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COMPARISON OF PRE-REVENUE STARTUP VALUATION METHODS

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Abstract. Adapting with the digitization phenomenon around the world, PT. Telkom Indonesia, Tbk (Telkom) established Indigo Creative Nation (Indigo) as the center of startup development in Indonesia. Indigo as investor applies "fixed valuation" principle for the startup that lies in the first three stages. However, this "fixed valuation" principle cannot be applied to the startup in the fourth stage namely market validation (MV) because the value of startup is varied. Whereas, this startup value affects the funding decision made by Indigo. Therefore, this research aims to provide several alternatives of the pre-revenue startup valuation methods that can be considered by Indigo to be implemented. All those methods will be given based on the literature review, startup circumstances, and Indigo's expert approval. These alternative methods will be exercised to the one of the startups in Indigo that will enter into the MV stage, namely Kubu (not the real name) and thus, this research also aims to estimate Kubu startup value. The alternative methods in this research are Berkus, Risk Factor Summation, and Scorecard. Each method estimates the startup value by analyzing several key factors that related to the startup risk of success. The range value results from those methods are 3,786,057,692-9,375,000,000.

Keywords: Startup Valuation, Seed Stage, Digital Business, Cyber Security, Indonesia

INTRODUCTION

The world is moving toward the digitization phenomenon driven by the factor of Industry 4.0. In order to adapt with this digitization, Telkom planned to transform its business in three main parts, namely building digital business, transforming into digitized company, digital people and culture. Cooperating with startup is the one way to actualize Telkom business transformation because startup consists of creative entrepreneurs who love to use their agility to create new innovation especially in the digital industry. They will have a higher chance for success as the market leader if capable, to validate their ideas (Manuwu, John P., 2018). However, running the startup is not easy, the main issues largely caused by capital, human resources, facilities, and market (Zaky et al; 2018). Therefore, Telkom established Indigo Creative Nation (Indigo) in 2009 to help start up development in Indonesia, which by providing assistance, facilities, and funding access. Every startup has to pass 5 stages in Indigo namely customer validation (CV), product validation (PV), business model validation (BMV), market validation (MV), and follow on funding. There will be twice funding decision created by Indigo specifically when startups want to enter the CV stage and before entering MV stage. Indigo as investor applies "fixed valuation" principle for the startup that lies in the first three stages. This startup value is the one of the main factor to create funding decision besides the business prospect itself. However, this "fixed valuation" principle cannot be applied to startup that lies in the MV stage since the startup value is varied. Currently, Indigo is still looking for the appropriate method to value their startup that will enter the MV stage. Therefore, this research aims to provide alternative for the appropriate valuation methods according to the literature review and startups state in Indigo. Those methods also will be exercised to the one of Indigo startup namely Kubu that operates its business in the crowdsourced security industry.

Based on Kubu's official website stated that they provide crowdsourced cyber security testing service through their own platform to test company's system/application/services. This service is a community-based solution that offers low price, variative result, and longer testing time rather than the existing solution namely penetration testing. Kubu conduct business to business model (B2B) that is begun from conducting the vulnerability assessment by bug hunters then the result of vulnerability report will be sent to Kubu for the validation. Kubu will select the critical bugs and giving recommendation based on the findings to the company. Currently, Kubu will enter the MV stage and thus, Kubu can be the object for those alternative methods applications. Hence, this research also aims to estimate Kubu value by using these alternative methods. The first alternative is Berkus method that estimates startup value by giving value to the 5 key factors as the main risk faced by startup. The second alternative is a Risk Factor Summation method that considers 12 standard risks faced by the pre-revenue startup. The last but not least alternative is Scorecard method that involved benchmarking process to determine the startup value. Based on all alternative methods, the result value ranges from 3,786,057,692-9,375,000,000.

