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VALUATION OF DIGITAL START-UP BUSINESS : A CASE STUDY FROM DIGITAL PAYMENT SOLUTION SERVICES COMPANY

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Abstract
Despite its promising, innovative and fast growth in the last several years, startup business is a high risk enterprise with potential high return on investment. Funding investment plays critical role in this issue in terms of supporting the development of startup business. A startup's ability to acquire financing at the right time is critical to its long-term success. Therefore, business valuation is become critical and essential for startup business as the fundamental step of funding process. Based on this notion, PT. AXY is willing to determine their value in order to manage investment opportunity ahead. Estimating value of PT. AXY's business is referring to its strategic plan since investment will be support to expand team and realizing projects. The strategic plan is divided into three scenario which are optimist, base, and pessimist. By using First Chicago Method (FCM) and Venture Capital Method (VCM) as two among several methods which considered suitable with PT.AXY's current condition. After compiling those three scenario using weighted sum, the results of valuation using FCM is IDR 556,550,469,235 and using VCM is IDR 506,381,073,478. Finally by using pareto optimality, we determine that overall valuation of PT.AXY is IDR 546,516,590,084. Sensitivity Analysis also used to determine which factors that directly impact to the valuation. By assessing several parameters that change for each variable to be swinged +/- 20%, as result revenue growth, discount rate and salary expense are parameters that considered as sensitive that management could pay attention to since it will be directly affect to the company's valuation.

Keyword :
Startup, Valuation, First Chicago Method, Venture Capital Method, Weighted Sum, Pareto Optimality, Sensitivity Analysis.

1. INTRODUCTION

In the era of globalization, technology is a necessity for all elements of human life. The development technologies are changing life style of societies that tend to prefer easiness and simplification of doing some activities. Therefore, almost all of the sectors can be potentially disrupted by technologies, including businesses since technology plays a critical role is the digital economic transformation. Currently, the companies are required to be adaptive and agile, and also be able to take advantage rapid growth of technology to maximize their businesses. This condition is caused many businesses to compete in terms of digital innovation and develop tech-based product or services to optimize their businesses activities and answer their customers needs. Hence, this phenomenon, be the reason that nowadays there so much digital startup established. Furthermore, Covid-19 pandemic condition that change society behavior and stimulate digitalization.

In Indonesia, According to Indonesia's Ministry of Tourism and Creative Economy, Indonesia's digital economy is the largest among ASEAN countries and 3rd largest in Asia which is around USD 40 billion or IDR 566.28 trillion in 2019, and projected be USD 130 billion or IDR 1.8 quadrillion in 2025 (Daily Social, 2020). The digital ecosystem is rapidly growing since the development of several unicorns including Gojek, Tokopedia, Traveloka, JD.ID, OVO and Bukalapak. The ecosystem is currently thriving along with the high penetration of internet in Indonesia which is growing almost 9% in 2020. According to Startupranking.com (Aditya, 2020) , the number of digital startup in Indonesia is around 2,195 in 2020, which is growing ~250% since 2018 and became the fifth countries with largest number of startup in the world after United States of America (65,910), India (8,540), United Kingdom (5,418), and Canada (2,728). It means that startup ecosystem and digital entrepreneurship in Indonesia now really promising and competitive.

Despite its promising, innovative and fast growth in the last several years, startup business is a high risk enterprise with potential high return on investment. In fact, many startup businesses are fail in the early stage of development. In 2019, the failure rate of startups was around 90%. Research concludes 21.5% of startups fail in the first year, 30% in the second year, 50% in the fifth year, and 70% in their 10th year (Bryant, 2020). According to CB Insight research, 9 out of 10 startup fail in 1 – 3 years which is riskier than 40% than standard business models (Bednár & Tarišková, 2018). There are several reason why startup business tend to be fail including investment, product, and financial management.

Funding investment plays critical role in this issue in terms of financing projects and supporting the development of startup business. A startup's ability to acquire financing at the right time is critical to its long-term success. It is fairly uncommon for entrepreneurs or startup owners to lack the financial resources to put their ideas into action and must find a method to fund their ventures. Funding from investors like venture capital (VC) or private equity (PE) has great impact on the growth of startup. Research from Davila et al. (2003) showed that implication of investment in early stage startup business has positive relationship with startup growth and management development.

2. LITERATURE REVIEW

Startup and Valuation Issue

There is no actual or academic widely recognized and universal meaning of the term "startup" (Bortolini et al., 2018). An early terminology was introduced by Camel (1994) who was assesing and conducting research about time-to-completion in a young firm that come up with general society stigma as the companies who were particularly agile, innovative and success in terms of developing and taking advantage of technologies.It defined startup as an organization formed to search for a repeatable and scalable business model.

Damodaran explain that, in terms of position in bussiness cycle (**Figure 1**), startup represents as the first step after a company has been established (Damodaran, 2012). The product hasn't been thoroughly evaluated and hasn't yet found a market. The company has no or little present activities, no operating history, and no or few comparable companies. This company's value is totally dependent on its future growth potential. Because there is little good information to rely on, valuation is the most difficult task at this stage. The inputs must be approximated, and there is a good chance that they will be inaccurate. Estimates of future growth are frequently based on judgments of present managers' competency and ability to turn a good idea into commercial success. This is one of the main reasons why companies at this stage strive to employ management who have a proven track record of turning ideas into revenues, since it offers them credibility with potential investors.

