ClAIrvoyant by Good AIdeas Only, Inc. Anchor Client Report

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1 Abstract

Good AIdeas Only, Inc. is seeking an anchor client for their talent intelligence platform, ClAIrvoyant, to provide them a strong strategic position in the market. In response, we performed an exploratory analysis of the need for such a platform by industry using LinkedIn job posting data, as well as identifying and comparing candidate companies using stock price and market research data. We utilized Bonferroni-corrected confidence intervals to compare industry-level statistics, in addition to heatmap and principal component analysis to cluster candidate companies. We found that Financial Services, Staffing and Recruiting, Software Development, and IT Services and IT Consulting were sectors of interest with a combination of a high volume of job postings, as well as a high proportion of postings to hire skilled workers. From these industries, Broadcom, Oracle, Citi, Capital One, and Synchrony Financial were identified as bellwethers based on their stock and revenue growth. Of this list, Synchrony Financial was our final selection as ClAIrvoyant's anchor client due to their good standing in the press and lack of engagement with Good AIdeas Only, Inc.'s competitors.

2 Introduction

Good AIdeas Only, Inc. is a startup company developing a new talent acquisition and intelligence platform built on the novel idea of unbiased matching of candidate resumes to job requisition descriptions. The company is currently a challenger in the talent intelligence market, and desires to grow their influence to become a sector leader and over-performer.

In order to break into the market, Good AIdeas Only Inc. requires an anchor client. There are many different factors that can help determine what makes a good anchor client. The target company should have a strong need for the ClAIrvoyant platform, should be a leader in their given sector, and should generally be a well respected establishment. This not only ensures that the ClAIrvoyant platform is used by the anchor client, but also that gains a credible foothold in the market by means of the anchor client's credibility and standing in their field. Additionally, the target anchor client should have a need for *skilled* labor specifically. Even if a company is a perfect anchor client in terms of their credibility and position in their industry, it does not matter if they primarily hire unskilled workers and will not utilize the ClAIrvoyant platform.

Good AIdeas Only Inc.'s request for an anchor client and the above considerations on what defines a good anchor client led us to the following three research questions:

1. Which industries and sectors have the highest current need for skilled labor?
2. Within a chosen industry, which companies are bellwethers and industry leaders in terms of recent financial performance?
3. How do bellwether companies in one industry compare those in other industries and to the anchor clients of ClAIrvoyant's competitors?

Considering these questions will allow us to ensure our selected anchor client will set up Good AIdeas Only, Inc. in a strong, strategic, position in the talent intelligence market which is successful in the long term.

3 Data

In this study, we used multiple LinkedIn datasets obtained from Kaggle, consisting of 11 CSV files, each containing different information about companies and job postings. For individual job postings, the variables of primary interest are the company name, the industry name, the salaries, and the job descriptions. To analyze industry-level trends, we merged the LinkedIn datasets using company IDs. The merged data contained 122,121 observations, each representing a single job posting, with the dataset spanning the period from January 2023 to December 2024. We explored the distribution of job postings and salaries across industries to identify patterns in labor demand and compensation.

