DETERMINING THE VALUE OF START-UP COMPANY USING DISAGGREGATED VALUATION MODELS (CASE OF KR.COM)

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Abstract- One of important things start-up company need is seed or early stage of funding. Funding is important for young start-ups to provide them with the capital needed to finance the early development of a new product or service. Valuation is important in raising fund process, because not knowing their fair value of the company could cause owners to sell their businesses for less than they actually are worth. This study is using disaggregated valuation approach to determine KR.com's total intrinsic value. The information needed to build a valuation model was obtained from KR.com internal record. After doing valuation process, the result that is using disaggregated model respectively.

Keywords- Intrinsic Value, Key Drivers, Start-up, Valuation

I. INTRODUCTION

The start-up company especially the young ones, they need a few important things to start their journey to be a million dollar or even a billion dollar company. One of the important things they need is seed or early stage of funding. Funding is important for young start-ups to provide them with the capital needed to finance the early development of a new product or service. These early financings may be allocated toward product research & development, market research, building team and developing business plan, Calopa et al(2014). In order to raise a funding round, the start-up company commonly need to give up some equity position in exchange for funding. Valuationof the start-up company will determine how much of equity position have to be sold to raise a given amount of money. Pinto, Henry, Robinson & Stowe(2009), mentioned that valuation is the estimation on an asset's value based on variables perceived to be related to future investment returns. In that case, it is a crucial thing that the start-up company to do a proper valuation, because in the worst case, not knowing the fair value of the1. company could cause owners to sell their businesses2. for less than they actually are worth.

3.

Mostyoung start-up firms are difficult to value for a number of reasons. Some businesses generates little or no revenues and operating losses. Even those young companies that are profitable have short histories and most young firms are dependent upon private capital, initially owner savings and venture capital and private equity later on. As a result, many of the standard techniques we use to estimate cash flows, growth rates and discount rates either do not work or yield unrealistic numbers, Damodaran (2009).

Valuation is important for the company because not knowing their fair value of the company could cause owners to sell their businesses for less than they actually are worth. The problem arise when the founder of KR.com try to raise Rp 2.5 Billion funding from an investor, which is a big company group in Indonesia. The investor was actually willing to invest the asking amount of money by KR.com but will not do it until KR.com get some good traction and know how much the company is worth. KR.com struggle to have an idea how much they are worth because they do not have a member who manage their corporate financial management properly in their team. Also as a young start-up company, earning of the KR.com is still very low and have high expenses, but have a great potential to increase their users and growing their market share. Align with those condition the author proposing to use disaggregated valuation models as a solution to solve company problem in finding company's intrinsic value.

II. METHODS

Based on the background above, this research objectives of study are as follow:
To determine KR.com intrinsic value.
To identify what variables are drives the KR.com intrinsic value (Key Drivers).
To determine how much percentage does company should sell its equity in exchange of certain amount of fund from investor?

Research Methodology

This research is using desk research as the methodology. Desk research is used to examine and analyze the given data provided by KR.com, such as:

1. KR.com total traffic or users.
2. KR.com revenue
3. KR.com expenditure

Those input are needed to conduct the disaggregated valuation modeling Damodaran (2018). Literature study also conducted from papers, books and cases

review. While web search conducted to complete the information needed for research purposes.

III. RESULT AND DISCUSSION

The Assumptions

Damodaran (2018), mentioned that in order to do a valuation, we cannot escape from the process of making assumptions. In fact, the assumptions that we need to make to value a company on a disaggregated basis are often more involved and complex than the one that we have to make in an aggregated valuation. Hence, before we could perform a valuation process, we need to make assumptions to build around valuation models on KR.com.

