Perspectives on Critical Issues

Vol. 4

An Anthology of Research Papers written by
Graduate Students in the MBA and MAPA Programs
At Saint Mary's University, Minneapolis, MN

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Introduction

The research papers collected in this Anthology were written by graduate students in the Master of Business Administration (MBA) and Master of Public Administration (MAPA) programs at Saint Mary's University, in Minneapolis, MN, for the Summer semester of 2021. Students were participating in MBA 643 (Corporate Finance), MBA 642 (International Finance) and MAPA 620 (Government Finance).

In general, students in these courses are required, among other assignments, to write a semester-long (eight weeks) research paper. The topic is usually up to them, so long as it reflects the application of the topics discussed in our course to their company and industry. For the Summer 2021 semester, the students enrolled in MBA 643 (Corporate Finance) were assigned a more specific topic, this time reflecting on the impact of major social issues on corporate America. Below is an excerpt from the syllabus presented to them:

> *There are two major areas of existential concern that are increasingly a central focus for the business community:* ***climate change****, and* ***inequality****.*
>
> ***1)*** ***Climate change*** *is settled science. It is no longer an area that can be debated intelligently, other than on ideological left versus right grounds. While we can differ on specific policies to address it (e.g., carbon taxes, subsidizing renewable energy), the fact of climate change is objective reality. The question now, within the business community, is how to deal with it. Consider that two sectors of our society which are especially focused on the issue of climate change are the property/casualty insurance industry (since they have to pay for environmentally caused damage and need to price that risk) and the US military (which is developing contingency plans for dealing with the consequence of climate change, including handling mass migrations, redeploying bases, and defending against military conflicts over diminishing natural resources). If it is a serious matter for them, then it is a serious matter for your industry.*
>
> *The question for you is: how can and should your company, and industry or profession, learn to accommodate, adapt to, change policies because of, and price the risks inherent in, climate change? As a senior manager within your*

field, and young enough to have a long career ahead of you, what are your thoughts about this issue, and the appropriate responses? What can your specific profession do to help in addressing this? Express your ideas within the context of our course, using the finance concepts we are learning here to outline your ideas and policies.

***2) Inequality** (in the sense of economic, racial, income, asset wealth, and knowledge inequality) is also a settled fact. Extensive research data shows that the gap between the highest income and lowest income, the wealthiest and the poorest, the best educated and the worst educated, continues to grow, and in fact has been exacerbated by the COVID-19 pandemic. Further, these gaps alarmingly parallel racial and gender lines. Approaching this problem from an objective business perspective, not an ideological left versus right perspective, there is a role for the business community to lead in addressing these issues. Higher inequality leads to greater social and civil unrest, lower creativity and productivity growth (since many parts of our society are marginalized), lower purchasing power, and reduced economic growth. Aside from all of the ethical and moral reasons for finding inequality unacceptable, there are sound economic reasons to find this unacceptable.*

The question for you is: how can and should your company, and industry or profession, learn to deal with, change policies because of, and assist in reducing, situations of inequality? As a senior manager within your field, and young enough to have a long career ahead of you, what are your thoughts about this issue, and the appropriate responses? What can your specific profession do to help in addressing this? Express your ideas within the context of our course, using the finance concepts we are learning here to outline your ideas and policies.

The students were informed that the best papers would be collected into an Anthology and made available within the Saint Mary's and the general professional community.

This is the fourth Volume in the series of Anthologies. The first Volume was produced from the papers of the Summer semester of 2020, the second from the Fall semester of 2020, and the third from the Spring Semester of 2021.

This Anthology is available as a PDF download at no charge to the St. Mary's and the professional community. Recipients are welcome and encouraged to forward this on to any of their colleagues.

For further information about Saint Mary's graduate programs, please go to www.SMUMN.edu, or contact Dr. Michelle Wieser, Dean of the Graduate School, at mwieser@smumn.edu. For further information about this Anthology, please contact me at: rkeysser@smumn.edu

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Energy, Climate Change and Finance

By Joshua Hebert

Introduction

Climate change has been established as one of the most defining challenges of our time. How we as a planet, meet and challenge climate change will have massive implications for economies, the energy system and our planet. Most individuals have heard of climate change and understand the effects it is having on the planet. Typically, with one astounding data point or statistic guided towards the effect of the energy industry and the climate change crisis. Energy plays a critical role in many facets of our lives such as for cooling and lighting. We also use sources of fuels for transportation and cooking. There sources are all interconnected in many ways such as water consumption, use of goods and services, transportation, economic growth etc. Most of these sources come from fossil fuels which have been linked as a key contributor to climate change and accounts for roughly 84% of U.S. greenhouse gas emissions (EPA, 2015).