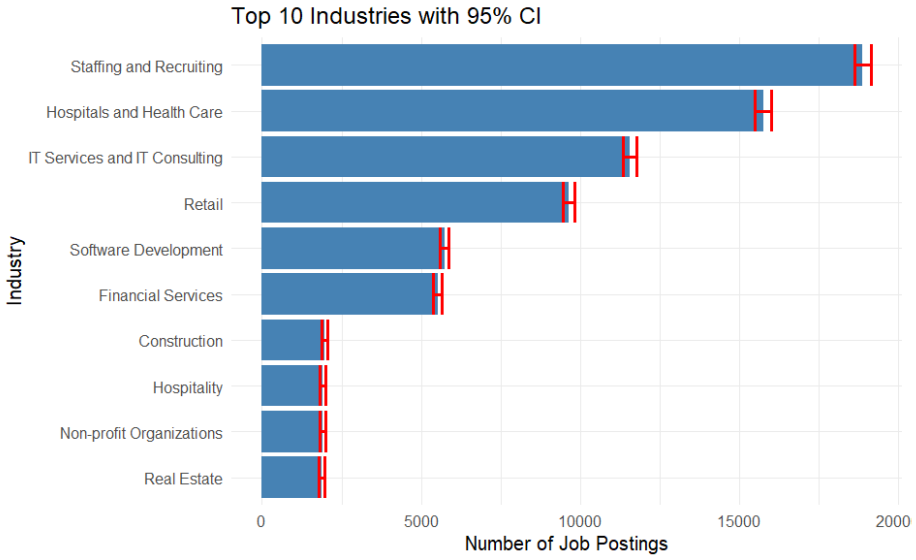

Figure 1: Top Industries by Job Postings. There is a clear separation between the top 6 industries and the rest.

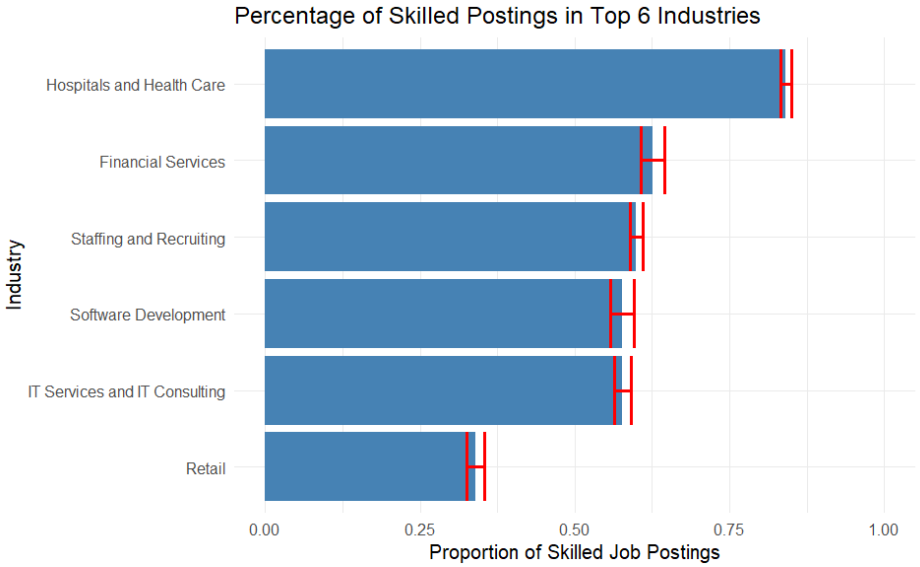

Figure 2: Proportion of skilled labor for top 6 industries by number of postings. Health Care has the highest proportion, and Retail has the lowest proportion.

Before our analysis, we first explored the LinkedIn job posting data to identify industries that have a

high need for talent intelligence and acquisition management platforms. We do so in Figures 1 and 2, which show the number of job postings per industry and the proportion of postings per industry that are for skilled labor. The intervals visualized are Bonferroni-corrected confidence intervals on the bar plots with an α level of 0.05. Of the top six industries by the number of job postings, only Retail has a proportion of skilled job postings that is low enough to warrant exclusion from further analysis.

To identify a "healthy" industry sector, we started by determining which industries were hiring the largest numbers of skilled workers. We define a job as "skilled" if its description contains the following keywords related to education or certification: bachelor, master, license, certified, accredited, MBA, or JD. We assume that these keywords indicate positions that require higher education and advanced skills, which are generally associated with specialized or skill-intensive roles. We consider the jobs with descriptions that do not contain any of our keywords related to education non-skilled. For our analysis, the presence of an education-related keyword is the only determining factor of whether or not the position is skilled.

