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Analysis of Key Factors Contributing Towards Valuation of Pre-Revenue Start-ups by Means of the Berkus Method

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Abstract— the **valuation** of **pre-revenue Start-ups** is a complex process. There are several methods startup can employ to arrive at a fair value. Irrespective of which method startup decides upon, it is highly subjective as it is based on personal judgment/assumption. This research paper is an attempt to provide certain sub-parameters that can be used under the Berkus method for the valuation of a pre-revenue startup. The Sub- parameters are not exhaustive but can be a point of reference while making adjustments according to the nature of the Industry/market.

Index Terms— Angel Investors, Equity, Idea Validation, Incubators, Pre revenue start-up, Proof of Concept, Prototype, Rollout, Scalability, Start-up Advisors, Strategic Relationship, Valuation, Venture Capitalist.

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1 Introduction

"A big business starts small"- Richard Branson

A startup focuses on growth, innovation, **scalability**, and profitability [1]. Every business starts with a great plan which is envisioned by the founder(s). When it is working through ideation, discovery, and validity but is yet to generate significant revenue, it is termed a ***pre-revenue startup***.

Investing in Start-ups is a highly risky undertaking. It is well established that Start-ups fail more often than they succeed. As per Shikar Gosh from Harvard Business School, "75% of all companies receiving venture capital investments do not give profits to these investors" [2]. This statement holds in both developed and underdeveloped economies. Most Start-ups have failed, despite of having an idea with immense potential. This is accredited to the reason of lack of **necessary funding at the right stages, at the right time by the right people.** A pre-revenue startup at some stage in its lifecycle tends to raise capital to enable quicker growth or even for strategic relationships which they perceive would be beneficial in the longer run.

For a startup to raise money, it needs to place itself in the shoes of the investor. Investors are perfectly aware of the risks in making investments in pre-revenue Start-ups. Thus, **valuation** becomes an essential step in the journey of a startup. No founder(s) want to part way with sizable equity for meager capital. It is also true that the founder(s) must look at valuation from a realistic point of view. He must be aware that a professional investor while looking for valuation might consider the size of the risk, the expected exit value, the time of exit, the requirements of additional capital, and its effect on the valuation.

The amount of shares an investor will receive depends on pre-money valuation. Post- money valuation is a simple summation of the pre money and the investment made. E.g.- If the pre money valuation of a startup is 5 million and an investment of 2.5 million is made. The post-money valuation would be 7.5 million. Thus, the new investor will own 2.5/7.5= 33.33% of the company. The percentage of returns expected by an investor would vary according to the stage of investments [3].

They raise the necessary capital in various rounds and from various parties. A startup can't raise large sums of money in a single round. Generally, they raise sufficient capital to achieve the next milestone. The investors for pre-revenue Start-ups can include **incubators**, accelerators, friends and family, angel investors, self-financing, and venture capitalists.

Startup valuation is an art more than a science. It is especially more complex when the startup for valuation is a pre-revenue startup. There are several methods in which one can calculate valuation such as Berkus Method, the Scorecard Valuation method, The Venture capitalist method. We plan to further elaborate on Berkus method throughout the paper. We attempt to provide sub-parameters that can be used for valuation under the **Berkus Method**. These sub-parameters are not exhaustive, and the weightage assigned to each sub-parameter is subjective to the nature of the industry, location of the startup, priorities specific to the product/service.

2 Background-

With the objective of valuation of **FoodVybe Inc**., we explored several methods pertaining to the valuation of pre-revenue start-ups and we found that Berkus Method was suitable for early-stage/pre-revenue technology Start-ups. However, there was a lot of ambiguity concerning to assigning values to the specified parameters under the Berkus Method. Hence, we studied some aspects investors prioritize while making their investment decisions and put forth the following re-

search paper.

3 Problem Statement-

Berkus Method is a relatively simple and vague method, thus making the usage subjective. It lacks proper reference as to how a founder while valuing his pre-revenue startup could assign an appropriate/apt value to the parameters specified in the method.