Climate change is a likely to increase electricity demand to cool homes and businesses in the summer while simultaneously decreasing electricity usage for natural gas, heating oil, and wood to heat in the winter. This change in consumer behavior is forcing investments in new infrastructure equipment to meet the increased demand, especially during heat waves. The adverse effect of climate change also affects water availability that is used to produce electricity and extract fuels (Concerned Scientists, 2017). The main concern is areas where water is already scarce, the competition and cost of water between energy sectors could increase. Studies also indicate that sea level rise with frequent intense storms have been linked to disruption the electrical interconnection by damaging fuel delivery, equipment, power plants, etc., (EPA, 2015).

Electrical Grid Past and Present

While it is obvious electricity production has an adverse effect on climate change, a major question of “How do we change the issue?” derives. Many scholars, CEOs of energy utilities, and government officials have had highly warranted discussions to implement a fix. One of the most highly regarded implementation plans calls out renewable energy (photovoltaic, wind, etc.,) to provide energy to the consumer in lieu of fossil fuels. Of course, this is far more complicated than simply installing generation resources. Questions surrounding funding,

stability, infrastructure, etc., are major components that are highly regarded, discussed and naturally all fall under the funding criteria. The current infrastructure is vastly outdated but has been able to sustain itself due to the decades old practice of centralized fossil fuel sources with little concern to CO2 and NOx emissions until recently.

While knowing the components that can contribute to decarbonizing the electrical grid is useful, one of the most prominent questions is how will the projects be funded? The financial aspect may be the key contributor to decarbonization. The availability to attain greenhouse gas emission targets is critical as it relates to clean energy. The project scope surrounding the work required to reach clean energy is massive and represented as the largest building project ever undertaken (Schub, 2019). The components surrounding the funding this project must be understood for the concepts to turn into reality.

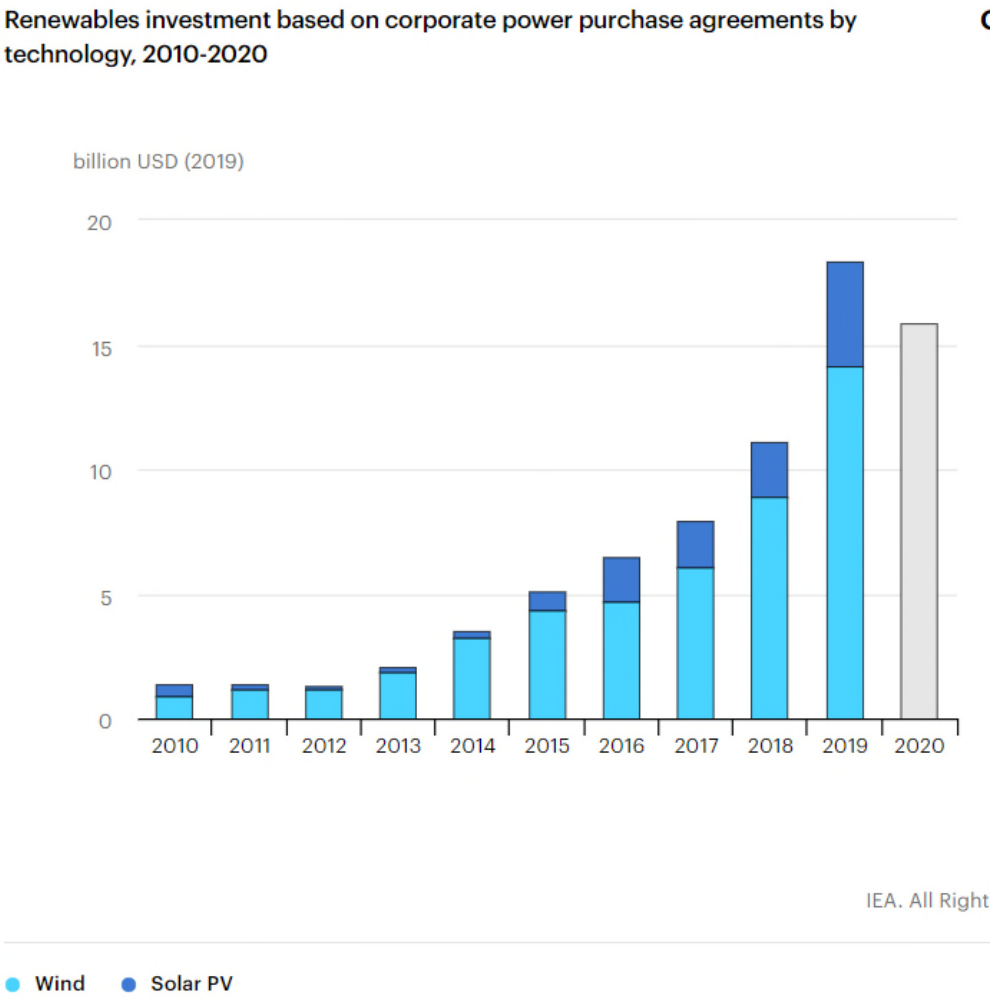
Over the last decade, green banks – which are defined as "public or nonprofit financial institutions purpose-built to develop, facilitate, and scale investment in greenhouse-gas reducing projects," are a common site and are said to be the "pioneer" of financing solutions (Inderst, Kaminker, Stewart, 2012). As of 2020, fourteen green banks have opened within the United States, with several more being planned and approved. These banks have turned each dollar of public funds into $3.40 of private co-investment, creating $3.67 billion of clean energy investment through 2018. There is also a bill that legislation passed twice in 2020 that leverages $35 billion capitalization from public funds into $1 trillion in greenhouse-gas-reducing investment (Schub, 2019).

