

# Key Value Driver for Technology Start-up Companies: A Literature Review

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## **Abstract**

*To understand the corporate value is one of the major management issues from the past. It is not only for the valuation specialists, but, more importantly, for management executives. Considering the one of the major missions of management executives is to increase corporate value of their companies, management executives should know what are the key value drivers, which increase corporate value, in order to evaluate strategic options.*

*To find out key value drivers for technology start-up companies, systematic literature review analysis was conducted. Then groupings were made to form categories of similar codes and overarching themes using and modifying IIRC's International Integrated Reporting framework.*

*Based on this research, "Relationship with corporate mentor", "Employee", "Net Assets", "Technology", "Product / Service uniqueness", and "Agility" are determined as key value drivers for technology start-up companies.*

**Keywords:** *value driver, technology, start-up*

**JEL classification:** *M 10, M 13, M 21, G30*

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## **1. Introduction**

To understand the corporate value is one of the major management issues from the past. It is not only for the valuation specialists, but, more importantly, for management executives. Considering the one of the major missions of management executives is to increase corporate value of their companies, management executives should know what are the key value drivers, which increase corporate value, in order to evaluate strategic options. They also need to understand what are the key drivers since they need to face outside stakeholders, such as investors or debtholders. Not only knowing the value of their companies, but also understanding the mechanism of how the value of corporation is created is also important since one of the major agenda for management offices is increasing corporate value.

In addition to them, entrepreneurs or employees with stock options are very interested in understanding the value of a business.

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As outside stakeholders, stock investors want to know accurate corporate value to decide whether they should buy or sell their stocks. Parties such as venture capitalists, corporate M&A teams, or investment bankers want to calculate corporate value in order not to overpay when they acquire stocks.

Fernandez (2007), further indicates that the process of corporate valuation helps parties to comprehend the economic sources of value creation as well as the destruction within the company.

## 2. Literature review

Although the importance of corporate valuation remains same, valuation becomes harder compared to the past. Based on Ocean Tomo LLC' annual study (2022), the source of corporate value is shifting from tangible assets, such as property, plant and equipment, land, inventory, etc., to intangible assets, such as intellectual property, brand name, customer relationship, platform, etc., dramatically. This shift makes corporate valuation more difficult since valuation of intangible assets are more difficult than that of tangible assets. It is increasing its subjectivity and consequently makes the value to be extremely fluid/ volatile.

There are several ways to calculate corporate value today which range in reliability and efficacy (Torrez, et al. 2006; Schueler, 2020). Among many valuation methods, Corporate Professionals (2017), suggest there are three commonly used valuation methods, cost approach, market approach and income approach, in many business practices.

However, if we focus on technology start-up companies, the cost approach is not applicable since these companies tend to have less tangible assets and more intangible assets. In addition to that, start-up companies may not have huge tangible assets due to financial restriction. Therefore, Given the above reason and the fact that the value of intangible assets become more important, the cost approach may not work for technology start-up companies.

The market approach also has issues. Fernandez (2007), identifies that 'multiples' are often used as metrics to value internet-type companies such as price/sales, price/subscriber, price/pages visited and price/inhabitant since many of these companies have negligible revenue or negative earnings. However, these multiples, such as price/sales, price/subscriber, or price/pages visited, are not clearly related to future cashflow. Thus, it is hard to justify applicable multiples. In addition, it is difficult to find comparable companies, especially new-tech companies since they are creating relatively new business models.

As for income approach, Corporate Professionals (2017), suggest that for start-up and e-Commerce companies several issues exist that make reliable valuations challenging. Damodaran (1999), Behr, et al. (2018), or Festel, et al. (2013) showed progressive results to justify using income approach but still we have challenges, such as cashflow forecasts, residual value estimation, and discount rate estimation.

**Table 1. Challenges of Traditional Valuation Method**

	<b>Challenges for Technology Start-up Company Valuation</b>
Cost approach	Technology company may not have huge tangible assets
	Start-up companies may not have huge tangible assets
	Hard to value intangible assets
Market approach	Many start-up companies have negligible revenue and negative earnings. As such, major multiples, such as P/E or P/EBITDA, cannot be used.
	Hard to find applicable multiples. May need to use less cashflow related multiples, such as price/sales, price/subscriber, or price/pages visited
	Hard to find comparable companies since technology start-up companies are creating relatively new business models.
Income approach	Hard to forecast future cashflow
	Many start-up companies have negligible revenue and negative earnings. As such, the portion of residual value become high. Hard to estimate residual value of start-up companies.
	For estimating discount rate, we do need comparable companies since start-up companies lack of financial records. Hard to find comparable companies since technology start-up companies are creating relatively new business models.

