MGTA 457 - BUSINESS INTELLIGENCE SYSTEMS

Final Project: Unicorns Performance Over the Years

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Project Goals

The primary goals of the project involves:
a.) Understand what Unicorn is and how their valuation is done.
b.) What makes unicorns interesting to study as well as different from others?
c.) Gather and wrangle data (source: Kaggel) around various unicorns
d.) Business Cases essential for user
e.) Create an interactive Tableau dashboard to provide interesting and important insights about the *unicorns* over the years across various industries

Before jumping into the interactive Tableau dashboard and details around it let us understand the following:

What is a Unicorn?
In finance and business, "unicorn" is a term that describes a privately-owned startup with a valuation of over $1 billion. The term *unicorn* was introduced by venture capital investor, Aileen Lee, in 2013 to describe rare tech startups that were valued at more than $1 billion.

What is Valuation?
A company derives its valuation or worth by venture capitalists and investors who participate in the financial rounds of the companies. Since all unicorns are startups, these companies are valued similarly based on their future growth potential, technologies, ideas and expected development.

How is Valuation of a Unicorn done?
Valuing unicorns is a sophisticated process that involves the consideration of various factors and the development of long-term forecasts. Additional complications often arise due to the business models of such companies. Some companies become the first business of their kind in an industry, which makes the valuation process even more complicated.

What makes unicorns interesting to study as well as different from others?
Unicorns' are interesting and that can be explained due to following reasons-

- Fast Growth Strategies: VCs primarily rely on fast-growth strategies and techniques for a startup's development. Such strategies encourage investing large amounts of money in every round of financing, in order to capture the biggest possible market share as soon as possible, as well as to prevent the emergence of major rivals in the marketplace. Therefore, a unicorn company's valuation skyrockets every round of financing.
- Buyouts: Startups are often taken over by large tech giants such as Google, Meta as unicorns provide established technologies, hence adding competitive advantages to larger companies.
- Innovation: Innovations in technologies allow the faster growth of startups. By leveraging the new technologies, unicorn startups manage to reach their customers faster and shorten the time required to achieve mass production.

To conclude, as of March 2022, there are approximately 1,000 unicorns around the world. The former popular ones include Airbnb, Shein, Canva and Google. We aim to build an interactive Tableau dashboard to provide insights about these unicorns over the years across various industries. The dashboard can be utilized by Venture Capitalists who want to determine which industries yield higher return on investment, Startup founders who want to determine which location is optimal for establishing their startup or those who want to compare their startups performance with other companies in their target industry and location.

Team Roles

Each team member worked on designing a unique worksheet visualization and write business cases for the used cased which revolved around a useful business insight for the user covering aspects such as the filtering unicorn companies, their fundings, foundation year, number of years the company achieved unicorn status among many others.

A lot of brainstorming sessions were involved where multiple design ideas were discussed to eventually come-up with the best designs to be added to the final dashboard screen.

Finally, the dashboard screen was created by joining all the worksheets. The team kept in mind things such as simplistics design and view, easy to understand, flexible and visually appealing and creative dashboard while developing the final version.

Data Source

The kaggle dataset comprises 1,074 unicorns and measures their performance in any particular industry over the years 1919 - 2021. The data contains 11 fields consisting of details about the

unicorns such as Company name, Valuation in billion dollars, the date when it reached unicorn status, industry, location and year the company was founded. It also includes information about the investors and total amount raised in billion dollars.
Source: https://www.kaggle.com/datasets/mysarahmadbhat/unicorn-companies

A snapshot explaining the data fields is shown in **Exhibit 1**

Data Preparation

Before creating visualization plots on Tableau the data was required to be clean. Additional columns were added and aggregate data was created.

- Valuation and Funding column data type was changed from Text to Numeric.
- Year columns were created out of Date Joined columns.
- Industry 'Artificial Intelligence' was occuring twice with slight variation in name. This was clubbed under the same category name.
- Investors column which shows the top investors for the company was separated under each column as it was present in a single column with comma separation i.e. Long to Wide format conversion.
- Investors with slight variation in name were merged under the same name to avoid duplicate records. For example Sequoia Capitals was treated to be categorized under the same name.
- State column was not present and was created using the City information. Some of the countries where the State could not be identified, the City was used as a proxy for the state.
- The data received from kaggle contained a lot of NULLs and Blanks which were imputed with NA or 0 or average value as per the data.
- Standardization (All Caps) for various columns was done to avoid duplication in values.

Dashboard Interactions and Findings

The dashboard was carefully created combining all the worksheets created by the team members. Each of the worksheet is explained below along with the idea of creating the screen and what business impact and insight this have for the user-

View 1: US Geography Summary View (Exhibit 2)

This interactive view helps users understand high level insights about the number of unicorns, industries, average funding and average valuation at state level geography. This view will help users gain insights in different areas in the US about unicorn companies and help solve business

problems such as which areas in the US have the most number of unicorns, areas where highest funding is received etc.

