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# UNICORNS – WHAT FACTORS ARE DRIVING UNICORN VENTURES' POST-MONEY VALUATIONS IN NORTH AMERICA AND EUROPE SINCE THE CHANGE OF THE MILLENNIA?

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**Abstract:** This paper explores what factors contribute to higher post-money valuations (PMVs) amongst startups with +$1bn valuations (unicorns) in North America and Europe. A triangulation method is applied when answering theoretically derived hypothesis through both quantitative methods and qualitative interviews. The paper's key contribution is the development of a multivariate model, which obtains an $r^2$ of 0.275 in explaining PMV variability. Further, it adds to current literature by finding support that unicorns pursuing a transformative business model or operate in an AI or FinTech-related industry are more likely to receive higher PMVs at a <0.05 and <0.01 significance level respective.

**Keywords:** Entrepreneurship & Entrepreneurial Finance • Venture Valuation • Unicorns • Startups/Scaleups

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# 1. Introduction

Human interest in the mythical creature referred to as a 'unicorn' dates all the way back to ancient civilizations such as the Mesopotamian Empire and the Greek Empire (Encyclopaedia Britannica, 2020). Yet, throughout the last decade this rare creature has been revived with a novel connotation when venture capitalist Aileen Lee applied the term in relation to startup ventures with a +$1bn valuation in her article "*Welcome to The Unicorn Club: Learning from Billion-Dollar Startups*" (Lee, 2013). Since then, the concept of unicorns has been widely used in business research and literature (e.g., Bock & Hackober, 2019; Leimeister et al.,2017; Simon, 2016) and many ambitious entrepreneurs relentlessly pursue membership in this mythical club, which spun off titans such as Facebook, Amazon, Google and Netflix and as of November 2020 constituted around 500 companies globally (CB Insights, 2020). Thus, this paper seeks to explore this distinctive club and in doing so perhaps illuminating some of the mysteries concerning the nature of these prosperous ventures?

## 1.1 Research Question

This paper takes a holistic and systematic approach to understand the key drivers behind the abnormal valuations of unicorn ventures. Therefore, it proposes a broad research question with several underlying sub-dimensions, which have been developed for the purpose of statistical testing. The ambition of the research is to add to the growing body of literature within the area and to add to the understanding of this novel concept. However, as there are unicorns all over the world analyzing all of them would be outside the scope and thus the research has been limited to investigate unicorns in North America and Europe (including Israel) and it will focus on companies founded after the change of millennia. Hence:

**RQ: What factors are driving unicorn ventures' post-money valuations in North America and Europe since the change of the millennia?**

This research question is distinctive as it contributes to current literature through its geographical focus and through expanding the list of success factors examined. Also, prior research has focused on the requirements to become a unicorn whereas this paper will focus on uncovering the factors influencing unicorns' post-money valuations (henceforth PMVs).

To fully comprehend which factors are rewarded by investors a set of sub-dimensions have been developed. These dimensions lay the foundation for a deductive reasoning approach, which will later be used to develop falsifiable hypothesis. Bock & Hackober (2019) previously investigated unicorn ventures' PMVs through variables that can be summarized in four dimensions; *D1: Business Model*, *D2: Growth Strategy*, D3: *Team Composition*, D4: *External Environment.* Hence, this paper will employ these dimensions as a starting point when developing hypothesis with the goal of increasing the explanatory power of the model proposed by Bock & Hackober (2019) (Figure 1).

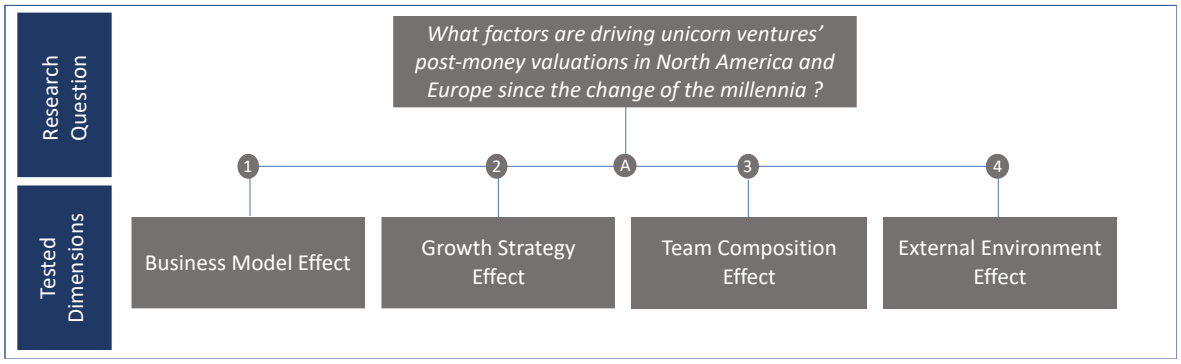



***Figure 1:*** *Research Question Overview and Sub-Dimensions,* ***Source:*** *Author*

## 1.2 Scope

Due to the limitations of the work project format, several delineations have been undertaken to narrow the scope and to ensure consistency in the data collection phase:

**Regions:** The geographical scope of this project has been limited to unicorns founded in or with a headquarter (HQ) in either North America or Europe. The only exception being the inclusion of Israel due to its' vibrant startup ecosystem and its proximity to Europe. Moreover, this geographical scope has been selected due to the rising focus on Europe's ability to 'catch-up' with the US in the Unicorn '*arms-race*' (Basta, 2019; Candelon et al., 2020).

**Time period:** This project will look at all unicorns founded after the change of the millennia (year 2000) and it will only analyze unicorns, which were characterized as unicorns by the 1st of November 2020. This implies that the research excludes companies that might previously have been characterized as unicorns but have been disqualified since then. For instance, companies that have been acquired, gone public, gone bankrupt or have been de-valued below the +$1bn threshold will not be included in this analysis.

**Firms:** The firms included had to fulfil the requirement of *adequate information*, which in this paper entails sufficient publicly available data for cross-referencing between the selected databases of *CB Insights*, *CrunchBase* and *Craft.co*.

# 2. Literature review

The literature review is divided into two parts. Section 2.1 will review the theoretical background for the broader concept of entrepreneurship and entrepreneurial finance. Understanding these fundamental theories is imperative as all research on unicorns is derived hereof. Moreover, Section 2.1 investigates the latest research on unicorns to establish the baseline for quantitative analysis. Section 2.2 reach beyond prior literature to identify factors, which has either not been quantitatively tested yet or simply have not been examined exhaustively in the context of unicorns. In turn, these findings will be used to form hypotheses.

## 2.1 Entrepreneurship and Entrepreneurial Finance

### 2.1.1 The Economic Role of the Entrepreneur and Entrepreneurship

In understanding entrepreneurship and its role in society it is imperative to revisit the research conducted by Austrian economist, Joseph A. Schumpeter. In 1947, Schumpeter introduced a contrarian position of what drives macro-economic activity and output. Contemporary classical economic theory focused on key constructs such as the supply of labor and access to capital (see Cobb & Douglas' aggregate production function, p. 151, 1928). However, Schumpeter argued that economic output is primarily driven by so-called '*creative responses'*. A creative

response occurs "*whenever the economy or an industry or some firms in an industry do something else, something that is outside of the range of existing practice*" as opposed to an adaptive response which has a more reactive nature to external changes (Schumpeter, 1947). Schumpeter positions the entrepreneur at the center of his theory as he characterizes entrepreneurs as the "*mechanisms of economic change in capitalist societies*" and that their creative responses can deem prior industries obsolete (ibid.). He further defines entrepreneurial activity as *"the doing of new things or the doing of things that are already being done in a new way (innovation)"* (ibid.). Venture Capitalists and investors of today has internalized this mentality and are on the lookout for the next wave of *creative destruction* to achieve risky, but potentially abnormal returns (Smith et al., p. 4-5, 2011).

### 2.1.2 Entrepreneurial Finance & Firm Valuation in Uncertainty

In a perfect world, entrepreneurial finance does not differ significantly from classical financial valuation theory. This implies that investors value startup ventures according to their ability to generate cash flows and their discounted present value (PV). This approach takes into consideration the concept of time value of money and the opportunity cost of capital. Following this method financial analysts forecasts expected cash flows for a selected period along with a continuation value and discount them to the PV utilizing the DCF formula, $PV_j = \sum_t \frac{CF_{jt}}{(1+r_t)^t}$ (Smith, Bliss, & Smith, p. 352, 2011). Yet, entrepreneurial finance is quite divergent in practice. Entrepreneurial ventures, even unicorns, operate in a far greater uncertainty than established ventures with stable and predictable cash flows. Many high growth startups even operate the first several years without achieving profitability. To account for this uncertainty, investors adjust their valuations utilizing either *the RADR (risk-adjusted return) method* or *the CEQ (certain adjusted) method*. The RADR method incorporates the added uncertainty through adjusting the discount rate with a risk premium. The CEQ method directly adjusts the expected cash flows in the DCF model in order to generate more conservative valuations (ibid., p. 348-

353). Finally, when valuing new ventures, it is common practice to utilize expected growth rates and multipliers. The estimated growth rate of revenues can be found through a yardstick method or through fundamental analysis. However, without many comparable firms, which is the case for many unicorns, fundamental analysis of demand and supply is most prevalent. The fundamental analysis approach *"[…] begins with an estimate of […] demand-related factors as number of competitors, pricing, location, and intensity of marketing efforts [and] For unique products, […] defensibility of the entrepreneur's position"* (Smith, Bliss, & Smith, p. 205-220, 2011). Information for this fundamental analysis can be obtained through empirical methods or reliable secondary data like markets reports concerning industry growth and market dynamics.

While these methods provide entrepreneurial investors with more robust estimates than conventional financial theory there is still an excess uncertainty. One core reason is the information asymmetry which exists between the investor (i.e., angel investors, venture capitalists and PE-funds) and the entrepreneur (i.e., founding team and management). According to Smith and colleagues (p. 64-65, 2011) this information gap is two-sided: "*First, the entrepreneur's information about the value of the [funding] opportunity may be incomplete and uncertain. Second, information about the value of the idea and the ability of the entrepreneur is held asymmetrically […]*". This implies that other factors then solely the DCF model will have to be considered. Supplementing this point Vinturella and colleagues (2013) argue that: "*VCs will rely on their judgement and experience, while considering valuations […]"* (Vinturella & Erickson, p. 191, 2013). Thus, entrepreneurial investors must combine risk adjusted DCF models with more experience-based, subjective fundamental analysis in order to determine the ventures true value and growth rates. Hence, it is reasonable to presume that 'softer' factors can impact PMVs of entrepreneurial ventures and unicorns (ibid; Long, 2017).

### 2.1.3 Theory of the Unicorn

Prior literature investigating unicorns have mapped several dimensions, which can be considered critical success factors. For the sake of simplicity these have been categorized into four dimensions; *1. Business Model, 2. Growth Strategy, 3. Team* and *4. External Environment* (Bock et al., 2019; Leimeister et al., 2017; Simon, 2016). Bock et al. (2019) has, to the knowledge of the author, conducted the most exhaustive research on unicorns and they are the only scholars adopting a multivariate approach when explaining PMVs:

In *Dimension 1: Business Model,* Bock et al. (2019) found significant support that unicorns that are internet- or app-related, approach a B2C target market or pursue a platform business model are more likely to receive higher PMVs at a 0.05 significance level. The primary reason being that a large proportion of VC-funded ventures are internet- or app-related within the B2C space. Further, platform businesses are likely to harvest abnormal returns if succesfully achiving network effects and the scalability of this business model is often higher than other industries due to its digital nature (Li & Mahoney, 2010; Bock & Hackober, 2019). Further, the platform economy is expected to grow significantly over the coming years (Deloitte, 2018).

In *Dimension 2: Growth Strategy,* Bock et al. (2019) argues that companies who grow inorganically through acquisitions will achieve higher PMVs and finds support for this hypothesis at a 0.01 significance level. The primary reasoning being the winner-takes-all market dynamics. In a recent interview the European Commissioner for Competition, Margrethe Vestager, supported this finding. She argued that tech giants' (i.e., former unicorns) immense power is gained through the winner-takes-it-all conditions, which allows them to cross-subsidize additional investments and thus achieve abnormal profitability (Vestager, 2020). Further, seen from an investor perspective the outlook for monopoly-like conditions provides a fertile ground for sustainable profits. This is also support by Simon (2016) who argue the existence of a 'winner-takes-all' premium in VC valuations.

Within *Dimension 3: Team,* Bock et al. (2019) argues that the size of the founding team plays an important role in determining PMVs due to the diversity effects harvested hereof. The scholars find that the variable holds explanatory power over whether a company becomes a unicorn or not at a 0.01 significance level and are thus making a case for team diversity in the founding team of unicorns.

For *Dimension 4: External Environment,* Bock et al. (2019) argues that the economic prosperity of the country in which a unicorn is based will have a positive impact on its valuation. The authors accounts for this variable through identifying the GDP growth of the country in the year in which the company was founded and the GDP growth of the country in the year when the unicorn received its' latest round of funding. Assuming that higher growth would lead to higher valuations because it will make investors more optimistic about future cash flows, which would ultimately be incorporated in the DCF model. However, the authors were not able to establish correlation at any commonly accepted significance levels. Secondly, the authors adopted Porter's (1998) concept of *strategic clusters* and argued that a unicorn with its' HQ located in a cluster would be rewarded with a higher PMVs because of the ecosystem effects and sophisticated investors. Although, the authors tested various geographical clusters they were only able to establish a significant positive correlation between PMVs and Silicon Valley at a 0.01 significance level. The other clusters yielded no significant effects.

## 2.2 Hypothesis Development

Throughout sub-section 2.2.1, 2.2.2 and 2.2.3 this paper reach beyond existing literature in order to derive novel hypothesis for statistical testing.

### 2.2.1 Creative Response Effect

As mentioned in *Section 2.1.1* renowned economist J. Schumpeter introduced the notion of the creative response vs. the adaptive response (Schumpeter, 1947). Since Schumpeter proposed his theory several scholars adopted and adapted it. Dos Santos and colleagues (1993)

distinguished between *innovative vs. noninnovative technology* in their research on technology investments' impact on firm market capitalization (Santos et al., p. 6-7, 1993). Smith and colleagues (2011) introduced the notion of *replicative vs. innovative entrepreneurship* in the context of entrepreneurial finance arguing that ventures that can be characterized as innovative has a bigger potential "*to add huge value to economies […]*" (Smith, Bliss, & Smith, 2011). Schilling (2016, p. 48) further differentiated between so-called *radical vs. incremental innovations*, where radical innovations have a definition close to that of Schumpeter's creative responses. Evidently, literature is continuously emphasizing the importance of companies with a transformative nature capable of causing a paradigm shift. Hence:

**H1:** *Unicorns pursuing a 'creative' business model will be more likely to obtain a higher PMV than unicorns pursing an 'adaptive' business model.*

### 2.2.2 Top Management Diversity Effect

Vast amounts of research and studies continue to prove that diversity and representation in the firm's top management team (TMT) has a strong positive influence on firm performance and financial returns (Tsusaka et al., 2019; Dixon-Fyle et al., 2020). McKinsey & Company (2020) studied 1000 large companies across 15 countries and showcased that firms in the top quartile in terms of respectively gender and ethnic diversity in their TMT improved their likelihood of outperforming the national mean of financial performance at a $<0.05$ significance level (Dixon-Fyle, Dolan, Hunt, & Prince, 2020). The study showed that on average companies in the top quartile of gender diversity outperformed their peers with more than 25% while those in the top quartile of ethnic diversity outperformed peers with more than 36%. Tsusaka and colleagues (BCG, 2019) derived similar findings showcasing that companies with above-average diversity in their TMT outperformed those with below average levels of diversity with +9% EBIT boost and +19% boost in innovation through the mitigation of psychological biases such as *groupthink*. Dwyer and colleagues (2003) took a different approach to evaluate the impact of

diversity on firm performance. The researchers introduced *firm objective* as a key factor. The scholars found that firms with a strong growth agenda and a high TMT diversity had higher productivity levels than firms without a strong growth agenda and equally high diversity at a <0.01 significance level. This indicates that unicorns could yield significant benefits from increased TMT diversity due to their relentless pursuit of growth.

Nevertheless, not all scholars yield the same optimistic results. Bezrukova and colleagues (2003) conducted a longitudinal study over a 5-year period of four Fortune 500 companies and did not manage to find substantial evidence that neither ethnic nor gender diversity should benefit firm performance. In the words of the authors: "*[…] racial and gender diversity do not have the positive effect on performance proposed by those with a more optimistic view […] (p. 28)*". Still, it is important to mention that the researchers did not find any significant evidence of the contrary (ibid.). Thus, weighing in both positive and neutral observations related to TMT diversity we derive:

**H2:** U*nicorn ventures with higher total TMT diversity (i.e., both gender and ethnic diversity) will obtain higher PMVs than firms with lower degrees of total TMT diversity.*

**H3(a):** *Higher TMT gender diversity is a positive predictor of unicorn PMVs, (***b)** *but ethnic diversity will be a stronger predictor.*

### 2.2.3 Industry Effect

For unicorn ventures to achieve rapid growth and scale it is imperative that they operate in an industry, which is attractive in terms of the growth outlook. Finance theory supports this as with higher growth expectations follows higher estimated future revenues, which is ultimately reflected in the valuations (Smith, Bliss, & Smith, p. 205-220, 2011). Thus, it is reasonable to assume that operating in an industry displaying high growth potential will be an important indicator of unicorns' PMVs. In this analysis particularly two industries standout as fertile grounds for unicorn ventures; AI & Fintech.