*Source:* Author's work.

Since many of technology start-up companies lack historical data and are uncertain for future perspective, practitioners may use alternative valuation methods instead of using traditional valuation method such as Real Option Method, First Chicago Method, Venture Capital Method, Berkus Method, Scorecard Valuation Method, and Risk Factor Summation Method. These alternative methods are well used for valuing many start-up companies. However, still these methods have challenges and limitations as follows.

**Table 2. Challenges of Alternative Valuation Method**

	Challenges for Technology Start-up Company Valuation
Real Option Method	Forecasting value of future option is difficult (same as market approach or income approach)
	Estimating the probabilities of each option is difficult
	Option pricing model is complex
First Chicago Method	Forecasting value of future option is difficult (same as market approach or income approach)
	Estimating the probabilities of each option is difficult
Venture Capital Method	Estimating future applicable multiple is difficult (same as market approach)
Berkus Method	Valuation of each risk factor is difficult and subjective
	Consider only 5 factors which may not be enough for some companies.
	Can be used only for a company, which may reach over \$20 million in revenues by the fifth year of business
Scorecard Valuation Method	Estimating the weight of each factor is subjective
	Estimating the value of each factor is subjective
	Estimating the average value of comparable company is difficult (same as market approach)
Risk Factor Summation Method	Evaluating a target company for each factor is subjective
	Using five level evaluation is easy to use but too simple
	Adjustment amount is easy to use but too simple
	Estimating the average value of comparable company is difficult (same as market approach)

Source: Author's work.

Some of researchers focused not only financial drivers but also non-financial information, such as management team, strategic relationship, product / technology, or competitive aspect. This non-financial information is also important even for the traditional valuation method. Although the traditional valuation method focusses on financial information, such as cashflow, revenues, earnings, or net assets, major components of traditional valuation method, such as future cashflow, residual value, discount rate, or applicable multiples, are affected by this non-financial information.

Although many researchers use their own framework to categorize each value driver, the International Integrated Reporting Council (IIRC) (2013) proposed the International Integrated Reporting (<IR>) framework to report the value creation of company. Although this framework can capture many aspects of value drivers, it mainly focuses on internal factors since this framework illustrate

how the value is created inside the company. Many researchers on value driver for start-up companies shows external aspect is also important (Miloud, et al. 2012; Brusche 2016; Wessendorf, et al. 2020).

### 3. Research objectives and methodologies

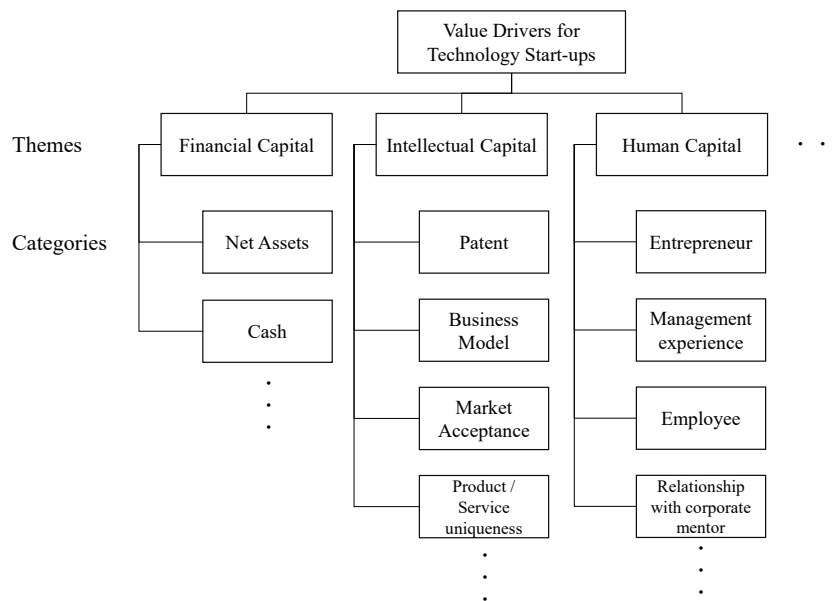
Although many researchers tried to find key value drivers for start-up companies, there are few research which focused for technology start up companies. As such, this research examines what are the value drivers for technology start-up companies. Therefore, two primary research questions were proposed.

RQ1: What are the value drivers for technology start-up companies?

RQ2: What are the Key Value drivers for technology start-up companies?

