

PROJECT REPORT ON ANALYSIS OF STARTUP ACQUISITIONS

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1. Introduction

Because of the competitive nature of the acquisition market, companies not only need to respond wisely but often must respond quickly as well. The growing independence of corporate boards and their demand for better information to support strategic decisions such as acquisitions have raised the general standard for acquisition analysis. Finally, sound analysis convincingly communicated can yield substantial benefits in negotiating with the target company's management or, in the case of tender offers, its stockholders.

1.1 Who we are?

We are a consulting firm who helps acquirers to understand the existing market trend for acquisitions. We will provide insights about their competitors' activities by answering the questions like which technology is getting acquired and in which geographical area are they getting acquired? Thus aiding them in strategizing acquisitions.

1.2 Who is our target?

We are targeting the Big Giants in different sectors who look to advance in trending fields by acquiring small companies which are making significant progress.

1.3 What do they do?

The Companies which we are targeting are usually ones working on a Product or providing service to users, where they are on the pathway to continuously improve their services and products to make the life of their customers a lot easier by bringing in new technologies and processes.

1.4 Our challenge is to answer

We will be answering below questions:

- Marketwise acquisition trend
Which markets will have the most number of acquisitions in following years?
- Regional acquisition
In which regions are most of the acquisitions taking place for a particular market?
- Competitive analysis
What are your competitors targeting in terms of market or technologies for acquisitions?
- Acquisition price analysis
How much money one should be ready with when they are planning to acquire a company in a particular region/market?

2. Solution

2.1 Our job is

- To find a suitable data source for analysis purposes.
- Understand the data and come up with few questions which needs to be answered.
- Clean the data if required.
- Come up with visualizations in order to identify new trends or patterns
- Create interactive dashboards to dig deeper into the data that can enhance understanding and inform strategic decisions.
- Conclude with recommendations based on our analysis.
- Find future scope for our topic.

2.2 An impactful solution would be

- Comparing acquisition analysis to determine which one best suits the needs your company.
- Determining the risks through acquisitions analysis to avert any future liabilities.
- Educating yourself about the acquisition analysis.
- Invest in a good acquisition due diligence software.

3. Analysis

3.1 Data sourcing

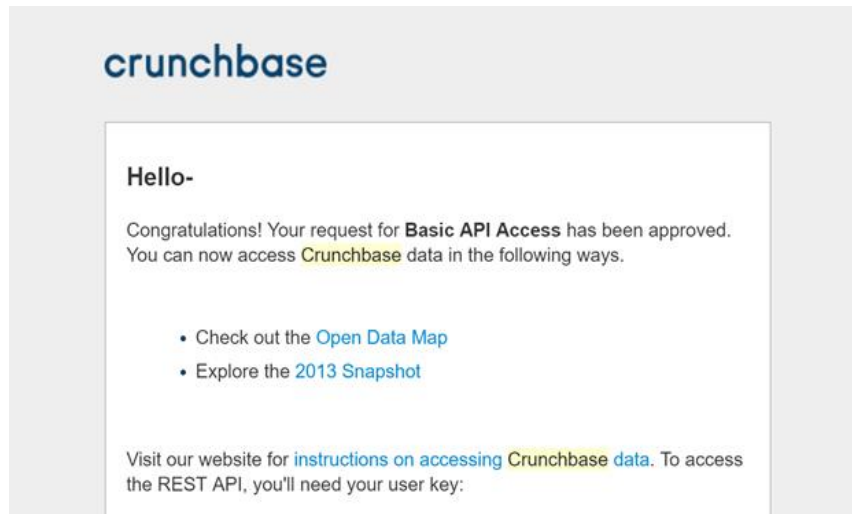
<https://data.crunchbase.com/reference#acquisitions-1>

<https://data.crunchbase.com/reference#organizations>

https://public.tableau.com/s/resources?qt-overview_resources=1

We found the data required for the project on CrunchBase. The data was available on subscribing to CrunchBase by making a payment of \$350.