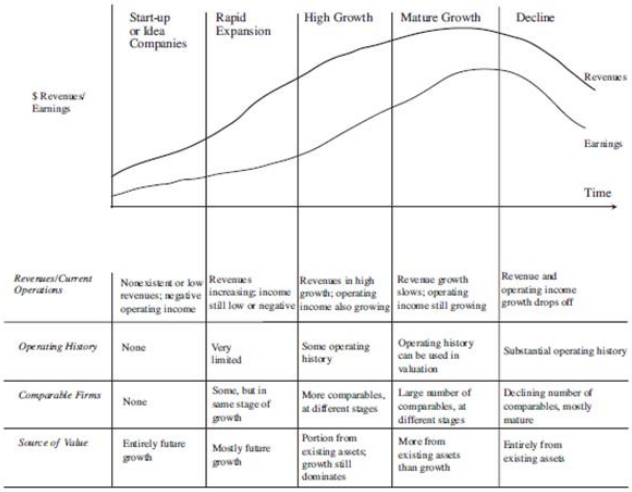

Figure 1. Business Life Cycle and Several Issues on each stages
Source: Damodaran, 2012.

When a company succeeds in acquiring consumers and creating a market presence, in move to rapid expansion phase which is when its sales rise quickly, even if it continues to lose money. Pricing, margins, and planned growth may all be gleaned from the firm's existing activities, but current margins cannot be extrapolated into the future. The firm's operational history is still limited, and it exhibits significant fluctuations from one period to the next. This company's projected growth accounts for the majority of its worth (Damodaran, 2012). At this point, valuation gets a bit easier, but the information is still restricted and inaccurate, and the valuation model's inputs are likely to change significantly over time

The company's revenues are quickly increasing at high growth phase, profitability are expected to lag behind. Both the present activities and the firm's operational history offer information that may be utilised in evaluating the company at this point. At this stage, the number of comparable organizations is often largest, and these firms are more diversified in terms of where they are in the life cycle, ranging from small, fast-growing competitors to bigger, slower-growing competitors. This company's present assets are valuable, but future expansion will account for the majority of its worth. At this point, there is more information available, and estimating inputs becomes more easy (Damodaran, 1999).

When revenue growth slows, companies usually notice two things. Earnings and cash flows are quickly increasing, reflecting previous investments, while the need to invest in new initiatives is decreasing. The business has present activities that mirror the future, an operational history that offers significant knowledge about the firm's markets, and a big number of comparable firms at the same stage in the life cycle at this point in the process. Existing assets contribute as much as or more than projected growth to company value, and the valuation inputs are likely to remain constant. Subsequently, This life cycle's last step is decline. As their businesses mature and new competitors overtake them, firms in this stage see both sales and profitability begin to fall. Existing investments are expected to continue to provide cash flows, albeit at a slower rate, and the company has no need for new ones. As a result, the firm's worth is solely determined by its current assets. While the number of comparable businesses tends to shrink at this point, they are all likely to be in either mature growth or decline.

Overall, valuation is significantly more difficult in the early phases of a company's life cycle, and estimations of value for startup or high-growth companies are far more likely to contain mistakes. However, for two reasons, the payback to valuation is expected to be largest with these companies. The first is that a lack of information drives many analysts away, and those who persevere and come up with a valuation, however sloppy, are likely to be rewarded. The second reason is that these are the companies that are most likely to be going to market in the form of IPOs and new issues, and they will require valuation estimates.

A. Startup Funding and Investment

Raise funding and searching for capital investment is an essential stage of constructing startup business. Startup funding concept is really relate with the concept of entrepreneurial finance which involve several stakeholders related including private equity, venture capital (VC) , angel investors, hedge funds, etc (Wallmeroth et al., 2018). Specifically in the startup business, VC investment plays pivotal roles since it some evidence of this category of investors has

experience their direct influence in shaping and developing startup (Alexey, Oliver; Block, Joern;Sander, Phillip;Ter Wal, 2011). VCs can provide direct and indirect impact to the startup business, the direct is by providing capital to the company and the indirect is providing management skills to the startups they fund and giving them access to VC's network.

Regarding the financing and funding for startup through investment, there are some stage or round including pre-seed, seed,VC capital stages, and Initial Public Offering (IPO) (Alpha JWC Ventures, 2021). In the pre-seed phase, the business is refer to bootstrapping where the founders and early team use their current available resources to kick-off the business operation. In this stage, the funding comes from the founders wallet or founders relation. Seed funding is actually the first funding that allows startup to fund cost for launching product which comes from angel investors, micro VCs or crowd funding.

There are several rounds or series in terms of VC capital stages including series A, B, C, and so on based on startup condition and valuation. Series A funding is the primary which takes places within risk capital stage and the startup should already have products or services and also customer or client base. Series A startup mostly comes from accelerator, super angel investors and venture capital. Series B is a funding when startup has already developed a certain and obvious user or client base alongside with steady revenue stream. This stage allows startup to expand their business including products, services, invetories, employees or management team. In this stage, the funding comes from venture capital. Series C and beyond (D, E, F, and so on) is funding when startup has already in the growth path and expected to do some innovative movement such as building new products, reaching up new market or acquiring small companies. In these stage, the funding comes from venture capital, private equity, hedge funds or banks.

In the end, the final target of startup business is IPO which is when company decides to sell corporate shares to the public to get additional funding to grow the business. This also an option as exit plan for former startup investors. Overall, the different stages of startup funding enable startup to expand their businesses at any point in their business journey. This scaling method enables them to determine where their business stands and which prospective investors could be interested in helping them develop. The summary of these stage can be seen in Table 4. In Indonesia itself, in 2020, Daily Social recorded that there are 113 funding transaction for every round from investors to Indonesia's startup with the total more than USD 3.3 Billion).

