Artificial Intelligence

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Abstract
Artificial intelligence can be defined two different ways. The first way that Merriam-Webster dictionary defined artificial intelligence is a branch of computer science dealing with the simulation of intelligent behavior in computers. The second definition they provided was “the capability of machine to imitate intelligent human behavior” (Merriam-Webster 2020). Artificial intelligence has been an upcoming element business have been using to make every day processes easier and less time consuming. Artificial intelligence can affect the company in different ways. Artificial intelligence can support businesses needs by automating business processes, gaining insight through data analysis, and engaging with customers and employees (Harvard Business Review 2018). Process automation is the most common type. Tasks that are classified as process automation would be transferring data from e-mail into records or replacing a lost credit card. Process automation is the least expensive form of artificial intelligence. Replacing administrative employees is not the primary goal. The second most common type of artificial intelligence is cognitive insight (Harvard Business Review 2018). This system is used to detect patterns in data sets and interpret the meaning of the data. Cognitive insight is being used to predict what a particular customer is likely to buy, identify credit fraud in real time, analyze warranty data to identify safety or quality problems in automobiles, automate personalized digital advertisements, and provide insurers with more accurate modeling (Harvard Business Review 2018). There are normally more detailed data when using cognitive insights. Cognitive insights are also used to improve job performance. Lastly, there is cognitive engagement. Cognitive engagement includes examples like, intelligent agents that are available 24/7 to offer customer service, internal sites for answering employee and customers questions, product and service recommendation systems for retailers, and health treatment recommendations (Harvard Business Review 2018).

Social media has changed the way that not only humans interact with each other, but the way that business is conducted. “Social media is the most popular online activity” (David Eccles School of Business 2012). There have been studies to prove this too. According to thee David Eccles School of Business, two-thirds of internet users regularly use social networks. Of those two-thirds, they also share or acquire information on products or services. There are evidence showing how businesses have been responding to these numbers. Businesses are now creating a powerful impact online. “Ninety one percent of experienced social marketers see improved website traffic from social media campaigns” (David Eccles School of Business 2012). Social media has completely changed customer behavior. Businesses see the impact that social media can have on people and they are embracing its benefits to boost business within their companies. Businesses are seeing this as a new way to conduct business.

How artificial intelligence and social media affects investor and trader behavior

Artificial Intelligence (AI) has been on the rise with technology being so advanced and we are looking at how that has impact social media analytics on investor, the trader behavior in stock markets, and other financial contexts. We will also ask how AI and social media affects a company internally. The first thing that we have to do is determine was AI is, AI is cross disciplinary field that has seen media hype and progress in for a few years now (Dormehl 2017). Some people may achieve AI through gambler’s fallacy, which is a fallacy where a person persuade itself that independent events probability will be affected by previous events (Wikipedia 2017). In 2010 there was a survey on three types of AI techniques used for three categories of financial applications (Bahrammirzaee 2010) The three types of economic problems were credit evaluation, portfolio management and financial prediction and planning. The three types of AI techniques that were examined for these financial problems are ANNs, expert systems, and hybrid intelligent systems.

R.C. Cavalcante did a recent survey on computational intelligence applications on financial markets published in 2016 (Cavalcante, Brasileiro, Souza, Nobrega, and Oliveria, 2016). Within this research study the years that was studied was between 2009-2015. This study involved work that was essential research goal that what is and what markets the approach that was applied (examples stock rates, stock indices, etc). Additionally, the study involved what input variables was used, what techniques were used, and even if it was a trading system. Basic forms of machine learning algorithms are commonly used by a variety of companies. (Lightbourne 2017). Cutting edge forms of machine education are increasing their way into the consumer circle and advancing into existing markets. The first question that we will look at is how AI has impacted social media analytics on investor, the trader behavior in stock markets, and other financial contexts. In finance, AI can be placed into 4 different categories: the first is customer-oriented applications, which involves credit scoring, insurance, and customer-oriented service robot. The second is management level applications that involve capital optimization, risk management, and market impact analysis; the third is financial market transactions and portfolio management. The last category is AI and machine learning are used in financial institutions or financial regulators (Xiel 2019).). In the financial aspect, we can try to use artificial intelligence to improve the enterprise's financial management ability (Ye, 2019). The sol purpose is to improve the financial management strength of enterprises. A fundamental function of the financial market is resource allocation, i.e., for businesses or people to secure resources for promising investment projects (Zhang 2017).