However, upon requesting access to the data for our project, we were granted the access.



3.2 Data cleaning

- We obtained the data we wanted in three different CSV Files viz.
 - Acquisitions Data – about the various acquisitions which happened in the USA from 2008 -2018.
 - Organizations Data- to obtain the market details about the acquirer companies.
 - Crunchbase_monthly_acquisitions Data - to obtain the market details about the acquiree companies.
- We merged the data together to obtain complete dataset using Python Pandas.
- We had to clean the data a little, to obtain the price and date in required format using Python Pandas.

```
In [1]: import xlrd
import numpy as np
import pandas as pd
import seaborn as sns
%pylab inline

Populating the interactive namespace from numpy and matplotlib
```

```
In [124]: df1 = pd.read_csv('acquisitions+.csv')
```

```
In [125]: df2 = pd.read_excel('Acquiree_Market.xlsx')
```

```
In [126]: df3 = pd.read_excel('Acquirer_Market.xlsx')
```

```
In [127]: Merge_acquiree = df1.merge(df2, left_on = 'Acquiree_Name', right_on = 'company_name', how = 'left')
```

```
In [128]: Merge_acquirer = Merge_acquiree.merge(df3, left_on = 'Acquirer Name', right_on = 'acquirer_name', how = 'left')
```

```
In [129]: Merge_acquirer['Price'] = Merge_acquirer['Price Usd']
```

```
In [130]: def format_price(num):
    magnitude = 0
    while abs(num) >= 1000:
        magnitude += 1
        num /= 1000.0
    # add more suffixes if you need them
    return '%.0f%s' % (num, ['', ' K', ' M', ' B'][magnitude])
```

```
In [131]: Merge_acquirer['Price Usd'] = Merge_acquirer['Price Usd'].map(lambda x : format_price(x))
```

3.3 Output Files

Our Final Output is shown below:

Acquirer Name	Acquiree Name	acquirer_market	acquiree_market	Acquired On	Price	Price Usd	Acquiree City	Acquiree Region	Acquiree Country Code	Acquirer City
Intel	Wind River	Hardware + Software	Software	6/4/2009	884000000	884 M	Alameda	SF Bay Area	USA	Santa Clara
Intel	Indisys	Hardware + Software	Enterprise Software	9/13/2013	260000000	26 M	Seville	Seville	ESP	Santa Clara
Intel	Omek Interactive	Hardware + Software	Software	7/16/2013	400000000	40 M	Bet Shemesh	Jerusalem	ISR	Santa Clara
Intel	Kno	Hardware + Software	Software	11/8/2013		Not Disclosed	Santa Clara	SF Bay Area	USA	Santa Clara