Climate Action

In order to address climate change, the financial resources and informed investments are needed to reduce emissions and adapt to the changes that are already in place. The world will need to make significant investments in the electrical infrastructure over the next 15 years, estimated around $90 trillion dollars by 2030 (World Bank, 2019). While that is a massive amount of money, there is a high possibility that these investments can be recouped. The transition to a green economy can open new economic opportunities and jobs. An investment of $1 has been found to yield $4 in benefits (World Bank, 2019). In addition, an immediate and determined action towards renewable energy, could bring an economic gain of $26 trillion

dollars by 2030 conservatively, as compared to the current practice of fossil fuel production (New Climate Economy Report, 2018).

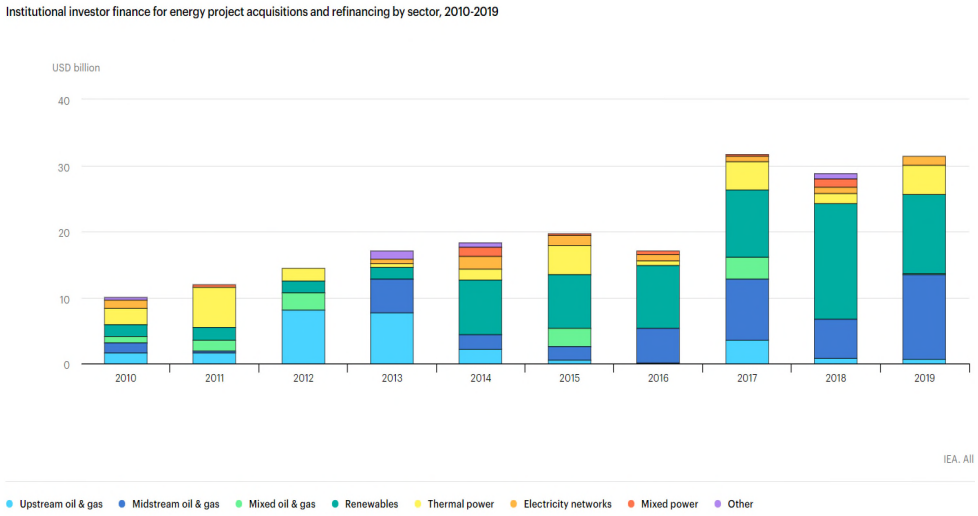
The impact of COVID-19 did provide a drop in emissions; however, this drop was temporary, and emissions have resurfaced back to where they were pre-pandemic and far in excess of the Paris Agreement goal, which would have proven devastating impacts. Multiple reports have inherently made it clear the world cannot afford to burn fossil fuel if we are to succeed in limiting climate change (Proctor, 2020). United Nations Secretary-General Antonio Guterres has recently set six priority areas for climate change in response to recovering from COVID-19 including: investing in decent jobs; no bail-outs for polluting companies; abandoning fossil fuel subsidies; ending investment in and construction of coal fired power plants; taking climate risks and opportunities into account in all financial and policy decisions; increasing international cooperation; and ensuring the transition that is fair and leaves nobody behind (Herz, 2020). One pitfall viewed by energy utilities are the assets that will be abolished prior to their intended retirement which will not develop their full potential of expected returns. Specifically, coal mines have already began closing as the price of renewable energy sources are far below those of coal. Replacing the most expensive 500 gigawatts of coal capacity with solar and wind would cut annual costs by up to $23 billion per year and yield a stimulus worth $940 billion, or around 1% of global gross domestic product (Elias, 2018).



