation and dividend multiple. By adding more experiment parameters, the model can consider more factors that might happen in determining the success metric of this acquisition.
3) Creating a sensitivity analysis on the stake portion of the acquisitions to determine the most efficient acquisition structure

6. Conclusion

The experiment shows that the acquisitions do not significantly impact the acquirer's potential intrinsic value based on the improvement in their cash flow. It is because the size of the acquisitions and the synergy value is insignificant compared to the entire market capitalization of the acquirers. However, the return on the invested capital itself is quite significant. Besides, this study offers a unique way to analyze a post- acquisitions financial performance effect. It shows that the risk/uncertainty of the pre-determined NPV/Market Capitalization success metrics is not being achieved so that the risk can be minimized. The reason of it because of the very small acquisitions size itself compared to the acquirer's company valuation.

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Biography

Ryan Alimhamzah is an Industrial Engineering postgraduate student at The University of Indonesia. He earned his bachelor's degree in Mechanical Engineering from The University of New South Wales – Australia, majoring in Structural and Materials Engineering. Along the way on his career, he finds his passion and interest in the field of Investment Banking and Corporate Finance Advisory with extensive exposure in Mergers & Acquisition, Financial Analysis, and Engineering Economy. With various experiences in solving financial problems, he is committed to increasing knowledge in other fields, such as quantitative finance, financial engineering, and big data, which is also the scope of Industrial Engineering.

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