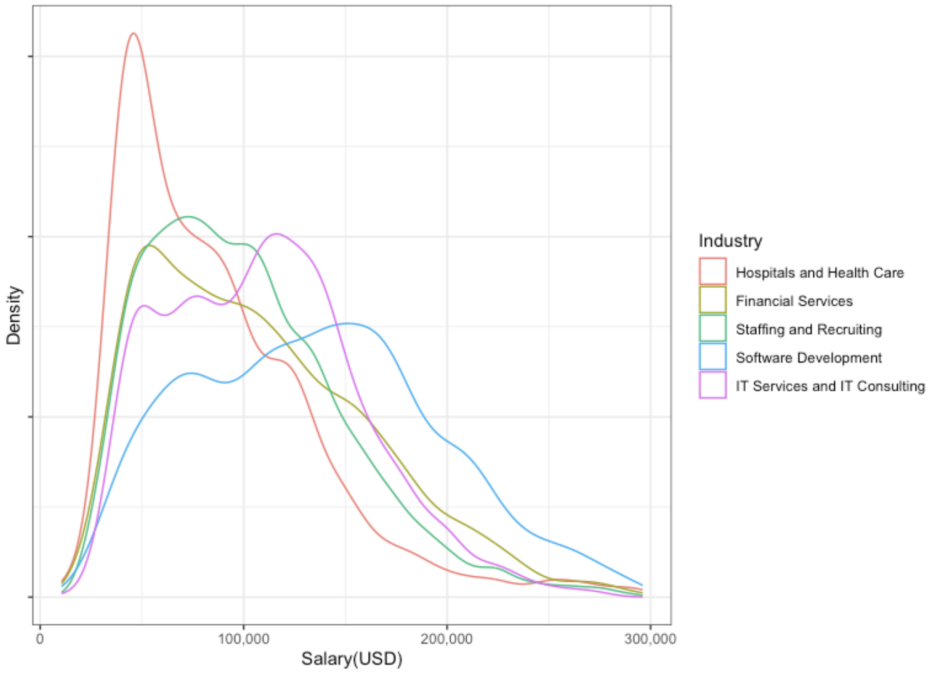

Figure 3: Density distributions of normalized salaries of select industries. Software Development and IT Services and IT Consulting have the largest center of the distribution.

We also created overlaid density plots for the normalized salaries of selected industries in Figure 3. These industries had a combination of a high number of job postings and a sufficiently high proportion of skilled workers, as seen in Figures 1 and 2. If an industry's salary distribution is very peaked and skewed right, it may indicate that a large proportion of employees in that industry are unskilled as they tend to earn less. However, 71 percent of the data had missing data on normalized salary, so only approximately 36,000 individual job postings contribute to the overlaid density plot. We don't have any reason to believe that this small percentage would not be representative of the whole, so we include it in our analysis.

We also use daily stock price data retrieved through the tq_get() function from the tidyquant package in R. This function can access multiple web sources, but we focus only on the stock prices function, which provides information from Yahoo Finance. The dataset includes daily observations of each company's opening and closing prices, daily highs and lows, the trading volume, and the adjusted closing prices. The observations span the entire trading history of each company's stock and are updated daily. Our primary variable of interest from the stock dataset is the adjusted closing price.

In addition, we compiled an external dataset containing firm-level financial and organizational information from Crunchbase and Google Finance. This dataset includes 23 companies, including top players across

four different industries (IT Services and Consulting, Software Development, Staffing and Recruiting, and Financial Services) and early adopters of Good AIdeas Only, Inc.'s competitors. The early adopters of the competitors are potentially included, but they are not necessarily anchor clients; the anchor clients are not publicly announced, so we have no way of verifying whether they are anchor clients.

These companies were chosen by looking at the top market leaders of sectors within those industries on IBISWorld. We only include public companies because we believe that they are more likely to be market leaders, as they have higher access to market capital. Additionally, we wanted the data source to be more consistent. Financial information on private companies is not available from the source where the public company information was pulled from, which would lead to inconsistency. We collected information such as number of employees, revenues and incomes for 2023 and 2024, annual stock growth rate from that time frame, market capitalization, average trading volume, and median salary. We also collected two metrics computed by Crunchbase: Growth Score, which quantifies a company's growth using both predictions and historical data, and Heat Score, which measures their eminence in the media. Creating this dataset allowed us to compare the performance of the company and the market trends in industries that are most relevant to the competitive market of Good AIdeas Only, Inc..

4 Methods

Our dataset on job postings does not contain direct information on the industry. Jobs are posted by companies, and companies have their unique associated industry. Therefore, the job postings dataset is joined with the dataset on company industries on company ID, so industry information is accessible for each job posting.