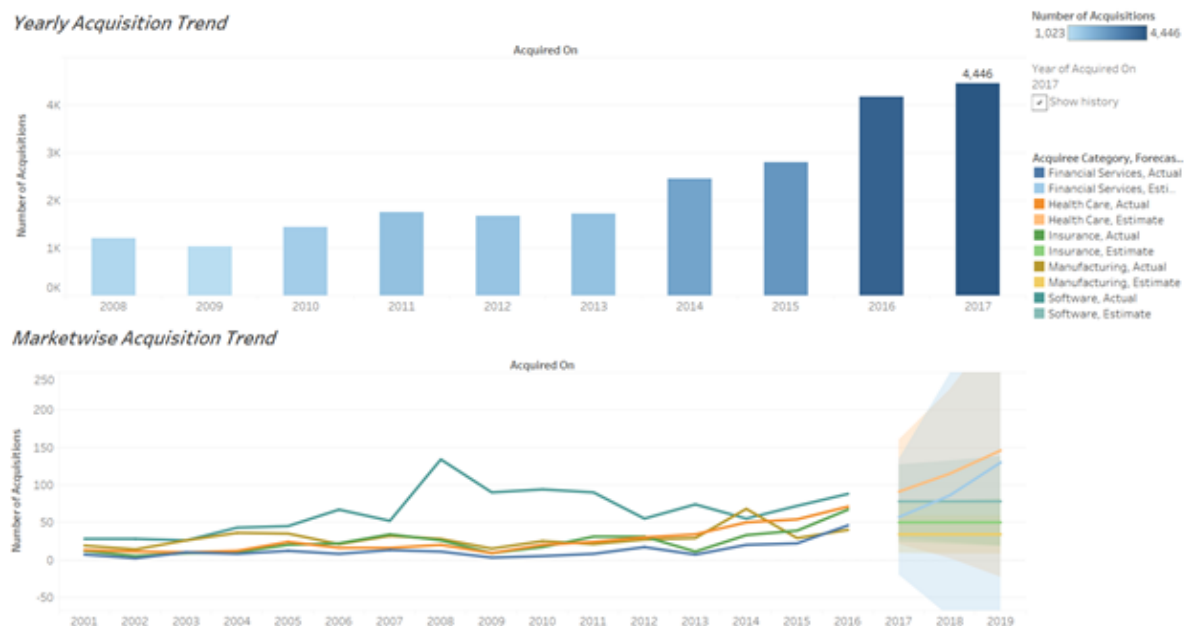
3.4 Dashboards

The Dashboards for our system were designed by using iterative user centric design process. The overall process can be described in three phases:



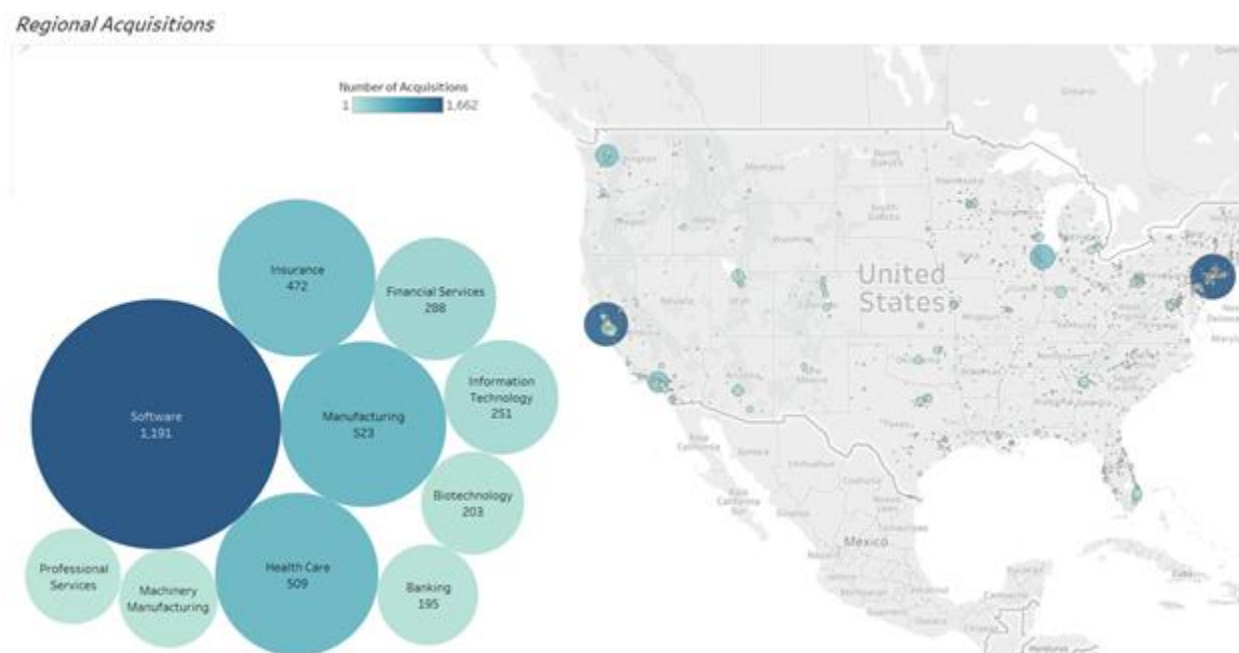
After the data exploration and cleansing a competitive analysis was conducted on relevant questions for visualizations. We narrowed down to three questions and performed analysis. We created interactive visualizations to support our analysis and recommendations. These visualizations will not only help answer the questions that we asked to our data, but also to drill down and explore more about the data through interactivity. Below we have discussed these interactive dashboards in detail.