4 Objective-

To provide key sub parameters (or) a guide with respect to further pursuing valuation under the Berkus method and allocating an apt value for each parameter.

5 Methodology-

We performed basic qualitative research using **secondary data sources** available which have been specified in the section of the bibliography. This paper includes the views presented by reputed authors in the field of finance along with studies conducted by various Universities.

6 The Berkus Method

The method is named after an angel and venture capitalist Dave Berkus [4]. He specialises in early-stage investing in technology start-ups. He was an early pioneer in the mini-computer industry, guiding the company he founded, Computerized Lodging Systems, Inc. This method emerged in the mid-1990s for **valuation** of early-stage companies and was later revised [5]. This method accounts for some of the main risk factors and attempts to give an admittedly arbitrary value to each of the factors highlighted below.

Table1

Quantitative Value Drivers [5]

Particulars	Values
Sound Idea (Basic Value)	$1 million (or) $ 2 million
Prototype (Reduces Technology Risk)	$1 million (or) $ 2 million
Quality Management Team (Reduces Execution Risk)	$1 million (or) $ 2 million
Strategic Relationship (Reducing Market Risk)	$1 million (or) $ 2 million
Product Rollout/Initial Sales. (Reducing Production Risk)	$1 million (or) $ 2 million

Initially, each parameter was valued at $500,000. Berkus had set the target for start-ups revenue at $20 Million (5th year), thus allowing investors a 10x return. After 20 years (2016), Mr. Dave Berkus updated the values to be at either $1 million (or) $ 2 million depending on the location/industry [6]. Valuations are higher in Silicon Valley, Silicon Beach, New York, North Carolina, or such commercial renown locations. Mr. Dave Berkus aimed to provide flexibility to the users of this method. He quoted the following example justifying the raise of the value of each element - **"In Silicon Valley, a "big data" start-up might competitively call for a $1.5 million maximum value per element, while the same start-up in Nebraska might find $500,000 appropriate."** Thus, it is left to the discretion of each individual start-up to decide as to choosing the maximum amount to be allocated under each given parameter.

7 Key Criteria Under the Berkus Method

7.1 Sound Idea (Production risk, basic value)

An idea can be defined as a thought or a course of action. Every start-up begins with a great idea. A start-up in essence is an idea that is derived from the founder. A good idea is one that has the potential to solve an unsolved problem or improve the existing business model of the target industry. Studies indicate that only one idea out of 3000 is successful. Irrespective of the quality of an idea, it has to be refined over the course of time. This practice is known as pivoting [7].

One mistake that is widely observed is when a startup incurs massive expenditure before even **validating** the idea. A good idea must be backed by evidence that customers problem is being solved. *Idea* ***validation*** is a key factor in terms of the valuation of the business.

'**Building before validating'** must be avoided. This step involves the entrepreneur through methods of survey and research enquiring to check if the problem he wants to solve exists in the market. The price fixation can also be done during the stage of validation by gauging the price the target customers are willing to pay. A founder must keep an open mind during the stage of validation and be flexible to **pivot** if necessary.

A business idea is one that checks all the factors below-

Number of potential customers*Percentage of the capturable market*Absolute dollar amount of each sale*Percentage margin of Net profit= Total Potential Profit [3]

A start-up idea fails when the idea is to solve an irrelevant problem, is not properly executed, and faces an external threat [8].Business idea planning is a continuous process. In post idea validation stage, the start-up must conduct a final evaluation with a larger target audience.

Sub-Parameter -

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1. **Proprietary nature of the idea -** A novel idea must have the potential to be secured via patents/ copyrights along with possessing the scope to generate significant returns.
2. **A well-defined future plan [9] -** investors always look at the big picture when investing, hence a start-up promising longevity in a well-planned direction becomes essential.
3. **The *scalability* of idea [10] -** a scalable business can expand with a minimal incremental cost. Thus, a start-up in order to survive in a competitive market must have a scalable idea.
4. **Socio-political relevance -** the appeal of the start-up idea to the general audience is heavily reliant on the prevailing socio- political climate, thus the idea being relevant is necessary.
5. **Validation of idea -** in order to minimize the risk during the stage of implementation the idea must be subjected to thorough testing with a large audience.