Firstly, on CB Insights' list of unicorns it is visible that the AI and the FinTech-related industries are the most prevalent industries within the investigated regions representing approximately 25% and 18% respectively of all unicorns in the US, the EU, Canada and Israel (CB Insights, 2020). The reason for the high prevalence of these industries might be due to their high growth rates and expectations. For instance, on Gartner's acknowledged hype cycle of emerging technologies 10 out 30 technologies were related to AI and Data Analytics in 2020 showcasing the increasing importance of these industries on the tech agenda (Panetta, 2020). This is further supported by the fact that these two industries are amongst the industries receiving the highest level of VC funding in 2019. Collecting approximately $24bn and $16bn respectively (Horbunova, 2019). Although the healthcare and the transportation industries receive slightly higher amounts of VC funding it is primarily because of their recent adaptation of AI and data collection processes in their business models (ibid.). Furthermore, the revenues generated by the AI-related industries (i.e., AI, ML, cybersecurity etc.) is expected to multiply more than 5 times over the coming years reaching more than $126bn in global revenues by 2025 (Statista & Omdia, 2020). Similarly, the FinTech industry is estimated to grow with a CAGR of around 22% from 2020 to 2025 reaching a market value of $305bn (Market Data Forecasts, 2020). Hence, we deduce the following hypothesis:

**H4:** *Unicorns operating in the high growth AI or FinTech-related industries will have significantly higher PMVs than unicorn ventures in other industries.*

# 3. Methodology

In order to investigate the established hypotheses a deliberate methodology will be enforced. The blueprint for the quantitative method relies on Bock et al. (2019) and their multivariate approach. Yet, this project seeks to add an additional layer of confidence in the findings through pursuing a triangulation methodology. According to Brender (2006) "*Triangulation constitutes a rigorous scientific approach to compensate for weaknesses in the study methodology by the*

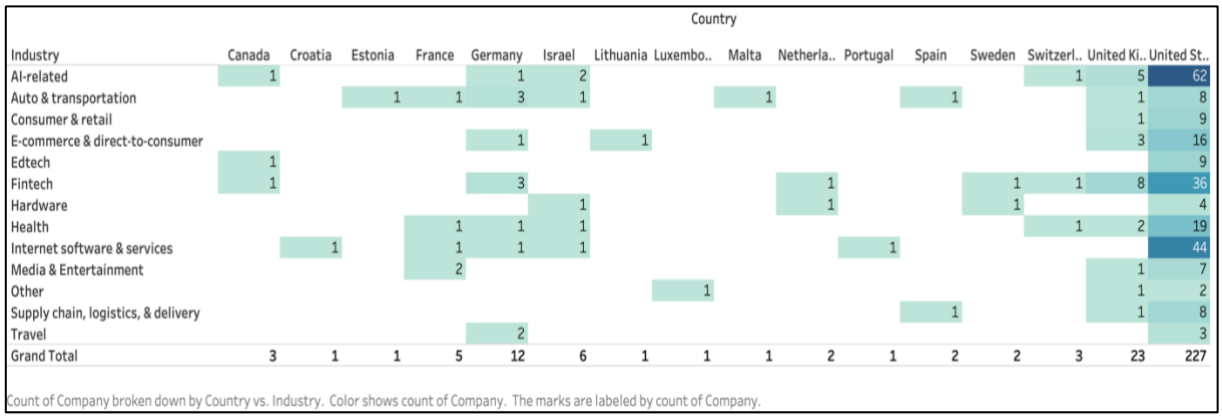
*application of different approaches for measuring the same characteristic*" (Brender, ch. 11, 2006). Thus, through triangulation this paper seeks to increase reliability by applying several methods to cross-examine the results. At first, an extensive theoretical foundation was derived in the previous sections to establish a strong foundation. Secondly, a hierarchical linear regression will be conducted in order to provide guidance to answer our research question and generate relevant insights about it. Third and finally, to challenge and qualify the statistical results, a handful of semi-structured interviews with a select group of entrepreneurs and academics will be undertaken.

## 3.1 Dataset

As mentioned in *Section 1.2*, all data was retrieved through cross-checking entrepreneurial databases CB Insights, CrunchBase and Craft. CB Insights is deemed the most reliable of the three as it is a professional data analytics and consulting company specializing in providing transparency within the entrepreneurial space (Bock et al., 2019; CB Insights, 2020). Crunchbase and Craft are relevant as they utilize a combination of their own editorial staff, APIs, web scraping and user generated updates (Crunchbase, 2020; Craft, 2020). This implies that while the accuracy of CB Insights can be considered more reliable, CrunchBase and Craft tend to have more up-to-date information.

CB Insights provides a complete list of all unicorns in the world and this list is updated frequently (CB Insights, 2020). The version used in this analysis was retrieved 1st of November 2020 and contained 491 unicorns worldwide. After filtering according to the regional scope (i.e. EU, Israel, Canada & the USA) the list was reduced to 311 unicorns. Hereafter the additional scope criteria (i.e. adequate information and current unicorn status) were applied and outliers were removed ultimately providing a list of 290 unicorns where 227 of them are based in the US and the remaining 63 spread throughout the EU, Canada and Israel. The unicorns

were further distributed across 13 industries (Table 1). See Exhibit 2 for further visualizations.



| | Country | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Industry | Canada | Croatia | Estonia | France | Germany | Israel | Lithuania | Luxembo.. | Malta | Netherla.. | Portugal | Spain | Sweden | Switzerl.. | United Ki.. | United St.. |
| AI-related | 1 | | | | 1 | 2 | | | | | | | | 1 | 5 | 62 |
| Auto & transportation | | | 1 | 1 | 3 | 1 | | | 1 | | | 1 | | | 1 | 8 |
| Consumer & retail | | | | | | | | | | | | | | | 1 | 9 |
| E-commerce & direct-to-consumer | | | | | 1 | | 1 | | | | | | | | 3 | 16 |
| Edtech | 1 | | | | | | | | | | | | | | | 9 |
| Fintech | 1 | | | | 3 | | | | | 1 | | | 1 | 1 | 8 | 36 |
| Hardware | | | | | | 1 | | | | 1 | | | 1 | | | 4 |
| Health | | | | 1 | 1 | 1 | | | | | | | | 1 | 2 | 19 |
| Internet software & services | | 1 | | 1 | 1 | 1 | | | | | 1 | | | | | 44 |
| Media & Entertainment | | | | 2 | | | | | | | | | | | 1 | 7 |
| Other | | | | | | | | 1 | | | | | | | 1 | 2 |
| Supply chain, logistics, & delivery | | | | | | | | | | | | 1 | | | 1 | 8 |
| Travel | | | | | 2 | | | | | | | | | | | 3 |
| Grand Total | 3 | 1 | 1 | 5 | 12 | 6 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 3 | 23 | 227 |

Count of Company broken down by Country vs. Industry. Color shows count of Company. The marks are labeled by count of Company.

***Table 1:*** *Allocation of unicorns by country and industry,* ***Source:*** *CB Insights' list of Unicorns, Tableau*

For the dimension related to TMT diversity a similar cross-checking between Craft, Crunchbase, Corporate Websites and LinkedIn took place to find up-to-date information about executive level employees (VPs and c-suite). Historical macro-economic indicators were retrieved from The World Bank and 2020 estimates were retrieved from Trading Economics.

## 3.2 Variables

Table 2 displays an overview of all variables along with a number of key descriptive statistics. Further, in Exhibit 3 an elaborate list of all variables and their denotations is presented.

| Descriptive Statistics of Full Sample (n=290) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Mean | | | | |
| Statistic | Range | Minimum | Maximum | Statistic | Std. Error | Std. Deviation | Skewness | Kurtosis |
| logValuation | 4 | 0 | 3,584 | 0,626 | 0,040 | 0,686 | 1,508 | 2,512 |
| Internetorapp_related | 1 | 0 | 1 | 0,800 | 0,023 | 0,398 | -1,535 | 0,359 |
| B2C | 1 | 0 | 1 | 0,430 | 0,029 | 0,497 | 0,266 | -1,943 |
| Platform | 1 | 0 | 1 | 0,350 | 0,028 | 0,478 | 0,624 | -1,622 |
| #acquisitions | 21 | 0 | 21 | 1,010 | 0,130 | 2,214 | 4,512 | 2,825 |
| #founders | 8 | 1 | 9 | 2,345 | 0,070 | 1,196 | 1,470 | 4,017 |
| GDP_growth_founding | 16,08% | -3,87% | 12,21% | 3,61% | 0,12% | 1,99% | -1,135 | 4,038 |
| GDP_growth_latestfunding | 24,31% | -15,10% | 9,21% | -0,99% | 0,36% | 6,16% | -0,318 | -1,784 |
| age_latestfunding | 20 | 0 | 20 | 7,793 | 0,221 | 3,767 | 0,749 | 0,517 |
| Creative_Response | 1 | 0 | 1 | 0,390 | 0,029 | 0,489 | 0,455 | -1,806 |
| TMT Diversity (women) | 1 | 0 | 1 | 0,430 | 0,029 | 0,496 | 0,294 | -1,927 |
| TMT Diversity (ethnic) | 1 | 0 | 1 | 0,420 | 0,029 | 0,495 | 0,323 | -1,909 |
| TMT Diversity (total) | 1 | 0 | 1 | 0,480 | 0,029 | 0,500 | 0,097 | -2,004 |
| AI or FinTech-related | 1 | 0 | 1 | 0,420 | 0,029 | 0,495 | 0,309 | -1,918 |

***Table 2:*** *Variable overview containing descriptive statistics computed with the full sample (n=290),* ***Source:*** *Author, SPSS*

### 3.2.1 Dependent Variable

This project will adopt a similar dependent variable (*DV*) as Bock et al. (2019) being the PMV of unicorns in current USD. The Corporate Finance Institute defines a PMV as "*the equity value of a company after it receives the cash from a round of financing it is undertaking*" (The Corporate Finance Institute, 2020). The benefits of utilizing the PMV is that it is continuous variable and thus it provides an information gain in comparison with models using a categorical binary variable as the dependent variable (Bock & Hackober, 2019). In effect, utilizing the PMV allows for analyzing the explanatory power of each independent variable. Further, as proposed by Bock et al. (2019), the natural logarithm of the PMV will be used in order to reduce the perceived divergence from normality as visible in Table 2 (DV: *logPMV*).

### 3.2.2 Control Variables

In order to build the base model a number of control variables (*CV*) will be introduced. As suggested by prior literature the number of acquisitions (CV: *#acquisitions*) will be included as a discrete control variable to capture the growth strategy effects on the enterprise value. Further, binary control variables concerning whether the unicorn ventures pursue a business model which is internet or app-related (CV: *internetorapp_related*), B2C-related (CV: *B2C*) or platform-related (CV: *platform*) will be included. Moreover, the size of the founding team (CV: *#founders*) will be included assuming that more founders will generate greater diversity effects. GDP Growth in the founding year (CV: *GDP_founding*) and in the year of the latest funding round (CV: *GDP_latest_funding*) will be incorporated to account for the supposed effect on investor optimistism about the future cash flows. Also, to control for potential time-related effects the age of the the unicorn venture is included (CV: *age_latestfunding*) assuming that unicorns that have endured for a longer period of years will have had more time to showcase their ability to survive in competitive markets. Finally, being the only positively significant

cluster in the research by Brock et al. (2019), Silicon Valley HQ (CV: *silicon_valley_area*) is included as a binary control variable due to the expected strategic cluster effects hereof.

It is trusted that these control variables respectively play an individual role in increasing the explanatory power of the base model and that they are not significantly correlated overall. However, it is important to emphasize that while certain CVs have smaller overlaps, they still have an independent reason for being integrated in the analysis. For instance, the internetorapp_related CV will undoubtably overlap with the platform CV as all platforms in the sample are internetorapp_related. Nevertheless, these two CVs are aiming at explaining different things as the internetorapp_related CV aims to tell about the contrast between unicorns with a digital nature and unicorns with psycial nature and the platform CV aims to showcase the significance of platform businesses solely. See Exhibit 4 for variable correlation overview.

### 3.2.3 Independent Variables

At first, the construct of creative vs. adaptive business models from H1, initially proposed by Schumpeter (1947), will be included as a binary independent variable (IV) assuming that companies of a creative nature will obtain higher PMVs than firms of an adaptive nature (*IV: Creative_Response*). In order to mitigate the potential subjectivity of this variable, the author has applied fixed categorization criteria (Exhibit 5).

In addition, three independent variables related to TMT diversity from H2 and H3 has been integrated. These variables are partially based on McKinsey's study of ethnic and gender diversity and partially based on diversity findings from the dataset. As indicated by McKinsey companies with above 20% of gender and ethnic diversity respectively are in the upper half in terms of TMT diversity (Dixon-Fyle, Dolan, Hunt, & Prince, 2020). However, in the dataset a slightly different distribution was prevalent indicating that unicorns with above 20% gender diversity, 12.5% ethnic diversity and above 35% overall diversity were in the upper half. Thus, consolidating these findings three binary variables have been created: (*IV: >20%_gender*), (*IV:*

*>12.5%_ethnic*) and (*IV: >35%_total_diversity*), where 1=above and 0=below. To avoid overlapping effects ethnic diversity is only including males of non-white descent. This decision hinders the isolation of effects related to women of non-white descent. Yet, this group will be indirectly included through the gender variable and the total diversity.

Finally, in order to understand the potential value of the high growth AI and FinTech industries from H4 the binary variable AI or FinTech-related was created (*IV:* AIorFintech-related), where 1=AI or Fintech related and 0=non-related industries.

All IVs are trusted to play an individual non-correlated role to the overall explanatory power of the models. Yet, once again, we have to be aware that, for instance, the diversity related variables are correlated as having a higher gender diversity will inevitably impact the level of total diversity. Yet, all diversity related variables are included in order to isolate any potential effects of different types of diversity.

## 3.3 Methods

Below the methodology for each of the triangulation methods will be presented:

### 3.3.1 Hierarchical Linear Regression

In line with Bock et al. (2019) a multivariate approach will be utilized to understand how the IVs impact the PMVs of unicorns. This approach is also consistent with business research methodological best practices when testing theoretically derived hypothesis. Easterby-Smith and colleagues (2015) argue that one of the key benefits of using causal models is that "*they allow decisions to be made about whether a given model is consistent with observed data* (ibid., p. 456, 2015)*".* Although causal modelling does not prove causality, they can be useful in validating hypothesis if they are derived from a solid theoretical foundation (ibid.). Further, Easterby-Smith and colleagues (2015) argue that the sample size of a multivariate model should be at least ten times the number of independent variables. This rule is respected through the dataset of 290 unicorns with 13 independent variables. Finally, a hierarchical approach has been

chosen as it makes "*it possible to compare the overall fit of one model to another with one or more predictor variables added*" (ibid., p. 464, 2015). Represented algebraically:

$$\begin{aligned}\mathbf{log(post-money\ valuation)}_i = \boldsymbol{\alpha} + \ & \boldsymbol{\beta_1}\mathbf{Creative\ Response_i} \\ & + \sum_{\mathbf{k=2}}^{\mathbf{3}} \boldsymbol{\beta_k}\mathbf{TMT\ Diversity_i} \\ & + \boldsymbol{\beta_5}\mathbf{AI\ or\ FinTech\ related\ Industry_i} \\ & + \sum_{\mathbf{k=6}}^{\mathbf{9}} \boldsymbol{\beta_k}\mathbf{Control\ Variables_{ki}} + \boldsymbol{\varepsilon_i}\end{aligned}$$

The above hierarchical regression illustrates that the base model is composed of the CVs and the IVs are hereafter introduced in groups. The overall model fitness will be assessed through interpreting the $r^2$. The model fit for each additional group of predictor variables will be interpreted through the added $r^2$ and related F-Snedecor test to assess its significance. Further, to overcome the issue of predictor variable heterogeneity the standardized beta coefficients will be reported instead of the Pearson correlation. The standardized beta method takes into account the standardized z-scores of each variable and thus allow for interpreting the relative explanatory power of each variable (Glen, 2016).

### 3.3.2 Semi-Structured Interviews

As the last part of the triangulation method this paper will include a small sample of interviews. These interviews will investigate the findings proposed by the quantitative methods and qualify whether they appear reasonable from a practical standpoint. Further, the interviews aim to identify potential areas, which has not been covered in the literature review. Hereby providing the basis for future researchers to investigate. The sampling method most appropriate for this work project is the *ad-hoc sampling method* where interviewees are selected on the basis of "*availability and ease of access*" (Easterby-Smith, Thorpe, & Jackson, p. 236, 2015). Although this method is subject to sampling biases it is deemed appropriate given the scope, time and

resources available for the work project. Still, a diverse group of individuals with expertise and knowledge of unicorns has been selected. The sample is composed of a total of four respondents being two founders; Mr. Kristiansen, CEO & Co-founder of Portchain (a platform scaleup) and Mr. Pitzner, CEO & Co-Founder of LastObject (a sustainable, e-commerce scaleup) and two academics; Prof. Decreton of Strategy at Nova SBE and Prof. Santos of Finance at Nova SBE. See Exhibit 6 for detailed description of the interviewees.

Further, a semi-structured interview methodology is employed in order to obtain in-depth responses on specific findings but also to allow the interviewees to provide context to the questions going beyond the script (ibid., p. 238). Thus, a topic guide has been created consisting of both open-ended and more specific questions (Exhibit 7). In order to avoid biasing the interviewees the first part of the interviews was completely open-ended without introducing findings from this paper. In the second part, the key research findings were introduced, and the interviewees were asked to comment on these results.