3.4.1 Marketwise Acquisition Trend



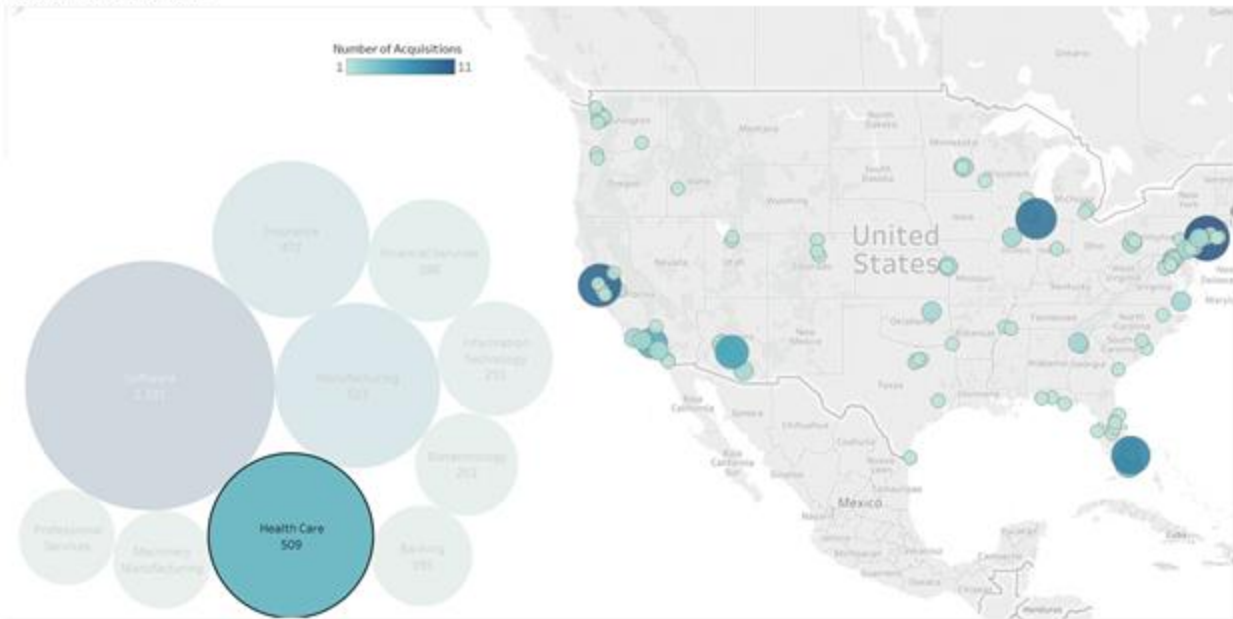
We analyzed the acquisition trend over the span of 10 years. According to our analysis, the number of acquisitions goes on increasing every year. In year 2008, the number of acquisitions were around 1000 while that number reached to 4,446 in 2017. We wanted to predict the trend for next 2 years, for 2018 and 2019. We wanted to see, which markets will be having more number of acquisitions in coming years. For this we used Tableau's forecast feature. For better forecast, we considered the data from 2001 to 2017. We filtered top 5 acquisition markets and analyzed the trend for those markets. As per our analysis, the number of acquisitions will be on rise for Healthcare and Financial services market. Though the number of acquisition for Software market had been always greater in the past, the growth rate for acquisitions is lesser for Software. The growth rate of acquisitions for Healthcare is highest.