7.2 Prototype (Reducing technology risk)

Prototype is the key parameter under valuation of start-ups by the Berkus method [11]. It is a replica of the actual concept or product in order to test its viability. The main notion of prototyping is to confront the identified loopholes or defects before the bulk investment of energy, money, and time.

Start-ups looking for funding from venture capitalists or angel investors must not underestimate the importance of the prototype, as it proves the products' functionality [12].A prototype shows the seriousness, dedication, knowledge, and vision of the founder(s). Involving feedback in the prototype is important as it gives the founder(s) scope to further dwell upon new ideas. Thus, presenting, and testing of product at an early stage, getting feedback and making the required changes provide an upper hand and increases the confidence of the potential investors.

Prototyping acts as a **technological risk management** technique for start-ups [13].There are various technology risks associated with IT products like breaching of confidential data, system/service breakdowns, cyber-attacks, and many more which have a bearing on the reputation business.

A product and its functioning are the foundation for any valuation. A product is expected to be unique, create an impact, solve an existing problem/ cater to an untapped market, seek to outperform the existing firms/peers, etc. Any product that has fulfilled most of the above-mentioned goals is ideal. This further emphasis doing the groundwork to arrive at a feasible prototype.

<u>Sub-Parameters [14] -</u>

1. **Completion status of the prototype**– A completed prototype consisting of most of the features the product plans to roll out is a good sign for the investors.
2. ***Proof of concept*/ user feedback to back the effectiveness of the application/site -**Involving users in the early process assists in getting genuine views and a better understanding of the product. It helps to prove there are people eager to use the application which makes it easier to attract funding from VCs thus draws positive valuation.
3. **The possibility to license the product/prototype in the early stage –** The product having the capability to be licensed in the early stage, provides a safety net/ exit for investors.
4. ***User Interface*/ ability to withstand large volume without failure/technical glitches –** A user-friendly interface that can handle a large volume of customers will help the start-up in developing the final product.
5. **The presence of well-experienced personnel in the field of technology -** start-ups having high-level technical experts will attract a positive valuation as they will be in a better position to identify the technical problems associated and resolve the same. A clear documentation and coding process is required.

7.3 Management Valuation

For any business to attain success, the business founder(s) play an important role [3]. A **venture capitalist or angel investor** would first examine the domain experience/track record of the founder(s). If the business founder has achieved success/reputation in the domain concerning the start-up, it would be of higher weightage in terms of valuation of the management. This provides a sense of security regarding the efficiency of the management [15]. The running of a team boils down to two words- **Good management**. Higher the capability of the management, higher the valuation. Incase, if the founder(s) skillset is limited, assembling a team/ enthusiastic partners becomes vital.

A strong start-up team gives the opportunity to achieve higher innovation, drive business growth, ensure quicker conversion from ideation to the production stage, survive in a cut-throat environment, cover all aspects/bases that are meant to be covered in a start-up, and also command a higher valuation/funding.

As per Eva de Mol, 60% of start-ups fail due to problems with the team [16].For valuing a start-up's management- the venture capitalist relies heavily upon his gut feel/intuition.

A recent study was conducted by Harvard Institute on 95 start-ups in Netherland. From this study, we deduce that experience solely was not sufficient. "**Entrepreneurial Passion" and "Shared Vision"** are two main factors that determines a

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successful team. A team of highly experienced founders having several years of relevant domain related experience but are not extremely passionate about the business, their chances of success diminish. Conversely, a team lacking domain experience but have the passion and common vision, tend to have a higher chance of working/functioning the start-up efficiently [16].