Table 1. Series of Startup Funding

Stages	Condition	Potential Investors	Valuation
Pre-seed	• Exploring of product or services feasibilities • Market testing • Planning Development	Founders wallet or relation	USD 10,000 – 100,000
Seed	• Considering to launch a product or services • Build awareness until revenue comes in • Start to recruit team	Angel investors, Micro VCs, Crowd funding	USD 1,000,000 – 6,000,000
Series A	• Working on business model • Start to generate revenue • Scalabing business and market • Further development of product or services	Super angel investors, venture capital	USD 10,000,000 – 30,000,000
Series B	• Scaling up business • Increasing market share • Develop high quality team and management	Venture capital	USD 30,000,000 – 60,000,000

Stages	Condition	Potential Investors	Valuation
	• Outlive competitors		
Series C and Beyond	• Business Expansion • Acquiring small startup • Increase market share • Try to reach new market	Venture capital, private equity, hedge funds	>USD 100,000,000
IPO	• Growth-oriented team • Stable financial statements	General public	USD 100,000,000 in revenue

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B.

C. Valuation Method

At this point, the valuation is crucial. Because a startup is a business, it is important to look at approaches methods particularly for startup company. Nasser (Nasser, 2016) determine that there are nine type of different valuation methods including the Berkus Method, Risk Factor Summation Method, Scorecard Valuation Method, Comparable Transactions Method, Book Value Method, Liquidation Value Method, Discounted Cash Flow Method, First Chicago Method, and Venture Capital Method.

The Berkus Valuation Method is designed by for valuing very early-stage startup invented by super angel investors, Dave Berkus, which more focused on companies who have not generate revenue yet. The method is basically uses both qualitative and quantitative factors including five elements which are: sound idea (basic value), prototype (reduce technology risk), quality management risk (reduce execution risk), strategic relationship (reduce market risk), and product rollout or sales. Quantitatively, Berkus Method assigned number of value to the each of these factors up to USD 500,000 if the factors exist (Table 5.). Note that those are maximum value that can be assigned, hence the maximum valuation for "perfect" company is around USD 2 or 2.5 Million. In general circumstances, investors put much lower than thos maximum values since it is make sense while they are seeking low enough amount for the extreme risk. McCann (Berkus, 2015) then create a simplification figure to present Berkus Method comprehensively (Figure 13). According to Berkus, once the company has already generate revenue, the method is no longer applicable as most of investors will use actual financial data to project.

Table 2. The Berkus Method Valuation Approach

If Exist	Add Valuation up to (Max for each)
Sound Idea (basic value)	USD 500,000
Prototype (technology)	USD 500,000
Quality management (execution)	USD 500,000
Strategic relationship (go-to-market)	USD 500,000
Product roll-out or sales (production)	USD 500,000

Source: Berkus, 2009

The Risk Factor Summation Method examines a considerably larger range of criteria when establishing the pre-money valuation of pre-revenue firms. Risk Summation Method is actually a slightly evolve of Berkus Method which need the adjustment of initial value first, then add value to others factors. The factors are including management risk, stage of risk, legislation/political, manufacturing, sales risk, capital raising risk, technology risk, litigation risk, international risk, reputation risk and potential lucrative exit(Nasser, 2016). Then, each risk is assesed by number +2 (for very positive growth), +1 (positive growth), 0 (normal), -1(Negative growth), and -2 (Extreme negative growth). Subsequently, the score adjusted then will be added value to USD 250,000 for every +1 and USD 500,000 for every +2 and vice versa, substract USD 250,000 for every -1 and USD 500,000 for every -2. Nasser (Nasser, 2016) presented example of Risk Factor Summation Method valuation.

The Scorecard Valuation Method which developed by Bill Payne which considering pre-money or pre-revenue companies for the target, this technique compares the target business to typical pre-revenue startup ventures and modifies the median valuation of previously funded companies in the region. Only firms at the same stage of development, in this case, pre-revenue (or low revenue) startup ventures, can be compared. This

method actually evolved and elaboration of previous methods considering 6 criteria including management (30%), size of opportunity (25%), product or service (10%), sales channels (10%), stage of business (10%), and others factors (15%).

The Comparable Transaction Method is used for assesing companies that need to become a target of acquisition in order to grow their business, gain access to valuable resources, expand their reach, eliminate competitor, or combination all of those notions. The first step this the method is to identify comparison unit and determine valuation metrics. The valuation metric used for this method is using enterprise value (EV) to earning before interest, taxes, depreciation, and amortization (EBITDA).

The Book Value Method is basically assigned price-book value (PBV) which is the market price per share divided by the book value of equity of the company (Damodaran, 2012).

$$Price - to - book\ value\ (PBV) = \frac{Price\ per\ share}{Book\ value\ of\ equity\ per\ share}$$

Investors utilize the price–book value ratio in investing research for a variety of reasons. The first is that the book value gives a very consistent, straightforward measure of worth that can be compared to the market price. For investors who have a natural aversion to discounted cash flow valuation estimations, book value is a far more straightforward comparison point. The second is that, given relatively comparable accounting standards across businesses, price–book value ratios may be examined to look for indicators of under- or overvaluation among similar firms. Finally, price–book value ratios may be used to analyze companies with negative earnings, which cannot be appraised using price–earnings ratios.