Paris Agreement

The Paris Agreement calls for “making finance flows consistent with a pathway towards low greenhouse gas emissions and climate resilient development.” While reducing emissions is a key component, building the resiliency of the infrastructure to avoid expensive repairs and to minimize the aftereffects of natural disasters on people, businesses and economies (Jones, 2021). This change to low carbon could create over 65 million new jobs globally by 2030 (U.N., 2020). Of particular importance is the emphasis the Paris Agreement places on transparency and the enhanced predictability of financial support. Fixing the climate crisis cannot be done alone, but instead must take a collective response from all countries, financial actors, businesses, and citizens. Developed countries have committed to jointly initiate the use of $100 billion per year which began in 2020, to address mitigation and adaptation needs of the more developed

countries (Carney, 2019). Worldwide governments came to an agreement that a major share of multilateral, multibillion-dollar funding should be channeled through the Green Climate Fund. The Fund also is indicative of essential mandates to establish a clear balance between adaptation and mitigation within its designated portfolio, and to encourage the engagement with the private sector through its Private Sector Facility to initiate the private finance towards renewable energy resource investments. The Global Commission on Adaptation estimates that the investment of $1.8 trillion from 2020 to 2030 has the possibility of generating $7.1 trillion in total net benefits with the five areas that include: early warning systems, climate resilient infrastructure, improved agriculture production, mangrove protection and a more robust supply of water resources (Elias, 2018). Multilateral development banks (MDBs) and developed finance institutions (DFIs) are taking urgent measures toward decarbonization and unlocking investments in adaptation and resilience and are proactively helping align their portfolios with the Paris Agreement (Yergin, 2020).



Climate Risks

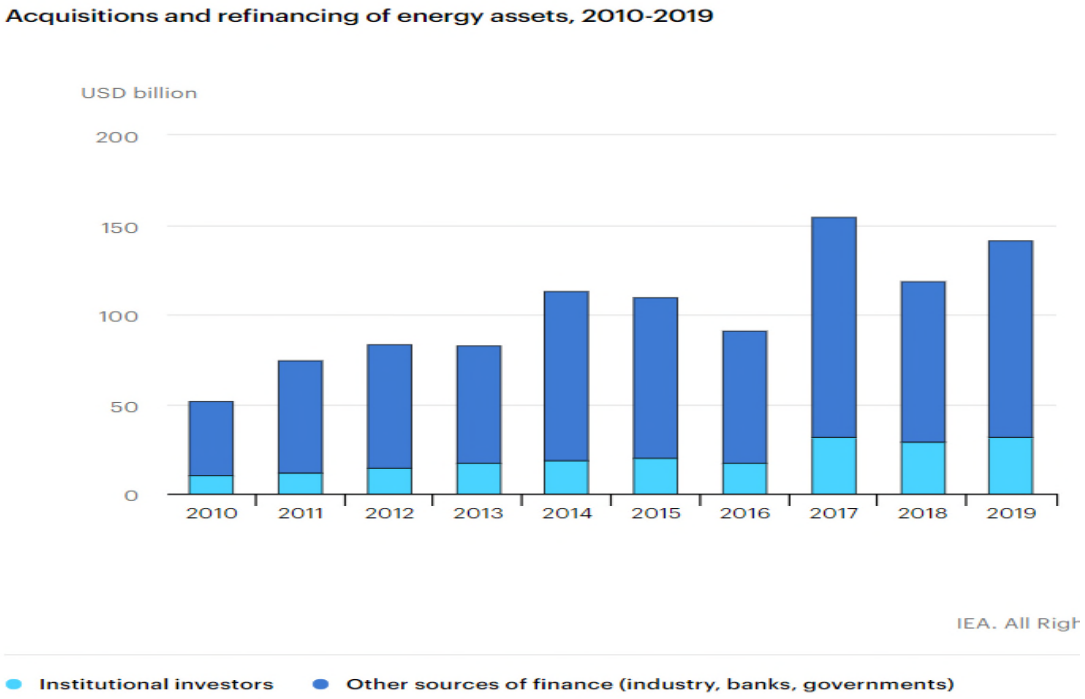
The investors, banks and companies continue to underestimate the risks of climate change because of short sighted decisions towards investments into renewable energy (Kessler, 2018). Changing the energy supply mix, which is the inception of renewable energy sources in lieu of fossil fuels for energy is a primary way to combine the urgency of declining greenhouse gas emissions and the economic activity. The Task Force for Climate-Related Disclosures