We performed pairwise hypothesis tests on the number of job postings and the proportion of skilled labor, corrected for multiple testing, as seen in Figures 1 and 2. We assumed that the number of job postings follows a Poisson distribution, which with large sample sizes looks approximately normal. After identifying the industries we want to focus on, we need to select a list of companies in each sector for our potential anchor client. We did so by comparing key financial statistics, such as total revenue and revenue percentage growth, to compare these companies within a given sector. This helps us identify the bellwethers in each sector. We also smoothed the stock data using a 30-day moving average to extract the trend of the data and to eliminate some of the noise of individual observations.

From the stock time series plot and the key statistics heatmap, we narrow down our selection to our final selection for the anchor client, or at the very least, a short list of two or three options. Then, we plan to compare these companies to the anchor clients of the leading talent intelligence companies, which are Eightfold, SeekOut, and Phenom People. We did so using a PCA and a time series showing market shares within their given industries in the time frames leading up to when the respective talent intelligence product was released. From a PCA plot, we were able to identify variables that contribute to each principal component. We identified companies that are more aligned with the principal component that is associated with growth. Distance on the PCA plot allowed us to check how our candidate companies behave in terms of the metrics compared to the anchor clients of our competitors.

5 Results

Figure 1 presents the top industries by number of job postings using LinkedIn data. Staffing and Recruiting, Hospital and Health Care, IT Services and IT Consulting, Retail, Software Development, and Financial Services are the industries that are hiring much more than the rest of the industries. Each of these six industries posts more than 5,000 positions on LinkedIn, while no other industry has more than 2,500 postings. None of the top six industries' Bonferroni-corrected confidence intervals overlaps with the rest, indicating significant differences in the number of postings between the industries. Additionally, they are all significantly higher than the rest of the industries. Therefore, it makes sense to choose a market-leading industry from these top six in terms of job postings.

In Figure 2, the proportions of the skilled job postings for the top industries with the most postings are plotted. Based on our metric for "skilled" defined in the previous section, Hospital and Health Care is the industry with a significantly higher proportion of jobs that require college degrees. The 95% confidence intervals for Staffing and Recruiting, IT Services and IT Consulting, Software Development, and Financial Services overlap with one another. These four industries' proportions of skilled labor are all above 50%. Retail is the industry that hires the smallest percentage of skilled labor. Its proportion is significantly lower than that of other industries, as the Bonferroni-corrected confidence interval does not overlap with any other industry. This is strong evidence that Retail is an industry with relatively weak demand for skilled workers.

Figure 3 shows the overlaid densities of salary distributions for five industries. Hospital and Health Care's salary distribution is strongly right-skewed, with a large number of employees earning salaries less than $50,000 per year. The distributions for Financial Services and Staffing and Recruiting are similar. They are both slightly right-skewed, with peaks at around $50,000 and $75,000, respectively. The distributions for IT Services and IT Consulting and Software Development are similar. Their curves seem bi-modal, with one peak around $75,000, and the other at $12,000 for IT Services and IT Consulting and $15,000 for Software Development. Although salary is not a stand-alone indicator of skilled labor, skilled workers tend to earn more money, so a higher median likely indicates a higher proportion of skilled labor.

From Figures 1, 2, and 3, we can identify industries that: 1) are intending to hire a large number of employees, 2) within which a large proportion of labor is "skilled", and 3) have a distribution that is not strongly right-skewed (so not a significant proportion are low-earners). The four candidate industries after this step are Staffing and Recruiting, IT Services and IT Consulting, Software Development, and Financial Services.