The way that AI impacts the stock market is by analyzing tons of data points and executive trades at optimal price, with this analyst are able to forecast markets with greater accuracy and trading firms more efficiently ease risk to provide for better returns (Thomas). This impact from AI is positive for the stock market because it gives financial analyst a more accurate than standard models when calculating the many data points that comes with the stock market. Social media analytics has impacted through trade behavior by gathering data together and then putting it out to the consumers just like AI impacted the GDP in the paragraph below. It also has different data points for different people based on what has been searched, recorded and wrote down in your phone thanks to advanced technology and AI.

In 2017, Goldman Sach's New York headquarters released 600 traders, and hired 200 computer engineers that had overlooked automated trading programs. The chief financial officer of the company has begun automated currency trading, and also that one computer engineer could replace four traders. (Magnates, 2018) AI has been causing a paradigm shift across many industries, but the biggest industry would come from the financial sector and it creates an unfair advantage in those markets. AI machines though are not able to keep up with the stock market constantly changing behavior, so keeping savvy traders that are able to adjust change. The reason that they keep these traders is because adjusting the machines algorithms could be too expensive but also time consuming. (Magnates, 2018)

A CPA and mortgage banking faculty member at North Lake College in Texas by the name of Keith Baker said that "If investors give over decision making to machines, and they use all the same data and algorithms, they might give a sell signal at the same time, depressing the markets and creating a permanent loss of capital.". In the same article, Gordon Moore, co-founder of Intel Corp., described a process in his own theorem called "Moore's Law" which in the law he hypothesized that every two years the processing power of computers would double. The reason behind this theory was the example brought in the article that explain that automatic trading had plunged Dow Jones industrial average 700 points in just 20 minutes. Yet, there is always the other side of the story, "The companies that have the best AI, combined with an evolved machine learning ability, will start winning more often in a theory." An AI specialist says that "at this stage [infancy stage], AI can provide a competitive advantage, but we cannot purely rely on it without constant monitoring of an ethical and human mind." This shows that AI has affected the investors way of predicting and figuring out their job, but also this has impacted the whole investing world in both a negative way and positive way for the future. (Carlozo, 2018)

AI has also impacted more than just finance, but also in micro and macroeconomics, in microeconomics AI can automate programmable work, this would cause unemployment to practitioners because it would lower labor costs. The second impact is that it promotes the redistribution of internal income distribution among labor. Thirdly, it would upgrade and transform the industry structure of the market; the fourth is that how much does it affect the innovation ability of enterprises, and the last is the impact that it puts on human resources (Xiel).

There are six ways that it affects macroeconomics, the first is the impact on economic growth, it improves it production efficiency, but lowers labor cost through "programmable work", this would then bring profits but reduce the share of capital return in the economy thanks to increase cost in non-automated sectors. The second is the impact on industrial organization, the third is on trade, why it impacts industrial organization is because of two channels, the first is the direct impact on technology and the second is the change of enterprise structure caused by technology. For the third impact which is on trade, is because AI has a huge impact on factor returns and changes the relative returns between different components which then cause advantages of countries to change. The fourth impact that AI has is on Gross Domestic Product (GDP), AI plays an important role e-commerce recommendation system, which changes the habits of consumption possibly. The fifth is on public policy, this is based on the negative impact that comes from the labor market from AI, and the government setting out public policies to make sure that social welfare is not fixed and ease the pressure cause by income inequality. The last impact is the research methods in macroeconomics, AI is based on large samples with high data while standard micro is based on small samples with low data (Xiel).