View 2: Unicorn Per Country View (Exhibit 3)

This simple bubble view helps the user understand the top countries where the most number of unicorn companies are present across the time period of the data. This is a very simple yet powerful visualization that gives a general sense to the user of the countries where most unicorn companies are present. This can give users an indication of countries who promote start-up culture. Further, users who are looking for research on unicorn companies can get a direction to focus on some specific countries.

View 3: Industry Wide Unicorns View (Exhibit 4)

The visualization helps users understand two things at industry level. Firstly, it draws a relative position of various industries across average funding and average valuation of all unicorn companies. Further, the size of the bubbles indicated the number of unicorn companies in each industry. A provided filter option helps compare specific industries and let users focus on some peculiar companies. This visualization is super powerful for users to understand the relative position of unicorn company status across industries. Further, it helps understand the user the size of industry based on the number of unicorn companies.

View 4: Establishment Time Series (Exhibit 5)

This visualization gives users a sense of the number of unicorns along with information such as average valuation, average funding and number of years taken to achieve unicorn status across years the unicorn companies were found. This visualization gives user a sense of unicorn companies development in terms of number of companies, their investors, valuations etc. across time. This helps users understand the time when unicorn companies started picking up pace across industries.

View 5: Industry Investors View (Exhibit 6)

This interesting tree visualization focuses on each industry and shows the number of investors within each industry. This simple yet powerful visualization finds its use cases where users can identify the top companies who invested in current unicorn companies within each industry. This can greatly help users who are planning to seek funding and approach companies to pitch ideas in their domain.

View 6: Industry Level Top Companies Table View (Exhibit 7)

This table covers most granular information giving users the required information of funding and valuation of top companies across each industry. This visualization is very important to know detailed information and is helpful for users to know details of unicorn companies who are performing best based on their valuation across each industry category.

Dashboard Design

Overall, based on the above visualizations and table we created two final dashboards which will help users understand insights on the formation of unicorn companies along with their detailed analysis showing the features and values such as valuation, funding, number of investors.

Changes from the previous Design Document

As mentioned in the report above, that various interactive brainstorming rounds of meetings were organized to finalize the final dashboard which makes proper story boarding and valuable insights for the user, there were few changes made to the current version over the previous version. Moreover, Professor's valuable feedback from the mid report was also incorporated to improve the designs and effective visualization while finalizing the dashboard.

The following were the incorporated changes:

1) Geographical map was initially designed to include a tooltip visualization to showcase significant insight into a particular region (state) but we later observed that the tool tip visualization could itself be used as a full fledged data visualization incorporated into our dashboard for further explaining our business use cases. Stated metrics from the previous dashboard design such as number of unicorns per state/ region in each industry, average valuation of unicorns and top 3 unicorns (as tree map) were each presented in the form of significant visualization for better storytelling.
2) Trend line was incorporated as mentioned in the previous dashboard design, but few additional metrics were added such as "average years to become a unicorn" and "average fund received by companies established in a particular year".
3) Bar graph was to be utilized for the new dashboard design as we could not find any significant use cases for it. However, the previously mentioned use case was incorporated into the trend line chart.
4) Bubble charts were utilized for different use cases, for instance "number of unicorns per country" and "industry wide avg.valuation and avg.funding".
5) We have also introduced a table which showcases a high level information of the top 3 performing unicorns per industry with metrics such as funding or valuation.

Appendix:

Exhibit 1: Data Dictionary

Field	Description
Company	Company name
Valuation	Company valuation in billions (B) of dollars
Date Joine	The date in which the company reached $1 billion in valuation
Industry	Company industry
City	City the company was founded in
Country	Country the company was founded in
Continent	Continent the company was founded in
Year Foun	Year the company was founded
Funding	Total amount raised across all funding rounds in billions (B) or millions (M) of dollars
Select Inve	Top 4 investing firms or individual investors (some have less than 4)

