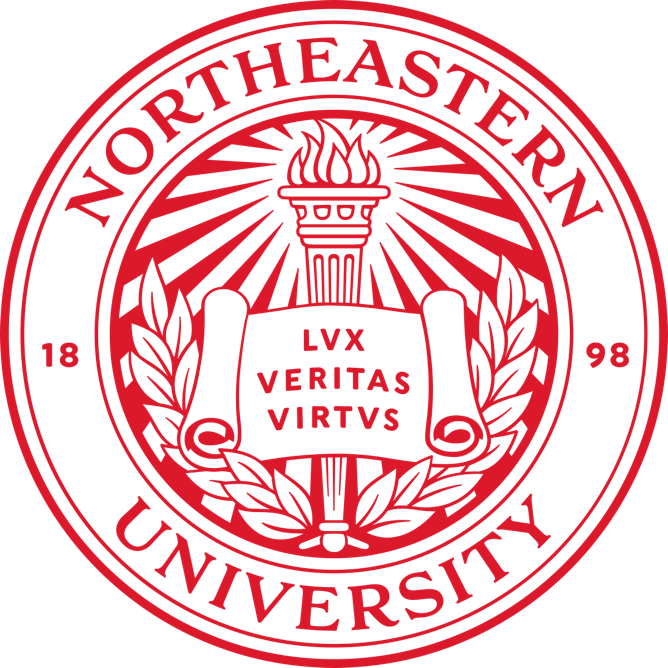
**MODELLING VERTICAL EXPANSION OF REDCROW**

**FINAL PROJECT PROPOSAL**

ALY 6080: INTEGRATED EXPERIENTIAL LEARNING

JUNE 25, 2020

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**Executive Summary**

We have done a lot of research and collected a lot of subsequent data for this project. In a nutshell, we have enhanced our project by analyzing three of our indicators in depth. First of all, we have predicted the S&P 500 Index value taking the data from January 2000 to December 2019 and predicted for the next 12 months from Jan 2020 to December 2021. We have also compared our S&P500 value from January 2020 to May 2020 to check the precision of our model and the error part.

Secondly, we have worked on our GII Innovation Index. We have collected GII data from different countries and compared the index of them to check what results we can get. We have also seen Innovation input and our results and analyzed the GII Innovation Index in depth. We have some interesting findings after comparing these results as lots of countries starting to invest in their innovation to boost their economy.

Lastly, we have seen how our Kauffman ‘s Indicators of Entrepreneurship is behaving from the Year 1996 to the year 2019 in the USA. We have also checked some indicators of Kauffman like Startup Early Job Creation, Rate of New Entrepreneur, Opportunity share by New Entrepreneurs, and Start-up Early Survival Rate and have analyzed their trends in these years. We will discuss it further in this project as we do a correlation between all these indexes.

**Objective:** The purpose of this project is to find out a profitable industry to invest in, which has the potential to grow as it will help RedCrow capture a significant amount of market share in the Crowd Funding space.

**Proposal Overview:** As we all know Our sponsor RedCrow, is a crowdsourced direct investment platform for healthcare innovation. RedCrow enables a wide array of investors to help new healthcare-focused startups to grow. We are focusing on the various industries Redcrow can expand its business apart from Health care. The belief system of vertically expanding RedCrow's business need analysis of industrial development. This can be achieved by compiling information and indexes to decide industrial development. We have segregated industrial growth into two dependencies, which we feel will help measure it. First is financial indicators and the other is innovation index. We will be considering and predicting the values of indexes which heavily affect market rates. For this, we have taken Dow30 and S&P 500. Dow Index is dependent on the share price of the component companies which are a part of NYSE and chosen Under the supervision of Washington Post. Similarly, S&P 500 depends heavily on the market capital which is the share price into the number of shares listed by the company in the stock market. With the help of these indexes and factors we are trying to determine the countries where Redcrow can expand its business in different sectors.