3.4.2 Region wise Acquisition Trend



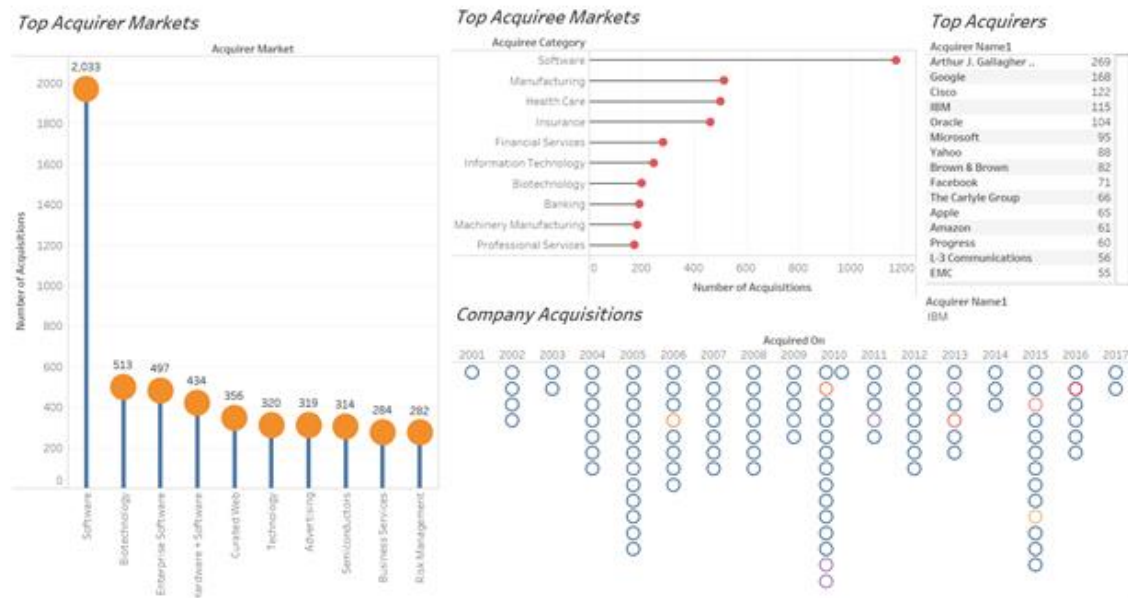
After understanding the marketwise acquisition trend, we wanted to know for a specific market which regions have the most acquisition. To get the answer, we tried to find out the number of acquisitions in a city. From the image, we can say that most of the acquisitions are happening in New York and San Francisco. After getting a map visualization, we made it interactive by adding bubble chart for acquisitions by market and using it as a filter for the map. For example, if you want to know where the most Software acquisitions are happening, click on the Software bubble and map will get updated only for Software acquisitions. Let's look at where the acquisitions are happening for Healthcare since it is on rise.