## 4. Results and Limitations

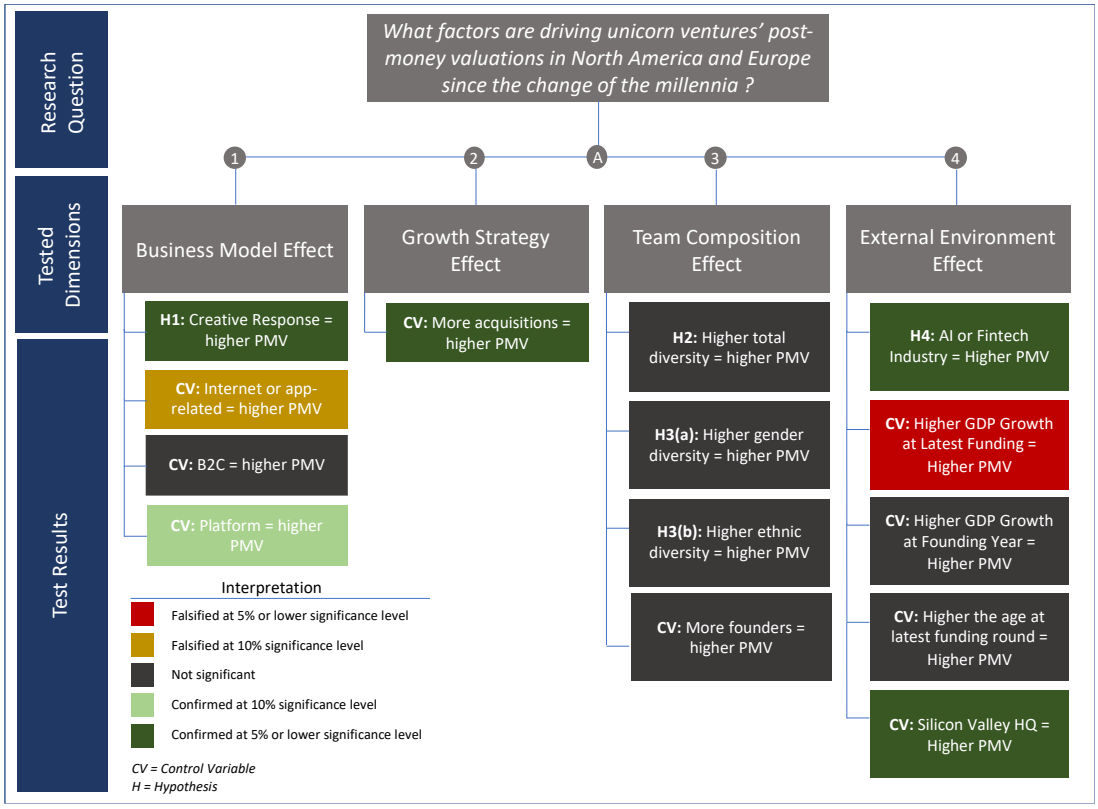



***Figure 2:*** *Results Summary,* ***Source:*** *Author*

Figure 2 display a preliminary results overview. In the following section the results of the hierarchical linear regression will be reported sequentially, and key findings will be highlighted. Please note that the discussion of the result will only be undertaken in Section 5.

## 4.1 Regression Results

Following the hierarchical regression method as stipulated in Section 3.3.1 four different regression models were tested with the aim of enhancing the explanatory power of the model proposed by Bock and colleagues (2019) who obtained a r-squared of 0.164. See Table 3 for full regression output:

| | Model 1 (a) | | Model 2 (b) | | Model 3 (c) | | Model 4 (d) | |
|---|---|---|---|---|---|---|---|---|
| Variables | Standardized Beta Coefficients | Sig. | Standardized Beta Coefficients | Sig. | Standardized Beta Coefficients | Sig. | Standardized Beta Coefficients | Sig. |
| **Control Variables** | | | | | | | | |
| ***D1: Business Model*** | | | | | | | | |
| Internetorapp_related | -0,102 | 0,0790* | -0,078 | 0,184 | -0,092 | 0,121 | -0,109 | 0,0720* |
| B2C | 0,022 | 0,689 | 0,032 | 0,571 | 0,036 | 0,535 | 0,067 | 0,284 |
| Platform | 0,111 | 0,0650* | 0,102 | 0,0880* | 0,099 | 0,0980* | 0,106 | 0,0780* |
| ***D2: Growth Strategy*** | | | | | | | | |
| #acquisitions | 0,360 | 0,0000**** | 0,346 | 0,0000**** | 0,354 | 0,0000**** | 0,359 | 0,0000**** |
| ***D3: Team*** | | | | | | | | |
| #founders | -0,009 | 0,863 | -0,005 | 0,926 | 0,004 | 0,936 | 0,001 | 0,980 |
| ***D4: External Environment*** | | | | | | | | |
| GDP_growth_founding | 0,035 | 0,512 | 0,046 | 0,385 | 0,059 | 0,274 | 0,062 | 0,254 |
| GDP_growth_latestfunding | -0,196 | 0,0000**** | -0,201 | 0,0000**** | -0,205 | 0,0000**** | -0,203 | 0,0000**** |
| age_latestfunding | -0,004 | 0,937 | 0,014 | 0,793 | 0,023 | 0,683 | 0,023 | 0,672 |
| siliconvalley_area | 0,173 | 0,0010*** | 0,167 | 0,0020*** | 0,144 | 0,0110** | 0,142 | 0,0120** |
| **Predictor Variables** | | | | | | | | |
| ***D1: Business Model*** | | | | | | | | |
| Creative_Response | | | 0,116 | 0,0350** | 0,120 | 0,0300** | 0,123 | 0,0260** |
| ***D3: Team*** | | | | | | | | |
| TMT Diversity (women) | | | | | -0,033 | 0,624 | -0,034 | 0,610 |
| TMT Diversity (ethnic) | | | | | 0,054 | 0,401 | 0,053 | 0,411 |
| TMT Diversity (total) | | | | | 0,067 | 0,361 | 0,068 | 0,352 |
| ***D4: External Environment*** | | | | | | | | |
| AI or FinTech-related | | | | | | | 0,198 | 0,0007**** |
| **Model Summary** | | | | | | | | |
| # of observations | 290 | | 290 | | 290 | | 290 | |
| df1 | 9 | | 1 | | 3 | | 1 | |
| df2 | 280 | | 279 | | 276 | | 275 | |
| R-Squared | 0,224 | | 0,236 | | 0,245 | | 0,275 | |
| R-Squared Change | 0,224 | | 0,012 | | 0,008 | | 0,031 | |
| Sig. F-change | 0,0000**** | | 0,0350** | | 0,38 | | 0,0007**** | |

Due to heterogenity of measures and units of predictor variables the standardized beta coefficients are reported to explain their relative importance in the regression model. Further each model is evaluating looking at the Adjusted R-sq and its hereto related significant F-change.

**Dependent Variable: logValuation**
Sig. <0,1 = *
Sig. <0,05 = **
Sig. <0,01 = ***
Sig. <0,001 = ****

***Table 3:*** *Hierarchical Regression Output,* ***Source:*** *Author, SPSS*

In Table 3 the standardized beta coefficients of the predictor variables and the hereto related significance levels are reported. Furthermore, the r-squared of the models are reported in the bottom of the table. Model 1 is the base model composed sorely on the control variables derived

from the past literature. Model 2 until Model 4 consecutively introduce the predictor variables derived in Section 3.2.3 to test the developed hypothesis. As Model 1 is a combination of only statistically significant findings from past literature its was expected that it would slightly improve the model's explanatory power compared to Bock et al. (2019). This assumption was supported as the $r^2$ of Model 1 was 0.224 compared to the $r^2$ of 0.164 Bock et al (2019) achieved.

As visible in Table 3 several of the control variables firstly introduced in Model 1 did as expected hold significant explanatory power over the PMV of the unicorn ventures. Control variables Internet or App-related and Platform business model were both significant at a <0.10 significance level. However, the variable 'internet or app-related' was a negative predictor which contradicted the findings from past literature. The control variable 'Silicon Valley HQ' was positively significant at a <0.05 significance level, which was in line with past literature. Further, both the number of acquisitions and the GDP growth in the year of the latest funding round were significant at a <0,01 significance level. However, GDP growth in the year of the latest funding round was a negative predictor contradicting past literature.

After introducing the predictor variable of 'creative response' in Model 2 to test H1 the explanatory power increased reaching an r-squared of 0.236 with a significant F-change at a <0.05 significance level. Also, the creative response variable serves as a positive predictor of PMVs with a standardized beta of 0.123 at a <0.05 significance level, which is in line with H1. Thus, the overall model fitness was improved and support for H1 was established.

In Model 3 the predictor variables related to TMT diversity were introduced to test H2, H3(a) and H3(b) and the r-squared of the model was increased to 0.245. Yet, the F-change was not significant at any commonly accepted significance level and thus it cannot be inferred that the diversity variables add significant explanatory power to the model. Consequently, these variables did not contribute significantly to the overall model predictability and no support for H2, H3(a) and H3(b) was found.

Finally, in Model 4 the independent variable of AI or Fintech-related industry effects was entered into the regression to test H4 improving the $r^2$ to a final 0.275 with a significant F-change at a <0.01 significance level inferring that this variable add significant explanatory power to the model. Moreover, this variable has a positive impact on PMVs through a standardized beta of 0,198 at a <0.01 significance level, which is in line with H4. In sum, approximately 27.5% of the PMV variability can be explained by the final model although the 'real' explanatory power might be a bit lower due to the non-significant diversity variables.

## 4.2 Limitations and Robustness Testing

Despite the presented significance levels, it is important to highlight a few limitations. As mentioned, the dependent variable is considered skewed and is thus departing from the normality assumption. This implies that the explanatory power of models is based on asymptotic normality and thus the validity can be questioned. To counter this limitation several mitigating measures have been undertaken. At first, thorough testing of the normality of the models' residuals and standard errors was conducted. In Exhibit 8 a histogram showcase that the residuals approximate a normal distribution around zero. Also, in Exhibit 8, the normality plot of residuals visualizes that the residuals of the standard error approximate linear distribution supporting the normality assumption (OriginLab, 2020).

Second, to further reinforce the reliability of the results a model fitness test has been conducted utilizing the bootstrapping method with a bootstrapping sample of 2000 (Exhibit 9). The bootstrapping method randomly resamples from the original sample until a normal distribution is approximated and thus ensures to "*generate the most accurate results*" (IBM Software, 2011). The bootstrapping regression reinforce the findings of Table 3 as no variable was impacted to the extent that it would no longer be statistically significant.

Thirdly, a Pearson correlation regression also reinforce that the established predictor variables are significant predictors of unicorn ventures' PMV generating further support of the

model robustness (Exhibit 10). As a decisive test of the validity of these findings a discussion taking standpoint in the semi-structured interviews will be conducted in Section 5 below.

# 5. Discussion and Directions for Further Research

This discussion will follow the same structure as the topic guide proposed in Exhibit 7 and will thus begin with a general discussion of unicorn ventures. Secondly, it will continue with a discussion of significant findings from the regression analysis. Finally, a few key areas for further research will be outlined based on the empirical findings from the interview and theory.

## 5.1 Is it Possible to Define a Unicorn?

In this paper a key assumption was that unicorn ventures' PMVs can be explained through four dimensions; D1: Business Model, D2: Growth Strategy, D3: Team and D4: External Environment. Hence, in order to validate the dimensions, each interviewee was asked how he would define unicorn ventures and if it is even possible to define common characteristics.

Reassuringly, most of the interviewees proposed either one or several of these dimensions in their response. Prof. Decreton emphasized particularly two factors: "*the two bigger elements are the ecosystems that can foster this kind of rapid growth and access to partners and the business models* (Exhibit 11, p. 46)". Further, paraphrasing Prof. Santos, he pointed out that particularly the speed of growth and the innovative nature of the business model were defining characteristics for unicorns (Exhibit 11, p. 53). Mr. Pitzner proposed five key characteristics for VCs being: 1. Problem/market potential and growth, 2. A strong core userbase, 3. Scalability and avoiding too high dependency on fixed assets, 4. Unfair advantages through, for instance, network effects or IP protection, and 5. Complementary Team (Exhibit 11, p. 60). Mr. Kristiansen similarly identified market attractiveness, growth and scalability as key factors. Yet, he emphasized that unicorns "*can be quite different*" across the board (Exhibit 11, p. 71). In sum, although these definitions diverge slightly from those applied in this paper, they establish general confidence in the overarching multi-dimensional framework employed.

## 5.2 Discussion of Significant Variables

With this it is now possible to discuss the individual variables. Hence, the interviewees were exposed to the multivariate model and the significant findings were discussed sequentially:

**CV: Platform Business Model:** In the regression support was found that having a platform business model is a significant positive predictor of PMVs. In general, the interviewees reinforced this with network effects and easiness to scale as the dominant reasons. However, Mr. Pitzner argued the risk of hidden effects by pointing out that: "*out of the 300 unicorns [in the sample], platform businesses obtain higher valuations but maybe there were thousands who went bust.*" Thus, arguing a risk of confirmation bias (Exhibit 11, p. 62).

**IV: Creative Response:** The regression showcased that pursuing a 'creative' business model was a positive significant predictor of PMVs. The interviewees responses to this dimension were mixed. One major issue was the uncertainty around how the classification of this variable was conducted. It was proposed that an independent review by two or more scholars could have increased the validity of this findings. However, it is important to mention that the interviewees did not have knowledge of the systematic classification criteria stipulated in Exhibit 5. Yet, these concerns are relevant and should be considered by further researchers. Still, Prof. Santos argued that: "*In an innovative/creative/disruptive environment, the market potential might be higher, and investors might be willing to pay for the real option of being on that market […]*" providing support for this finding (Exhibit 11 – p. 55).

**CV: Growth Strategy:** The growth strategy effect captured through the number of acquisitions was found to be a positive significant predictor of PMVs. There was a broad consensus that this could be true, but several inquisitions were made. A core conclusion was, as Mr. Kristiansen argue: "*when you're buying a company, you're […] you're basically buying valuation into your company at a cost*" (Exhibit 11, p. 75). Also, several concerns were raised as to the actual value-creation achieved in the acquisition process as many mergers tend to fail.

**IV & CV: Team Composition:** No significant effects were found related to the diversity variables or the number of co-founders. Mr. Kristiansen argued that while diversity is important it is a marginal factor compared to the central determinants of unicorn success like market growth and potential (Exhibit 11, p. 76). Mr. Pitzner further argued that, in an entrepreneurial setting, complementary competences are more essential (Exhibit 11, p. 65).

**CV: GDP Growth:** The GDP growth in the year latest funding round was found to be a negative significant predictor of PMVs, which was contradicting past literature. A vibrant discussion about this variable was initiated. In most of the interviews severe critique was raised as GDP growth was argued to be too broad to actually capture the desired effect. Rather than having this macro-economic indicator Mr. Kristiansen wanted to look specifically at the growth of the industry in which the unicorn operated. Further, both Prof. Santos and Mr. Pitzner argued that macro-economic indicators such as interest rates could be more relevant. Yet, Prof. Decreton argued that one reason for this effect could be that: "*investors are much more selective in a year like that*" (Exhibit 11, p. 51).

**CV: Silicon Valley Area:** Having a headquarter in the Silicon Valley Area was found to be a significant positive predictor of PMVs. All interviewees found this result probable due to the high density of sophisticated VCs and the whole ecosystems of supporting organizations.

**IV: AI or FinTech-related industry:** Operating in the high growth AI or FinTech-related industries was found to be a positive significant predictor of PMVs. Both Mr. Kristiansen and Mr. Pitzner found this to be reasonable due to the high growth expectations these industries are facing. As Mr. Kristiansen argued: *"I think it's entirely driven by that. I think it's the market exactly. It's going to be the market right. I mean, AI as a whole… as an industry right… It's going to grow much faster"* (Exhibit 11, p. 78). However, Prof. Santos express concern as to whether it might overlap with some of the other dimensions and some support of his concern can be found in Exhibit 4.

### 5.3 Recommendations for Further Research

The discussion has highlighted a few improvement areas, which are ranked below according to their expected relative impact on improving the quality of the research below:

1. *Internal Data* – collecting internal data about hard metrics like user growth and revenue
2. *Adjusted Industry Effect* – explore ways in which to understand the impact of specific industry growth and attractiveness on PMVs (i.e., not only AI or FinTech-related)
3. *Unfair Advantages* – introduce and quantify variables related to unfair advantages such as IP protection, patents and network effects
4. *Skill-Based Diversity* – consider skill-based diversity to capture complementary effects

## 6. Conclusion: How to Catch a Unicorn?

This paper sought to explore core drivers of PMVs of unicorns in Europe, Israel and North America. Through combining qualitative and quantitative methods several findings were derived. At first, Model 1 largely supported existing literature providing confidence in the core model and thus it's application for further testing. Through Model 2-4 four hypothesis were tested and this paper successfully introduced the variables of Creative Response Effect and Industry Effect. Further, both variables were partially supported through the interviews. However, no diversity-related effects were found and thus additional research in this area is needed to draw conclusions hereto. *So, are we now closer to catching a unicorn?*

It is still a hard nut to crack, but this paper suggests that pursuing the development of a transformative platform business model in a growing industry while locking-in core customers through rapid scaling and network effects can be part of the answer. Judging by the recent IPO of the disruptive platform business, Airbnb, who IPO-ed in December reaching a market capitalization of $86bn more than doubling market expectations this assessment might not be that far off, but nevertheless no easier to accomplish (Feiner, 2020)!

# 7. References


Encyclopaedia Britannica. (2020, May 14). *Britannica.com*. Retrieved from https://www.britannica.com/topic/unicorn

Lee, A. (2013, November 2). *TechCrunch*. Retrieved from Welcome To The Unicorn Club: Learning From Billion-Dollar Startups: https://techcrunch.com/2013/11/02/welcome-to-the-unicorn-club/

Bock, C., & Hackober, C. (2019). *Unicorns—what drives multibillion-dollar valuations?* Darmstadt: Institute of Entrepreneurship, Technische Universität Darmstadt.

Simon, J. P. (2016). *How to Catch a Unicorn: An exploration of the universe of tech companies with high market capitalisation.* Brussels: European Commission.

Leimeister, J. M. (2017). *Finding the unicorn: Predicting Early Stage Startup Success.* St. Gallen: University of St. Gallen.

CB Insights. (2020, September 8). *The Complete List Of Unicorn Companies*. Retrieved from CB Insights Web site: https://www.cbinsights.com/research-unicorn-companies

The Corporate Finance Institute. (2020, November 8). *What is a Unicorn? .* Retrieved from The Corporate Finance Institute Web site: https://corporatefinanceinstitute.com/resources/knowledge/finance/unicorn/

The Corporate Finance Institute. (2020, November 8). *What is Post Money Valuation? .* Retrieved from https://corporatefinanceinstitute.com/resources/knowledge/valuation/post-money-valuation/

Basta, V. (2019, April 16). *Unicorns: A tale of two continents*. Retrieved from TechCrunch: https://techcrunch.com/2019/04/16/unicorns-a-tale-of-two-continents/

Schumpeter, J. A. (1947). The Creative Response in Economic History. *The Journal of Economic History*, 149-159.