The team can have ***advisors*** who may help them through the process of start-up development [3]. The advisors may work on a consultancy basis for a fee or partner with the start-up out of his benevolence or interest without charging a fee (desire to pay it forward in the form of sharing what they've learned over the years). Mentors are crucial but not compulsory. It is however beneficial to have an advisor with an **established network** in the specific domain of the start-up. An advisor with solid industry specific knowledge could be vital in providing a sense of assurance to an **investor.** A founder(s) may tend to develop a deep sense of attachment towards his/her idea over the years, thus the presence of an advisor would provide him the ground reality.

Sub parameters/criteria

1. The technical or commercial **competency** of the founding team.
   - This can either mean the founders have the relevant prior experience of incubating a start-up or they have developed the appropriate skills necessary to execute the goals set before them. A team needing additional supervision in the form of a higher- level management team.
2. The management's awareness of their **limitations** and appointing specific people to overcome such shortcomings
   - E.g. - The firm has identified that management does not have a member with legal acumen and hence has hired an external third-party legal team to be part of the start-up incorporation/ filing patents.
3. The share/***equity***/***stake*** among the founding members.
   - A start-up in which a founding member has a **large stake** ensures that he/she will remain motivated. If there are many founders, the equity spread among them being equal is an advantage.
4. **Founder Flexibility.** i.e., the founder's willingness to pivot/ allow an external monitory body to take the control of the management.
   - The founder may not be an expert in management or functioning of the business if, in the best interest of the firm, the founder's willing to implement additional higher management.

5. **Diversity** of skills among the founders
   - The founders, if many, have experience in a wide range of skill sets it would be a further assurance to all potential investors that the management is well controlled in all aspects by the founders.

7.4 Strategic Relationships (reducing market risk)

"Business is all about relationships, how well you build them determines how well they build your business"- Brad Sugars

Strategic relationships are the collaborations between two or more parties in order to achieve mutual benefits [17]. A Start-up usually enters into strategic relations with parties that are huge and well established in order to exploit their **expertise and resources**. It is often seen that chains of production/distribution are incomplete in start-up's and they leverage these relationships to ensure smoother rollout/functioning.

Start-ups success rate is rather low and a firm possessing such relationships is bound to benefit in terms of success and valuation. The type of strategic relationship will vary as per the need and nature of start-up but this would assist them in increasing the customer/user base, exhilarating promotional activities, added value and trust of people. Thus, turning the odds in favour of the start-up [18].

The Pre-revenue start-ups or any other organization irrespective of the size or nature cannot neglect the market in which they exist. The market which surrounds the industry is dynamic and challenging thus a thorough understanding and research of it is a crucial step. Strategic relations are decisions that need to be taken with enormous care. They are in essence the building blocks of a start-up [19].

An example of the strategic relationship between two companies would be Spotify and Uber. Uber riders have the option to control the music of each ride with Spotify, thus making the experience of the ride satisfactory and Spotify services will be used by the riders, thus enabling branding and advertisement [20].

Note- The above example is stated for two well-established firms, the same is true for the start-up.

In order to value Strategic relationship which is one of the key parameters under the Berkus method, the following sub-parameters can be taken into consideration.

Sub-Parameter -

1. Existing Rivalry-

A start-up facing rivalry in the industry will struggle to leverage valuable strategic relationships. Thus, the market in which the start-up is present plays an important role in commanding valuation.

2. Effect of strategic relationship on the efficiency of the start-up

A start-up needs to justify qualitatively/ quantitatively as to

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how a particular the strategic relationship will help their future prospects.

3. The strategic relationship may bring new business/ add to existing satisfaction of the customers

By entering into a strategic relationship, the start-up is able to expand the customer base or bring new customers.

4. The capability of the strategic relationship in preventing a competitive threat [21].

Firms/ Start-up enter into relationships in order to be well equipped to have resources to compete with threats/ competitors which are likely to arise during the business.

5. The strategic relationship had covered considerable an amount of risk which the start-up was prone to.

If the start-up identifies a risk, it will make efforts to enter into agreements/partnerships for the purpose of risk mitigation.