Liquidation Value Method is an asset-based technique that determines how much money a company would get if it sold an asset on the open market. The term "immediately" refers to the asset being sold within six to twelve months. The age, wear, and technical advances connected with this sort of asset are all taken into account using this technique. The Liquidation Value Method implies that the firm has collapsed and that the asset must be sold right away. The selling of assets through a structured procedure, such as bankruptcy liquidation, is one example.

The Discounted Cash Flow (DCF) method is determining the value of an entire company as the present value of its expected free cash flows discounted at the firm's weighted average cost of capital, which is its expected average future cost of funds over the long run (Gitman & Zutter, 2015). This approach is based on the present value rule, which states that the value of any asset is equal to the present value of its projected future cash flows (Damodaran, 2012).

$$Value = \sum_{t=1}^{t=n} \frac{CFt}{(1+r)^t}$$

Where n = Life of the asset
CF = Cash flow in the period t
r = Discount rate reflecting the riskiness of the estimated cash flows

The First Chicago Method (FCM) is a situation-specific company valuation technique for early-stage firms used by venture capital and private equity investors. The components of market-oriented and basic analytical approaches are combined in this model. It's mostly utilized in the appraisal of fast-growing businesses. The FCM is an elaboration of DCF method (Key2Investor, 2020) which dividing the valuation into three scenario: best, base, and worst scenario. Then adjusted the probability for each scenario for calculation weighted average sum as final valuation.

The Venture Capital Method (VCM) depicts the investment process, in which investors are aiming for a 3 to 7-year exit. First, the investment's projected exit price is calculated. After that, one estimates the current post-money valuation, taking into account the time and risk taken by the investors. The return on investment (ROI) may be calculated by evaluating what kind of return an investor could expect from a certain investment given the risk level. The insight is included into the VC technique, which employs the applicable time period to discount a future value attributed to the company. Any of the approaches previously discussed, such as DCF or relative valuation, can be used to estimate the firm's future worth. Because a forecast of future cash flow at that time would be extremely risky, the most frequent way of arriving at a terminal value is to employ market multiples. In most cases, the parties will determine the terminal value using a price-to-earnings ratio.

3. RESEARCH METHODOLOGY

The research began with identifying business problem based on company's current condition and business strategic plan. Subequently, business issue exploration is conducted after defining the problem to gain broader views by using several strategic management methods including internal analysis, external analysis and SWOT analysis. Literature review then conducted to get additional insight based on academic perspectives. Furthermore, data that collected directly from company will be processed to formulate some

adjustments and calculate company's valuation. Finally, to deal with confidence issue regarding the valuation results, scenario and sensitivity analysis.

4. RESULT AND DISCUSSION

A. Business Overview

PT. AXY is a B2B payment solutions services startup company which provides technology company provides online and secure payment solution services including business billing system to support all ecosystem in doing their transactions. The company's vision is to be a part of Indonesia's future digital ecosystem by integrating end-to-end business in Indonesia and aim to be uniquely positioned to support local business and contribute in driving the economy in Indonesia.

PT. AXY provided technology ecosystem that bridging supply and demand, also value-added service in the system as well as real-time monitoring, bank account verification, and data tracking analysis, and several use case in the industry including e-commerce and marketplace, tuition fee payment, rental and property payment, subscription and recuring payment, business operation, and sending payroll, refund, and cash. Some big partnertship already conducted with few of big companies such as Banking (BCA, Mandiri, BNI, BRI, Permata), telco provider (Telkomsel, XL, 3, Smartfren, Indosat Ooredo), Gaming (Garena, Steam, Unipin), fintech (Gopay, OVO, Shopeepay, LinkAja), etc.

As already mentioned that most of startup company are tend to be failed in the early stage and one of the main factors in financial aspects, and investment play critical roles in this phenomenon to support startup business development. Therefore, to achieve the vision, PT. AXY required some financing from invesment to enhance its company scalabilities. To determine proper investment decision, calculation of company valuation is needed. However, the challenges is the company only has one year historical financial data and negative earning. Hence, this study will determine best suitable method to value PT. AXY regarding the conditions, calculate company's valuation and analyze parameters that affect to the company's valuation.

B. Choosing Valuation Method

Among several valuation methods elaborated, we need to choose which method is suitable for valuing PT.AXY based on company's current condition. Since PT.AXY already generated revenue, the method such as Berkus Valuation Method and Risk Summation Valuation Method will be taken off from the options. Since According to Berkus (2015), once the company has already generate revenue, the methods is no longer applicable as most of investors will use actual financial data to project.

The Scorecard Valuation Method is become less credible in this case, since the method is not using actual financial data to project valuation. The Comparable Transaction method is also not suitable for this conditions, since PT. AXY is not a target company for an acquisition case. Furthermore, using price–book value ratios can not suitable to analyze companies with negative earnings (Nasser, 2016). Therefore, the Book Value Method is also dismissed from option. It is the same as the Liquidation Method, which asset-based technique that determines how much money a company would get if it sold an asset on the open market. Since it is only considered tangible assets, therefore it is not suitable since most of startups (including PT.AXY) are also rely on intangible assets.