**Problem Definition:** This project concerns about RedCrow and in what verticals it should grow to maintain its growth streak. Through exploring and analyzing data from Yahoo finance and NYU stern dataset and several other Datasets, we seek to answer the following questions.

* In which business should RedCrow invest?
* Which industry is growing in the market?
* Which industry is more prone to seed funding?
* We need to find which metric system will help us understand the growth of the industry.

**Scope of project:** In the 12-week project with Redcrow, we have divided the work every week to achieve our deliverables. We divided our project in 3 phases:

**Phase 1 (April 22, 2020 – May 16, 2020):** In this phase we have been researching and studying about our sponsor Redcrow and the information related to Healthcare industry and crowdfunding platforms. We got to know how the business of our sponsor works and created some business questions which can help sponsor to solve real time problems.

**Phase 2(May 17, 2020 – May 28, 2020):** We collected data from Yahoo finance, NYU stern, Kauffman’s index and GII innovation index datasets. We did data cleaning and structured the data in readable format. We created data models for S&P 500 index. S&P 500 index is the measure to give the value of stocks of 500 largest companies that are listed on NYU exchange. It tells us about the financial and professional aspects of different companies and tell us about the current market conditions. We used R programming and plotted graphs and time series; we used the ARIMA model for our prediction.

**Phase 3 (May 28, 2020 – June 9, 2020):** We attempted the to use monitory/fiscal policy to stimulate the economy. We determined the correlation between our different indicators to analyze the market trends and patterns. USA has the highest stimulus package, followed by Japan, we, will be considering geographically expanding within the state’s first. We will provide recommendations to Redcrow that will help them in future problem solving.

**Data Collection and Preparation:** We have predicted the S&P 500 Index value taking the data from January 2000 to December 2019 and predicted for the next 12 months from Jan 2020 to December 2021. We have also compared our S&P500 value from January 2020 to May 2020 to check the precision of our model and the error part.

We will be analyzing, the market as a whole with the help of indexes i.e. S&P500 and Dow30 (we will be using time series forecasting to forecast index index prices for five years down the line), and then with certain variables like average retention rate, fundamental growth rate, net income, dividends, buyouts and stock issuances, EPS ratios, Current P/E of major industries; with the help of NYU Stern Industry Specific data set compiled by the Damodar. With this data in hand, we will be predicting which industry is more prone to RedCrow’s vision for a vertical expansion. we have worked on our GII Innovation Index. We have collected GII data from different countries and compared the index of them to check what results we can get. We have also seen Innovation input and our results and analyzed the GII Innovation Index in depth. We will also be considering Kauffman indicators of entrepreneurship to coincide with factors related to our research. We have deep dive into factors like Startup Early Job Creation, Rate of New Entrepreneur, Opportunity share by New Entrepreneurs, and Start-up Early Survival Rate and have analyzed their trends in these years. We will discuss it further in this project as we do a correlation between all these indexes. From the NYU Stern Data set (Prof. Damodar), we compiled charts and created a database.

**DELIVERABLES**

**S&P500:** The below image contains our raw data for the S&P500 closing value obtained on the 1st of every month since January 2000. In the next image, we have cleaned our time series by removing unwanted dips.

A close up of a map

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Now, we have used the moving average method in R and calculated our time series in Monthly, Yearly, and 3 years moving average. As we can see moving average for 3 years seems to have the best fit, so we will use it to further breakdown our time series. Now we have decomposed our time series so that we can find patterns and can use them in our prediction model.

A close up of a map

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Now, as we have different components of the time series, we will use the ARIMA model for predicting. For this, we have first calculated Mean Error (ME), Root means square error (RMSE), Mean absolute error (MAE), Mean percentage error (MPE), MAPE, MASE, and ACF1. These errors will help in understanding the errors in our model in order to improve the accuracy of prediction. The model which comes out to be the best fit is ARIMA (2, 2, 1) as it has a 96.7% accuracy level. Also, when we compare our values from January 2020 to June 2020 by our model to actual values, it comes out to be almost accurate.