Disaggregated Valuation:

1. **Existing Users Lifetime:** Users of a product or service are likely have a lifetime regarding how long they will stay to be a user. According to (APJII, 2017) infographic in figure 3.1, the average age of internet user majority is 26 years old, while the minority is 55 years old or more. Hence, according those facts, existing user lifetime is about 30 years.
2. **Churn rate:**Churn rate is refers to the proportion of users or subscribers who leave the product or service provider during a given period. According to (Pacific Crest, 2016), reported the median annual churn rate across the entire sample as 10%. The sample are from 177 SaaS companies from around the world but mostly in US region. So, the author will use 10% as churn rate of KR.com existing user.
3. **Revenue per User growth rate:**According to KR.com revenue stream showed in early chapter three, there is a significant difference between KR.com current revenue stream and future revenue stream. The difference is more than four times bigger. Hence, the author assume that the company could increase their revenue per existing user by 300% for the first five years, and adjust to slower rates by 50%, 10% and 5,28% for the year 6-10, 11-15 and 16-30 respectively.
4. **Cost of service per Existing user growth rate:**As a digital or internet based company, KR.com are expected to increase their cost to service the existing users by spend more on license fees for server, hosting and etc, to make the website or mobile application more reliable and capable. The author will use the same assumption as the growth rate of license fees expense, which is 100%, but only for the first five years. The following years will adjust to lower rates which are 50%, 25% and 5,28% for the year 6-10, 11-15 and 16-30 respectively.
5. **New Users growth rate:**In previous part, it is explained that the company plan to do an aggressive strategy in marketing campaign to acquire new users. According to (Equidam, 2016) about start-up's growth rate in US, India, Europe and Canada, average forecasted Annual User Growth rate is reach 200% for the first five years. However for the upcoming years, the growth rate are become more conservative in around 40% annual growth rate as they grow larger.
6. **Value per New User growth rate:**Align with the company strategy to spend more on marketing expense to acquire new users. The company expected to increase their customer acquisition cost in the first five years. Such thing will affect the value per new user to decrease. However according to Damodaran (2018), as the users grow bigger and scale up, the company expected to get network benefit from it and causing to decrease their customer acquisition cost while simultaneously increasing the value per new user. Hence, according to the author calculation, the assumptions for value per new user growth rate are -1,5% and 1,5% for the year 1-5 and 6-10 respectively.
7. **Corporate Drag growth rate:**According to Damodaran, (2018), the corporate drag are all corporate expenses that not directly related to users. In this case will be the operating expense and capital expenditure of the company. Hence the author will assume the growth rate is the average of operating expense and capital expenditure growth rate assumption that is 75% annual growth rate.
8. **Tax rate:** The tax rate assumption will be using 25% Indonesia corporate income tax rate for both valuation model.

Deconstructing KR.com Financial

Like stated earlier in this Chapter, as a private start-up company, KR.com could not provide detailed information regarding their financial data or record. But we still could breakdown the information given by KR.com into the variables needed to be able to perform a disaggregated valuation model. The first breakdown is to find average revenue per user of KR.com or presented in table 3.4 below.

KR.com	2017	2016
Commissions Revenue	$ 104.77	$ 25.80
Number users	21218	13788
Revenue/user	$ 0.0049	$ 0.0019

The second breakdown is to classify KR.com expenses into three categories, which are: 1) the expense for servicing existing users; 2) Expense for acquiring new users; and 3) Corporate Expense that

not directly related to users. The result can be seen in table 3.5 below:

KR.com	2017			
IT Development	Rp	45,200,550.00		
License fee expense	Rp	5,053,216.00		
Marketing	Rp	5,111,000.00		
Corporate Expense	Rp	126,000,000.00		
Total expenses IDR	Rp	181,364,766.00		
Total expenses USD	$	12,507.91		
Total expenses breakdown	**IDR**		**USD**	**%**
Service existing user	Rp	5,053,216.00	$ 348.50	2.79%
Corporate expense	Rp	171,200,550.00	$ 11,806.93	94.40%
Get new users	Rp	5,111,000.00	$ 352.48	2.82%

The last breakdown is to determine the cost of servicing per existing user and cost of adding a new user and will be shown in table 3.6 below:

KR.com	2017	2016
Total Users	21,218	13,788
Increase in Users	7,430	N/A
Service existing user expense	$ 348.50	N/A
Cost of Service per Existing User	$ 0.016	N/A
Get new users	$ 352.48	N/A
Cost of Adding a New User	$ 0.047	N/A

After breaking down or deconstructing KR.com financial statements, we have all elements needed to perform user-based valuation model to determine the Total value of KR.com through Value of Existing Users, Value of New Users and The Corporate Drag.