It turns out that only Discounted Cash Flow (DCF), First Chicago Method (FCM), and Venture Capital Method (VCM) are the only options. These three method actually suitable with the current situation for valuing PT. AXY. However, since FCM is an evolve method of DCF with more comprehensive projection (considered best, normal, and worst scenario) and also we need other method as comparison and proportion for overall calculation, and VCM is considered primary financial metrics and benchmarking metrics for most startup that already generated revenue (including revenue growth as financial metrics, EV/Sales as benchmarking metrics), as according to Visconti (2020) in terms valuing early stage company, the methods used must be refeered to company's dynamic growth and combines with analytical and market oriented approach, hence it is arguable to say that FCM and VCM are suitable for doing valuation calculation for PT. AXY.

C. Strategic Planning and General Assumption

Since financial report is only consists of one year financial data, therefore the company's valuation is conducted by projected supporting assumptions that aligned with PT. AXY's strategic plan for expanding its business. In this case, based on management discussion and planning, there are two big initiative plan that become priority in the following five years. First one called Albus#1 which enhancing current B2B services to broad range of business including syari'a finance (such as Zakat, Infaq, Shodaqah), investment, insurance, paylater & instalment, securities crowdfunding for SMEs, etc. Then, Albus#2 which try to enter new market with B2C platform with significant and stable growth of users metrics (Daily Active Users/DAU, Monthly Active Users/MAU).

Subsequently, to create better and comprehensive insights in terms of valuing PT.AXY, scenario then made based on strategic planning with several projections of revenue growth and manpower needed, the scenario divided into three, including:

1) First scenario, which is optimist scenario, in this scenario, Albus#1 is started to begin in 2021, with increasing of manpower from 21 people (current) to be 40 people which mostly recruiting tech and product team which in estimation of 15 additional people, 2 operational officers, and 2 people for manager/lead level. And revenue estimated to grow 60% increment. Furthermore, followed by Albus#2 which about to begin in 2023 and also projectin revenue grow 60% with significant DAU/MAU increment and additional manpower up to 60 people which mostly consists of tech people (projected to be around 12-15 additional engineer/dev-ops). Here is the schema of revenue projection and general manpower plan:
2)

Table 3. Revenue Growth Projection and Manpower Plan for Optimist Scenario

Year	2021 (Albus#1)	2022	2023 (Albus#2)	2024	2025
Increment of Revenue Growth	40%	60%	60%	40%	30%
Manpower Plan	40	43	60	63	65

Source: Author's Analysis and Management Judgment

3) Second scenario, is base scenario which according to management is the scenario that more realistic to be happened. In this scenario, management decides to generate positive earning first as soon as projected in 2021 before starting Albus#1 in the following year that also provide increment 60% grow of revenue. The manpower needed is also pretty much the same (40 people with details also much the same). Furthermore, Albus#2 will be started in 2024 with the schema of revenue growth and manpower same as optimist scenario. Here is the schema of revenue projection and general manpower plan for this scenario:

Table 4. Revenue Growth Projection and Manpower Plan for Base Scenario

Year	2021	2022 (Albus#1)	2023	2024 (Albus#2)	2025
Increment of Revenue Growth	10%	40%	60%	60%	40%
Manpower Plan	25	40	43	60	63

Source: Author's Analysis and Management Judgment

4) Third scenario, is pessimist scenario, which allow PT.AXY to delay Albus#1 to 2023 and not any chance to start and develop Albus#2. The management only focused on surviving and generating positive earnings. Therefore, the revenue growth projected not provided high increment considering of late time to penetrate the market share. Furthermore, here is the schema of revenue projection and manpower planning for this scenario:

Table 5. Revenue Growth Projection and Manpower Plan for Pessimist Scenario

Year	2021	2022	2023 (Albus#1)	2024	2025
Increment of Revenue Growth	5%	10%	40%	10%	10%
Manpower Plan	21	25	40	41	42

Source: Author's Analysis and Management Judgment

All in all, these three scenario will be impacted to the calculation of company's valuation by using First Chicago Method and Venture Capital Method which will be elaborated in the following sections.

D. Valuation using First Chicago Method (FCM)

The FCM is an elaboration and of DCF method which dividing the valuation into three scenario: best, base, and worst scenario. Then adjusted the probability for each scenario for calculation weighted average sum as final valuation. In this case, the scenario that already explained above. The valuation itself is generally using bottom up

approach which estimate expected cash flow in the future based on revenue, cost, and taxes by creating pro-forma income statement. For projecting revenue is based on scenario that conduct and projected by management. However, cost of good sold will be projected by using percent of sales method. In terms of expense, salary expense estimation will be adjusted according to manpower plan above which will be calculated by using average/median salary of certain position. However, other selling, general, and administrative (SG&A) expense, excluding salary expense, will be adjusted by using inflation rate projection in Table 3. Tax will be calculated based on Indonesia's Government Regulation (PP No. 46/2013 and Perpu No.1/2020) which regulates business tax 22% from net income for company that has gross income more than IDR 4.8 Billion. In terms of discount rate, we try to calculate Weighted Average Cost of Capital (WACC) then considered as discount rate. In this case, the financial source is only come from equities, hence WACC will be the same as Cost of Equity. Regarding calculating Cost of Equity, we try to develop some adjusted variable including, risk-free rate (Rf) = 6.28 % as 10y Indonesia's Government Bond, Market Risk Premium (Rm) = 6.58% based on Country Risk Premium from Aswath Damodaran in December 2020, and beta (β) = 1.08 as beta for Software and Application from Aswath Damodaran calculation of beta global industry average in December 2020. Therefore, the calculation of Cost of Equity depicted below:

$$WACC = Costof\ Equity\ = Rf + \beta(Rm)$$

= 6.28% + 1.08 (6.58%)