A screenshot of a cell phone

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The below points represent the upper and lower limit of S&P500 value between January 2020 to December 2021. Our model suggested a 95% confidence interval represented in the dark grey area and 80% confidence interval represented in the light grey area in the coming months.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Point Value as of Jan 2020 -Dec 2021** | **95% confidence Interval** | **80% Confidence Interval** |
| Lower End | 3245.6 | 3153.97 | 3035.95 |
| Upper End | 3758.025 | 4230.16 | 4480.09 |

**GII Innovation Index:** The GII is an understanding of the multidimensional features of advancement driven development. Giving 80 point by point measurements to 129 economies in 2019, the GII has gotten one of the main references for estimating an economy's development execution. Moving into its twelfth release this year, the GII has advanced into an important benchmarking device that can encourage open private discourse and where strategy creators, business pioneers, and different partners can assess development progress on a yearly premise.

Every year the GII presents a topical part that tracks worldwide development. In the current year's release, it examines the clinical advancement scene of the following decade, taking a gander at how mechanical and non-innovative clinical development will change the conveyance of human services around the world. It likewise investigates the job and elements of clinical development as it shapes the fate of medicinal services, and the potential impact this may have on financial development. The innovation input sub-index and output index determine the GII

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We are comparing the GII index for 4 countries like the USA, China, Japan, Switzerland. Switzerland ranks no.1 in the innovation inputs and income group strength followed by Sweden and the United States of America. These Indexes can help Redcrow to determine the economic conditions in different countries and help them to get the idea in which country they should invest in.

**Kauffman’s Indicators of Entrepreneurship:** Adding to the model 8 section that we have had covered, we will be pitching in detail of the Kauffman indicators. These indicators will be considered and then further correlated with other datasets. We will be considering indicators from early-stage entrepreneurship which is a measure that will represent new businesses and how integrated the level of quality is when it comes to delivering new business. We will be considering indicators like the rate of new entrepreneurs, the opportunity shares of new entrepreneurs, the start-up early job creation, and the start-up survival rate.

We can get an estimate as to which indicator is thriving in 2019. These indicators are heavily dependent on how a state is doing in terms of setting up and promoting on entrepreneurship, and how is VC, in particular, can support these entrepreneurs. From the chart below, we can incur how these new indicators are generated and how they are differentiated in the national trend dealing with demographics and ethnicity. The below chart defines the national rate of all the four indicators that we've discussed above in the year 2019.

A screenshot of a social media post

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As Kauffman indicators, we are dealing with states within the USA. We try to see the average rates of all these indicators and how well are the states doing considering indicators.

A close up of a sign

Description automatically generated

The above chart defines the rate at which a particular state is capturing new businesses that are either formed into a legal Corporation and also firms that are formed not as a legal corporation. In 2019, 310 people out of 100,000 people started a new business each month in the United States, keeping Texas, Florida, Georgia, California, and Alaska top states where people have set up new businesses. This rate is generally calculated considering the population. We also see, there are new entrepreneurs at the age of 45 to 54, and most of them have education till high school.

A screenshot of a cell phone

Description automatically generated

In the chart above, we are identifying a very important aspect. The opportunity to start a new business can be either out of necessity when the entrepreneur itself is out of a job and needs money for survival, or it is out of curiosity and a thrive towards innovation or creating something new in the market. Hence, this above rate deals with a seesaw of the aspect when a new business is set up either as an opportunity or as a mode of survival. A national percentage of 86.86% of the total number of entrepreneurs have created new businesses. These entrepreneurs we're not unemployed and we're not looking for a job, but they develop these firms out of curiosity and innovation. We incur that South Dakota and Wyoming have more such people who are looking towards innovation.