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LITERATURE REVIEW

In this research, the intended Indigo startup refers to the digital pre-revenue startup that lies in the seed stage. The pre-revenue startup is not only startup that hasn't yet generated revenue, but also currently working through stages of ideation, discovery, and validation (RIC, 2016). Generally, the valuation method aims to estimate the economic value of the company, it divides into intrinsic, relative, and contingent. The intrinsic method includes discounted cash flow that relies in forecasting future cash flow for 5-10 years. The relative method values asset by pricing of comparable asset and standardized it using general variables namely earning, cash flows, book value, and revenues. The contingent method values certain assets such as patent or undeveloped reserves as an option that depend on the contingencies. The asset will exceed the prespecified value for a call option or less for the put option. However, startups in the seed stage have the characteristics of frequently pre-revenue, lack minimum viable product, very limited operating histories, and future value highly speculative. Hence, there will be challenges to value startup by using those common methods such as extrapolating the discount rate, estimating the stable growth of startup, finding the proper multiples and comparable companies, and estimating the variance and nontraded asset value.

Moreover, EquityZen (2018) as the market place for early stage investor believed that the startup valuation in seed stage can be assessed by involving more of qualitative variables, namely Berkus, Risk Factor Summation, Scorecard, Venture Capital, Book Value, and Liquidation Value. The Berkus estimates startup value by scoring the 5 key factors, namely sound idea, prototype, management team quality, strategic relationship, and sales. The Risk Factor Summation estimates startup value by adjusting the score of average pre revenue startup valuation in the same region or initial value toward the 12 standard risk faced by early stage company. The Scorecard conducts benchmarking process toward the initial value to determine the weighted % of each 7 key factors, namely the strength of the management team, opportunity size, product or technology, competitive environment, marketing/sales/partnership, need for additional investment, and other factors. Book Value and Liquidation Value estimate value by calculating the net worth of tangible company's tangible assets. Venture Capital takes account the investor's point of view as input assumption to estimate the terminal value. The key advantages and key disadvantages of each valuation method is addressed in the table 1.1 as below:

Method	Key Advantages	Key Disadvantages
Berkus	● Straight forward and easy to be used ● Flexible framework that can be modified according to investor priority factors	● There are a number of other factors that could go into a startup valuation besides the 5 factors ● Ignores geography and market / sector dynamics
Risk Factor Summation	● Considers a wider set of factors than Berkus and Scorecard ● Take into account the average pre-revenue company valuations	● Finding data for the average pre-revenue company valuation in a geographic locale may be challenging ● Average valuations are often biased by outliers, positively or negatively
Scorecard	● The valuation worksheet has been provided by Bill Payne which makes the weighting process is easier	● Difficult in looking for the average pre-revenue company valuation in a geographic locale ● Average valuations are frequently biased by outliers positively or negatively ● Method does not consider all risk factors
Book Value and Liquidation Value	● The method theoretically consists of the most directly quantifiable valuation of a company ● Liquidation value provides investors with a clear sense of risk	● This method is not relevant for startup because of the condition that is mostly lack of tangible assets, primarily in future growth and also mostly have the intangible assets
Venture Capital	● Considering the growth potential of a startup ● Allowing investor to set their expected rate of return	● There are difficulties in calculating terminal value and it doesn't take account the following issuances and resultant dilution

Sourced: (EquityZen, 2018)

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METHODOLOGY

In order to determine the alternative methods, the discussion with an expert from Indigo is conducted. Considering the startup characteristics in Indigo which there are no sufficient financial data and history for projection, lack of tangible asset owned, and limited data of comparable companies. Therefore, referring to the table 1.1, the alternative methods are filtered into Berkus, Risk Factor Summation, and Scorecard. However, even though each method is easy to be implemented in the short time, there are some key disadvantages. In order to reduce the impact of key disadvantages, the assumption was made by Indigo namely the average pre-revenue startup valuation in the same region will be obtained from the prevalent maximum value of Indigo startup that will enter the MV stage. In order to reduce the subjectivity, the scoring table of Berkus and Risk Factor Summation are developed based on the literature review and Indigo's confirmation. The steps to develop those scoring table is begun by determining the number of key factors, according to the valuation method theory of Berkus and Risk Factor Summation. Then, developing each subfactors of each scoring table based on literature review and approval from Indigo's expert. Next, determine the weighted % of each subfactors by distributing the pairwise comparison questionnaire to the Indigo's expert and calculating the weighted % using Analytical Hierarchy Process (AHP) tools. Then, finding the overall prevalent maximum startup value in Indigo that is Rp7,211,538,462 and adjusting the level of scores in each scoring table by conducting the comparison way toward the overall prevalent maximum startup value in Indigo.