Value of Existing User

Valuing existing users is about to determine how much value that existing users generate for the company over the lifetime period. The cash flow from existing users are from the average revenue per user minus the cost servicing them per user times (1-Tax). However in valuing existing users there is no terminal value added to the model because (Damodaran, 2018) argue that the existing users of user-based companies are not immortal and will stop using the product or service at some point of period or have a lifetime period in other word. Hence the cash flow generated by existing users cannot be calculated at perpetuity. The resulting valuation of existing users is captured in table 3.7 below:

Total Present Value per Exisiting User	**$ 19.88**
Number of Existing User	**21,218**
Total Value of Existing Users	**$ 421,777.21**

The table above show that the Total Value of KR.com Existing Users is the total present value of the discounted expected after-tax operating income generate by per existing user over defined periods, times by the total number of existing users. Hence the Total Value of KR.com Existing Users is around $ 421.777,21.

Value of New User

The first thing to do before valuing KR.com new users is to find the value per new user. According to framework of Damodaran (2018), the value per new user is the result of subtracting the Value per Existing User from prior calculation with the Cost of Adding New User from the financial statements breakdown information explained before. The result is in table 3.8 below:

Value per Existing User	**$ 19.88**
Minus: Cost of adding new user	**$ (0.05)**
Value per New User	**$ 19.83**

After finding the value per new user, we can proceed to calculate the total value of KR.com new users. The resulting valuation of new users is captured in Table 3.9 below:

Year	Total User	New Users	Value per New User	Value added of new user	PV
0	21,218	0	$ 19.83	$ -	
1	61,532	42,436	$ 19.53	$ 828,918.12	$ 718,392.06
2	178,443	123,064	$ 19.24	$ 2,367,804.60	$ 1,778,466.32
3	517,486	356,887	$ 18.95	$ 6,763,633.83	$ 4,402,808.20
4	1,500,709	1,034,972	$ 18.67	$ 19,320,320.05	$ 10,899,683.51
5	4,352,056	3,001,418	$ 18.39	$ 55,188,494.22	$ 26,983,483.11

6	5,657,672	1,740,822	$ 18.66	$ 32,489,466.55	$ 13,767,083.22
7	7,354,974	2,263,069	$ 18.94	$ 42,869,851.11	$ 15,743,497.70
8	9,561,466	2,941,990	$ 19.23	$ 56,566,768.54	$ 18,003,647.97
9	12,429,906	3,824,586	$ 19.52	$ 74,639,851.08	$ 20,588,267.38
10	16,158,878	4,971,962	$ 19.81	$ 98,487,283.51	$ 63,524,734.92
			Terminal Value	$ 167,244,763.58	
				Total Present Value Added by New Users	**$ 176,410,064.37**

The table above show that the Total Value Added by KR.com New Users is the total of the discounted expected value added generate by annual new users over defined periods + the terminal value. Hence the Total Value Added of KR.com New Users is reaching $ 176.410.064,37 with the discount rate of 15,39%.