A close up of a sign

Description automatically generated

The above chart shows another indicator which is how a startup has created jobs within states. This is interesting to know as this gives out an economic aspect as to how startups are not just an engine to generate revenue and create market curiosity through his products but how well they can employ people and sustain in the market. Jobs created by startups in 2019 were 5.16 1000 people, this was supposed to be higher in the previous years like in 2000 the jobs created were between 7 to 8. This indicates that startups are not fruitful in job creation anymore, and there is a trend which is slightly rising since 2009. D.C. created a lot of jobs higher than any other state.

A screenshot of a cell phone

Description automatically generated

The last indicator is the survival rate of a startup, this is calculated when a particular startup is still operating after one year since its inception or in the phase of maturity. This rate has remained constant since 2011. In 2019, we see a super slight increase taking the number to 79.63%. This means that 79.63% of firms have survived with one year of operation and haven't gotten bankrupt. We see a good rise in states like California, Massachusetts, Virginia, Louisiana, Alaska, and Alabama. We see a lot of startups in Connecticut getting bankrupt within a year, this is either due to its state laws and how poor the state is in infrastructure.

We have used these indicators to plot the below charts:

* Industry Fundamental Growth Chart
* Price/Earnings to Growth Ratios Industry Specific
* Industry Dividends and Free Cash Flow to Equity Data.
* Industry wise Aggregated Tax data.
* Industry wise Aggregated Tax data.

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A close up of a device

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**WalletHub State Innovation Index:** This Index ranks states according to 24 key indexes which are categorized into two ranks “Human Capital” and “Innovation Environment”. We have taken this Index because it gives us the growth pattern of every state taking STEM professionals, Science & Engineering Graduates, R&D Intensity, In demand Technology, Entrepreneurial Activity, Tax-Friendliness and many more significant indexes of the market. Other than Ranking, knowledge and technology outputs which determines the strength and development of particular countries and states, other factor which contributes to the success of its development are innovation growth through investments in education, research and business creation, especially in highly specialized industries. In order to recognize these factors, WalletHub compared the 50 states and the District of Columbia across 24 key indicators of innovation-friendliness. A glimpse of it is shown below.

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**DASHBOARDS**

**Dashboard – USA Statewise Dashboard**

Kauffman indicators of Entrepreneurship is our base measurement tool that is calculated by the weighted average of four types of indicators. These indicators are the rate of new entrepreneurs, the opportunity share of new entrepreneurs, the start-up early job creation, and start-up early survival rate.

The rate of new entrepreneurs is a measure of businesses created by a set of population in a state. It basically includes all kinds of businesses with no discrimination of its size, or the amount of people they're hiring, the amount of innovation they're doing, or its origin. We have taken average working hours of 15 hours per week per business to mark it as a running business. in laymen language it is how many people are starting a business each month. A measurement out here can be understood as follows: a 0.14% in RNE means that 140 out of 100,000 have started a new business each month. The rate of new entrepreneurs in 2019 is 0.31.

A drawing of a face

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As we see from the graph, men are likely to start new businesses every month more than woman. and this gap is persistent for around 25 years. Hence an encouragement to start new businesses for opposite gender is encouraged. Also, we see that African Americans are not able to start up new businesses whereas Latinos have the highest numbers of entrepreneur in their community.

The second indicator reads the opportunity share of a new entrepreneur. This defines an intention for an entrepreneur to start a business. This can be either out of unemployment in order to survive or it can be out of curiosity to innovate. There is always a demotivation when starting a new form because of monetary benefits, and hence a psychology behind an opportunistic mind or a mind to survive, is always there. This is calculated by the current population survey and takes the average of that particular year of that state and calculates the owners of new businesses and their opportunistic mindset. The opportunity shares of new entrepreneur in 2019 is 86.9%.

A close up of a map

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We see that here women actually surpassed men and have been quite stable when the economy is towards uphill. Also, Asians have a more opportunistic approach and the Latinos and Whites have remained almost constant during the entire decades as mentioned.