Cobb, C. W., & Douglas, P. H. (1928). A Theory of Production. *American Economic Review*, 139–165.

Smith, J. K., Bliss, R. T., & Smith, R. L. (2011). Entrepreneurial Finance : Strategy, Valuation, and Deal Structure. In J. K. Smith, R. T. Bliss, & R. L. Smith, *Entrepreneurial Finance : Strategy, Valuation, and Deal Structure* (pp. 352-353). Palo Alto: Stanford Economics and Finance.

Vinturella, J. B., & Erickson, S. M. (2013). Raising Entrepreneurial Capital. In J. B. Vinturella, & S. M. Erickson, *Raising Entrepreneurial Capital* (pp. 191-192). London: Elsevier.

Long, J. (2017, April 24). *6 Important Factors Venture Capitalists Consider Before Investing*. Retrieved from Entrepreneur: https://www.entrepreneur.com/article/293159

Porter, M. E. (1998, November). Clusters and the New Economics of Competition. *Harvard Business Review, 98609*, 77-99.

Santos, B. L., Peffers, K., & Mauer, D. C. (1993, March 01). The Impact of Information Technology Investment Announcements on the Market Value of the Firm. *Information Systems Research, Vol. 4*(No. 1), 1-108.

Schilling, M. A. (2016). *Strategic Management of Technological Innovation* (Vol. Fifth Edition). New York City, New York, USA: McGraw-Hill Education.

Tsusaka, M., Krentz, M., & Reeves, M. (2019, June 20). *Embrace the Business Imperative of Diversity*.

Retrieved November 2020, from Boston Consulting Group: https://www.bcg.com/featured-insights/winning-the-20s/embrace-business-imperative-of-diversity

Dixon-Fyle, S., Dolan, K., Hunt, V., & Prince, S. (2020, May 19). *Diversity wins: How inclusion matters*. Retrieved November 2020, from McKinsey & Company: https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters

Bezrukova, K., Jackson, S. E., Ely, R., & Joshi, A. (2003, March). The effects of diversity on business performance: Report of the diversity research network. *Research Gate*, 1-36.

Dwyer, S., Richard, O. C., & Chadwick, K. (2003, September 1). Gender diversity in management and firm performance: the influence of growth orientation and organizational culture. *Journal of Business Research, 56*, 1009-1019.

Manyika, J., & Bughin, J. (2018, October 15). *The promise and challenge of the age of artificial intelligence*. Retrieved November 2020, from McKinsey & Company: https://www.mckinsey.com/featured-insights/artificial-intelligence/the-promise-and-challenge-of-the-age-of-artificial-intelligence

Brender, J. (2006). Handbook of Evaluation Methods for Health Informatics. In J. Brender, *Handbook of Evaluation Methods for Health Informatics.* Aalborg, Denmark: Elsevier Inc.

CB Insights. (2020, November 20). *About CB Insights*. Retrieved November 2020, from CB Insights: https://www.cbinsights.com/about

Crunchbase. (2020, November 20). *About Us*. Retrieved November 2020, from Crunchbase: https://about.crunchbase.com/about-us/

Craft. (2020, November 20). *Always-on enterprise intelligence platform*. Retrieved November 2020, from Craft: https://enterprise.craft.co/

The World Bank. (2020, October 20). *World Development Indicators*. Retrieved November 2020, from The World Bank: https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.MKTP.CD&country=

Trading Economics. (2020, October 20). *GDP Forecast ($ current)*. Retrieved November 2020, from Trading Economics: https://tradingeconomics.com/united-states/gdp

Vestager, M. (2020, September 29). Clement kalder Jorden: Har Vestager tabt techkrigen? *DR*. (C. Kjersgaard, Interviewer) https://www.dr.dk/drtv/serie/clement-kalder-jorden_207316.

Li, Y., & Mahoney, J. T. (2010, June 23). When are venture capital projects initiated? *Journal of Business Venturing, 26*, 239-254.

Deloitte. (2018, December). *The rise of the platform economy.* Retrieved November 2020, from Deloitte: https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/human capital/deloitte-nl-hc-reshaping-work-conference.pdf

Easterby-Smith, M., Thorpe, R., & Jackson, P. (2015). *Management & Business Research* (Vol. 5). London, United Kingdom: Sage Publications Ltd.

Forbes Insights. (2012). *Diversity & Inclusion: Unlocking Global Potential Global Diversity Rankings by Country, Sector and Occupation*. Retrieved November 2020, from Forbes: https://images.forbes.com/forbesinsights/StudyPDFs/global_diversity_rankings_2012.pdf

Hampel, A., & Hannak, A. (2017). *Deloitte US/EU M&A Report.* Retrieved November 2020, from Deloitte: https://www2.deloitte.com/content/dam/Deloitte/at/Documents/finance/at-28-04-2018-deloitte-us-eu-ma-report-2017.pdf

Rudden, J. (2020, November 25). *Largest acquiring countries for mergers and acquisitions (M&A) worldwide in 2018, by number of deals.* Retrieved November 2020, from Statista: https://www-statista-com.eu1.proxy.openathens.net/statistics/961276/leading-acquirer-countries-worldwide-for-mergers-and-acquisitions/

Glen, S. (2016, February 15). *Standardized Beta Coefficient: Definition & Example*. Retrieved December 2020, from Statisticshowto.com: https://www.statisticshowto.com/standardized-beta-coefficient/

Horbunova, V. (2019, November). *Top 5 fastest growing industries of 2019: a review of the investments in startups*. Retrieved December 2020, from YouTeam: https://youteam.io/blog/top-fastest-growing-industries-2019/

Panetta, K. (2020, August 18). *The Gartner Hype Cycle for Emerging Technologies 2020*. Retrieved December 2020, from Gartner: https://www.gartner.com/smarterwithgartner/5-trends-drive-the-gartner-hype-cycle-for-emerging-technologies-2020/

Statista & Omdia. (2020, March). *Revenues from the artificial intelligence (AI) software market worldwide from 2018 to 2025*. Retrieved December 2020, from Statista: https://www.statista.com/statistics/607716/worldwide-artificial-intelligence-market-revenues/

Market Data Forecasts. (2020, February). *Global Fintech Market Research Report 2020-2025*. Retrieved December 2020, from Market Data Forecasts: https://www.marketdataforecast.com/market-reports/fintech-market

IBM Software. (2011, June). *IBM SPSS Bootstrapping: Ensure the stability of your models* . Retrieved December 2020, from SPSS.ch: https://www.spss.ch/upload/1316002085_SPSS%20Bootstrapping%2020.pdf

OriginLab. (2020, December). *Residual Plot Analysis*. Retrieved December 2020, from OriginLab.com: https://www.originlab.com/doc/Origin-Help/Residual-Plot-Analysis

Feiner, L. (2020, December 10). *Airbnb skyrockets 112% in public market debut, giving it a market cap of $86.5 billion*. Retrieved January 2020, from CNBC: https://www.cnbc.com/2020/12/10/airbnb-ipo-abnb-starts-trading-on-the-nasdaq.html

# 8. Appendices

## Exhibit 1: Overview of Tables, Figures and Appendices

**Tables:**



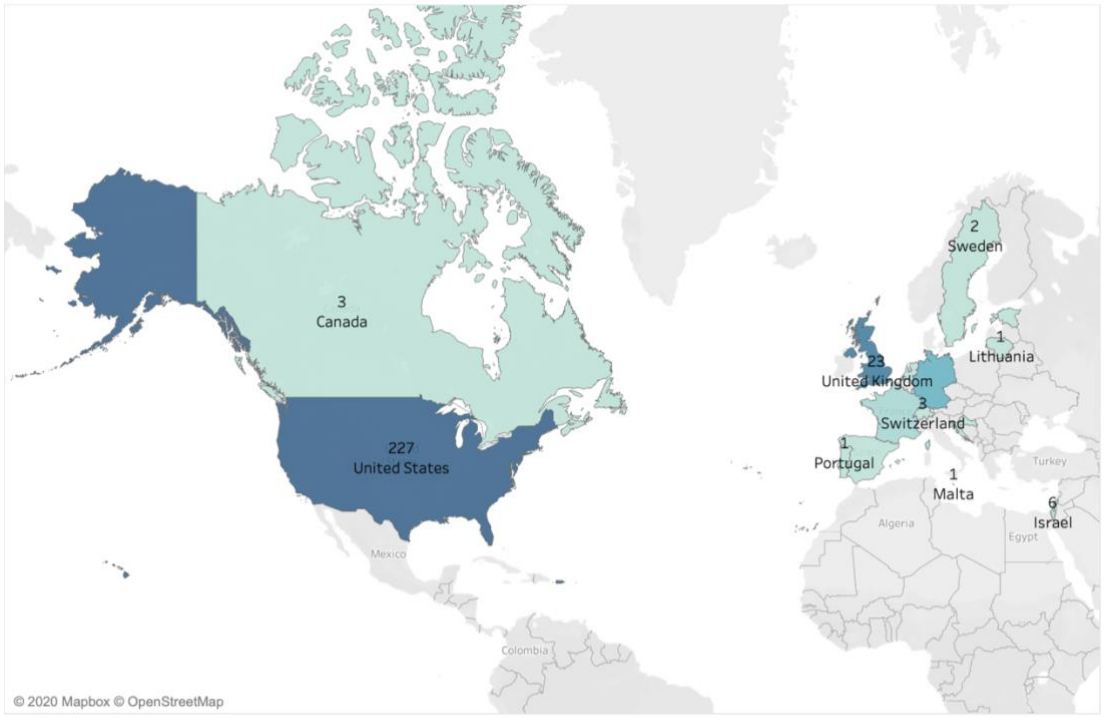
**Figures:**



**Appendices:**

## Exhibit 2: Sample Data Visualizations

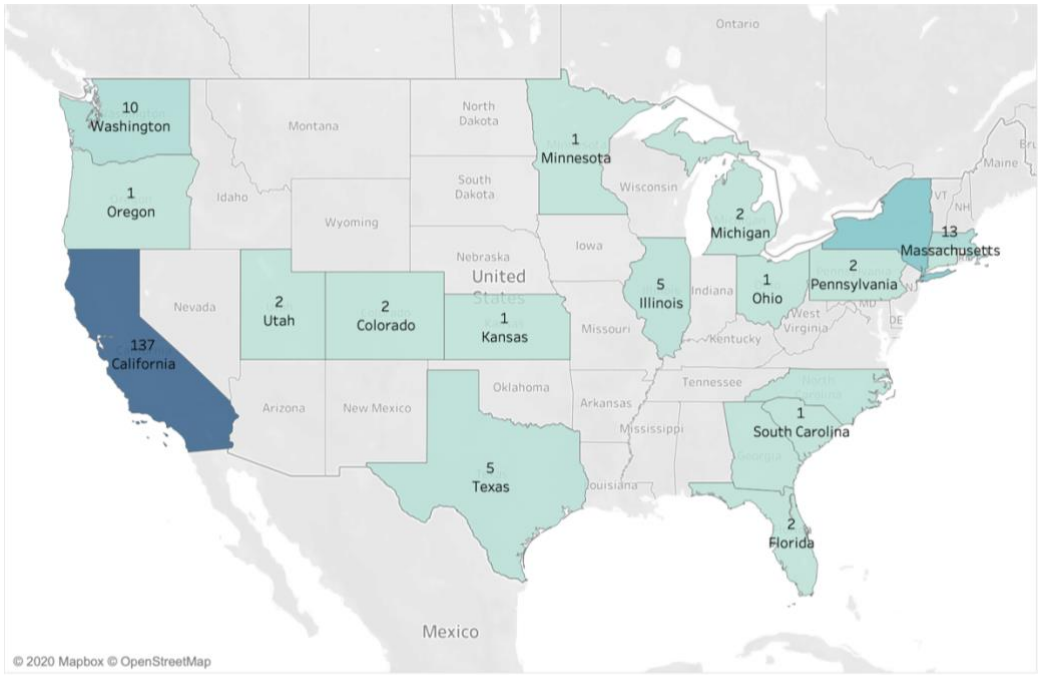
### Global allocation of unicorns by country




Map based on Longitude (generated) and Latitude (generated). Color shows Count - Companies. The marks are labeled by Count - Companies and Country. Details are shown for Country.

***Map:*** *Sample allocation of unicorns by country,* ***Source:*** *Author, Tableau*

### US allocation of unicorns by state




Map based on Longitude (generated) and Latitude (generated). Color shows Count - Companies. The marks are labeled by Count - Companies and Country or State. Details are shown for Country or State.

***Map:*** *US allocation of unicorns by state,* ***Source:*** *Author, Tableau*

## Total distribution of unicorns by industry

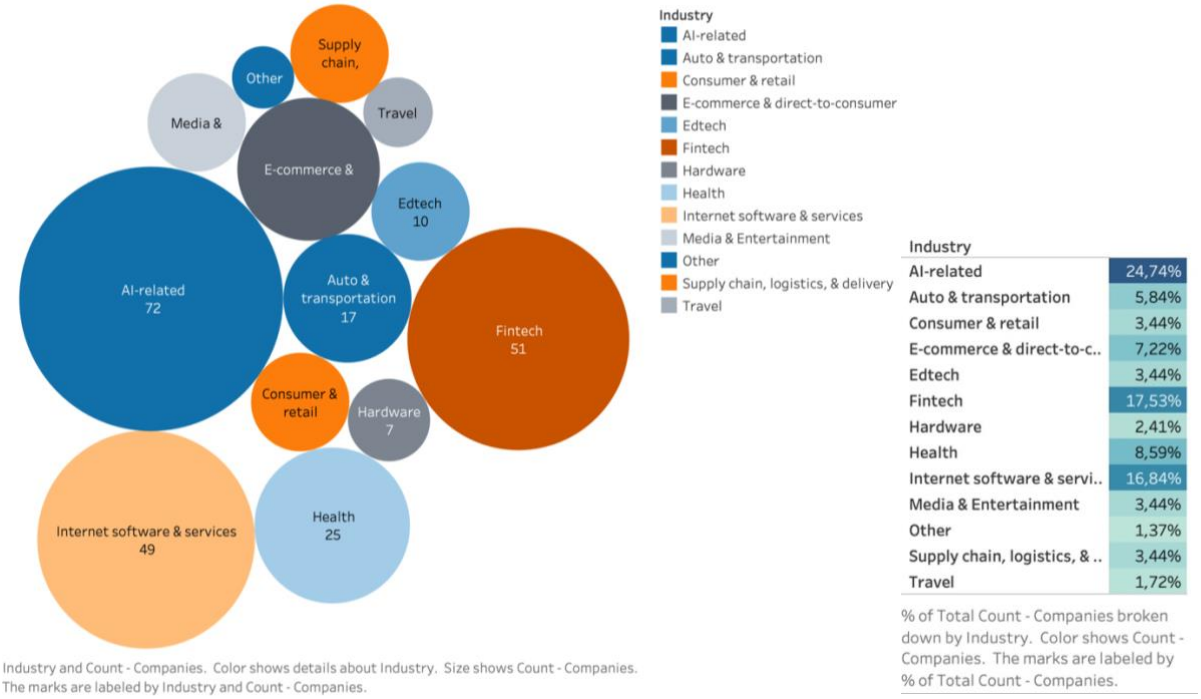



***Figure:*** *Total distribution of unicorns by industry (left=as count, right=as % of total),* ***Source:*** *Author, Tableau*

## Exhibit 3: List of All Variables and their Denotation

As mentioned, the dependent variable will be the post-money valuation. The post-money valuation being the value of the company after it received external capital and, in this report, only if this value exceeds $1bn.

| **Dependent Variable** | | |
|---|---|---|
| **Variable** | **Description** | **Measure** |
| Post Money Valuation | In the regression model the logarithm of the dollar amount of post-money valuation is utilized. | Log(post-money-valuation) |

Prior research within the field of unicorns have established a relationship between several factors and a firm's post-money valuation. These factors can be used for a foundation for the model and will be applied as control variables. Here amongst are:

| **Control Variables** | | |
|---|---|---|
| **Variable** | **Description** | **Measure** |
| Internet- or app-related | Each business is classified according to whether their business model is internet or app-related or not. This has to be the key component of their business model. | Binary,<br>1=Internet or app-related,<br>0=not related |
| B2C | Each unicorn is classified according to whether they are pursuing a B2C or a B2B business model. | Binary,<br>1=B2C, 0=B2B |
| Platform | Each business is classified as to whether they are pursuing a platform | Binary,<br>1=Platform, 0=Not |

| | | |
|---|---|---|
| | business model with network effects or not. | |
| #acquisitions | The number of acquisitions the firms has undertaken with the aim of scaling their business since it was founded. | Discrete variable counting the number of acquisitions |
| #founders | Number of founders in the founding team. | Discrete variable counting the # of members in founding team |
| GDP growth in the year of founding | GDP growth rate in the founding year. | Continuous variable of the % of GDP growth |
| GDP growth in the year of the latest funding round | GDP growth the year of latest funding round | Continuous variable of the % of GDP growth |
| Age at latest founding | The number of years from when the Unicorn was founded until it received its latest funding round. | Discrete variable, # years |
| Silicon Valley Area | Each Unicorn is classified according to whether it is located in the Silicon Valley Area or not. | Binary, 1=Silicon Valley Area, 0= |

To investigate the hypothesis stated in Section 2.2.1, 2.2.2 and 2.2.3 the following independent variables have been added.