(TCFD), provides the framework and climate risk disclosures for financial parties and organizations to address climate risks and benefit from opportunities during the low carbon, climate resilient economy (Gross, 2020). Currently, new and sustainable financial systems are being built for funding the initiatives towards the private sector, which has a high possibility to amplify the climate policies of governments. Government officials are making it a point to avoid the development of standards and are rather pushing financial regulators and authorities to ensure cohesive and easy to follow regulation. The possibility of stranded assets would result in losses that would cause financial instability (Gross, 2020).

Repricing of risks due to recent events have had an immediate effect to the energy sector, specifically towards investments. These risks include: funding, such as how well revenues and earnings can support new expenditures on corporate balance sheets and also the financing perspective which is how well debt and equity can be raised to supplement corporate and government funds (IEA, 2020). There are concerns over the declines in revenues facing oil and gas throughout 2020, which includes equipment and goods suppliers. The financial market volatility and slow project finance transactions and almost obsolete acquisitions and mergers. Near term liquidity constraints and an astounding risk of defaults within the economy cause uncertainty, where many organizations and investors are choosing capital discipline instead of financing new transactions (Herz, 2020). Due to the short-term market volatility and the only semi-recently researched renewable energy field, there is question surrounding the investment options. Due to the COVID-19 pandemic, top companies experienced declines in market capitalization steeper than those of equity benchmarks. Typically, falling share prices have a direct impact on investors, they subsequently provide a line of expectations for possibility of profitability and increase the cost of issuing equity (Proctor, 2020). Looking near term, many challenges are regarded towards liquidity and sufficient cash flow to keep these businesses operating while still meeting specific obligations with customers and suppliers. Future funding capacity is shaped by the shifting market and uncertainty surrounding the nature of economic recovery that is pressuring profitability (Jones, 2021).

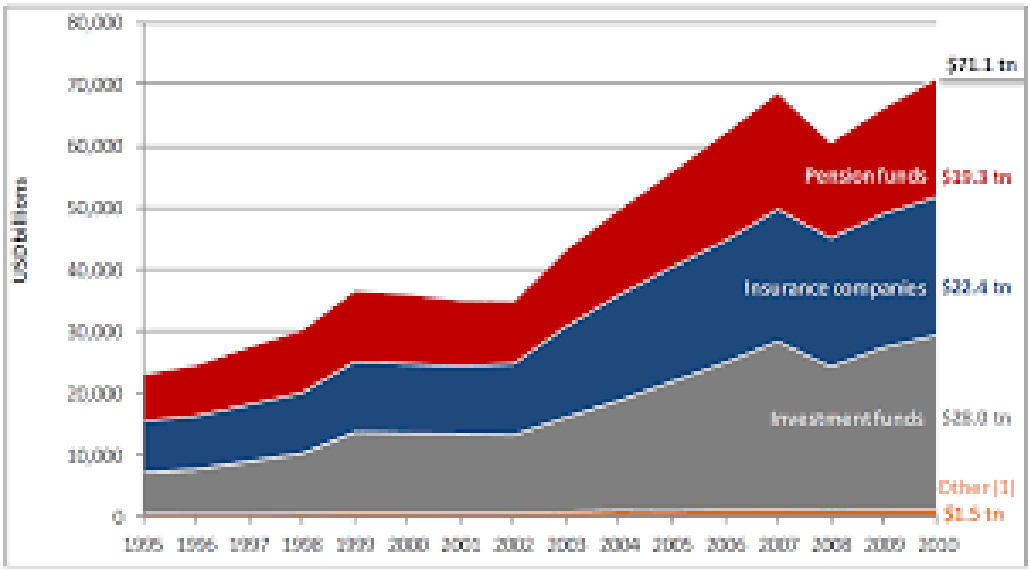
There has been a decline in power demand, the unclear phenomenon towards pricing for market generators and the exposure to gas distribution sees business models raising new funding challenges. The costs associated with borrowing have risen and many utilities face risks of non-payment by customers under financial stress (Proctor, 2020). During both the down times and