= 13.39%

The Cost of Equity 13.39% is debatable and arguiable as too small discount rate for startup company and considered not applicable for the valuation calculation. However typical of target return for company from Venture Capital according to (Damodaran, 2012) is depicted below:

Table 6 . Typical Target Return Based on Company's Development Stage

Stage of Company Development	Typical Target Return
Start up	50 - 70 %
First Stage	40 - 60%
Second Stage	35 - 50%
Bridge/IPO	25 - 35%

Source: Damodaran, 2012

The typical amount of return is pretty high compared to initial calculation of Cost of Equity (13.39%). The capital expenses of startups are reflected by the discount rate, which corresponds to the rate of capitalization as necessary return on equity. It is essential and advisable to examine the consideration of young technology businesses development when determining the discount rate (Festel et al., 2013). Therefore, for this calculation, since PT.AXY is on startup stage development, we assume the discount rate is 50%. In terms of perpetual growth, we use projected GDP Growth rate.

5) First Scenario (Optimist)

As elaborated above, the valuation calculation is adjusted based on strategic scenario that provided by company's management. Therefore, for this scenario here is the simulation of expected cash flow and valuation calculation:

Table 7. Free Cash Flow and Valuation Calculation for Optimist Scenario

		2021	2022	2023	2024	2025	Terminal Value
FCF		67,331,537,160	107,176,332,021	171,576,165,317	244,845,699,615	321,870,670,094	760,896,778,080
Discount Factor (1+Ra)^t		1.500	2.250	3.375	5.063	7.594	1.630
PV of Future Cash Flow		44,887,691,440	47,633,925,343	50,837,382,316	48,364,582,640	42,386,261,082	466,843,838,619
Required Return	50.00%						
Perpetual Growth	5%						
Valuation	700,953,681,440						

in IDR	2021	2022	2023	2024	2025
Net Profit	89,605,859,696	147,109,583,162	235,591,746,936	333,749,476,111	436,821,450,173
Tax	22,401,464,924	36,777,395,790	58,897,936,734	83,437,369,028	109,205,362,543
NOPAT	67,204,394,772	110,332,187,371	176,693,810,202	250,312,107,084	327,616,087,630
Depre/Amo	113,793,874	227,587,747	341,381,621	455,175,495	568,969,368
Net Current Asset Investment	132,728,210	1,353,700,935	2,165,921,496	2,310,316,262	2,425,832,075
Net Fixed Asset Investment	146,076,724	1,915,948,289	3,065,517,263	3,269,885,080	3,433,379,334
FCF	**67,331,537,160**	**107,176,332,021**	**171,576,165,317**	**244,845,699,615**	**321,870,670,094**

Source: Author's Analysis

From the calculation considering the optimist conditions, where Albus#1 is started to begin in 2021, and followed by Albus#2 which about to begin in 2023, PT. AXY has valuation of IDR 700,953,681,440 in 5 years. This calculation will be adjusted for overall valuation by also considering other two conditions (base and pessimist).

6) Second Scenario (Base)

Using same as previous calculation method with adjustment in Section 3.2., the simulation of expected cash flow and valuation calculation are provided below:

Table 8. Free Cash Flow and Valuation Calculation for Base Scenario

		2021	2022	2023	2024	2025	Terminal Value
FCF		54,090,025,598	82,502,356,450	116,644,767,774	189,560,714,255	270,259,888,473	638,889,769,992
Discount Factor **(1+Ra)^t**		1.500	2.250	3.375	5.063	7.594	1.630
PV		36,060,017,065	36,667,713,978	34,561,412,674	37,444,091,705	35,589,779,552	391,987,141,055
Required Return	50.00%						
Perpetual Growth	5%						
Valuation	572,310,156,028						

in IDR	2021	2022	2023	2024	2025
Net Profit	71,950,510,946	114,210,949,067	162,349,883,545	260,036,162,298	368,007,074,679
Tax	17,987,627,737	28,552,737,267	40,587,470,886	65,009,040,575	92,001,768,670
NOPAT	53,962,883,210	85,658,211,800	121,762,412,659	195,027,121,724	276,005,306,009
Depre/Amo	113,793,874	227,587,747	341,381,621	455,175,495	568,969,368
Net Current Asset Investment	125,728,219	1,153,602,926	2,166,046,988	2,314,689,094	2,479,558,418
Net Fixed Asset Investment	154,076,712	2,115,850, 299	3,065,391,771	3,265,512,248	3,379,652,991
FCF	**54,090,025,598**	**82,502,356,450**	**116,644,767,774**	**189,560,714,255**	**270,259,888,473**

Source: Author's Analysis

From the calculation considering the base conditions, where Albus#1 is started to begin in 2022, and followed by Albus#2 which about to begin in 2024, PT. AXY has valuation of IDR 572,310,156,028 in 5 years.