| Independent Variable | | |
|---|---|---|
| **Variable** | **Description** | **Measure** |
| Creative Response or not | Each variable was classified as pursuing either a creative or an adaptive response. See Exhibit 5. | Binary, 1=creative response, 0=adaptive response |
| TMT Gender Diversity | Each unicorn was classified as to being in the top 50% or the bottom 50% in terms of top management gender diversity. | Binary, 1=top 50% (in this case above 20%), 0=bottom 50% |
| TMT Ethnic Diversity | Each unicorn was classified as to being in the top 50% or the bottom 50% in terms of top management ethnic diversity. | Binary, 1=top 50% (in this case above 12,5%), 0=bottom 50% |
| TMT Total Diversity | Each unicorn was classified as to being in the top 50% or the bottom 50% in terms of total top management diversity (gender and ethnic). | Binary, 1=top 50% (in this case above 35%), 0=bottom 50% |
| AI or FinTech Industry | Unicorns in the high growth AI and Fintech industries were separated from the other unicorns. | Binary, 1=AI or FinTech, 0=not |

# Exhibit 4: Variable Correlation Overview

## Pearson Correlation between variables

| Pearson Correlation | logValuation | Internet or app related | B2C | Platform | #acquisitions | #founders | GDP Growth Founding | GDP Growth Latest Funding | Age latest funding | Silicon Valley Area | Creative Response | TMT Diversity (women) | TMT Diversity (ethnic) | TMT Diversity (total) | AI or Fintech-related |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| logValuation | 1,000 | -0,002 | 0,072 | 0,149 | 0,368 | -0,012 | 0,000 | -0,208 | 0,072 | 0,190 | 0,143 | 0,016 | 0,061 | 0,085 | 0,108 |
| Internet or app | -0,002 | 1,000 | -0,057 | 0,346 | 0,128 | 0,070 | 0,057 | -0,010 | 0,051 | 0,081 | -0,174 | -0,011 | 0,140 | 0,106 | 0,337 |
| B2C | 0,072 | -0,057 | 1,000 | 0,258 | 0,075 | -0,032 | -0,048 | -0,022 | -0,050 | -0,087 | -0,030 | 0,199 | -0,099 | 0,098 | -0,288 |
| Platform | 0,149 | 0,346 | 0,258 | 1,000 | 0,117 | -0,043 | -0,096 | -0,055 | 0,048 | 0,100 | 0,004 | 0,020 | 0,045 | 0,108 | -0,062 |
| #acquisitions | 0,368 | 0,128 | 0,075 | 0,117 | 1,000 | 0,020 | -0,016 | -0,009 | 0,208 | 0,037 | 0,060 | -0,017 | -0,115 | -0,017 | -0,039 |
| #founders | -0,012 | 0,070 | -0,032 | -0,043 | 0,020 | 1,000 | -0,006 | 0,033 | -0,024 | 0,056 | -0,041 | -0,016 | -0,018 | -0,090 | 0,056 |
| GDP Growth Founding | 0,000 | 0,057 | -0,048 | -0,096 | -0,016 | -0,006 | 1,000 | 0,027 | 0,064 | -0,037 | -0,125 | 0,049 | -0,135 | -0,054 | 0,048 |
| GDP Growth Latest Funding | -0,208 | -0,010 | -0,022 | -0,055 | -0,009 | 0,033 | 0,027 | 1,000 | -0,061 | -0,024 | 0,046 | -0,004 | -0,032 | 0,064 | -0,065 |
| Age latest funding | 0,072 | 0,051 | -0,050 | 0,048 | 0,208 | -0,024 | 0,064 | -0,061 | 1,000 | -0,065 | -0,152 | -0,004 | -0,098 | -0,078 | -0,023 |
| Silicon Valley Area | 0,190 | 0,081 | -0,087 | 0,100 | 0,037 | 0,056 | -0,037 | -0,024 | -0,065 | 1,000 | 0,061 | 0,137 | 0,206 | 0,279 | 0,030 |
| Creative Response | 0,143 | -0,174 | -0,030 | 0,004 | 0,060 | -0,041 | -0,125 | 0,046 | -0,152 | 0,061 | 1,000 | -0,019 | 0,021 | -0,053 | -0,142 |
| TMT Diversity (women) | 0,016 | -0,011 | 0,199 | 0,020 | -0,017 | -0,016 | 0,049 | -0,004 | -0,004 | 0,137 | -0,019 | 1,000 | -0,158 | 0,488 | -0,079 |
| TMT Diversity (ethnic) | 0,061 | 0,140 | -0,099 | 0,045 | -0,115 | -0,018 | -0,135 | -0,032 | -0,098 | 0,206 | 0,021 | -0,158 | 1,000 | 0,377 | 0,131 |
| TMT Diversity (total) | 0,085 | 0,106 | 0,098 | 0,108 | -0,017 | -0,090 | -0,054 | 0,064 | -0,078 | 0,279 | -0,053 | 0,488 | 0,377 | 1,000 | 0,021 |
| AI or Fintech-related | 0,108 | 0,337 | -0,288 | -0,062 | -0,039 | 0,056 | 0,048 | -0,065 | -0,023 | 0,030 | -0,142 | -0,079 | 0,131 | 0,021 | 1,000 |

***Table:*** *Pearson Correlation between variables,* ***Source:*** *Author, SPSS*

## 2-sided Significance Level of Correlations

| 2-tailed significance | logValuation | Internet or app related | B2C | Platform | #acquisitions | #founders | GDP Growth Founding | GDP Growth Latest Funding | Age latest funding | Silicon Valley Area | Creative Response | TMT Diversity (women) | TMT Diversity (ethnic) | TMT Diversity (total) | AI or Fintech-related |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| logValuation | 0,000 | 0,977 | 0,224 | 0,011 | 0,000 | 0,843 | 0,995 | 0,000 | 0,219 | 0,001 | 0,015 | 0,784 | 0,303 | 0,149 | 0,067 |
| Internet or app | 0,977 | 0,000 | 0,337 | 0,000 | 0,029 | 0,234 | 0,334 | 0,870 | 0,385 | 0,170 | 0,003 | 0,852 | 0,017 | 0,070 | 0,000 |
| B2C | 0,224 | 0,337 | 0,000 | 0,000 | 0,205 | 0,590 | 0,417 | 0,714 | 0,398 | 0,141 | 0,612 | 0,001 | 0,093 | 0,095 | 0,000 |
| Platform | 0,011 | 0,000 | 0,000 | 0,000 | 0,046 | 0,462 | 0,103 | 0,347 | 0,413 | 0,090 | 0,949 | 0,732 | 0,443 | 0,067 | 0,291 |
| #acquisitions | 0,000 | 0,029 | 0,205 | 0,046 | 0,000 | 0,740 | 0,784 | 0,878 | 0,000 | 0,528 | 0,307 | 0,778 | 0,051 | 0,774 | 0,511 |
| #founders | 0,843 | 0,234 | 0,590 | 0,462 | 0,740 | 0,000 | 0,921 | 0,570 | 0,683 | 0,338 | 0,484 | 0,785 | 0,761 | 0,126 | 0,342 |
| GDP Growth Founding | 0,995 | 0,334 | 0,417 | 0,103 | 0,784 | 0,921 | 0,000 | 0,644 | 0,277 | 0,527 | 0,033 | 0,403 | 0,022 | 0,362 | 0,415 |
| GDP Growth Latest Funding | 0,000 | 0,870 | 0,714 | 0,347 | 0,878 | 0,570 | 0,644 | 0,000 | 0,303 | 0,690 | 0,432 | 0,945 | 0,586 | 0,278 | 0,272 |
| Age latest funding | 0,219 | 0,385 | 0,398 | 0,413 | 0,000 | 0,683 | 0,277 | 0,303 | 0,000 | 0,266 | 0,010 | 0,941 | 0,096 | 0,186 | 0,693 |
| Silicon Valley Area | 0,001 | 0,170 | 0,141 | 0,090 | 0,528 | 0,338 | 0,527 | 0,690 | 0,266 | 0,000 | 0,301 | 0,019 | 0,000 | 0,000 | 0,613 |
| Creative Response | 0,015 | 0,003 | 0,612 | 0,949 | 0,307 | 0,484 | 0,033 | 0,432 | 0,010 | 0,301 | 0,000 | 0,750 | 0,723 | 0,365 | 0,015 |
| TMT Diversity (women) | 0,784 | 0,852 | 0,001 | 0,732 | 0,778 | 0,785 | 0,403 | 0,945 | 0,941 | 0,019 | 0,750 | 0,000 | 0,007 | 0,000 | 0,180 |
| TMT Diversity (ethnic) | 0,303 | 0,017 | 0,093 | 0,443 | 0,051 | 0,761 | 0,022 | 0,586 | 0,096 | 0,000 | 0,723 | 0,007 | 0,000 | 0,000 | 0,026 |
| TMT Diversity (total) | 0,149 | 0,070 | 0,095 | 0,067 | 0,774 | 0,126 | 0,362 | 0,278 | 0,186 | 0,000 | 0,365 | 0,000 | 0,000 | 0,000 | 0,728 |
| AI or Fintech-related | 0,067 | 0,000 | 0,000 | 0,291 | 0,511 | 0,342 | 0,415 | 0,272 | 0,693 | 0,613 | 0,015 | 0,180 | 0,026 | 0,728 | 0,000 |

***Table:*** *Significance level of correlations between variables where cells marked in yellow illustrates significant correlations at a <0.05 significance level,* ***Source:*** *Author, SPSS*

## Exhibit 5: Creative Response Classification and Justification

**Creative Response:**

- 1. Potential to Change the Rules of the Game in a particular industry
- 2. Potential to shape the whole course of subsequent events and their long-run outcome
- 3. The doing of new things or the doing of things that are already being done in a new way

*Elaborate Example:* An example of a unicorn founded as a creative response can be Airbnb. Although peer-to-peer apartment lending existed prior to Airbnb it is widely recognized as the company that shifted the bargaining power from the hotel and hostels into the hands of private individuals. In doing so they practically democratized the vacation home rental industry. As a result of this democratization the industry can never return to what it was before. Similar cases can be found in Uber, Netflix and Spotify.

**Adaptive response:**

- 1. Adapting to changes in an industry
- 2. Expansion of existing practices
- 3. Doing something existing more efficiently

*Elaborate Example:* An example of a unicorn founded as an adaptive response can be Wish. Wish is a mobile e-commerce platform that connects small businesses and buyers. Wish cannot be considered as a creative response as it is merely adapting e-commerce practices similar to what Amazon and eBay has done for many years. What Wish contributes to this market is its mobile-first approach and a personalized shopping experience.

*Concrete examples from the dataset and their justifications can be seen on next page:*

| Unicorn | Company Description from Craft.co | Classification: Creative vs. Adaptive (rationale) |
|---|---|---|
| SpaceX | SpaceX is an aviation and aerospace company that designs, manufactures, and launches advanced rockets and spacecraft. | Creative (potential to change the rules of the game and shape the course of subsequent events) |
| Stripe | Stripe is a technology company providing online payment processing for internet businesses. It offers a platform that delivers payment acceptance, POS integration, fraud prevention, invoicing and subscription management, and multi-party payments capabilities. The company also delivers financial services, including corporate cards and financing. | Creative (doing of something in a new way with potential to change rules of the game) |
| AirBnb | Airbnb is a provider of a vacation rental online marketplace. The company offers a website and mobile app that enables travelers to search for and book vacation home rentals and travel experiences for solo journeys, family vacations, and business trips, as well as to add events to their itinerary, message hosts, and get directions. Its solution allows hosts to share their extra space or lead experiences, update their listing and calendar availability, prepare a host guidebook, message guests, and manage reservations. | Creative (changing the rules of the game of peer-to-peer vacation home renting) |
| DoorDash | DoorDash is a technology company that provides on-demand delivery service connecting customers with local businesses. The company is mainly focused on serving restaurants that do not have their own | Adaptive (restaurant delivery platforms already exist at grand scale Uber Eats and many more, so this is an example of a company doing something more efficiently or responding to this new trend) |

| | | |
|---|---|---|
| | delivery staff. Its platform can also be used by merchants and drivers as logistics software to deliver goods within local communities. | |
| Instacart | Instacart is a company that offers grocery delivery services. The company supplies food and home essentials from a number of local stores. It enables customers to order from multiple stores at once and get same-day delivery. | Creative (changes the rules of grocery shopping) |
| Snowflake Computing | Snowflake is a company developing a cloud-based SQL data warehouse solution. It offers a managed service with a pay-as-you-go-model that works on structured and semi-structured data. The company allows organizations to store and analyze all data in one solution. | Adaptive (several leading players like Microsoft is already doing this type of data warehouse but Snowflake has the potential to do it more efficiently) |
| JUUL Labs | Juul Labs manufactures and markets e-cigarettes. The Company offers a temperature regulation system to heat nicotine-based liquid to an ideal level, which is designed to avoid burning. Its products include device kits, JUULpods, and accessories in different flavors. Juul Labs retails its products online, through its e-commerce platform. | Adaptive (incumbents like BAT, Philip Morris and Reynolds are already in this field, but JUUL Labs is a new entrant) |
| Wish | Wish is a company developing a mobile e-commerce platform that connects small-business owners and consumers. It offers a variety of goods, including clothing and consumer electronics | Adaptive (large players like Amazon and eBay are already in this space, but Wish has the potential to target certain customer groups more efficiently) |

## Exhibit 6: Description of Interview Respondents

| Interviewee (expertise) | Role | Background |
|---|---|---|
| Benoit Decretion (Strategy Scholar) | Assistant Professor of Strategy at Nova SBE | • Visiting Scholar at INSEAD and Stanford University<br>• PhD at WU Vienna in Strategy & International Business<br>• CEMS MIM at Copenhagen Business School and Hong Kong University of Science & Technology |
| Fabio Soares Santos (Finance Scholar) | Assistant Professor of Finance at Nova SBE | • Area Manager at SONEA<br>• Business Analyst at Kearney<br>• MSC in Finance from Nova SBE |
| Kristian Pitzner-Jørgensen (entrepreneur) | Serial entrepreneur and CEO & Co-founder at LastObject<br><br>*LastObject is an e-commerce scaleup selling sustainable and reusable consumer goods.* | • Head of Group Strategy at Tryg Insurance<br>• Co-Founder & CEO at Samlino<br>• Management Consultant at McKinsey & Company<br>• MSC in Finance & Strategic Management at Copenhagen Business. School |
| Niels Kristiansen (entrepreneur) | CEO & Co-Founder at Portchain<br><br>*Portchain is a platform scaleup operating in the maritime industry utilizing AI to connect industry players and increase operational efficiency.* | • Solution Manager at McKinsey New Ventures<br>• Engagement Manager at McKinsey & Company<br>• Master of Business Administration (MBA) from MIT<br>• MSC in Economics from University of Gothenburg & Oxford |

Exhibit 7: Interview Topic Guide

# INTERVIEW TOPIC GUIDE

## Questionnaire – What drives multibillion-dollar valuations?

Firstly, in case you don't already know me then I'll do a brief introduction. I am Valentin Dybkjær a 24-year-old master student at Nova School of Business & Economics in Portugal. Before Nova SBE I finished my bachelor's in international business at Copenhagen Business School. At the moment, I am finishing my thesis where I am studying the phenomena of 'unicorn ventures', which in this research is defined as "*privately held companies with a valuation above $1bn and which were founded after the year 2000*". Also, the scope has been reduced to only consider unicorns in the US, the EU, Israel and Canada.

This interview is one of four interviews which will be conducted with a group of entrepreneurs and academics with an expertise in high growth enterprises or finance. The overall purpose of these interviews is to help qualify the findings, which have been derived from my thesis research and to substantiate hypothesizes put forward in a report. There will be approximately 10 questions and a duration of about 30-45 minutes is expected.

You can decide whether to be anonymous or not, and whether answers can be directly cited in the report or not. In case you decide not to be anonymous. I will of course share the transcript from the interview so you can validate that I do not misquote you. Finally, I would like to record the interview for the purpose of transcribing. These recordings will be used for transcribing only and will not be published anywhere.

As a minor token of appreciation for participating in the research you will be one of the first to receive the final report. Both in the format of a Presentation/Executive Summary and the full thesis in case this could be relevant for you work/research.

### Respondent Data

- **Name:**
- **Role:**
- **Brief Description/Experience:**
- **Confidentiality Preferences:**

### Part 1: Interviewee views and perspectives

Before explaining more about the research and presenting you with any findings I would like to understand a bit better your perspectives on the so-called unicorns. Thus, I will ask you some general questions about the topic. After this we will explore the research in more detail. Is that okay with you?

- **1. From your experience as a _____, what would you say make unicorns distinctive from non-unicorns? And do you think it is possible to generalize common characteristics of unicorns across industries?**

## Part 2: Research findings and interviewee comments

Thank you for sharing your thoughts on the topic. Now I would like to introduce the research in a bit more detail and get your perspectives on some of the core findings.

For a long time, I have had a professional and personal interest in the area of startup ventures and what makes them successful. Thus, for my thesis, I decided that I would investigate the phenomena of the most successful high growth ventures - the unicorns. Although research within the area is gaining popularity the amount of literature available is still quite limited. However, some key researchers conducted a study where they ran a hierarchical regression utilizing predictor variable to explain the variation of unicorns' post-money valuations. Put differently, they generalized some variables that should, according to theory, impact the unicorns' valuations and they did so with some degrees of success.

So, I decided to build on this research by adding relevant variables and dimensions based on additional research and literature with the ambition to add explanatory power to the original model. The key dimensions of analysis being *Dimension 1: Business Model, Dimension 2: Growth Strategy, Dimension 3: Team and Dimension 4: External Factors*. However, it is important to note that key financial metrics like revenue growth, profitability etc. have not been included as the data has been externally retrieved and thus these insights have not been accessible. Therefore, one can argue that this model is trying to assess whether the 'softer' variables play a role in a unicorn valuation.

- **2. First of all, having heard about the model, do you expect that such a model will be able to predict any variation in the post-money valuation of unicorns? And do you think that it is reasonable to assume that 'softer' variables play a role in the valuation process? Why? Why not?**

Independent of your answer to the above I will now present the key findings and ask you to comment on their potential validity.