better times, financial markets will play a very important role in energy investments (Eccles, 2020). Near term investments are proven to be uncertain but the long-term condition towards refinancing and acquisitions may play a large part to lower the cost and improve the developers to invest because they will be able to recover their capital.



Private investors are dependent on how the current crisis and how the government handles the crisis towards supporting markets. An example is that investors have increased their attention towards sustainable finance or renewable energy, however there are not consolidated or set definitions surrounding energy policy signals or how to align financial policies for real sustainable assets (EPA, 2016). With that said, investment risks are still relatively high, which leads to the ideology towards how important the public finance institutions will play for future development (Pierpoint, 2020). It is estimated that the transition to a low carbon, resource efficient, and climate resilient economy over the years towards 2030, is going to require a significant number of investments and private sources of capital (Irena, 2019). There is an estimated $71 trillion in assets that institutional investors have and how these are used will play a critical role in financing green growth initiatives. There is especially an importance because

traditional sources of capital are constrained due to bank deleveraging, financial turbulence and new regulations (Stanley, 2018).



The potential role of pension funds in financing green growth initiatives, from electric vehicles availability and other green institutional investor initiatives finds that despite the growing interest, institutional investors; asset allocation towards these investments is relatively low (Pierpoint, 2020). Institutional investors face two main levels of investment decision making:

- Strategic decisions taken by a board of directors or trustees, an investment committee or CIO (Environmental Social and Governance, SRI (Socially Responsible Investment).
- Implementation decisions taken by internal or external fund managers and green analysts.

These options both involve targeted solutions. When solutions are standardized and made a common practice markets grow. The involvement surrounding standardized solutions involve the board making a set decision for the rule setting body involving a simple checking of assets against the standard decisions (Worland, 2020).

Conclusion

The energy industry is under immense pressure to produce results to lower the impact of climate change. Most studies suggest or lean towards photovoltaic, wind, and other renewable sources that produce little to no emissions. As consumers push legislation to create mandates or a standard and formality for energy utilities to follow, energy utilities are faced with the decision of how to produce the funds in order to invest in new generation and new components of the infrastructure. Many are using debt to help finance this new adventure and that seems to be the strategy that will protect utilities the best. Private investors, green growth initiatives, green banks and green bonds are the major components which will help utilities raise enough capital in order to fund these massive projects.

The struggle to initiate clean energy does not solely fall on the United States as the Paris Agreement involves multiple countries who are all eager and willing to reduce their carbon footprint by innovating clean energy initiatives. The availability of manufacturers to produce these components are of major concern because complete retrofits, product redesign, and financial considerations to remain competitive will all play an important role in how these initiatives will shape our future infrastructure. Private investors find it difficult to decide on investment in green energy production because of the unstable markets and current state of emergency with the COVID-19 pandemic. The future of electricity is green and government, energy utilities and citizens are all ready for the transformation to take place. Financial funding is thought to be the most important piece that needs to fall into place for it to be deemed successful.

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The Impact of Climate on the Automotive Industry

by Garrett Grunke

Introduction

Climate change is a controversial topic that has been debated by the ideological left and right for the past decade. However, science has proven that climate change is real and that there will be detrimental consequences if changes are not made to the way corporations and humans operate. A variety of factors, both human and natural can influence the earth's climate. The atmosphere and oceans are arguably the two environmental elements that have been affected the most by climate change. In further detail, the atmosphere has seen increases in surface temperature and the ocean's water levels are rising (Smerdon 2018).