Regional Acquisitions

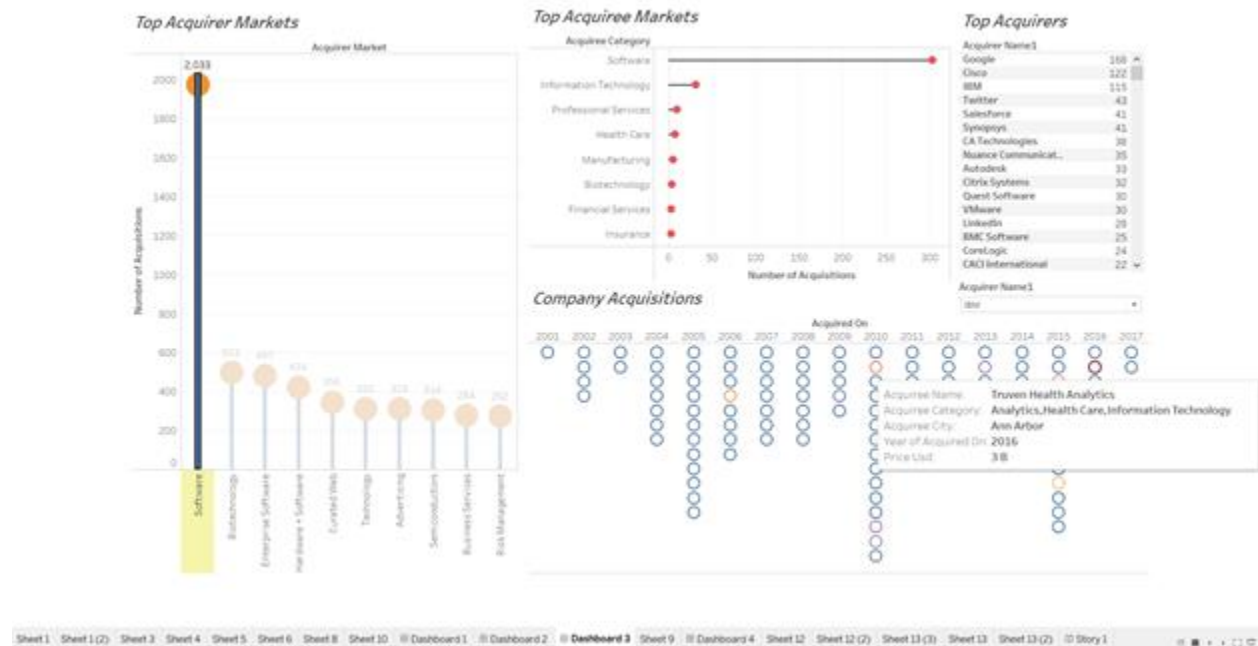


Most of the HealthCare acquisitions are happening in New York, San Francisco, Chicago and Boca Raton. This visualization can help the acquirer from any market to understand the regional acquisition trend not only for his/her own market but also for other markets as well.