A close up of a map

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Another important thing to note is that all the age groups apart from the pre-retirement age group have shown increase and an increase in opportunity share, and there is always an upward trend after the Great Recession.

Thirdly, let's articulate a very important indicator which is the job creation indicator, Start-up early job creation. As it says, it measures the number of total jobs created by new companies in their first year and then it's normalized by the population of the state. This is basically being calculated with the help of business employment dynamics. The indication of start-up job creation in 2019 is 5.2 per thousand people.

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As we see from the graph, there was a great decline in 2008, and now employment has remained almost the same since 11 years for new companies.

Fourthly and Lastly, the indicator is about how start-up has survived in the market. the indicator is called startup only survival rate which deals with the percentage of new businesses which are running and still active after one year of operation. The only problem with this indicator is that it doesn't indicate the long-term survival of a company but only indicates the first-year survival of a company. Basically, deals with the threshold as to if the company survived for a year, it will actually grow and generate some rounds of series funding in the next year. A trend of this can be explained below:

A screenshot of a cell phone

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We income from the chart the survival rate has almost stayed constant apart from the Great Depression and has largely affected because of market instability. The rate of survival of startup in 2019 is 79.7%. This is also calculated with the help of business employment dynamics.

The Kauffman index, or the KESE index, is centered at 0 which is like an average of all the years’ data set that we have. And, based on this we evaluate the weighted average and then normalize the values of all indicators present above to create a score.

A close up of a piece of paper

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The values about zero indicates the positive growth of the startup indicators as a whole, and the value below 0 indicates a low value of the index which is a below average performance. The index had the lowest value in 2009 which was -1.9.

We have created an interactive dashboard for our sponsor Redcrow which gives the information about the Start-up Job Creation across United States. The Innovation Rank is determined by Z-Index (KESE Weighted average) which is calculated by using the Kauffman’s index by using the 4 indicators rate of new entrepreneurs, the opportunity shares of new entrepreneurs, the start-up early job creation, and the start-up survival rate. Z-Index and Wallet Hub Innovation score combine to give us the Overall innovation rank. We have also determined the Startup Survival rate for particular state. We have created this dashboard from the data available from year 1996 to 2019. The overall top 10 Innovation rank are for the states Massachusetts being no 1, followed by Washington, District of Columbia, Maryland, Colorado, California, Virginia, Utah, Delaware and Oregon.

**Dashboard Link:**

1. <https://public.tableau.com/shared/92KYRF2X4?:display_count=y&:origin=viz_share_link&:embed=y>

**A close up of a map

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1. <https://public.tableau.com/shared/6KRBQQP6D?:display_count=y&:origin=viz_share_link&:embed=y>

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**Dashboard – Technical Vs Non-Technical Startup Funding’s in USA**

The following dashboard is taken from a public tableau chart. This basically denotes series of funding in cities across USA. This chart distinguishes technical startups from non-technical startups. Like Brisbane in California, amounts to heavy technical startup funding off around 201 million but no funding’s for non-technical startups.

1. <https://public.tableau.com/views/Mapofthefundinghotspots_0/Mapofthefundinghotspots?:language=en&:embed=y&:display_count=y&:toolbar=n&:origin=viz_share_link>

**A close up of a map

Description automatically generated**

**Dashboard – Industries Risk Analysis**

In the second dashboard, we have analyzed the average unlevered beta. The average beta levered or unlevered, involves taking out the debt parameters before evaluating the portfolio of investment risk within comparison to the market. this can be largely referred to as the asset beta.

A picture containing knife

Description automatically generated

This can largely be identified as a regressed version of the coefficient of a slope when evaluating returns on stocks to that of the market. In the dashboard, we see that beta ranges from zero to an upper value of 1 point something. We generally keep the market risk or rather say the systematic risk as one; and hence beta value changes and fluctuates according to how the company or the industry is actually doing in the market. We incur, that industries like computer and peripherals, diversified, engineering and construction firms, biotechnology firms, and real estate firms, depends heavily on a higher risk profile.