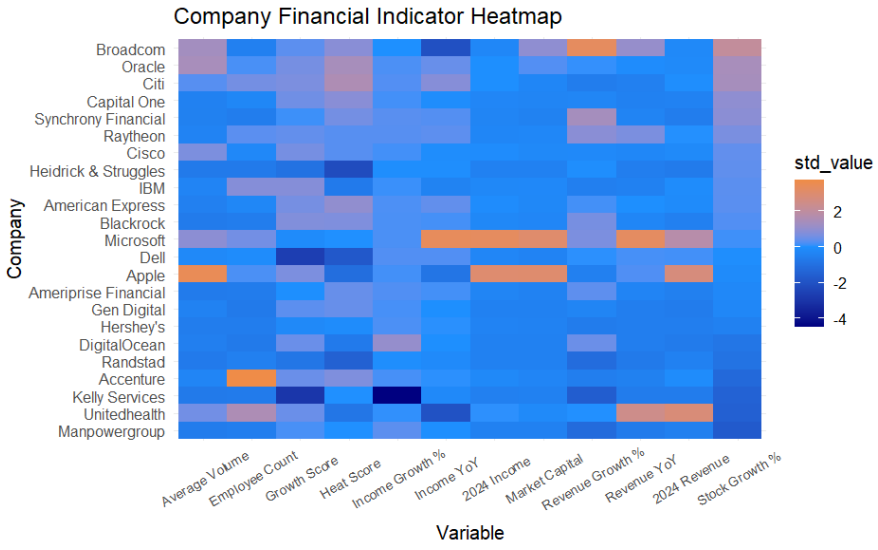

Figure 4: Heatmap of financial indicators for anchor client candidates and early adopters of competitors, ordered by stock growth percentage over the past year

Figure 4 presents a heat map of key financial statistics and related metrics for a list of publicly traded bellwethers from each top industry. The companies are sorted in decreasing order by stock growth in the past year, so the ones near the top all have strong trends of growth. The top five are Broadcom, Oracle, Citi, Capital One, and Synchrony Financial, followed by anchor clients of our competitors, Raytheon, Cisco, and Heidrick & Struggles. Despite stock price growth, these companies are also similar in their growth and heat score, obtained from Crunchbase. Some variables, like market capital and average volume, are dominated by giants like Apple and Microsoft.

Figure 5 is a smoothed time series plot of all industry bellwethers' stock prices over the past year. The prices are all standardized to 100 at the beginning date of 10/01/2024, and 30-day moving average filters

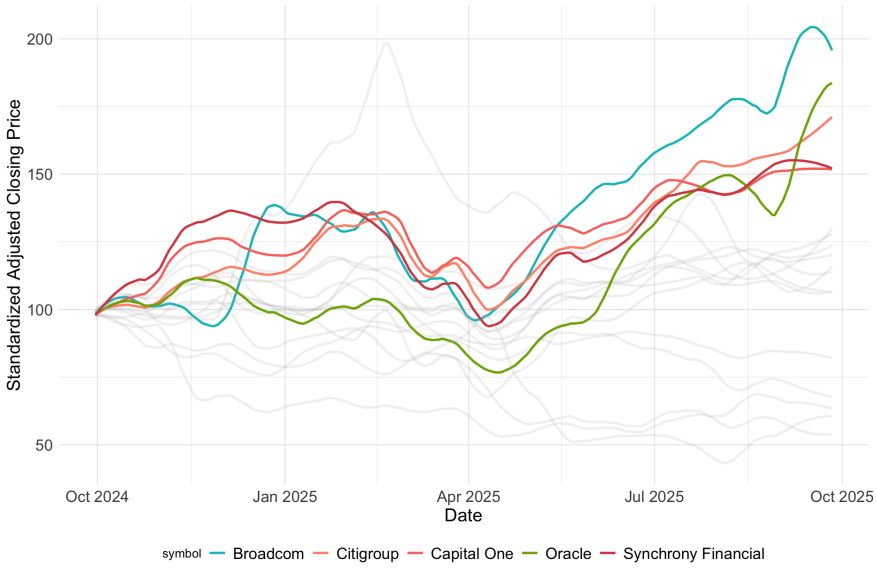

Figure 5: 30 day moving average of stock growth for candidate companies, standardized to 100 on October 1st, 2024.