The Berkus scoring table consists of 5 factors and thus, the maximum level of score is obtained by dividing the prevalent maximum startup value by total number of Berkus factors. Hence, the distribution score of Berkus scoring table ranges from Rp0 into Rp1,442,307,692. While, theoretically, the level of scores in Risk Factor Summation method has been assigned into 5 for each subfactor namely; $500,000; $250,000; $0; $-250,000; -500,000 (Payne, 2011). Thereby, by using comparison way, the distribution score of each level is Rp1,442,307,692; Rp721,153,846; Rp1,250,000,000; Rp0; -Rp721,153,846; Rp1, 442,307,692. The Berkus method calculates the value by multiplying each subfactor weighted % to the chosen level score. Then, the startup value is obtained by summing all those result values in each subfactors. Similar with Berkus, the Risk Factor Summation calculates the value by sum or subtract the additional value that is derived from each subfactor. Moreover, the Scorecard method calculates the value by determining the % of norm for each key factor which derived from evaluating startup condition toward criteria in the valuation guideline that is provided in Bill Payne official website. The result of % norm will be input for the Berelowitz (2014) valuation worksheet that lies in the Finding and Arguments section. Based on the table 1.2, the weighted % is obtained by multiplying the % of norm to the max % value in average sector industrial. Then, the weighted % will be multiplied by the average sector industry value and result each value for each key factor. The overall startup value is obtained by summing all each key factor values in the Kubu startup valuation column.

FINDINGS AND ARGUMENT

The Scorecard method calculates Kubu startup value by using Berelowitz (2014) valuation worksheet which result value for Rp8,094,951,924 that is shown in the table 1.2 as below:

Table 1.2: Scorecard Method Calculation Result

Pre-Money Valuation	**Average Sector Industry (IDR)**	7,211,538,462
	Cyberarmy Value (IDR)	8,094,951,924

Main Factors	**Weighted Ranking Range** (% Value to Pre-Revenue Company)	**Average Sector Industry**		
		Max Value %	**Weighted Value $**	**Norm**
Strength of the Management Team	0% - 30%	30%	2,163,461,539	100%
Size of the Opportunity	0% - 25%	25%	1,802,884,616	100%

Sourced: (Berelowitz, 2014)

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The Berkus method results Kubu estimates Kubu startup value for Rp3,786,057,692 that is indicated in the table 1.3 as below:

Subcategory	Weighted Value	Scoring (IDR)			
		1,442,307,692	1,081,730,769	721,153,846	
Product Benefit	50%	Product benefits confirmed by numerous clients	Product benefits confirmed by first client	Product benefits clearly identifiable	Prod iden
Intellectual Property(IP) Protection	50%	All IP protection are granted	Some of IP protection are granted	There are some or all of filed IP protection are close to being granted	IP Pr plan
Track Record	75%	All criteria stated are fulfilled	There is 3 of 4 criteria stated fulfilled	There is 2 of 4 criteria stated fulfilled	Ther state
Competence of	25%	All skills required are available	Only 1 skill required is not	Some of skill required are not	The
Network Size	87.50%	There is a partner who can provide 4 of 4 subcriteria	There is a partner who can provide 3 of 4 subcriteria	There is a partner who can provide 2 of 4 subcriteria	Ther prov
Route to Market	12.50%	Realistic route to market plan / distribution partner	Partner identified - agreements in place with only with some partners	Options identified- no agreements in place	The is sti

(Analysis, 2019)

The Risk Factor Summation method generates Kubu startup value for Rp8,094,951,924 that is shown in the table 1.4 as below:

Category	Subcategory	Scoring			
		2	+1	0	-1
Management Risk	Track Record	All criterias are fulfilled	There are 3 criterias fulfilled of 4 stated criteria	There are 2 criterias fulfilled of 4 stated criteria	There is 1 crit fulfilled of 4 s
Stage of Business Risk	Business Stage	Follow on Funding	Market Validation	Business Model Validation	Product Valida
Legislation Risk	Mitigation	Compliance to all legality requirement and It has mitigation plan of possible changed policy	Compliance to legality requirement and It has not any mitigation plan of possible changed policy	Less compliance to legality requirement and It has not or has mitigation plan of possible changed policy	Already violat law and It has plan for possi policy
Production Risk	Software Readiness	SRL9	SRL8	SRL5 / SRL6/SRL7	SRL2 / SRL3
Sales and Marketing Risk	Marketing Plan	There is some of marketing objectives have been met	likely to be feasible	Justifiable	Difficult to jus
	Sales Plan	There is some of marketing objectives have been met	Conservative	Justifiable	Difficult to jus
Funding Risk	Financing Plan	Financial resources for next 4 years are available	Financial resources for next 3 years are available	Financial resources for next 2 years are available	Financial reso next year is av
Competition Risk	Existing competition threat	Long term low competition	Low competition	Moderate competition	Potentially str competition

(Analysis, 2019)

Kubu startup value results by using Berkus Method indicates that the chosen levels are more inclined to the left equilibrium (Rp 1,442,307,692; Rp1,081,730,769) which contributes positive value from some factors namely sound idea, strategic relationship, and prototype. the Risk Factor Summation method shows the chosen levels are more inclined to the left equilibrium (0,+1,+2) specifically for the risk of legislation, production, technology, competition, and potential lucrative exit that give additional positive value of (Rp1,442,307,692; Rp721,153,846). Moreover, based on the analysis result of the Bill Payne (2011) valuation guideline, Kubu has the strength or above the prevalent startup value in Indigo for several factors, namely the strength of management team, product/technology, competitive environment, and marketing/sales channels/partnerships. All the value generated through 3 alternative methods also indicates that the value of Kubu startup ranges from Rp3,786,057,692 – Rp9, 375,000,000 which mostly have the similar strength of key factors namely, product, competition, and strategic relationship.

The Berkus method results the lowest Kubu startup value compared to the other methods since it doesn't consider the market value. In this case, the maximum number that can be obtained using Berkus Method is equal to the prevalent maximum startup value in Indigo that is Rp7,211,538,462 while the other methods can result the maximum value more than the prevalent maximum startup value in Indigo. Eventhough, the conservativeness characteristic of Berkus method is more preferable for investor but there are still many factors that can be analyzed besides the 5 key factors. Moreover, both methods of Scorecard and Risk Factor Summation consider the market value but the more comprehensive risks are evaluated in the Risk Factor Summation method. This may affect to the result of startup value since there is the higher chance of startup to show their potential business prospect that relevant to the key factors and thus, the startup value may be resulted higher. However, this can result vice versa condition if the startup doesn't have good business prospect. Furthermore, all of alternative methods are useful to be the tools of negotiation to create funding decision between Indigo and startup.

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CONCLUSIONS

In order to provide alternative pre-revenue startup valuation methods, author gathered literature review which shows that there are 6 pre-revenue startup valuation methods in the seed stage namely Berkus, Risk Factor Summation, Scorecard, Venture Capital, Book Value, and Liquidation Value (EquityZen 2016). However, considering the startup state which is there are no sufficient financial data and history for projection, lack of tangible asset owned, and limited data of comparable companies. Hence, the alternative methods are filtered into Berkus, Risk Factor Summation, and Scorecard. Moreover, after conducting discussion with Indigo's expert which considers each method's key advantages and key disadvantages. The alternative of pre-revenue startup valuation methods that can be considered to be applied by Indigo namely Berkus, Risk Factor Summation, and Scorecard.

All those methods have been exercised to Kubu as the one of startup in Indigo that will enter the MV stage. The result of Kubu startup value ranges from Rp3,786,057,692 – Rp9,375,000,000 which mostly have the similar strength of key factors namely, product, competition, and strategic relationship.

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