:

7) Third Scenario (Pessimist)

Also Using same as previous calculation method with adjustment in Section 3.2., the simulation of expected cash flow and valuation calculation are provided below

Table 9. Free Cash Flow and Valuation Calculation for Pessimist Scenario

		2021	2022	2023	2024	2025	Terminal Value
FCF		51,514,107,004	53,559,318,537	73,101,360,440	105,922,094,724	117,148,650,040	276,937,411,993
Discount Factor **(1+Ra)^t**		1.500	2.250	3.375	5.063	7.594	1.630
PV of Future Cash Flow		34,342,738,003	23,804,141,572	21,659,662,352	20,922,882,908	15,426,982,721	169,913,355,131
Required Return	50.00%						
Perpetual Growth	5%						
Valuation	286,069,762,688						

in IDR	2021	2022	2023	2024	2025
Net Profit	68,515,952,821	75,620,231,850	104,292,007,099	148,518,002,924	163,858,756,769
Tax	17,128,988,205	18,905,057,962	26,073,001,775	37,129,500,731	40,964,689,192
NOPAT	51,386,964,616	56,715,173,887	78,219,005,325	111,388,502,193	122,894,067,576
Depre/Amo	113,793,874	227,587,747	341,381,621	455,175,495	568,969,368
Net Current Asset Investment	120,495,798	1,268,748,614	1,933,678,382	2,225,972,830	2,331,457,952
Net Fixed Asset Investment	158,309,136	2,000,900,610	3,070,172,629	3,185,541,648	2,958,784,089
FCF	**51,514,107,004**	**53,559,318,537**	**73,101,360,440**	**105,922,094,724**	**117,148,650,040**

Source: Author's Analysis

From the calculation considering the pessimist conditions, delay Albus#1 to 2023 and not any chance to start and develop Albus#2, PT. AXY has valuation of IDR 286,069,762,688 in 5 years.

E. Valuation using Venture Capital Method (VCM)

According to Damodaran (2012). The VCM is basically calculating enterprise value based on multiplication of expected earnings and multiple earning of publicly traded firm in which operated in the same sector. Therefore, in this case we try to estimate revenue in the future year since in the most

cases, five year is the typical range of projections, we try to estimate the PT.AXY earnings/revenue for the next five years. Furthermore, in terms multiple earnings, we use Enterprise Value to Sales (EV/Sales) of publicly traded firm in the Software and Application sector. For the numbers, we use EV/Sales = 12.44 according to Damodaran calculation of EV/Sales in global sectors.

8) First Scenario (Optimist)

By using the approach of revenue growth estimation form management in section 3.2., the revenue projections and valuation calculation of this scenario is provided below:

Table 10. Valuation Calculation for Optimist Scenario Using VCM

		2020	2021	2022	2023	2024	2025
Revenue		274,764,649,998	384,670,509,997	615,472,815,996	984,756,505,593	1,378,659,107,830	1,792,256,840,179
EV/Sales	12.44						
r	50%						
EV	4,785,301,144,365						
PV of EV	630,163,113,661						

Source: Author's Analysis

As we can see, from the calculation above, using five years projection period, in the optimist scenario which considered condition where Albus#1 is started to begin in 2021, and followed by Albus#2 which about to begin in 2023, PT. AXY has valuation of IDR 630,163,113,661.

9) Second Scenario (Base)

Also using the same approach based on strategic plan that already elaborated in section 3.2., the valuation calculation presented here:

Table 11. Valuation Calculation for Base Scenario Using VCM

		2020	2021	2022	2023	2024	2025
Revenue		274,764,649,998	302,241,114,997.80	423,137,560,996.92	677,020,097,595.07	1,083,232,156,152.12	1,516,525,018,612.96
EV/Sales	12.44						
r	50%						
EV	3,759,879,470,573						
PV of EV	495,128,160,734						

Source: Author's Analysis

From the calculation based on base scenario which considered condition where Albus#1 is started to begin in 2022, and followed by Albus#2 which about to begin in 2024, PT. AXY has valuation of IDR 495,128,160,734.

10) Third Scenario (Pessimist)

Also using the same approach based on strategic plan that already elaborated in section 3.2., the valuation calculation presented here:

Table 12. Valuation Calculation for Pessimist Scenario Using VCM

		2020	2021	2022	2023	2024	2025
Revenue		274,764,649,998	288,502,882,497.90	317,353,170,747.69	444,294,439,046.77	710,871,102,474.83	995,219,543,464.76
EV/Sales	12.44						
r	50%						
EV	3,588,975,858,274						
PV of EV	472,622,335,246						

Source: Author's Analysis

From the calculation based on base scenario which considered condition considering the pessimist conditions, delay Albus#1 to 2023 and not any chance to start and develop Albus#2, PT. AXY has valuation of IDR 472,622,335,246.

F. Valuation Summary and Overall Calculation

This research used two valuations method including FCM and VCM which each of method calculated and divided into three scenario (optimist, base, and pessimist). Therefore to construct overall calculation of each method, we use weighted average to generate estimation of overall valuation for each method. In this case, we use management's expert judgement and confidence level to provide proportion for each scenario. Here is the estimation of valuation for each method:

Estimated value for FCM in IDR
= (10% x Value in Optimist Scenario) + (80% x Value in Base Scenario) + (10% x Value in Pessimist Scenario)
= (10% x 700,953,681,440) + (80% x 572,310,156,028) + (10% x 286,069,762,688)
= 556,550,469,235

Estimated value for VCM in IDR
= (10% x Value in Optimist Scenario) + (80% x Value in Base Scenario) + (10% x Value in Pessimist Scenario)
= (10% x 630,163,113,661) + (80% x 495,128,160,734) + (10% x 472,622,335,246)
= 506,381,073,478

Table 13. Valuation Summary and Estimated Valuation for Each Method

Weighted Proportion		10%	80%	10%	Estimated Valuation
Condition		Optimist	Base	Pessimist	
Method	FCM (IDR)	700,953,681,440	572,310,156,028	286,069,762,688	**556,550,469,235**
	VCM (IDR)	630,163,113,661	495,128,160,734	472,622,335,246	**506,381,073,478**

Source: Author's Analysis

After finding estimated valuation for each method, we try to compile those two methods to find overall estimated valuation also by using weighted average. In this case, we use Pareto optimality judgement (Marler & Arora, 2010) to provide proportion for each method since there is no standard or concern from management and to estimated the optimal overall valuation. In terms of optimization, according to Jakob & Blume (2014), the judgement can be derived from feasibility of variable/paramaters. The set of Pareto optimal solutions results will determine which one must be chosen as the final result by a human decision maker. Furthermore, FCM method will have higher proportion since it considered more comprehensive and feasible calculation rather than VCM.