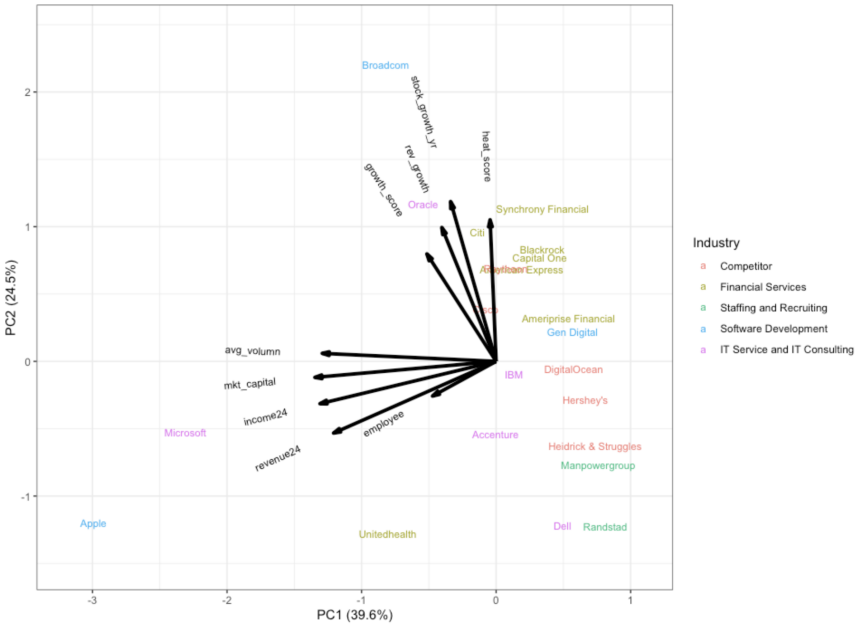

Figure 6: PCA plot showing the first two principal components of companies' statistics.

are taken. The ones highlighted are those identified as potential market leaders in previous plots. In this window, all four highlighted stocks show strong trends of growth in general. The stock of Oracle seems less stable, as it once dropped to half of its initial price in April 2025. Among the four, Citi's stock has the most steady growing trend. Despite a short period of continuous decrease from March to April 2025, it seems to have an upward trend at all other times.

Figure 6 plots the first two principal components of a PCA using the same set of metrics as Figure 4. The companies are colored by their industry or being one of our competitors' anchor clients. The first two principal components account for 64.1% of total variance in the data (39.6% for PC1 and 24.5% for PC2).

The variables that are more associated with PC1 are directly related to business size, such as market capital and yearly revenue. Apple, Microsoft, and UnitedHealth stand out from the rest in this PC. As we are not merely interested in the size of the company, we focus on PC2, which is related to growth. The companies that are higher up in this PC are Broadcom, Oracle, Synchrony Financial, and Citi, which coincide with ones with strong growth from Figure 4. Interestingly, the companies of the industry Staffing and Recruiting are at the bottom-right corner, indicating that they are lacking in both market share and growth. The anchor clients of the competitors are located close to each other, with similar business scales and moderate overall growth.

6 Discussion

We determined the need for skilled labor in a given industry by looking at the raw number of job postings from companies within an industry, and then comparing the proportion of those postings that are hiring skilled laborers. Both of these criteria are crucial. Without either one, there is an inherent lack of demand for ClAIrvoyant. From the results in Figure 2, we see that many of the top six industries in terms of the number of job postings are inseparable by the proportion of skilled labor. However, the Retail industry has a significantly lower proportion of skilled labor, which eliminates it from consideration. Even with a high volume of job postings, the low-skilled proportion indicates a lower demand for ClAIrvoyant. Despite the Hospitals and Health Care industry having the highest proportion of job postings for skilled labor, we chose to remove it from consideration as well. This is due to external factors, such as the nation-wide nursing shortage, which could inflate the number of job postings. Additionally, because of the shortage, it is harder to differentiate truly talented nurses just based on resumes, which makes it not a good fit for ClAIrvoyant. Lastly, the distribution of this industry in Figure 3 is very peaked at less than a $50,000 salary, which is another indicator that the Healthcare industry may not be the best choice to look for an anchor client. This leaves us with four industries that have a high current demand for skilled labor: Financial Services, Staffing and Recruiting, Software Development, and IT Services and Consulting.