Exhibit 2: US Geography Summary View

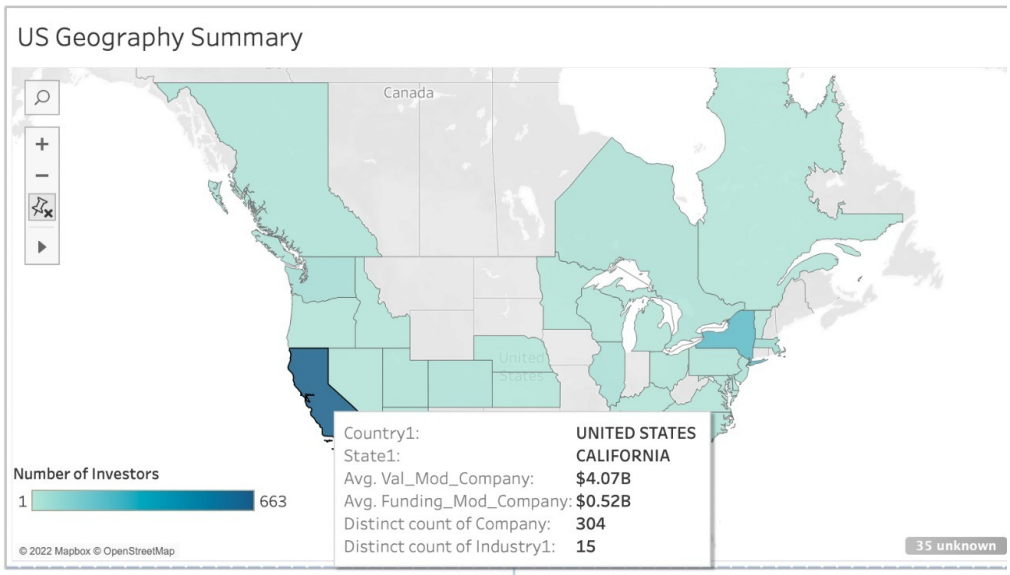

Exhibit 3: Unicorn Per Country View

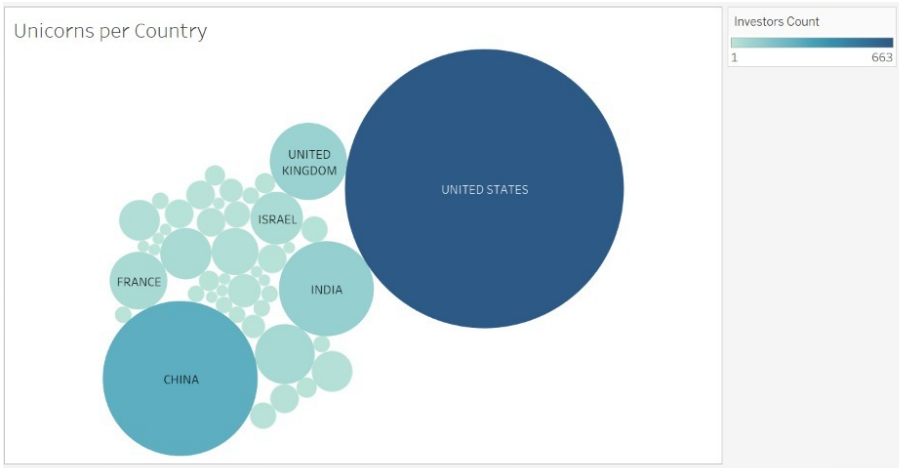

Exhibit 4: Industry Wide Unicorns View

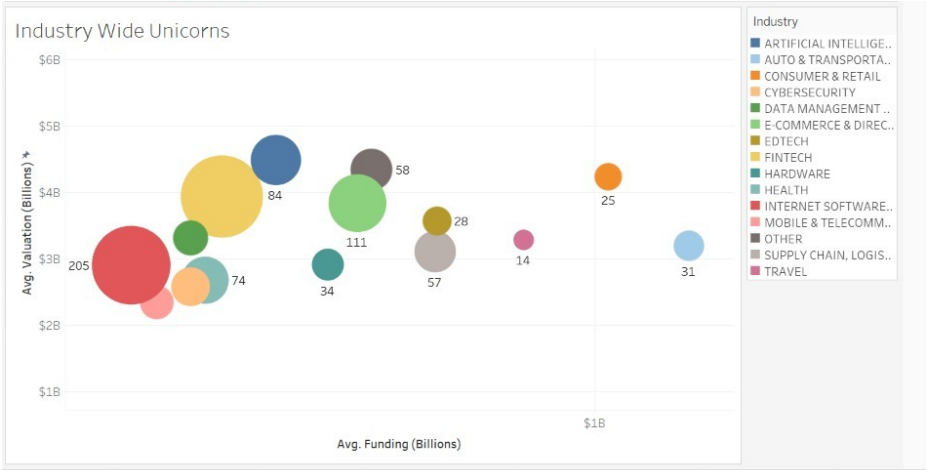

Exhibit 5: Establishment Time Series

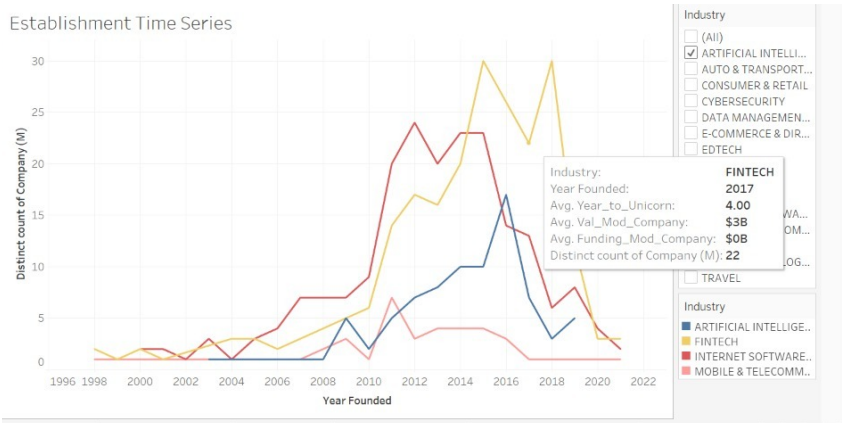

Exhibit 6: Industry Investors View

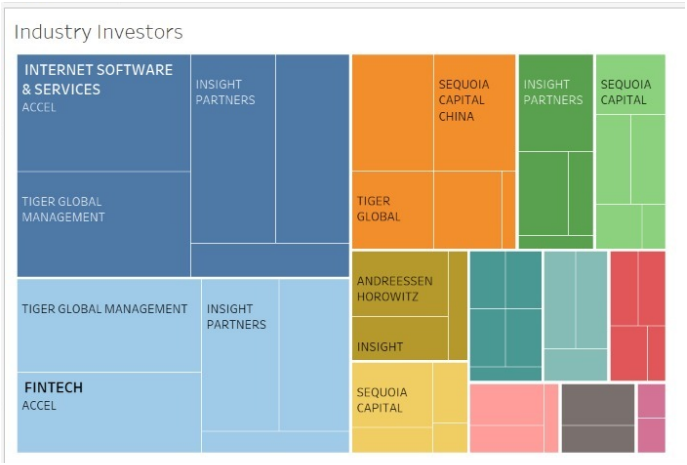

Exhibit 7: Industry Level Top Companies Table View

Details

Industry1	Company	Funding	Valuation
ARTIFICIAL INTELLIGENCE	ARGO AI	4,000,000,000	12,000,000,00