- **3. In Dimension 1 concerning the business model it was found that platform-based unicorns are valued significantly higher than non-platform unicorns at a <10% significance level. Do you think this makes sense from a valuation standpoint?**

- **4. In Dimension 1 concerning the business model a key concept from entrepreneurial theory by Austrian economist Schumpeter who characterized companies as either creative (similar connotation to today's 'disruptive') and adaptive (similar connotation to today's 'incremental' or 'marginal' improvements) has been adopted. By utilizing this concept each unicorn was classified according to their transformative nature being either 'creative' or 'adaptive'. It was found that having a 'creative'/'transformative' business model was a strong positive predictor of valuations at a <5% level. Do you think this makes sense from a valuation standpoint?**

- **5. In Dimension 2 concerning the growth strategy of the unicorns it was showcased that inorganic growth through acquisitions was a strong positive predictor of post-money valuation at a <1% level. Do you think this make sense from a valuation perspective?**

- **6. In Dimension 3 concerning the team composition several hypotheses were presented concerning the value of team diversity on improved performance and ultimately post-money valuation. Thus, to capture this the number of founders, the degree of gender diversity, the degree of ethnic diversity and the degree of total diversity was tested. None of these did however contribute significantly to the valuation of the unicorns (neither negatively nor positively). Do you think this make sense from a valuation perspective?**

- **7. In Dimension 4 concerning the external environment it was hypothesized that the economic prosperity in terms of GDP growth in the year of the latest funding round would be a positive predictor of post-money valuations due to investor optimism about the economic outlook. Nonetheless quite the contrary was indicated by the regression results. They showcased at a <1% level that higher economic growth in last funding round was a negative predictor. What do you think could be the reason for this?**

- **8. In Dimension 4 concerning the external environment it is also supported at a <5% level that having a HQ in Silicon Valley is a positive predictor of post-money valuation due to the cluster effects derived from that specific location. Do you think this make sense from a valuation perspective?**

- **9. In Dimension 4 concerning the external environment it is also supported at a <1% level that operating with AI/ML or Fintech based technology is a positive predictor of post-money valuation. Do you think that it makes sense that these technologies influence the valuation?**

## Part 3: Final comments

- **10. As mentioned, this research is conducted externally and thus key information such as revenue growth, profitability, user growth etc. has not been accessible. These pieces of information are obviously extremely important when it comes to valuations. Still the final model testing these 'softer' variables stimulated above proposes an adjusted R-squared of 0,275. Meaning that approximately 27,5% of the post-money valuation variation can be explained by the model. Do you find this reasonable?**

## Exhibit 8: Robustness Test 1 - Normality Plots of Standardized Residuals

### Histogram of the Residuals

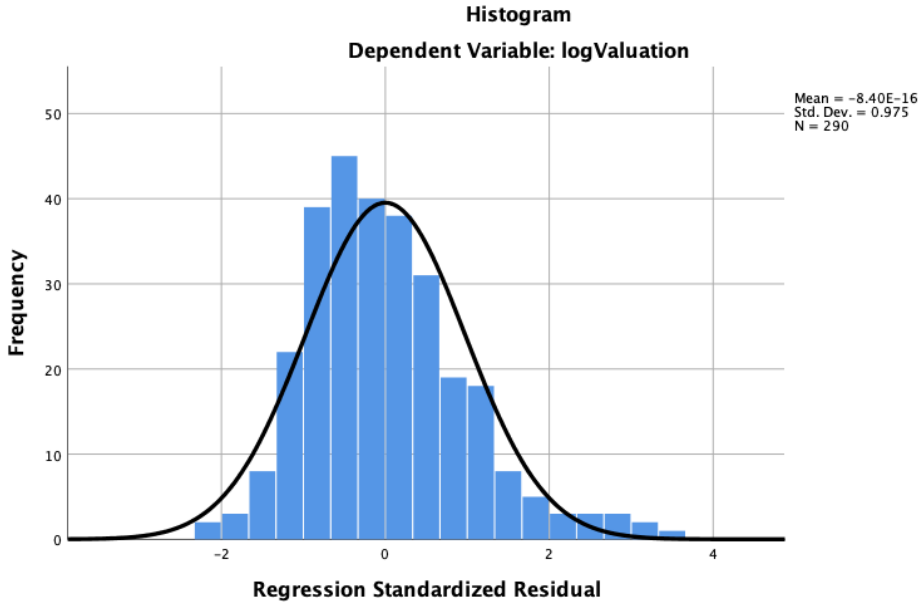



***Figure 4:*** *Histogram of the Residuals showing that the deviation is approximately normally distributed,* ***Source:*** *Author, SPSS*

### Normal Probability Plot of the Residuals

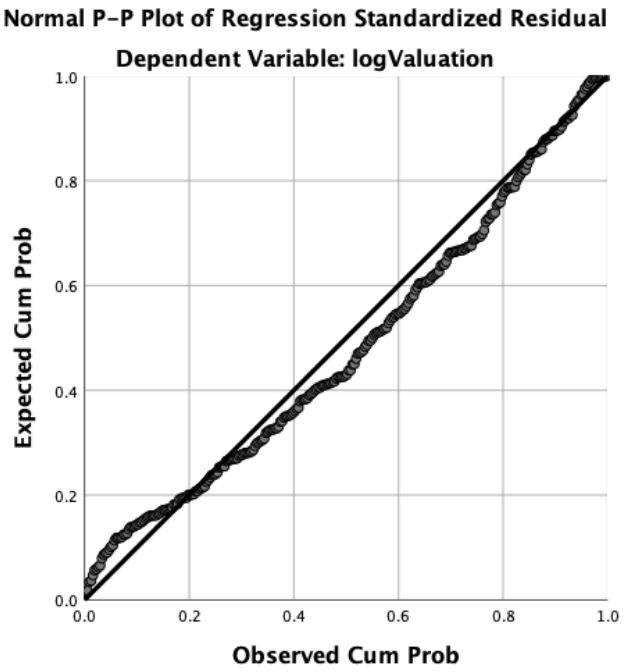



***Figure 5:*** *Normal Probability Plot of the Residuals approximating a linear plot thus assuming that the error term is approximately normal,* ***Source:*** *Author, SPSS*

## Exhibit 9: Robustness Test 2 – Bootstrapping Regression Output

### Full Model (Model 4) with Bootstrapping

| Standardized Beta Model with Bootstrapping | | | |
|---|---|---|---|
| **Variables** | **Standardized Beta Coefficient** | **Sig.** | **Bootstrap Sig. (2000 samples)** |
| **Control Variables** | | | |
| D1: Business Model | | | |
| Internetorapp_related | -0,161 | 0,0090*** | 0,0050*** |
| B2C | 0,082 | 0,157 | 0,154 |
| Platform | 0,123 | 0,0380** | 0,0290** |
| D2: Growth Strategy | | | |
| #acquisitions | 0,360 | 0,0000* | 0,0005**** |
| D3: Team | | | |
| #founders | 0,000 | 0,995 | 0,996 |
| D4: External Environment | | | |
| GDP_growth_founding | 0,057 | 0,278 | 0,199 |
| GDP_growth_latestfunding | -0,190 | 0,0000* | 0,0005**** |
| age_latestfunding | 0,033 | 0,540 | 0,513 |
| siliconvalley_area | 0,147 | 0,0080*** | 0,0120** |
| **Independent Variables** | | | |
| D1: Business Model | | | |
| Creative_Response | 0,138 | 0,0120** | 0,0180** |
| D3: Team | | | |
| TMT Diversity (women) | -0,028 | 0,674 | 0,676 |
| TMT Diversity (ethnic) | 0,044 | 0,486 | 0,450 |
| TMT Diversity (total) | 0,064 | 0,375 | 0,386 |
| D4: External Environment | | | |
| AI or FinTech-related | 0,198 | 0,0010*** | 0,0005**** |

*This table seeks to qualify the OLS regression standardized beta coefficients through compensating the dependent variable assymetry through bootstrapping 2000 samples.*

Dependent Variable: logValuation
Sig. <0,1 = *
Sig. <0,05 = **
Sig. <0,01 = ***
Sig. <0,001 = ****

***Table 6:*** *Bootstrapped regression results (n=2000), which validates the confirms the significance of the derived variables with only minor differences,* ***Source:*** *Author, SPSS*

## Exhibit 10: Robustness Test 3 – Pearson Correlations Output

Pearson Correlation of all variables

| Pearson Correlation Model (all variables) | | | |
|---|---|---|---|
| **Variables** | **Pearson Correlation Coefficient** | **1-tailed Sig.** | **2-tailed Sig.** |
| **Control Variables** | | | |
| *D1: Business Model* | | | |
| Internetorapp_related | -0,002 | 0,489 | 0,978 |
| B2C | 0,072 | 0,112 | 0,224 |
| Platform | 0,149 | 0,0060*** | 0,0120** |
| *D2: Growth Strategy* | | | |
| #acquisitions | 0,368 | 0,0000* | 0,0000* |
| *D3: Team* | | | |
| #founders | -0,012 | 0,421 | 0,842 |
| *D4: External Environment* | | | |
| GDP_growth_founding | 0,000 | 0,498 | 0,996 |
| GDP_growth_latestfunding | -0,208 | 0,0000* | 0,0000* |
| age_latestfunding | 0,072 | 0,109 | 0,218 |
| siliconvalley_area | 0,19 | 0,0010*** | 0,0020*** |
| **Independent Variables** | | | |
| *D1: Business Model* | | | |
| Creative_Response | 0,143 | 0,0070*** | 0,0140** |
| *D3: Team* | | | |
| TMT Diversity (women) | 0,016 | 0,392 | 0,784 |
| TMT Diversity (ethnic) | 0,061 | 0,151 | 0,302 |
| TMT Diversity (total) | 0,085 | 0,0750* | 0,150 |
| *D4: External Environment* | | | |
| AI or FinTech-related | 0,108 | 0,0340** | 0,0680* |

*This table reports the OLS regression output in the form of unstandardized Pearson correlations and their respective significance levels.*

Dependent Variable: logValuation
Sig. <0,1 = *
Sig. <0,05 = **
Sig. <0,01 = ***
Sig. <0,001 = ****

***Table 7:*** *Full model (model 4) Pearson correlation showcasing 1- and 2-sided significance levels further confirming the validity of the findings,* ***Source:*** *Author, SPSS*

## Exhibit 11: Interview Transcripts

Below all interview transcripts are showcased. Only respondent answers are showed as the strict interview guide showcased in Exhibit 9 has been applied rigorously in order to ensure that all interview respondents were provided with the same information. Any case where additional information has been provided will be pointed out in the transcripts.

### INTERVIEW QUESTIONNAIRE TRANSCRIPT – BENOIT DECRETION

# BENOIT DECRETON, ASSISTANT PROFESSOR IN STRATEGY AT NOVA SBE

## Respondent Data

Benoit:

My name is Benoit Decreton I am an assistant professor in Strategy at Nova SBE. In terms of the relevant research that I do. I work a lot with large companies who are willing to collaborate with startups. There are different types of collaborations but mostly through technology licensing agreements. I try to see what different biases in the selection process of large corporations are. Also, I spend some time in Silicon Valley at Stanford doing research with large companies, entrepreneurs and investors. So that's where I get my experience with unicorns.

## Part 1: Interviewee views and perspectives

- **1. From your experience as a scholar, what would you say make unicorns distinctive from non-unicorns? And do you think it is possible to generalize common characteristics of unicorns across industries?**

Benoit:

Two things right. Firstly, I don't have the data, but I think most of those unicorns are located in Silicon Valley. If not, I think they would be located in Beijing, Shanghai or Guangzhou. I think if you take Silicon Valley and those three Chinese cities you already have where most of the unicorns would be located. I think it's because, as we discussed, those ecosystems provide the context that can enable high-growth ventures to emerge. So, now you have to think what is in those environments? It is: relatively easy to access capital that enables international growth, so I think that's a key mechanism. You also have potential partners to collaborate with and multinationals who can open new doors to international markets. I would be interested to see from your data if it is something you find. But I think most of them will be present in ecosystems. So… it is not like they are alone somewhere… of course some of them could be in isolated places, but most of them will be in ecosystems that provides a high-growth context. That's one thing. Then probably the other thing I could think of when trying to think of characteristics of unicorns would be the business model. I think most of them, and again I am no expert in unicorns, but most of them would have a platform business model that can scale rapidly. Something that they can replicate in many countries. So, you can think of DeliverMeal and their growth case in Africa. You see the mechanisms of trying to replicate and grow in many places by not adjusting too much. There were some issues of course but I think that's what enabled them to grow that much. I mean that the business model can scale. In terms of industries, I have to think about this… because for me I would say there is not so much variance in terms of unicorn in terms of industry. Probably you look at E-Commerce, you look at maybe FinTech and other Internet services. There's probably a large chunk of the unicorns that would fall into those categories. So yeah, the two bigger elements are the ecosystems that can foster this kind of rapid growth and access to partners and the business models.

Valentin-Prompt:

If you should rank them which one would be the most important?

Benoit, Q1 contd.:

That's a good question… I think it is probably the business model because even if you are not in an ecosystem you can still get access to the financial capital and human capital. So, maybe the business model but I am not sure. But I think it's a tricky question. Maybe the most successful ones are particularly good at scaling the business model in the sense they can take up global domination without making many adjustments. If you think of Uber and Airbnb, they don't own a lot of resources. They don't have employees and they don't have a lot of assets.

## Part 2: Research findings and interviewee comments

- **2. First of all, having heard about the model, do you expect that such a model will be able to predict any variation in the post-money valuation of unicorns? And do you think that it is reasonable to assume that 'softer' variables play a role in the valuation process? Why? Why not?**

Benoit:

Well, my first thought… you don't look at Asia in the sample and maybe half of the unicorns are in China. I think that poses a problem in terms of explaining what makes unicorns successful and by making that delineation you missed some of the explanations. But yeah, I would have to see the variables more well defined. Also, as you said, the financials, of course, would explain a lot and you don't have access to that right… Maybe you can capture that through the business model and maybe the scalability of it. Still, I expect that you find something, but I'm not sure the variance explained would be super high though. It could still be interesting, I think.

- **3. In Dimension 1 concerning the business model it was found that platform-based unicorns are valued significantly higher than non-platform unicorns at a <10% significance level. Do you think this makes sense?**

Benoit:

Yeah totally, I think it has to do with the scalability of platform businesses. You can have customers on both sides also. Of course, it depends on the type of platform, but platforms are essentially connecting individuals to other individuals and as a broker you can potentially get a lot of customers and I think that's something that can scale. So, I think it is probably the scalability element of platforms that you can see significantly in your model.

- **4. In Dimension 1 concerning the business model a key concept from entrepreneurial theory by Austrian economist Schumpeter who characterized companies as either creative (similar connotation to today's 'disruptive') and adaptive (similar connotation to today's 'incremental' or 'marginal' improvements) has been adopted. By utilizing this concept each unicorn was classified according to their transformative nature being either 'creative' or 'adaptive'. It was found that having a 'creative'/'transformative' business model was a strong positive predictor of valuations at a <5% level. Do you think this makes sense?**

Benoit:

I am not entirely sure on your definition… but I mean it could be… just being a platform is not a sufficient condition. So, you have to also provide something novel. Not just novel, but if you can replace something it also means that there is an existing customer base that you can potentially attract. But I also think many VCs have a portfolio approach so they would make some very high risk, disruptive investments and they would take some investments that are

maybe less risky to balance each other out. It's just because they diversify and then if they are lucky then maybe they get to partner with some firms that eventually become unicorns.

- **5. In Dimension 2 concerning the growth strategy of the unicorns it was showcased that inorganic growth through acquisitions was a strong positive predictor of post-money valuation at a <1% level. Do you think this make sense?**

Benoit:

It could make sense that it has an impact, but it depends on the type of acquisitions. Is it an acquisition of something that's very resourceful? So, I'm thinking here do you acquire a company because you are looking for assets or are you looking to buy… for instance I am think about BlaBla Car they did a lot of acquisitions to essentially buy the networks that other platforms had built in other countries. In this sense I think that would make sense but yeah. But again, I think it probably depends on the type of acquisitions. If you buy presence in foreign markets maybe that would make sense or if you acquire customers, but if it's an acquisition completed because you need to secure maybe some of the type of assets that's really more tangible it could also be correlated with the fact that you have a business that needs a lot of assets. Maybe it is even location bound, which would make it more difficult to scale. Also, if you need to acquire loans to scale, it's very costly.

Valentin-prompt:

So, you think for further research it could be interesting to look at the acquisition motives and actually divided into market seeking or like a resource seeking or something similar?

Benoit:

Yeah, I think this could make sense.

- **6. In Dimension 3 concerning the team composition several hypotheses were presented concerning the value of team diversity on improved performance and ultimately post-money valuation. Thus, to capture this the number of founders, the degree of gender diversity, the degree of ethnic diversity and the degree of total diversity was tested. None of these did however contribute significantly to the valuation of the unicorns (neither negatively nor positively). Do you think this make sense?**

Benoit:

Yeah, so I'm thinking is there a lot of variance? So, these. companies have already become unicorns and so maybe they already have some kind of diversity in their teams otherwise they wouldn't make it there. So, it would be interesting to see what the variance is. Maybe the distribution is so tiny that even if you are not very different from average it could still have a large effect. So, firstly I would look at the distributions. Also, I want to say regarding gender and ethnic diversity that maybe you don't find the effect because it is hidden somewhere. Maybe it could be that the effect appears when you have at least one female in the team for instance. I mean I would look at the distribution and try to operationalize in different ways…

- **7. In Dimension 4 concerning the external environment it was hypothesized that the economic prosperity in terms of GDP growth in the year of the latest funding round would be a positive predictor of post-money valuations due to investor optimism about the economic outlook. Nonetheless quite the contrary was indicated by the regression results. They showcased at a <1% level that higher economic growth in last funding round was a negative predictor. Do you think it makes sense?**

Benoit:

Yeah, I think so. I don't know if I read this somewhere or if I'm just thinking about it right now, but I think investors are much more selective in a year like that. I mean, if you can manage to get funding in the year that's terrible economically, you're pretty good.