Identifying bellwethers within these industries is a difficult task with only the job posting data. Additionally, stock prices may be a good indicator of a company's success and eminence, but it is by no means comprehensive. So, to determine which companies make good anchor clients from the list of potential target companies we compiled, we evaluated a combination of stock price growth percentage and other financial metrics that measure change over the past year. These include revenue (both 2024 and year-over-year), market capital, and heat and growth index scores from Crunchbase, and together they embody our measurement of sector leadership. Since the list of companies was compiled based on major players within a given industry from Crunchbase, supplementing with the companies' growth over the past year provides a good indicator for which corporations are truly performing the best and leading their industries.

We also included the competitors' early adopters in our analysis of financial metrics. While it is not a true comparison of how the early adopters performed at the time of launch of the competitors' products, these companies' metrics are an indicator of our end goal. We desire for our anchor client to perform similarly to the competitor early adopters in the future, so any similarities present now provide us with confidence that the chosen anchor client will continue to grow and lead their industry. Many of the companies depicted in 6 have similar scores in the principal components as the competitor early adopters. Notably, we see that the size of a company does not necessarily lead to being a good anchor client. This principal component is slightly skewed by giant industry titans, such as Apple and Microsoft, but all of the competitor early adopters do not fall into this category.

Now, considering Figure 4, we see a cluster of competitor early adopters (Raytheon, Cisco, and Heidrick & Struggles) with high stock growth percentages. So, from those companies in the same cluster, we limit our scope of search to those with high stock growth over the past year. Since their stock has grown by the largest percentage, we believe them to be the leaders in their industry. There are five companies that have high stock growth and fall within the black cluster: Broadcom, Oracle, Citi, Capital One, and Synchrony Financial. Notably, these companies also tend to perform well in the other financial indicators, not just stock growth, which provides even more confidence in these companies as potential anchor clients.

To select an anchor client from our 5 candidates, we turned to external research regarding their use of ClAIrvoyant's competitors and news in the media. We found that most of our potential anchor clients already use one of the established, leading talent intelligence networks. Citi, Capital One, and Oracle all utilize Eightfold AI, and Broadcom has been linked to Eightfold AI in the past. Additionally, Broadcom does not have the best current representation in the press, with news about the company being dotted with articles with mass layoffs after acquiring VMWare. This leaves us with Synchrony Financial, who does not currently utilize a competitor's product. There is very little to no negative press regarding Synchrony, which further solidifies them as our choice for Good AIdeas Only, Inc.'s anchor client. Synchrony Financial is a publicly-traded market-leading company in credit card issuing, with over 10,000 employees in the US and a current market capital of 27.28 billions USD.

Lastly, we wish to discuss the limitations of our approach and analysis and future work. Our approach introduces some bias from our selection of keywords that define skilled labor. While education and training level is one factor that influences the categorization as skilled labor, it is not the only consideration. Further analysis, using a different method to identify skilled labor, is needed to evaluate the possible bias introduced. The nature of the dataset also could introduce bias. The salary distributions may also not be representative of all jobs, as a large number of job postings did not have salary information. Similarly, not all job postings are present on LinkedIn, so based on the dataset choice, we may not be representing the true nature of the industries. Lastly, the number of postings and people hired do not necessarily have a one-to-one correspondence. A single job posting could lead to multiple hires, so by using postings, we are assuming that a high number of postings generally corresponds to a large number of hires. Again, to identify the effect or magnitude of any bias introduced, further research is needed utilizing different data sources or different methods to identify demand for skilled labor within a given industry.

The analysis presented in this report creates future research questions to be investigated. First, a different approach could be used to determine skilled job postings. Many of the proposed methods require advanced text analysis procedures, such as keyword analysis. Additionally, it would be interesting in future work to compare the candidate companies' performance relative to the performance of the competitors' early adopters leading up to their respective platforms launch. In order to perform this analysis, extra data would be required than what was provided and collected for the competitor early adopters. We would need historical financial indicators and stock prices rather than modern day information. Additionally, a similar analysis to that presented in this paper could be performed using private companies rather than public companies. As mentioned earlier, this is left for future work to maintain the consistency of the financial dataset which we curated.