We have analyzed this dashboard, with the cost of equity that denotes if an investment will meet its capital return requirement to that of a calculated unlevered beta.

We have taken this into account, with the help of P/E ratio. A higher PE ratio of an industry will be at low risk and also at a monitory risk reinvestment, where in a company or an investor is basically willing to pay if the company will own profits and build its market capitalization. Hence, to sink in both, we are able to analyze all these four aspects and try to obtain an industry for RedCrow to target next when they are willing to vertically expand. We see that software, entertainment, hotel, information Services, retail industry fair high in P/r Ratio and a moderate to large Cost of Equity. FMCG, software internet, biotech, recreation, and telecom have high ratio off market capitalization to net income; making these industries high in growth when it comes to earnings.

We have also considered PEG ratio, but considering the industries with a higher PEG ratio, it's very hard for RedCrow to invest in such industries. These industries are often regulated or have major involvements of government, they are metal and mining, oil and gas, and chemical.

One major industry with the highest PEG ratio is food wholesalers, which indeed is a very good market to explore, since the increase in population, leads to increase in buying power, and hence necessity products have higher chances to grow and being bought. Average number of firms are major in the finance and banking background, which majorly contains of branches. An operation firm dealing with the logistics and the operations of this industry can benefit an open door for bigger finance institutions, and great funding opportunities.

**Dashboard Link:**

<https://public.tableau.com/views/USAIndustryRiskIndustry-1/Dashboard1?:language=en&:embed=y&:embed_code_version=3&:loadOrderID=2&:display_count=y&publish=yes&:origin=viz_share_link>

A screenshot of a cell phone

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**CONCLUSION**

In this part, we have predicted the S&P500 value which is increasing every month and can give high returns. We have also seen the ARIMA (2, 2, 1) is the best fit model in this prediction and has given a 96.7% accuracy level.

The overall GII score shows the simple average of the Input and Output Sub-Index scores. We are comparing the GII index for 4 countries like the USA, China, Japan, Switzerland. Switzerland ranks no.1 in the innovation inputs and income group strength followed by Sweden and the United States of America. USA and China are the recommended countries where Redcrow can expand its business. The US Ranking has increased in worldwide development in terms of innovation index showing the maximum innovation output pattern.

Kauffman indicators not only deals with how a startup is surviving in the market, how many jobs are they creating and what is the intent behind starting a startup by an entrepreneur, but, it creates a weighted average of all the four indicators discussed above, and normalize it to a certain value. This denomination is called as KESE Index. The value in 2019 is around 1.2, which is basically more than one standard deviation above its normalized value. We can compare these values to the indicators developed by GII and the data set that we borrowed to financial borrowings and lending of different industries (Stern Data Set).

RedCrow currently caters to a very high segmented and high fundamental growth industry which is hospitals and healthcare. But vertically expanding, through this segment, will not only benefit its present cash cow but also improve its shiny stars. We have analyzed the stimulus market to understand which country has the highest stimulus package, then we have analyzed as to how market is performing with the help of S&P 500 and Russell 2000. We have predicted the values and we've seen a potential growth, maybe because of Covid-19, we might get a short recession but a quick recovery from this recession is evident because of E-commerce, and the dynamics of the work culture. After, we are able to identify from NYU Stern’s data, potential industries for vertical expansion (Dashboard 2), and the states which are growing innovation from WalletHub innovation and GII Innovation Index. We are able to merge all and keep the KESE index as a base to deal with higher potency of start-up dynamics.

**RECOMMENDATIONS**

The overall top 10 Innovation states where RedCrow should invest are the states Massachusetts being no 1, followed by Washington, District of Columbia, Maryland, Colorado, California, Virginia, Utah, Delaware and Oregon.