- **8. In Dimension 4 concerning the external environment it is supported at a <5% level that having a HQ in Silicon Valley is a positive predictor of post-money valuation due to the cluster effects derived from that specific location. Do you think this make sense?**

Benoit:

Yeah, it does. For me it's about access to capital and also learning. You can create a much stronger team if you are in Silicon Valley than if you are elsewhere. You can learn from the experience of many others and potentially even other unicorns. You know, when you are there [in Silicon Valley] you can even get a team member who is an entrepreneur that managed to actually reach that status. So, in sum, you have access to human capital in a way that you cannot get elsewhere. You can get financial capital and then you have all the supportive infrastructures. I mean all these innovation outposts of large multinational that can potentially help you get internationalized rapidly. For instance, if you are a telecom company there will be many large companies, which can help you very quickly enter 50 countries. Even if it requires some adaptation these companies are there to help and they can facilitate entering those markets. It's the same for many other industries. I mean, most industries have representatives in Silicon Valley, and it means you can access new markets relatively easily and quickly.

- **9. In Dimension 4 concerning the external environment it is also supported at a <1% level that operating with AI/ML or Fintech based technology is a positive predictor of post-money valuation. Do you think that it makes sense?**

Not answered.

## Part 3: Final comments

- **10. As mentioned, this research is conducted externally and thus key information such as revenue growth, profitability, user growth etc. has not been accessible. These pieces of information are obviously extremely important when it comes to valuations. Still the final model testing these 'softer' variables stimulated above proposes an adjusted R-squared of 0,24. Meaning that approximately 24% of the post-money valuation variation can be explained by the model. Do you find this reasonable?**

Benoit:

I mean, you can always increase it. It is just a question of adding some stuff that would increase the r-squared. The real question is about increasing the explanatory power in a meaningful way. But I think since you can already explain 20% it is not too bad. But I think I would include information about the investors. For instance, if you have very high-profile investors and VCs that have invested in unicorns before I think it could be relevant here.

INTERVIEW QUESTIONNAIRE TRANSCRIPT - FÁBIO SOARES SANTOS

# FÁBIO SOARES SANTOS, ASSISTANT PROFESSOR IN FINANCE AT NOVA SBE

## Respondent Data

- **Name:**

Fábio Soares Santos

- **Role:**

Assistant Professor in Finance at Nova SBE

- **Brief Description/Experience:**

Professor in Finance at Nova SBE for 10 years, also worked in Consulting at Kearney and as a Manager in Sonae. Specifically, in this topic, I was a financial advisor/consultant of a start-up company and raising venture capital.

## Part 1: Interviewee views and perspectives

- **1. From your experience as an academic, what would you say make unicorns distinctive from non-unicorns? And do you think it is possible to generalize common characteristics of unicorns across industries?**

Fábio:

The definition presented is broad and is purely based on the size and growth speed – the typical common characteristic in a company that is that "valuable" that fast has to do with the market it addresses and its potential. There is one key characteristic under this context: the company is usually in a market segment where the investors find a lot of potential, albeit that potential is not proven on the fundamentals in that short period of time. It's usually an innovative product/service that is fundamentally different from what already exists.

## Part 2: Research findings and interviewee comments

- **2. First of all, having heard about the model, do you expect that such a model will be able to predict any variation in the post-money valuation of unicorns? And do you think that it is reasonable to assume that 'softer' variables play a role in the valuation process? Why? Why not?**

Fábio:

As a Finance academic and practitioner, I tend to prefer hard data to check corporate valuation, since I'm a believer of "fundamentals". It is normal that some more qualitative variables and

soft characteristics will also play a role, but I think it is hard to proper capture which common variables those will be, which "values" they will have and ultimately what impact they have on the valuation prediction.

- **3. In Dimension 1 concerning the business model it was found that platform-based unicorns are valued significantly higher than non-platform unicorns at a <10% significance level. Do you think this makes sense from a valuation standpoint?**

Fábio:

I'm assuming that the variables in the model were controlled for some factors (e.g. revenue size as a controlling variable for value). Anyway, it might make sense to have platform-based unicorns a bit more valuable for other non-platform businesses with the same revenues. The fundamental that can explain that might be the scalability, which is higher in this kind of business – the added value for added revenues / consumers is higher.

- **4. In Dimension 1 concerning the business model a key concept from entrepreneurial theory by Austrian economist Schumpeter who characterized companies as either creative (similar connotation to today's 'disruptive') and adaptive (similar connotation to today's 'incremental' or 'marginal' improvements) has been adopted. By utilizing this concept each unicorn was classified according to their transformative nature being either 'creative' or 'adaptive'. It was found that having a 'creative'/'transformative' business model was a strong positive predictor of valuations at a <5% level. Do you think this makes sense from a valuation standpoint?**

Fábio:

Yes, and it connects with the initial context I referred before. In an innovative/creative/disruptive environment, the market potential might be higher, and investors might be willing to pay for the real option of being on that market and potentially seize the upside – that is not as high in an adaptative business.

- **5. In Dimension 2 concerning the growth strategy of the unicorns it was showcased that inorganic growth through acquisitions was a strong positive predictor of post-money valuation at a <1% level. Do you think this make sense from a valuation perspective?**

Fábio:

It depends on how it was incorporated in the predictive model – but it might make sense. Again, and connecting with the context I've described before, a unicorn company needs really fast growth, by definition. And that growth is quicker if it is inorganic through acquisitions. So, I will expect companies to have a higher absolute value quicker if it undergoes through more acquisitions.

- **6. In Dimension 3 concerning the team composition several hypotheses were presented concerning the value of team diversity on improved performance and ultimately post-money valuation. Thus, to capture this the number of founders, the degree of gender diversity, the degree of ethnic diversity and the degree of total diversity was tested. None of these did however contribute significantly to the valuation of the unicorns (neither negatively nor positively). Do you think this make sense from a valuation perspective?**

Fábio:

Yes. The value of a company is dependent on many factors and naturally the quality of the founders/managers is key – but the number of managers/founders and levels of diversity do not guarantee higher quality and value.

- **7. In Dimension 4 concerning the external environment it was hypothesized that the economic prosperity in terms of GDP growth in the year of the latest funding round would be a positive predictor of post-money valuations due to investor optimism about the economic outlook. Nonetheless quite the contrary was indicated by the regression results. They showcased at a <1% level that higher economic growth in last funding round was a negative predictor. What do you think could be the reason for this?**

Fábio:

At first glance, I believe it might be a spurious relationship. GDP growth expectations are indeed key macro external factors, together with interest rates. However, the GDP growth of the funding year is short sighted – it does not reflect the expectations about the future.

- **8. In Dimension 4 concerning the external environment it is also supported at a <5% level that having a HQ in Silicon Valley is a positive predictor of post-money valuation due to the cluster effects derived from that specific location. Do you think this make sense from a valuation perspective?**

Fábio:

Yes, it might make sense – objectively and psychologically for investors. Objectively if the company is inserted in a cluster of companies in Silicon Valley where there are big advantages and synergies. Psychologically because VC investors find it more appealing if the company is in Silicon Valley.

- **9. In Dimension 4 concerning the external environment it is also supported at a <1% level that operating with AI/ML or Fintech based technology is a positive predictor of post-money valuation. Do you think that it makes sense that these technologies influence the valuation?**

Fábio:

It might be overlapped with some of the factors that we discussed before. Being AI/ML or Fintech are actually specific cases of the "innovation" described on Dimension 1, as well as the "platform" based in the same dimension. I do not see it as an extra factor/dimension, but rather a set of specific cases that show the other dimensions we've discussed.

## Part 3: Final comments

- **10. As mentioned, this research is conducted externally and thus key information such as revenue growth, profitability, user growth etc. has not been accessible. These pieces of information are obviously extremely important when it comes to valuations. Still the final model testing these 'softer' variables stimulated above proposes an adjusted R-squared of 0,24. Meaning that approximately 24% of the post-money valuation variation can be explained by the model. Do you find this reasonable?**

Fábio:

There would be a few technicalities to discuss, but I would not expect a high R-Squared in this setting, for two key reasons: (1) the valuation of a company is a complicated matter that is dependent on many factors beyond the ones you mention here and (2) those factors that you mention here are "soft" and hard to measure/define, thus its role in explaining valuation is also more difficult.

INTERVIEW QUESTIONNAIRE TRANSCRIPT – KRISTIAN PITZNER JØRGENSEN

# KRISTIAN PITZNER JØRGENSEN, CEO & CO-FOUNDER AT LAST OBJECT

## Respondent Data

My name is Kristen Pitzner my background is from finance and economics at Copenhagen Business School. I spent the first part of my career in McKinsey as a consultant and then I went

into the startup world where I founded Samlino, which is a price comparison FinTech where we ultimately raised more than 20 million euros to grow the business. After about four years I went on to found another company called LastObject, which is a consumer brand company that creates reusable alternatives to single use items and that's also a scale up. We haven't taken any funding as of yet because we've built a profitable business, but we may decide to go on and do so at a later stage. So, that's a brief intro.

## Part 1: Interviewee views and perspectives

- **1. From your experience as an entrepreneur, what would you say make unicorns distinctive from non-unicorns? And do you think it is possible to generalize common characteristics of unicorns across industries?**

Kristian:

Yeah, so I think there is a distinction to make up front. Typically, when you talk about unicorns, at least to my understanding, you're talking about companies that have a 1-billion-dollar valuation but also relatively young companies. For instance, I think there are many industries where you can probably create billion-dollar valuation companies if you, for example, have enough capital. Like, I don't know, opening a new mine or something. So that you have huge entry barriers in terms of capital and equipment or something. In this case you, in my definition of what we're talking about now is more like newer companies that have been able to show rapid growth and have operated maybe less than 10 years or something like that before they achieve the Unicorn status. That’s conceptually how I think about it because you can obviously find many industries where you can deploy capital and then you're going to achieve the same sort of Unicorn status.

So, if we look at those, what I can sense that many VCs are looking for is… I think it's a few things right. I think that one you need to solve the problem that's big enough and because that's an indication of the potential of the market that you can address. It doesn't need to be sort of an established market already, right. You can take Facebook for instance. You know there was not an exact version of Facebook before Facebook did it. You could even take our reusable cotton swabs [at LastObejct]. The market for reusable cotton swabs didn't exist before we created it, but the problem was there. Many people wanted to communicate with each other before Facebook was created and many people wanted to use cotton swabs every day and they use cotton swabs for one single use because that's what options they have available at the moment. So, you need to find something where there is a big market ultimately. Also, even if that means creating that market. The best question to ask is if it is a problem that many people face and if they face it with a high frequency. So, it's not so helpful if it's something that happens every 10 years in your life. It's much better to find the problem that is a daily occurrence. So, I think, that's basically number one. Is the problem big enough?

I think… the other thing is… are you able to solve it really well for enough people early on. So, I think it's much easier to become successful if you find sort of a niche where you can allow yourself to create super good user experiences and address a small group of people but really addressed the problem in a very effective way rather than trying to do something for everyone. It is much better to find the core and grow from the core. So, I would imagine many companies, and if you take the case of Facebook, they started with the college students and rolled out from there. Right now, they have, whatever, plus 2 billion users globally. So, I think that it is a great example of how they went from college students and universities to expand into the rest of the US and ultimately across markets.

Then if you look at the scalability because that's really important too. So, it needs to be something that scales well. I think that's more an operational thing than it is a financial thing because if it scales well operationally and the unit economics are good then you can find the money. But if you say you wanted to open, now I'm going to say something where you can find a lot of examples that that will tell a different story, but if you want to open physical shops then it's just more costly and it just takes longer to achieve the scale. Ultimately, I think it will be harder to do like very massive scaling for ventures with a physical nature. I don't think I would be able to imagine Starbucks becoming as big as Facebook but certainly they are they are a good case in showing that obviously you can make that model work. Another example can be consulting or any business where people are selling their hours. It's just something that scales really poorly. Whereas acquiring users typically scales very well. So, that applies to all the social media, SaaS and all of these types of businesses because they basically scale with server capacity. So, I think the unicorns you see are the ones, especially in recent years, who are on this course. You know, in the spectrum of easy to scale. I'm sure you would have found many SaaS companies and platforms. So, I think that's super important.

Then you have basically what I would call your unfair advantage. I think that you need to have some kind of unfair advantage to beat the market and sustain your competitive advantage. An unfair advantage can be that you have some of the best people in the world in a specific field. It could also be patents and IP rights. Meaning that a particular idea very well protected so that if anyone wants to use it, they will need to pay you one way or another. It could be network effects. That is extremely important. Again, think about Google and Facebook and so on. It works much better the more people who use the product, and it makes it less attractive to use an alternative, so they create high switching costs and protect the business. So, you know, you

need to figure that out. There almost always needs to be some kind of unfair advantage that you can leverage because that's really your entry barrier in a way for competition.

Finally, I would say the team. I think that goes a little bit back to unfair advantages, but I think just zooming a little bit in on the team. I think, relatively speaking, that two things that need to be in place. One is the founders need to be complementary. A simple way of thinking about that is somebody needs to be really good at building the product and somebody needs to be really good at selling the product. Then, I think, on the margin it is probably better to have very good technical founders than it is to have really good salespeople because it makes good salespeople easier to find than if it is the other way around. I still think the risk with technical founders is that they are too far away from the customer, so you need somebody to balance this out. You need someone to represent the voice of the customer. Secondly, I mean, it's not only selling it's basically making sure that what is being built is actually matching what the customers are looking for. So, I think those are some of the characteristics I would look for in companies that are able to achieve unicorn status.

## Part 2: Research findings and interviewee comments

- **2. First of all, having heard about the model, do you expect that such a model will be able to predict any variation in the post-money valuation of unicorns? And do you think that it is reasonable to assume that 'softer' variables play a role in the valuation process? Why? Why not?**

Kristian:

For sure, but I mean, it's obvious that it can be hard to quantify some of these dimensions but yeah… For instance, I think the external environment is a super critical one. I would much rather be industry or segment that have high growth because if you enter into that segment in

the right markets you basically just have to do average and then you have the average industry growth typically. So yeah, I think that's sort of the where to play, so select the right industry select the right markets is extremely important and I think that one will capture that well.

Business model, yeah of course, that's your unit economics. Basically, that is that you can make the numbers work with your pricing and underlying cost structure.

Growth strategy**,** I'm not sure exactly what you mean. If you mean like pursuing a rapid growth strategy by lots of funding it obviously makes it easier to become Unicorn. So, diluting yourself for shareholders but getting a lot of cash to grow the business should increase the valuation.

- **3. In Dimension 1 concerning the business model it was found that platform-based unicorns are valued significantly higher than non-platform unicorns at a <10% significance level. Do you think this makes sense?**

Kristian:

Well… in a sense yes… but I think potentially there is a risk of confirmation bias here. If you only look at the 300 who made it and not at the thousands who tried. I don't know if it's because there were so many who tried to do platform businesses and then only very few ended up being successful. So intuitively I think there's just something around… what is the question that you're answering by making that analysis… So, you can probably say that out of the 300 unicorns, platform businesses obtain higher valuations but maybe there were thousands who went bust. I think that might even be the case because it is such a winner takes it all market. For instance, there's only really room for one Facebook or one Google. So, what happened with all the rest is a relevant question. I think that's just food for thought. On the other hand, you can say that platform business has a lot of the things that we discussed before in terms of unfair advantages

as they have network effects that protects them quite significantly. Still, it is a winner takes it all segment so there are many, many other companies that will need to go bust or get acquired along the way for someone to have the number one position.

Valentin Follow-up:

So, we could imagine that the platforms that make it to the Unicorn level might be the actual ones that have successfully utilized their unfair advantage which propelled them to have this really high valuation.

Kristian:

Yeah. That could be the case.

- **4. In Dimension 1 concerning the business model a key concept from entrepreneurial theory by Austrian economist Schumpeter who characterized companies as either creative (similar connotation to today's 'disruptive') and adaptive (similar connotation to today's 'incremental' or 'marginal' improvements) has been adopted. By utilizing this concept each unicorn was classified according to their transformative nature being either 'creative' or 'adaptive'. It was found that having a 'creative'/'transformative' business model was a strong positive predictor of valuations at a <5% level. Do you think this makes sense?**

Kristian:

I think it makes sense. I think that's sort of like if you go out and create something truly new that's in order of magnitude better than what's already there then I think that will ultimately be reflected in your valuation. Still, I think from a risk-return perspective, and this is just guessing right, but I think from a risk-return perspective you are also taking lots more risk in the

transformative creative ones than you are in the adaptive ones. So, maybe if you looked at the Alpha in each of those models you would find that the adaptive ones are more attractive. I don't know why but I think that's a little bit similar to the comment on platforms before... How many succeed and so on and if that's even what you're looking to answer?

- **5. In Dimension 2 concerning the growth strategy of the unicorns it was showcased that inorganic growth through acquisitions was a strong positive predictor of post-money valuation at a <1% level. Do you think this make sense?**

Kristian:

Yes, I think it makes a lot of sense intuitively. If you assume that people are acquiring other companies at a fair market value. I'm just not sure if it creates shareholder value. Still, if you have a business today which is worth 100 million and you acquire another business that's worth 50 million by raising 50 million it is like somebody put 50 million into your business. You then use the 50 million to buy another business and then suddenly your business is not worth 100 million. It is worth 150 million. So, I think, assuming that this these transactions happened at the reasonable prices, then the business value will increase proportionally with the acquisitions. Then of course there is the potential to harvest some synergies and probably that is also true to some extent, but I think that it's really hard to say. But yes, of course, if you can deploy more capital to buy other businesses then your valuation will increase proportionally.

- **6. In Dimension 3 concerning the team composition several hypotheses were presented concerning the value of team diversity on improved performance and ultimately post-money valuations. To capture this the number of founders, the degree of gender diversity, the degree of ethnic diversity and the degree of total diversity was tested. None of these did however contribute significantly to the**

**valuation of the unicorns (neither negatively nor positively). Do you think this make sense?**

Kristian:

Interesting, I think you will find in general research confirming that diversity creates positive outcomes almost always. I think that the dimensions you're looking at though are not necessarily what you would be looking for in a startup or Unicorn. What you're looking for is diversity of skillsets and not necessarily ethnicity or gender or something like that. I think is just much more relevant. Like an engineer complemented by a salesperson or a coding person complemented by a marketing person. Maybe you would be able to sort of infer that by the number of founders but I'm not even sure. It could easily be three people who went to Business School together and started a company or three people from an IT or engineering school. So, I think the dimensions you have here are not the right ones to be very honest.