Table 12. Overall Estimated Valuation Calculation

			Proportion	Overall Valuation
Method	**FCM**	**556,550,469,235**	80%	**546,516,590,084**
	VCM	**506,381,073,478**	20%	

Source: Author's Analysis

Finally, to summarize, the overall calculation of estimated valuation of PT.AXY by using FCM and VCM method is IDR 546,516,590,084. It is a compiled numbers after estimating valuation based on three different scenario of each method which follows strategic plan from PT.AXY's management.

G. Sensitivity Analysis

After compiled calculation of estimated valuations, in this research, sensitivity analysis.also conducted to analyze which variable that potentially affect the overall estimated valuation through. Sensitivity analysis will allow us to define the paramater which impactful to the company's valuation hence management could manage and giving more focus on those paramaters.

In this analysis, the fundamental paramaters that have been chosen are considered hypothetically giving direct potential to the company's valuation. Those parameters including revenue growth, salary expense, sales expense, repair and maintenance expense, discount rate, GDP growth rate and inflation rate. The analysis conducted by assessing change for each variable which swing +/- 20%.

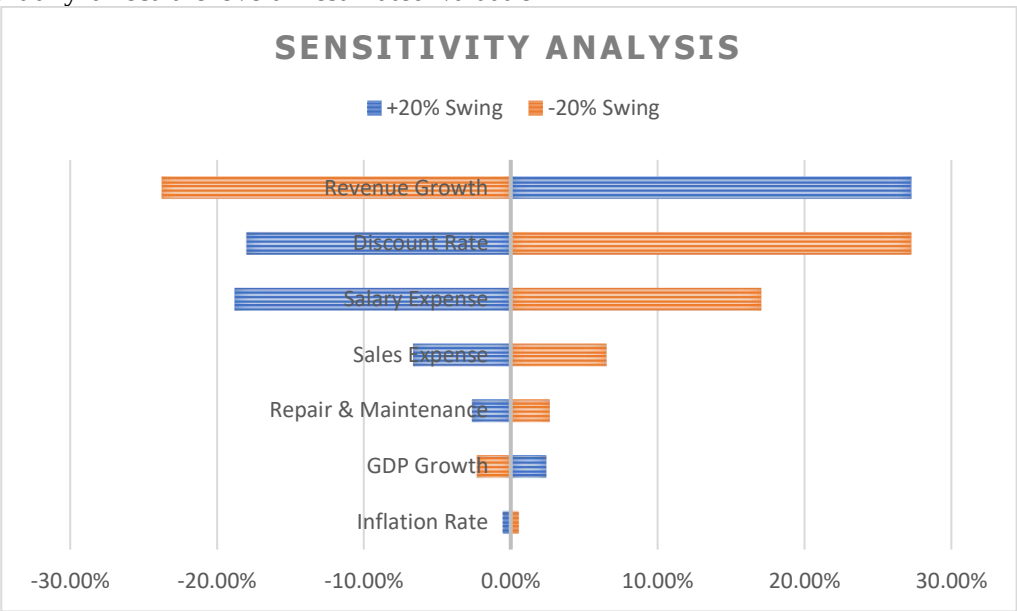

Figure 2. Tornado Chart that Depicted Impactful Paramaters

Source: Author's Analysis

As the results from the Figure above, revenue growth, discount rate and salary expense are parameters that considered as sensitive that management could pay attention to. Furthermore, only revenue growth and GDP growth that have positive relationship with estimated valuations meanwhile other assessed variables have negative relationship.

Looking up to the result, recommendation for management is focus on generating and managing revenue since sudden change, although a little, will be really provide direct impact to company's valuation.

5. CONCLUSION

To summarize the analysis that have been conducted, here are the conclusion that we can get from this research: At this point, the valuation is crucial. Because a startup is a business, it is important to look at approaches methods particularly for startup company. Nasser (2016) determine that there are nine type of different valuation methods. However,First Chicago Method (FCM) and Venture Capital Method (VCM) are two of among valuation methods that suitable to use for valuing PT.AXY based on current condition since these provide comprehensive framework (for FCM) and external benchmarking metrics (for VCM). Using FCM and VCM which supported by scenario-based method including optimist, base, and pessimist scenario, proporting to each scenario for both method using management judgement, then weighted for both method using Pareto Principle to find out overall company's valuation, it found out that the value of PT. AXY is IDR 546,516,590,084. The numbers are compiled after estimating valuation based on three different scenario of each method which follows strategic plan from PT.AXY's management. After finding the overall estimated valuation, we try to find out which parameters that have direct impact to the numbers using sensitivity analysis. As the results from the Figure above, revenue growth, discount rate and salary expense are parameters that considered as sensitive that management could pay attention to. Furthermore, only revenue growth and GDP growth that have positive relationship with estimated valuations meanwhile other assessed variables have negative relationship. Looking up to the result, recommendation for management is focus on generating and managing revenue since sudden change, although a little, will be really provide direct impact to company's valuation.

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