We see that software, entertainment, hotel, information Services, retail industry fair high in P/r Ratio and a moderate to large Cost of Equity. FMCG, software internet, biotech, recreation, and telecom have high ratio off market capitalization to net income; making these industries high in growth when it comes to earnings.

One major industry with the highest PEG ratio is food wholesalers, which indeed is a very good market to explore, since the increase in population, leads to increase in buying power, and hence necessity products have higher chances to grow and being bought. Average number of firms are major in the finance and banking background, which majorly contains of branches. An operation firm dealing with the logistics and the operations of this industry can benefit an open door for bigger finance institutions, and great funding opportunities.

**FUTURE SCOPE**

**Stimulus:** Attempt to use monitory/fiscal policy to stimulate the economy. Since, USA has the highest stimulus package followed by Japan, we have considered geographically expanding within the state’s first. Since it’s a crowdfunding platform, in future we can attract startups from different stimulus economies like Japan, the UK and Germany, as they are heavy in stimulus and can easily bear market fluctuations in the economies.

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2. Gaia Bassani, Nicoletta Marinelli, Silvio Vismara-Crowdfunding in healthcare. (2019). Retrieved 17 May 2020, from https://link-springer.com.ezproxy.neu.edu/article/10.1007/s10961-018-9663-7
3. U.S. Sector Indices, Charts, Prices - Barchart.com. (2020). Retrieved 17 May 2020, from https://www.barchart.com/stocks/indices/us-sectors?page=all

In these articles, the author is talking about the idea of changes taking place in the healthcare industry. The article gives information to people on how to raise money and funds for the organization and the idea of convincing people about investments on a large platform. Crowdfunding has made it easier for raising capital where every person can contribute a certain fraction of the total amount. It helps in advertising and gain reach to a large set of people.

Many investors try to route in, but they want immediate return of investment. The health care industry requires time to advertise its product and produce trust in the market in the long run not just in monetary terms. The crowdfunding platform has its own challenges. When you try to pitch your idea there are chances where other people can replicate it. Many investors lack knowledge regarding the health care sector. Reaching to a large audience through the crowdfunding platform requires lots of time, effort, and money.

Popular crowdfunding platforms used by people are Kickstarter, Indiegogo, GoFundMe. We can use the knowledge of these platforms and compare them with Redcrow regarding the proposed projects and customer's requirements. We will see what similar kinds are of undertaken project. What is the success rate? What is the strength or size of the company? What equity concepts and investment methods are followed? We will also discuss different domains where Redcrow can expand apart from Health care. We will investigate the different categories and the risks involved. We will be using big data prediction models to gain more insights into the Redcrow Project.

1. Kauffman Indicators of Entrepreneurship. (2020). Retrieved 17 May 2020, from https://indicators.kauffman.org/

The Kauffman Indicators of Early-Stage Entrepreneurship is a set of measures that represent new business creation it involves integrating several high-quality, timely sources of information on early-stage entrepreneurship. It helps us in identifying the rate of new entrepreneurs, the opportunity shares of new entrepreneurs, Startup early job creation, startup early survival rate. (Retrieved From: KAUFFMAN INDICATORS OF ENTREPRENEURSHIP,2019).

1. Market Watch. (2020). Retrieved 17 May 2020, from https://www.marketwatch.com/investing/index/

We have used the metric system to do the market search which includes the analysis of the following factors. Dow Jones U.S. Financial Services Index – ETF Tracker. It helps us in measuring the performance of the financial services industry segment of the U.S. equity market in the field of finance and other sectors. Dow Jones Internet Services Index (DJISVC), S&P 500 IT Services Industry Index-contains information of large-cap companies. S&P Food & Beverage Select Industry Index (SPSIFBUP)-contains information regarding Index that is classified in the GICS food & beverage sub-industry. (Retrieved from: https://www.marketwatch.com/investing/index/).

#### Global Innovation Index 2019. (2020). Retrieved 17 June 2020, from https://www.wipo.int/global\_innovation\_in