- **7. In Dimension 4 concerning the external environment it was hypothesized that the economic prosperity in terms of GDP growth in the year of the latest funding round would be a positive predictor of post-money valuations due to investor optimism about the economic outlook. Nonetheless quite the contrary was indicated by the regression results. They showcased at a <1% level that higher economic growth in last funding round was a negative predictor. What do you think could be the reason for this?**

Kristian:

I can give you my perspective, but I'm not sure I can give you an answer. So, what drives a valuation? Traditionally, two factors right, it's a revenue or earnings metric so and then some multiple. When you're looking at the GDP growth, you're looking disproportionally on the multiple side of things than on the underlying performance of the business. Let park that here and I will get back to it. But when you look at the multiple then what happens is and you can

say in the one scenario where the GDP growth is high you would assume that the market is sort of overheated. People are willing to pay a higher multiple per $1 of revenue. That logic is probably sort of there and there is probably some truth to that…. you know lots of transactions are happening and prices are getting pumped up. The counter argument is that if you have low GDP growth and you probably want to check for you know… I almost wanted to check for the return in the capital markets rather than GDP growth… but when there's low returns in terms of GDP or rather in terms of putting your money into a bank, the investors will allocate their money to other types of businesses that can generate returns. That's why you're seeing VC startup having no problems getting funding in times of contracting economic environments. I mean, the alternative is so unattractive, so that the VCs' return is so much more attractive, and it is easier to justify placing more of money in that type of investment. If you place them in bonds you basically get the negative yields or 0 so I think those are some of the factors that can sort of influence the multiple investors are ready to pay. Yet, the thing that I think is much more important is the industry or sub-segment of an industry that this business is dealing with. I think if they are part of a major trend like you had with the dot-com era or all these things like the social media and they are part of a major trend with high growth and that is basically driving the market right now. Looking, for example, at our business [Last Object]. When we look at the number of Google searches for instance for terms like 'reusable' those keywords have skyrocketed over the past few years so that's a leading indicator that there's something happening and that we can be part of a major trend. If you looked at number of Internet users back in the dot-com days I'm sure that would be a major trend predictor as well. If you can you detect that you are part of a major trend and I think that will tell much more about the likelihood… or your ability to achieve high growth in the business. So, I think it's like some of the factors that I just mentioned are more multiple-oriented and some of them are more looking at the business itself.

It could also be relevant to look at the data and say in the periods where you experience one period with low GDP growth and high multiples and one with high GDP growth and lower multiples or- whatever it was that you found- you know what was the underlying growth rates in each of those periods for the 300 companies in the data set because obviously if you're looking at a company where the growth for the past three years had been significantly higher in one data set compared to the other then that would explain a lot as to why the multiples might be higher. But on the other hand, it makes a lot of sense that if the GDP growth is really low then the money will flow to where investors can obtain a higher return potentially, which could be in the VC field. That's at least point I think of, but I think it's not necessarily the GDP which I would just say is directional. I would imagine that the interest rate is a better predictor. So, I think those [GDP growth and interest rates] are related terms, but maybe that would be an interesting additional analysis.

- **8. In Dimension 4 concerning the external environment it is also supported at a <5% level that having a HQ in Silicon Valley is a positive predictor of post-money valuation due to the cluster effects derived from that specific location. Do you think this make sense?**

Kristian:

I think that sounds very reasonable. I think that's where you have access to capital. You have the investors. You have the whole ecosystem around these types of companies, so you not only have money, but you also have a lot of expertise gathered there. So, I'm sure you get the high-quality investors, and you have an investing paradigm over there, which is very much focused on creating these big unicorns rather than creating short term healthy businesses. So, I think they invest in a way that drives higher growth and therefore also higher valuations

- **9. In Dimension 4 concerning the external environment it is supported at a <1% level that whether a unicorn is operating within AI/ML or Fintech Industry or not is a positive predictor of post-money valuation. Do you think that it makes sense?**

Kristian:

Well… I guess you've seen the movies and studies or whatever right. I don't have any data to support this, but this is like… the companies that change their names to include AI or something like that and their prices increased in the stock market and I think this has to do with what's trendy… what do people believe will come in the future and then money will sort of float in that direction. So, again, I think it's probably more an indicator of the multiple then it is an indicator of the underlying performance of the company and the multiple is kind of dictated by investors' hopes and wishes for the future returns rather than where they are today. So, I definitely think that you could find some very, very aggressive multiples in those two areas as well as maybe even also a lot of technologies that are well protected patent wise. Therefore, you maybe pay more for the technology part than the current performance if you will. I think that's probably what I would expect is the biggest driver.

## Part 3: Final comments

- **10. As mentioned, this research is conducted externally and thus key information such as revenue growth, profitability, user growth etc. has not been accessible. These pieces of information are obviously extremely important when it comes to valuations. Still the final model testing these 'softer' variables generated an adjusted R-squared of 0,24. Meaning that approximately 24% of the post-money valuation variation can be explained by the model. Do you find this reasonable?**

Kristian:

I honestly don't have a strong opinion on it. It's very hard to just say. I think all of these things are very relevant, but I think that the problem is about the data quality that you can use in the model like this. I think that since you're not on the inside of these companies it is really, really hard to say something meaningful about, for example, the team. I think that the growth strategy may be right. The type of business model is… sure I think that makes sense… but the team sounds like it's really difficult the nail. The external environment sounds like it's more GDP focused then what I would have looked at myself. So, I think it's a tough nut to crack in a way and it is difficult to get this right because you are collecting from an external data point of view. It's hard to get reliable data on a lot of these things so I would not expect it [the r-squared] to be super high.

INTERVIEW QUESTIONNAIRE TRANSCRIPT – NIELS KRISTIANSEN

# NIELS H. KRISTIANSEN, CEO & CO-FOUNDER AT PORTCHAIN

## Respondent Data

Niels:

Briefly about my background… I think I got to understand the concept [of unicorns] when I was studying at MIT and then joined McKinsey afterwards where I was doing consulting work in technology, but it was only when I started my own software company, which was four years ago or almost four years ago that I really became aware of the concept. I think that in the startup environment it's impossible to not be familiar with unicorns and by now I have read about 20 different startup books – all the classics - and I think as such you can't avoid learning about unicorns.

## Part 1: Interviewee views and perspectives

- **From your experience as a _____, what would you say make unicorns distinctive from non-unicorns? And do you think it is possible to generalize common characteristics of unicorns across industries?**

Niels:

Well, I mean that depends, but I guess one factor is what you could call hyper growth and then of course a very big market that they can take a chunk off. I think for VCs their definition is that it has to be at least one billion dollars, but yeah, I think a combination of hyper growth in a large market where the market is also growing.

Then I would say that I think unicorns typically tend to go for global domination, which is very aligned with the VCs' model. They don't want to fund a company that is only going to operate in, for instance, Denmark and Portugal. They typically do in the beginning, but they want to see the vision and the potential that they can go and basically take on a global market. I think this is a important characteristic.

Valentin follow-up:

How would you define hyper growth?

Niels:

So, I think it means multi-100% growth per year… at least in the beginning and then of course it's going to start to decline over time but yeah… it is really down to two drivers. It is going to be revenue and users or customers. Those are the two key ones that you'll be looking at. Then a typical characteristic for unicorn is that they are generally not profitable companies that are growing at a stable pace. It's a very deliberate **growth model** where you sacrificed profits for market share and users, and you do that through many years. That's because if you want to get

the global market share you need to grow really fast and you need a lot of money to do that, which is what the VCs can provide. You need to grow faster than your competitors.

Valentin follow-up:

If you could just talk a bit about like maybe the business model and like this strategy do you think there are any common ones?

Niels:

I think they can be quite different. It's hard to say right… so let's take 2 examples… for instance, let's say the electric scooter market that is taking off. I would say that market is characterized, and I don't even know if any of them are unicorns by now, but I would say that market is characterized by very low entry barriers, which means that competition is going to be high. When competition is high it becomes a growth game where you need to be better and faster at executing and you need to have more money than your competitors. I think that's what you've seen with the e-scooters, I mean, they've grown like crazy but if they don't do it then their competitors come through. You have tons of companies entering the market to get a slice of this new market that's being created. On the other hand, you have a company like SpaceX, which has one competitor basically which is NASA. NASA is also their biggest customer or one of them. I think this is where you have something so extremely hard. Building rockets is extremely hard. So, you're competing in a game that requires insanely long and complex enterprise sales of selling to the US government, the space agencies or to the military. Landing these large contracts is immensely complex. You have to invest a lot in the beginning before you can even build a rocket and test it at low cost. You need a lot of money to even get the first versions tested and that's a completely different model from for instance the scooter company.

## Part 2: Research findings and interviewee comments

- **First of all, having heard about the model, do you expect that such a model will be able to predict any variation in the post-money valuation of unicorns? And do you think that it is reasonable to assume that 'softer' variables play a role in the valuation process? Why? Why not?**

Niels:

In short, I think it is possible, but I will also say that there are a lot of different factors in this. I mean the VCs will try to put a value on their investments. So, what they'll do is that they'll invest at a certain valuation and then they need to have a liquidity event, which is either going to be an exit or an IPO where they need to get their money out within 8 to 10 years. Typically, the life cycle of a fund is 10 years. Some will have an extension of two years going up to 12 years in total. They basically use the first 2-3 years allocating all their investments. Then they'll do follow-ups in the years after where they will then save say 60% of the fund maybe even 70% of the funding to do follow-ups on the ones that are growing or have the most potential. Of course, they are ongoingly tweaking their valuations. Over the period of a fund, they ideally want to triple the value of the fund. So, they're going to internally keep track of the value of the companies. So, they'll try to say… OK, we invested at this valuation and now they have achieved you know… they've grown their user base by this much in this much time and this has happened and then they try to internally allocate a new valuation. So, they're basically tracking what some call funny money when you're tracking across the portfolio, they're tracking the value and whether they think they're on track to meet their return targets so they're definitely using a model for this. It would probably be interesting to also talk to a few VCs how they're doing it, but I think it's probably more of an art than a science I would say. I think there are definitely models out there that are being used.

- **In Dimension 1 concerning the business model it was found that platform-based unicorns are valued significantly higher than non-platform unicorns at a <10% significance level. Do you think this makes sense from a valuation standpoint?**

Niels:

I think that makes a lot of sense. Platforms are extremely powerful and typically where you also get network effects so that I don't think that's surprising at all. But they are also very hard to build.

Valentin follow-up:

You guys [at Portchain] are also developing a platform or utilizing a platform model so maybe if you can just elaborate just one sentence on what makes platforms unique?

Niels contd.:

What I think makes platform so extremely valuable, and that's also a key thing for instance to look after, is network effects. Basically, you know… the first fax machine had zero value. Also, If you had a fax machine and three others have fax machines but you still have 100 of friends that don't have it the value is still not really there. But if 70% of your friends have fax machines suddenly the value goes up. That's what network effects mean. If you look at a company like Microsoft, which is in the most innovative space around tech, it's the same company that's dominant like 30-35 years later which is saying something, right? The only reason that they're still a company is purely because of network effects. It just secures platforms against competition and allows them to basically cement their position in the market and just set off any entrance into your space. So, I would say that makes sense. Also, when if you look at the valuation. When you can create a space with high network effects it becomes very defendable, which is always driving valuations because you can keep entrants out. Secondly, once you

become a platform and hit a certain, I think the rule of service like 100 million dollars in ARR maybe it's even higher, and then suddenly you can become a platform for other companies to start building on top of your platform. So, if you look at you know something like Google or Salesforce or maybe even Slack when you can actually start having companies that can make money and can make enough money to be profitable based on the platform that you have created… then of course it will further fuel the valuation.

- **In Dimension 1 concerning the business model a key concept from entrepreneurial theory by Austrian economist Schumpeter who characterized companies as either creative (similar connotation to today's 'disruptive') and adaptive (similar connotation to today's 'incremental' or 'marginal' improvements) has been adopted. By utilizing this concept each unicorn was classified according to their transformative nature being either 'creative' or 'adaptive'. It was found that having a 'creative'/'transformative' business model was a strong positive predictor of valuations at a <5% level. Do you think this makes sense from a valuation standpoint?**

Niels:

I think… I guess… maybe just look at a company like Apple creating the iPhone. I think… if you search for it… I think now the iPhone has in total displaced I think it's 27 industries. I mean, think about cameras, video recorders, scanners, alarm clocks, at night you have the flashlight and even the compass. They're all these industries that they have replaced during this process. That is creative disruption in those industries. Coming completely from the outside and just entirely taking out all these industries so and that of course comes from a very creative place, but I am not completely sure about your definition here and I would need to look more at the data.

- **In Dimension 2 concerning the growth strategy of the unicorns it was showcased that inorganic growth through acquisitions was a strong positive predictor of post-money valuation at a <1% level. Do you think this make sense from a valuation perspective?**

Niels:

Yeah, I do… I mean when you're buying a company, you're typically buying also their revenue. So, you're basically buying valuation into your company at a cost of course. At the same time, you are taking out a competitor, which should also increase your valuation. I think for unicorns to do these roll-ups and roll companies in as they grow, I think of course you are naturally increasing the valuation. M&A is just tricky. I think around 70% of all M&A deals are inherently value destroying or unsuccessful and I think you can search for McKinsey stats on that. So, I would say sure I think it's a predictor, but I think the big one for me is also just the market and the inherent growth in the market. So, you don't have that I think you're missing a fundamental part in your model.

- **In Dimension 3 concerning the team composition several hypotheses were presented concerning the value of team diversity on improved performance and ultimately post-money valuation. Thus, to capture this the number of founders, the degree of gender diversity, the degree of ethnic diversity and the degree of total diversity was tested. None of these did however contribute significantly to the valuation of the unicorns (neither negatively nor positively). Do you think this make sense from a valuation perspective?**

Niels:

No, I think it makes sense. I think it's very secondary. I think there should definitely be an effect in the sense that having women in teams increases basically the creativity of the team and I think it has been proven that diversity has a positive effect but it's so, so small compared to what's actually a play here. I mean, if instead you looked back the unicorns from when they were, I don't know, 700 million dollars before and now they're $1.3bn and you compare them and maybe there's a tiny factor with diversity. I mean, you can look at how did those unicorns even become unicorns. I think you have to go much further back through the fundamentals. Because of course, you need to have a great team. There's no way that you're going to succeed without it, but if you have a great team in a bad market, you're not going to succeed on average. So, you need to have a great team in a great market. A great market is a market that's growing and where you're getting a lot of tailwind. You can read about this on Andreessen Horowitz blogs and about the importance of the market and the timing in the market. So, for instance, taking cannabis in the US, which is certainly just taking off, but the timing is there. If you're starting a cannabis company in the US, you're inherently just growing like gangbusters because a lot of people want it, and you can actually have that lower performing team because you're in a market that's just completely exploding. So, the timing in the market is there, but only because the government decide to deregulate. If that was not the case, there isn't going to be any market. So, you're waiting for the right timing and then it happens. That's why if you compare those factors to diversity you can't even compare them. It's like diversity has no effects.

- **In Dimension 4 concerning the external environment it was hypothesized that the economic prosperity in terms of GDP growth in the year of the latest funding round would be a positive predictor of post-money valuations due to investor optimism about the economic outlook. Nonetheless quite the contrary was indicated by the regression results. They showcased at a <1% level that higher**

**economic growth in last funding round was a negative predictor. What do you think could be the reason for this?**

Niels:

I don't think you can use that. It is way too through high level. You need to get into the specific industry and get much deeper than GDP in the country, but I mean of course you need to be in a country where you have the ability to create a startup. So, if we play with the assumption, and imagine that you have those fundamentals in place, then I don't think it's going to come down to the GDP growth of the market you're in. I think it is about the specific industry and not so much the actual country or the growth in that country.

- **In Dimension 4 concerning the external environment it is also supported at a <5% level that having a HQ in Silicon Valley is a positive predictor of post-money valuation due to the cluster effects derived from that specific location. Do you think this make sense from a valuation perspective?**

Niels:

Yeah, I think it comes down to… you have very sophisticated investors that have built large companies before and I think that should help, right. For instance, if you can get the VC that helped build and expand Airbnb and you want to move into an adjacent business that's not competing directly but have similarities it's of course going to be a big help for you to have the investor team from Airbnb to invest in your company. Since VC investments tend to be very local. Typically, within like a 30-minute flight of Silicon Valley I think naturally unicorn companies would be there.

- **In Dimension 4 concerning the external environment it is also supported at a <1% level that operating with AI/ML or Fintech based technology is a positive**

**predictor of post-money valuation. Do you think that it makes sense that these technologies influence the valuation?**

Niels:

Yeah, for sure I think it's entirely driven by that. I think it's the market exactly. It's going to be the market right. I mean, AI as a whole… as an industry right… It's going to grow much faster than the I don't know like the milk industry or whatever or Coke. I mean, it makes a lot of sense. The electric car industry is also one, which is just inherently growing at a much higher rate than other industries.

## Part 3: Final comments

- **10. As mentioned, this research is conducted externally and thus key information such as revenue growth, profitability, user growth etc. has not been accessible. These pieces of information are obviously extremely important when it comes to valuations. Still the final model testing these 'softer' variables stimulated above proposes an adjusted R-squared of 0,24. Meaning that approximately 24% of the post-money valuation variation can be explained by the model. Do you find this reasonable?**

Niels:

I mean… I would actually have suspected it would have been a little bit higher, but I guess there are a lot of different factors so I would say yeah. I do think that it should be possible to bring it up. But overall, I think it is the market, the team and the timing in the market, I think this is the big ones, and then of course the growth model. It is so hard to become a Unicorn unless you have super aggressive growth frankly. So, that's also going to be a big one and then you of course need a market that can handle that growth. If you enter a declining market you can put all the money into it that you want but you're not going to get a unicorn out of it.