Another way for AI to affect trade behavior is by using AI to improve outcomes from trade negotiations internationally. This could be used to be able to analyze trajectories economically from each partner that is negotiating under different assumptions. This would include outcomes contingent on trade negotiation, and how those outcomes are affected in a multiplayer scene where trade obstacles are changed down at different rates, as also predicting trade response from countries that are not a part of the negotiation. (Meltzer, 2019)

Inside the company, social media analytics and artificial intelligence has their own effects on the company that may help them in the long term. According to Forbes magazine, there are six ways that AI will affect your business, and the first is Smarter technology to inform decision making. What this means is that since AI is becoming more talented at looking over data and interpreting it and being able to do it at such fast pace companies and business has a chance to build more beneficial and personal promotions. This could also lead to automated decision making, while taking decisions out of the hands of customers service reps, strategist, or consultants thankfully. The second factor is a streamlined supply chain, this is a positive impact because it boosts the accuracy and agility by using the automation of manual processes. An example of this would be like Amazon using drones as delivery machines and leaving your package at your door. The third impact is to continued focus on mobile, this talks about how AI will be better implemented in the software of our phone, and this could also be used to use social media analytics better (Bullock 2019).

Going to the last three parts of how it impacts within the company, the fourth one is the customer relations. With AI powered software, the companies are able to use these instead of using actual people to help more effectively to complaints, concerns, and also queries. The fifth impact is recruitment practices, this could be used with bring the best people into the company by using AI to make it easier and quicker, it also helps save time and money. The last impact is the improved cyber security. This is an improvement because it helps track and identify the behaviors that comes with fraud, it could also be vital to use AI to protect consumer data which then inspires trust and brings true business value (Bullock 2019).

Artificial. Intelligence has also made it easier for people to trade and invest. Before artificial intelligence, analyzing stock market data was time consuming and confusing for people. Now, people have the power to invest at their fingertips. They can research which stocks that they want to invest in and they are able to know the risk on investing by looking at how the company has done in the past. This also makes the stock market more competitive because it is now easier to invest. People can study the changes in stock before the invest, this led to more accuracy in trading.

For social media, many young investors are spending more time on social media platforms and social networking and the ages range from 16 a 24 for an average of 3 hours a day. The older investors that are above the age of 45 would spend less than 2 hours but more than 1 hour a day on social media platforms and social networking apps. (Rudin, 2019) With social media influencers having followers and wanting to share the exclusive access that they are given. With these investors that are confident can get caught up in bias/overconfidence, this is because the amount of information that investors have access to, they then become overconfident with their knowledge of investment. (Rudin, 2019)

In another article, it is said that since 2008 firms have begun to use Twitter to communicate news to consumers and investors. Marginal investors who may read the “managed” tweet from the firm can react accordingly would be most likely unsophisticated since Twitter is an info pushing social media platform instead of info pulling like Bloomberg. A “manage” tweet is when the firm is pushing out content within 140 characters, so they are specific what they put in the tweet. With investors using Twitter to communicate with firms, it leads to mispricing. (Paul, 2015)

Going along the last paragraph, when tweeting about stocks that has a positive or negative sentiment could have a ripple effect before hitting the stock market. In the same article, there was report given from Johan Bollen who is a business professor that Twitter data could predict the Dow Jones Industrial Average with 87.6% accuracy, while legendary gurus would range from 22 to 52 percent accuracy in stock market forecasting. (Simple, 2016) This shows that social media like Facebook and Twitter are natural precursor to actual stock market action. (Simple, 2016)

Companies are strongly encouraged to provide information to the financial community, but each company chooses a different path they wish to take. Each company has a different competitive environment. There are different reasons upon why companies choose the path that they do. Companies have different methods and formats that the choose to use to disclose information to potential investors. The paper Transparency versus Performance in Financial Markets the main focus is earning surprises. There are different reasons why there are earning surprises. Sometimes it occurs beyond a company’s control. When earnings surprises occur, it catches the investors and stockholders off guard.