The Corporate Drag

There is final component in valuing user-based company that has to be brought into the valuation. Even in user-based company, there are costs that are not directly related to users that have to be accounted for somewhere in the valuation. These costs have to be valued and brought in, for the final valuation to reflect the true value for the company. To value these non-user related cost or corporate drag as Damodaran (2018) prefer to term it, the resulting valuation of corporate drag is captured in table 3.10 below:

Year	Corporate expense	After-tax corporate expense	PV
0	$ (11,806.93)		
1	$ (20,662.14)	$ (15,496.60)	$ (13,430.32)
2	$ (36,158.74)	$ (27,119.05)	$ (20,369.22)
3	$ (63,277.79)	$ (47,458.34)	$ (30,893.15)
4	$ (110,736.13)	$ (83,052.10)	$ (46,854.38)
5	$ (193,788.23)	$ (145,341.17)	$ (71,062.11)
6	$ (339,129.40)	$ (254,347.05)	$ (107,776.99)
7	$ (593,476.46)	$ (445,107.34)	$ (163,460.95)
8	$ (1,038,583.80)	$ (778,937.85)	$ (247,914.51)
9	$ (1,817,521.64)	$ (1,363,141.23)	$ (376,001.77)
10	$ (3,180,662.88)	$ (2,385,497.16)	$ (6,511,529.70)
	Terminal Value	$ (24,853,059.89)	
	Total Present Value of Corporate Expense		**$ (7,589,293.10)**

The table above show that the Total Corporate Drag of KR.com's corporate expense is the total of the discounted expected after-tax corporate expense over defined periods + the terminal value. Hence the Total Corporate Drag of KR.com's corporate expense is $ 7.589.293,10 with the discount rate of 15,39%.

Intrinsic value of KR.com

Eventually, to reach the overall value of KR.com from user or subscriber valuation perspective, we need to bring together all the components which we working on before.

Value of a User-Based Company = Value of Existing Users + Value of New Users – Value of Corporate Drag
= $ 421.777,21 + $ 176.410.064,37 - $ 7.589.293,10
= $169.242.548,48

From the equation using disaggregated valuation model, we can determine that the intrinsic value of KR.com is $ 169.242.548,48. However this value is derived from many input assumption variables. The result of the intrinsic value could be vary depends on the used assumption variables.

Tornado Chart of Disaggregated Valuation Variables

The author again using tornado chart to show which growth rate variables that have significant impact on generating KR.com Intrinsic Value using disaggregated valuation. The variables are simulated to 50% ups and down scenarios in order to see the impact of each variables to the KR.com Intrinsic Value. The resulting effect is presented at figure below:



(Source: Author analysis, 2018)

According to the figure above, there are some key drivers on generating KR.com Intrinsic Value. Those variables are:

- Average Revenue per User growth rate
- New User growth rate
- The Churn rate level
- Rates of Returns.

From the key drivers list presented before this, we could recommend that KR.com should open more new revenue streams, increasing the transactions from each user to increase the average revenue per user over time. Another insight is to acquire new users aggressively even the company have to increase the cost of acquiring new user because the growth of new users is more significant in generating KR.com's intrinsic value than the growth of adding new user cost. The churn rate level of KR.com's users also important to watch, the company should keep the churn rate at low level by increasing the loyalty of their users by always improving their user experience in both KR.com's website and mobile application. The last but not least is KR.com should prove that their business model could working in the market by getting a good traction from their website and mobile application to lower the company's risk of failure and hopefully could lower the rates of return of the company from investors point of view.

CONCLUSION AND RECOMMENDATION

The first result of the valuation process are the intrinsic value of KR.com from disaggregated valuation model is resulting in total amount of $ 169.242.548,48. Those value were adjusted to higher discount rates to reflect the risk of being a young start-up or early stage company.

While for another approach which is disaggregated valuation model, the key drivers are more insightful for the company. KR.com could use the insights from the key drivers of disaggregated valuation to increase their intrinsic value by open up more revenue streams to increase the average revenue per user, spending more cost to acquire new users, improving their users experience to keep the user churn rate at low level and also proving the company can get a good traction from the market to lower their failure risk and hopefully causing a lower target rates of returns from investor point of view.

The final result of this research is to give the owners of the company a sense of knowledge regarding how much the equity position they should sell to investor in exchange for certain amount of fund. The author used weighted average to combine the value from both valuation method and determine the range of how much equity position of the company should be sell by the owners in exchange for certain amount of fund from investor.

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