	AUTOMATI..	849,000,000	7,000,000,00
	BYTEDANCE	8,000,000,000	180,000,000,00
	FAIRE	1,000,000,000	12,000,000,00
	GONG	583,000,000	7,000,000,00
	PONY.AI	1,000,000,000	9,000,000,00
	SCALE AI	603,000,000	7,000,000,00
E-COMMERCE & DIRECT-TO-CONSUMER	FANATICS	4,000,000,000	27,000,000,00
	GOPUFF	3,000,000,000	15,000,000,00
	OPENSEA	427,000,000	13,000,000,00
	SHEIN	2,000,000,000	100,000,000,00
	XIAOHONG..	918,000,000	20,000,000,00
FINTECH	CHECKOUT	2,000,000,000	40,000,000,00

Exhibit 8: Geographic Insights Dashboard

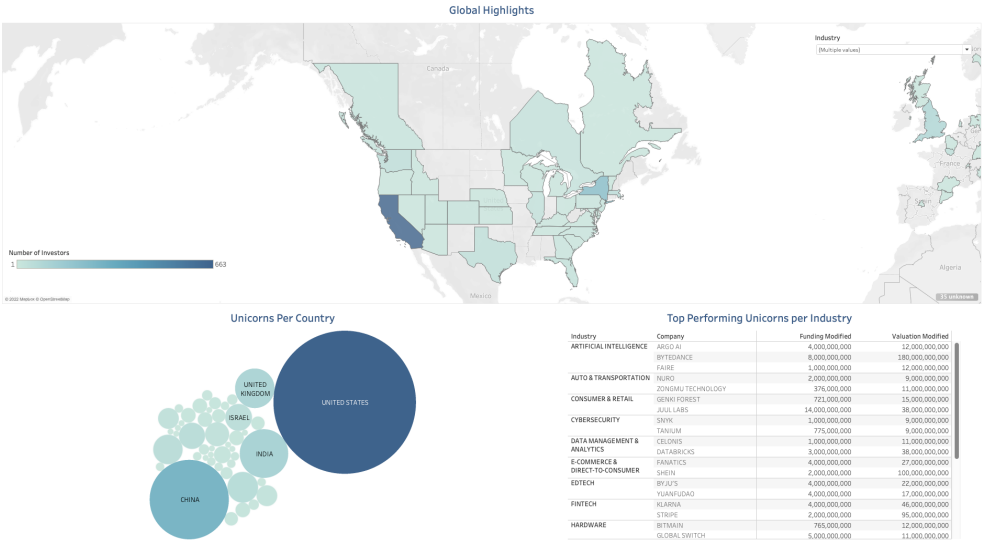

Exhibit 9: Industry Level Insights