The Coronavirus pandemic has also impacted how people are investing in the stock market. It has created financial stress to many people all over the world. Many people lost their jobs due to the pandemic. If people do not have a source of income then they are less likely to invest in the stock market. There are many risks when it comes to investing in the stock market during a pandemic like this one, this was caused by investors being worried about ev everything that is going on in the world around them. Local outbreaks of the coronavirus lead to economic losses as well as unforeseeable stock market conditions.

How artificial intelligence and social media affects a company internally

Artificial intelligence can have many different effects on a company's internally. This is leading to many different transformations in company's all over the world. The way that companies are conducting business is constantly changing. Artificial intelligence is a way for those companies to stay up to date on those changes. Typically, when people think of artificial intelligence, they think of robots replacing people in the workplace, but this is not the case. Artificial intelligence is a way of employees to work together in different ways that they were not able to before. This is changing the typical workday for most companies. A great example of this would be in a factory setting where there is an assembly line. These machines are able to perform tasks at a much faster rate than what they would have with only humans.

Artificial intelligence is now being used not only in manufacturing, but in all departments of businesses. Many bigger companies have embraced artificial intelligence because of its full potential. Artificial intelligence has made business processes more fluid and adaptive (Daugherty and Wilson 2018). This means that companies are moving from solely humans but instead a team that is consisted of humans and machines. This is changing from more of the traditional business processes. The world is constantly changing, and companies must keep up with those changes if they want to be successful.

One misconception of artificial intelligence is that it is trying to replace humans altogether, but that is not the case. Humans are needed in order for these machines to work properly. They are needed to program or troubleshoot. The machines if there is something wrong. Research shows that technology's greater power is when it is complementing and augmenting human capabilities (Daugherty and Wilson 2018). Instead of replacing the need of human employees, artificial intelligence is doing the main "grunt" work so that humans do not have to. That gives human employees more time to focus on the bigger projects.

Today's society has out a negative view on machines. Many people see it as "man versus machine" instead of looking at the ways that they could work together. This has kept businesses from expanding and using those machines because they are afraid that it will replace humans in the workplace. These thoughts are far from the truth. The truth is machines are not taking over the world. They are not taking away the need for humans either. "Artificial intelligence is amplifying our skills and collaborating with us to achieve productivity gains that have previously not been possible" (Daugherty and Wilson 2018). Humans and machines are not "fighting" against each other but forming a partnership to be able to accomplish more than what they would on their own. The book Human and Machine provided a great example of humans and machines working together. Rio Tinto is a global mining company. This company is using artificial intelligence to manage different heavy machinery necessary for their job from a central control center. This has provided more safety for employees that work for Rio Tinto because it is no longer necessary for the company to send employees into dangerous mining conditions.

According to the book Human and Machine, many industries are already maximized automation. They are now developing new processes by using human and machine teams to capitalize on productivity. These companies are moving from the traditional thinking that machines are coming to replace humans, but rather they are here to make jobs more efficient. AI is better at handling multiple inputs. Machines are far better than people in managing many different factors at the same time when making complex decisions, they can process much more data at once and use the probability of proposing or making the best possible decision (Njegovanović,2018). Given that machine learning is a form of statistics, some well-known strengths, and limitations relative to human capabilities follow almost immediately (Wall, 2018). One advantage of machine learning (ML) and statistics are that they are created to process handle far more data than a human could handle. This allows machine learning to catch any information that could be missed by humans. The second advantage is that machine learning or computers implement a level of consistency that cannot be achieved by humans, who can be easily distracted by hunger, lack of sleep, or personal issues that is going on in their lives. The last strength of machine learning in a large-scale operation is that it generally has considerably lower marginal costs than dependence on humans.