7.5 Product Rollout/Sales (Reducing production risk)

Product rollout is an imperative factor that determines the success or failure of any start-up. Product Rollout is the last and the most crucial stage of the product development process. The product rollout can transpire in a **limited or global** market, varying upon the target market size in which it will be rolled out initially [22].It is an interior analysis of the start-up's **ability to market** and sell its product. The process of rollout starts from pre-launch and also includes the stages of launch of the product and managing the activities post launch.[8]

The founder(s) must plan the rollout diligently as it has the potential to diminish the threat, enable efficient and effective use of resources, setting the deadline, and ultimately measures the success of the product post launch. The rollout team should develop a product protocol, a **highly aggressive marketing strategy** advertising the benefits the **target audience can derive** and keep a check on whether the start-up is moving in the intended direction. The success of a ***rollout*** is a green signal for the future expansion plans of the start-up with a clearer vision and knowledge to proceed further.

Sub-Parameters [14]:

1. The product has been tested, run through QA, and proven capable of holding up to the expected standard. - The product rollout attracts a positive valuation when the product has been tested and any negative finding in this process of the initial rollout has been addressed.
2. The start-up must have evidence that the customer is willing to pay the target price. The price point must be well tested.
3. The customer support team has been properly trained on the product and is ready to assist new users with their common questions, issues, and problems.
4. Preparation and implementation of order handling plan- the start-up must be capable of handling the estimated orders it projects along with having a plan to meet excess demand that may arise.
5. The firm has set clear goals and developed a go-to-market plan for the product/service.

On completion of the goals of product rollout, the firm can draw a fair conclusion if the start-up is moving towards the intended ultimate goal and make the necessary changes, if so required. Thus, a systematic rollout with defined objectives draws positive valuation.

8 Conclusion

Early-stage start-up valuation is an art rather than a science. As the start-ups projected results can significantly vary from the ground results. A start-up founder ought to evaluate the pros and cons before finalising a method of the valuation which he deems to be apt for his business. The Berkus Method is widely used for valuation of technology start-ups. The method uses the 5 factors which are thought to be the drivers of a start-up in terms of valuation. The assignment of values to the drivers of value is left at the discretion of the founder. The start-up ought to choose the hurdle number/target that is achievable in a span of 5 years. It is only upon determination/projection of revenue, the founder can proceed with determining the maximum value which could be assigned to each parameter. A detailed preparation of a financial model could be useful in helping the start-up determine/project the growth. The claim of this method being oversimplified cannot be ignored. The major limitation is the subjectivity of the method. But if the founder utilises and develops clear justification for the chosen assigned value using certain **key sub-parameters** (depending upon the nature of the business/industry), the Berkus Method can be a viable method for valuation of a pre revenue start-up.

9 Glossary

- ***Valuation-*** Process of assessing the worth of a company/start-up in financial terms.
- ***Pre revenue startup-*** A startup which is yet to generate sale of its product/services.
- ***Incubators-*** Provide assistance to Start-ups via training, mentoring and connections with investors.

- ***Angel investors-***A high Net Worth individual who provides funding at an early stage to startup. He is also known as key investors.

- ***Venture Capitalists-***A private equity investor providing growth capital to early-stage Start-ups.

- ***Idea validation-*** Process of testing, gathering evidence around ideas through experimentation/studies before launching the product/service to the target audiences.

- ***Scalability-*** The ability to expand and can be adapted to a bigger scale/level.

- ***Prototype-*** An early sample, model of a product to test the concept/process.

- ***Proof of Concept-*** Also known as proof of principle. It refers to a feasibility check.

- ***Startup Advisors-*** An individual who provides the startup with connections and guidance.

- ***Equity/Stake-*** Percentage of ownership.

- ***Strategic Relationships-*** Partnerships formed to counter an external threat (or) improve own efficiency.

- ***Rollout-*** Product release or introduction of a service to the market.

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