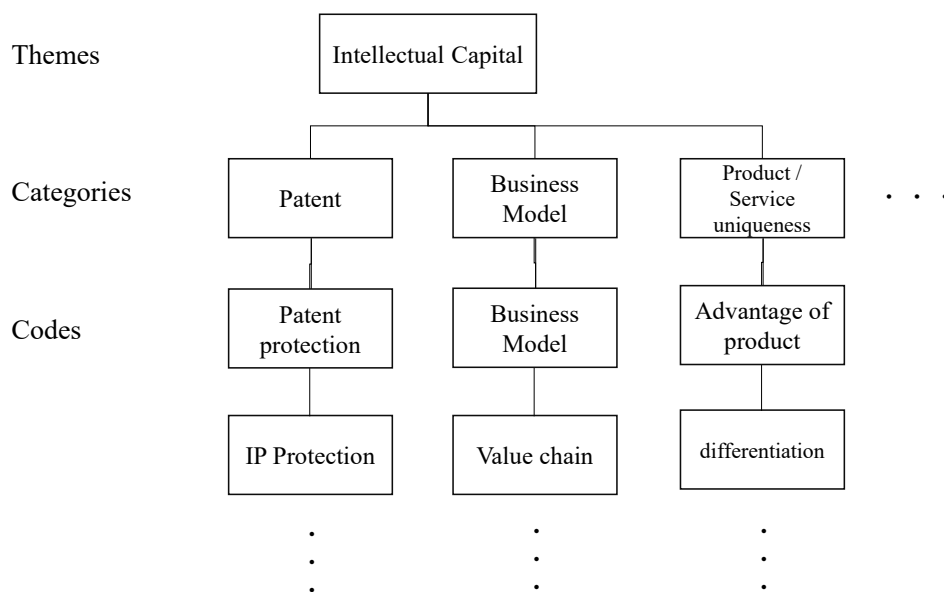
Firstly, the data was gathered from a systematic review of 83 articles from ResearchGate database from 2018 to 2023 using keyword of “Technology”, “Star up”, “Value driver”, including peer review journals, but not limited to them. The materials went through multiple passes of reading, comprehending, highlighting meaningful words, phrases and concepts. Out of 83 articles, 32 articles are extracted as related article. Then groupings were made to form categories of similar codes and overarching themes using and modifying IIRC’s International Integrated Reporting framework. Examples of the coding process is demonstrated in figure 1 and 2.

**Figure 1. Example of Coding of the Data**



Source: Author’s work.

**Figure 2. Example of Coding from Systematic Review**



Source: Author's work.

#### 4. Finding and Discussion

In this systematic literature review, code is specific item, and some codes are similar but used different word. As such category is assumed to be a value driver for company to increase this corporate value. Based on this research, value drivers, which are categories in this systematic literature review, for technology start-up companies are shown in table 3.

All the codes are linked each category. And all the categories are linked each theme. Themes are categorized by using IIRC's International Integrated Reporting framework. Although this framework can capture many aspects of value drivers, it mainly focuses on internal factors since this framework illustrate how the value is created inside the company. Thus, modification of including external aspect was made by author.

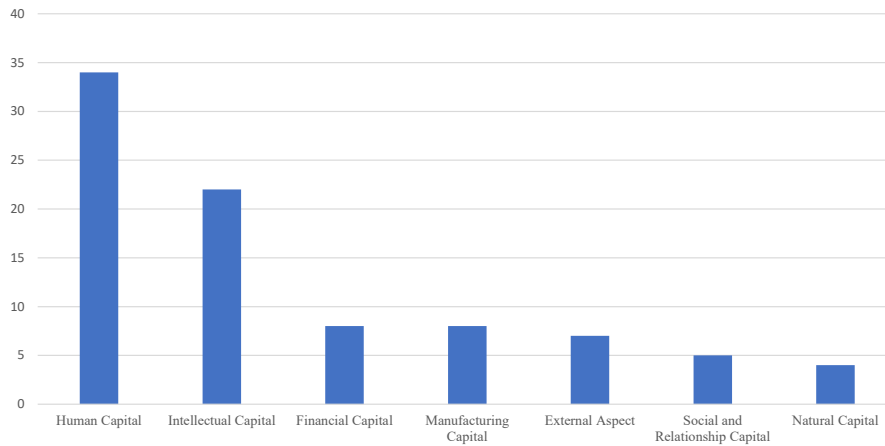
Table 3 Value Drivers for Technology Start-up companies

	Theme	Value Driver (Category)
Internal Capital	Financial Capital	Net Assets
		Cash
	Manufacturing Capital	Business partner
		Cost effectiveness
		Supply chain
		Process efficiency
	Intellectual Capital	Technology
		Product / Service uniqueness
		Market acceptance
		Patent
		Intellectual capital
		Business model
		R&D investment
	Human Capital	Employee
		Relationship with corporate mentor
		Agility
		Management team
		Entrepreneur
		Relationship with VC
		Business strategy
Work environment		
Management experience		
Industry experience		
Social and Relationship Capital	Marketing communication	
	Social responsibility	
	Governance	
Natural Capital	Environmental responsibility	
	Sustainability	
External	External Aspect	Competition
		Market size
		Regulatory
		Market growth

Source: Author's work.