The way that we communicate has changed over the years. Social media has changed the way the world interacts with each other. Humans have always interacted with each other through dialogue, but there is no question that the platforms we now use have taken communication to the next level (Qualman 2013). Social. Media changed the way that humans interact with each other, leading to the change of how businesses operate and interact with other businesses. It is important for businesses to use social media in their overall business strategy. Social media is a free platform where businesses can use it for marketing and public relations. It touches almost every aspect of a business from customer service to a business's technology department.

Within the natural world, there is a Swarm Intelligence (SI) is a commonly occurring process in which biological groups amplify their collective intelligence of forming closed-loop systems. This is known in schools of fish, flocks of bird, and swarms of bees. With Artificial Intelligence have created human groups to configure systems that are modeled after natural swarms.Known as Artifiical Sarm Intelligence (ASI), the technique has been shown to amplify the effective intelligence of human groups (Rosenberg, 2016). This particular study measures the guessing intelligence of ASI systems against extensive betting markets when determining sporting events.

Social media also opens new opportunities for businesses. Businesses are now shifting their focus to strictly social media marketing because of the benefits that it has. For example, Pepsi opted out of buying advertisements during the Super Bowl to focus on social media (Qualman 2013). Another example is Ford. Ford adjusted their marketing budget so that 25% of the budget goes towards digital media as well as social media (Qualman 2013).

“If Facebook were a country, it would be the third largest country in the world” (Qualman 2013). If Facebook is such a huge social media platform, why are all businesses not capitalizing on it? Social media is a direct form of marketing. With a simple post, businesses are able to reach their consumers. This process is essentially taking out the middleman when it comes to marketing and advertising. It is also making marketing more efficient. Social media is the biggest referral program in the world (Qualman 2013). Social media is used all over the world, this is why it is much easier to reach so many people. One of the biggest things that social media has to offer is to stay connected with friends and family, so why shouldn’t it be used for businesses to stay connect with their consumers? The businesses message is also less likely to be misunderstood unlike word of mouth advertising.

Social media is a great tool for businesses to relay their message to their consumers. Businesses can reach many people just by one post, this is a more efficient way of advertising than what businesses were doing in the past such as billboards and advertisements in newspapers. It important that businesses develop a marketing strategy by. Using social media for their long-term goals. The growth in social media in the past years leads to more advertising opportunities for businesses. Social media creates a larger audience for businesses to reach. This creates a way for businesses to instantly connect with their consumers. Unfortunately, most businesses do not take full advantage of social media marketing and their businesses suffer because of it. Businesses are trying to learn how to best effiecntly use social media to help their business. It is important for businesses to strategically plan their posts because anything posted onto the internet will stay there forever. They want to make sure that they are not making a bad name for their business. Even if the post is taken down, people could have seen it before it was deleted. Depending on the post, it could help a business reach levels they have not been before or it could hurt a business forever. People all over the world use social media all day, every single day. Because social media is a free platform for businesses to use, they are able to reach many people at one time without spending money. There are some features on Facebook or other social media platforms that require payment, but it is not necessary for businesses to reach their customers.

The Coronavirus pandemic not only lead to a downfall in the stock market, but it also took a toll on businesses internally. Employees lost jobs, took significant pay cuts, and a decrease in labor production. If the pandemic drags on for a long period of time, it could cause businesses not to recover from being shut down. The pandemic has created mass fear and panic among people. The Proceedings of the National Academy of Sciences of the United States of America conducted a survey of 5,800 small businesses. There were different factors caused by the pandemic that affected businesses. Due to mass layoffs, many businesses were at risk of closure and some could not recover from being closed. Smaller businesses were more affected than what larger businesses were. The pandemic had caused an economic shock. Because so many small businesses were affected because of government shutdown, the government created the Coronavirus Aid, Relief, and Economic Security Act or CARES Act for short. The CARES Act was created to aid small businesses while they were shut down.

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