3.4.3 Competitive Analysis

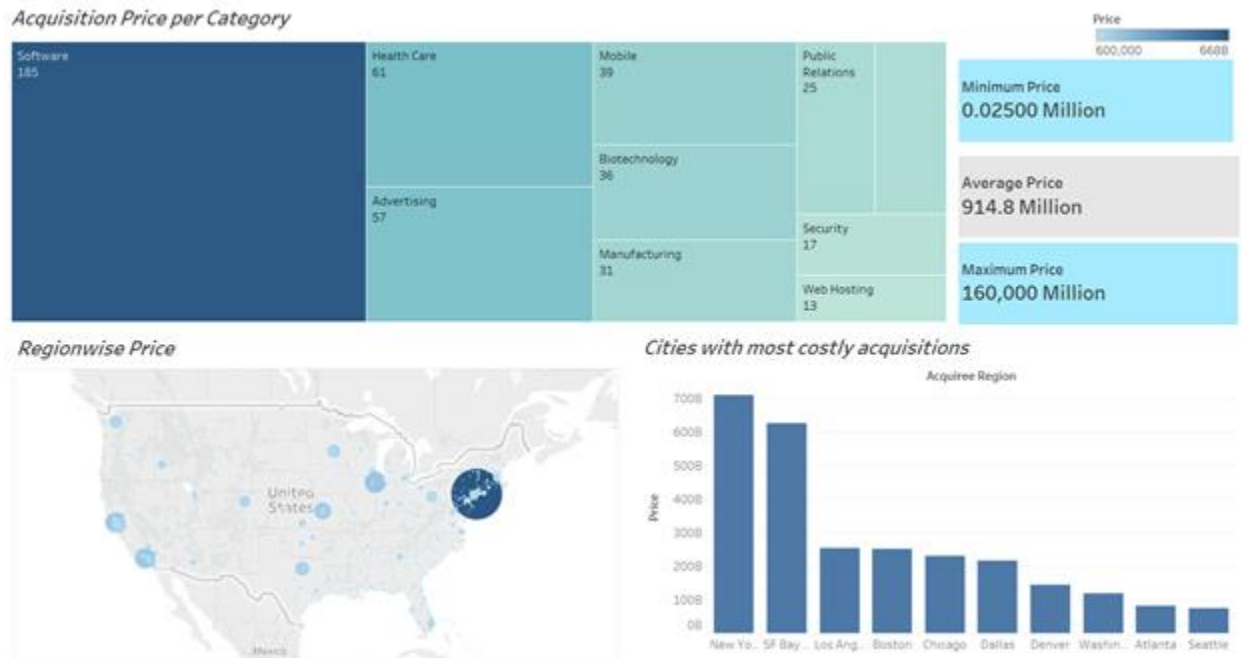


We wanted to analyze which technologies or markets other companies, or competitors are acquiring. This insight at competitor's market strategies would help in our own strategic planning. For this, we listed top acquirer markets, top 10 acquiree markets that the acquirers are acquiring, which are the top acquiring companies from that market and which companies they have acquired. For example:



We want to know, what technologies the Software companies are acquiring. When we select Software in the top acquirer markets chart, it gives us on the right top markets that software is acquiring. As per our analysis, Software is acquiring other software startups, Information Technology, Professional services and Healthcare etc. In the top acquirer's window, it lists all the companies in the descending order of number of acquisition they have done so far. We can see that Google has done 168 acquisitions, Cisco has done 122 while IBM has acquired 115. Now, let's drill down into which companies IBM has acquired so far. In the company acquisitions window, it lists all the acquisitions for IBM since 2001 when we filter on IBM. Each circle represents an acquisition. If we hover over the circles, it gives all the details about the acquisition in the tooltip. IBM has acquired Truven Health Analytics from Ann Arbor on 2016 for price 3 Billion. From this we can say that a top software acquirer is acquiring company from Healthcare analytics market.

3.4.4 Analyzing Acquisition Price



After understanding the market acquisition trends, we wanted to know how much amount we should be ready with if we plan to acquire any company. For this we prepared an interactive dashboard, where we listed the top acquiree markets and minimum, average, maximum price for acquiring a startup from those markets. We figured out that the price for acquisition varies with the region. For example, in New York we have most costly acquisitions overall. So, we added the filter for region as well. This dashboard can help the companies to strategize the financing for acquisition in advance.



For example, if you want to acquire a company from Healthcare, then you should be ready to invest around 973 million. Also, if the company is in Los Angeles then the acquisition will be costlier as compared to other regions.

4. Recommendations

- Software market has highest number of acquisitions. Acquisition growth rate is highest for Healthcare market and Financial Services. Plan investing your money in these markets in future.
- Most of the acquisitions happen in New York, San Francisco, Chicago and Seattle. Most of the Healthcare acquisitions are happening in New York, San Francisco, Chicago, Boca Raton and Scottsdale. If you are planning to acquire a company, look for the companies in these areas.
- Software companies are acquiring companies in Analytics, Big Data, Healthcare analytics, Biotechnology etc. Software has entered into Healthcare market.
- If you plan to buy a software company then be ready with 250 Million on average.

5. Learnings

- ✓ It is important to have a clear understanding of the requirements before you start the project plan. In case the requirements are not clear, it's better to ask questions.
- ✓ There are multitudes of data sources but relevant data sources and the right amount of data help in getting useful insights.
- ✓ Data cleaning and integration is one of the most important part of the project and helps to structure the entire project.
- ✓ Some parts of data transformations cannot be planned and must be accomplished as you understand the insight. The insight questions better.
- ✓ Data integration is the most important part of the visualization project and takes the maximum time.
- ✓ We understood the importance of time management and teamwork while working together on this project.

6. Future Scope

In our project, we have just analyzed the past acquisition prices and have provided the recommendation based on past acquisition activities. We can extend this further, to predict the amount for buying any company based on the factors like location, acquiring company's reputation, acquiree's reputation, technology needs etc.