Based on this research, the frequency of each theme is shown in figure 3.

**Figure 3. Frequency of each Theme**

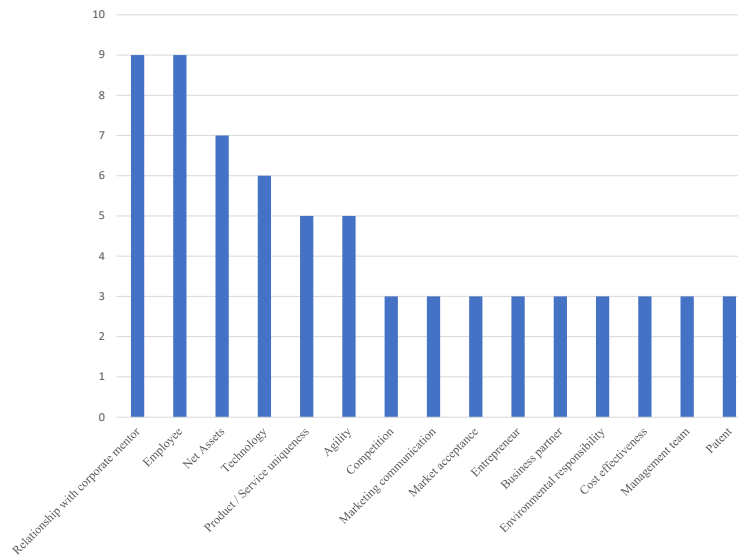


*Source: Author's work.*

Among all the themes, “Human Capital” is the most frequent theme, and “Intellectual Capital” is the next. These two themes are more frequent than other themes. As such, these two themes can be considered as key themes for technology start-up companies in the research.

In addition, the frequency of each category, which is value driver, is shown in figure 4.

**Figure 4. Frequency of each Value Drivers (Top 15 Drivers)**



*Source: Author's work.*



Among all the value drivers, “Relationship with corporate mentor” and “Employee” are the most frequent value drivers. As such, these two value drivers can be considered as key value drivers for technology start-up companies in the research.

In addition to “Relationship with corporate mentor” and “Employee”, “Net Assets”, “Technology”, “Product / Service uniqueness”, and “Agility” are also considered to be key value drivers.

Considering “Human Capital” is most the most important theme based on this research, “Relationship with corporate mentor”, which is external relationship human capital, and “Employee”, which is internal human capital, become key value drivers. “Net Assets” is also important since start-up companies need funding for pursuit of product / service development. “Technology”, “Product / Service uniqueness” are considerably key value drivers for technology start-up companies. Lastly, “Agility” is also important since start-up companies sometime need pivot change based on customer acceptance. In addition, considering COVID-19 and revolution of digital technology, agility plays major role for technology start-up companies (Mujaya, et al. 2023; Sisu, et al. 2023).

## 5. Conclusions

This paper represents the initial stages of a long-term study to find out key value drivers of technology start-up companies. In this research all the value drivers are categorized by using and modifying IIRC’s International Integrated Reporting framework. Among all the themes, “Human Capital” and “Intellectual Capital” are the important theme compared to other themes.

Among many value drivers, “Relationship with corporate mentor”, “Employee”, “Net Assets”, “Technology”, “Product / Service uniqueness”, and “Agility” are determined as key value drivers for technology start-up companies in the research. “Relationship with corporate mentor” and “Employee” represent key value drivers of “Human Capital” both external and internal point of view. “Technology” and “Product / Service uniqueness” represent key value drivers of “Intellectual Capital”. “Net Assets” is also key value driver which provide technology start-up companies to expand their product / service development. Lastly, “Agility” is also important since start-up companies sometime need pivot change based on customer acceptance. In conclusion, these five value drivers are determined as key value drivers for technology start-up companies.

However, limitations of this study include a relatively small data sample size. Consequently, in the future I will increase the size of raw data for analysis by drawing on a greater selection of literature and by utilizing other research methods such as interviews and focus groups.

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