Many industries have been under scrutiny for their impact on climate change, but none more than the transportation industry. The transportation industry is under the magnifying glass for their contributions to the total global CO2 emissions (AIP Conference Proceedings 2017). The amount of vehicles across the world are continuing to increase resulting in higher emissions of CO2 and equivalent gases, despite all of the measures planned to be taken by manufactures for cleaner vehicles. Commercials and advertisements portray the story that vehicle manufactures are a part of the solution to climate change through hybrid, smaller and electric vehicles. However, in reality consumer demand trends show an increased demand for sport-utility vehicles, which are larger in size (AIP Conference Proceedings 2017). The demand for larger vehicles will remain high until fuel prices are reflective of the vehicle size. For example, if fuel costs $7 dollars per gallon, less people would purchase large trucks as they get lower miles per gallon.

Many studies have highlighted the obstacles in increasing consumer adoption of electric vehicles, including high purchase price, low max range on a full charge, prolonged charging time, and lack of related infrastructure (Choi et al 2018). Charging time can take up to 30-45 minutes to fully charge, which will allow the user to travel up to 300 miles per charge. Due to the previous reasons electric vehicles share in most consumer automobile markets remain negligible. Electric vehicles are not 100% carbon-neutral, due to the electric energy needed to recharge the batteries. The transition to electric vehicles will increase waste and require government regulations surrounding the disposal of batteries.

Climate change will affect the automotive aftermarket, as electric vehicles have less automotive parts that companies are able to sell in the aftermarket. Inventory levels will have to

decrease for all parts and completely sold through for parts specific to combustion motor vehicles. My current company's strategy relies on large inventory purchases that result in large rebates leading to income for the company. As inventory lowers, they will have to pivot their strategy and consider other forms of financing as the company's line of credit is relies on inventory levels.

Climate Change

Natural climate variability to earth's climate short term and long term has always occurred, but not to the extreme circumstances that scientists are seeing today. Earth's climate is changing faster than at any point in the history of modern civilization, largely because of human activities (GlobalChange 2021). Global climate change has negatively influenced a wide range of environmental factors across every region of the country and many sectors of the economy with the expectation to grow in the coming decades. Two environmental factors that have seen major effects due to climate change are the atmosphere and the oceans.

The earth's atmosphere is the protective blanket that makes it possible for humans and all other organisms to live on earth. The atmosphere protects life on earth's surface from the ultraviolet rays, and regulates its surface temperature so liquid water exists (Smerdon 2018). When the earth absorbs the sun's energy, or when atmospheric gases prevent heat released by the earth from radiating into space, the planet warms (Denchak 2017). Earth's climate revolves around solar radiation, and the change in solar radiation has the potential to significantly change the climate system (Wong 2016).

The climate has seen a warming trend over recent years at an alarming rate. One of the basic ways to prove that there has been a change in our climate is to compare the average temperatures of the land and oceans over the years. The northernmost latitudes have experienced the largest increase in temperature from 2000 to 2009 (Wong 2016). Temperatures for land surfaces have increased more than that of the ocean surfaces. It is important to note that 90% percent of the extra stored energy since 1971 can be traced to shallow ocean regions due to water having a large heat capacity. Although it is more difficult to heat up the oceans, the bodies of water are much more difficult to cool down once they have absorbed energy (Wong 2016).

The preservation of oceans is crucial to mitigating climate change as they make up about seventy-one percent of earth's surface. The buildup of greenhouse gasses in the atmosphere will depend on what happens with the oceans because the ocean absorbs a lot of solar energy and transports it around the globe. The ocean transports approximately one-third of the transport energy from the equator to the poles (Smerdon 2018). The temperature of the ocean does not vary by location as much as the atmosphere, despite the amount of energy and heat the ocean holds. Land gains more water through precipitation than it loses from evaporation and the oceans lose more water through evaporation than they gain through precipitation keeping a balance between land and oceans (Smerdon 2018).

If the sea levels continue to rise by nine meters per year, glamorous cities such as Dubai and Abu Dhabi will be under water as early as 2100 (Wong 2016). Modern day electrical infrastructure is at ground level or below the ground, which would mean that it would not be possible to inhibit a building that is flooded on the first and second floor. There are multiple strategies that countries can take in attempt to reduce the rising sea levels using hydrology such as, creating containment areas, building walls or barriers, and municipal solid waste from the community, as in a sanitary landfill.

The Netherlands was able to build a reservoir between a river, the river's mouth, and the harbor to create a large fresh water containment area in their country (Wong 2016). This is a creative approach to water management and may be essential to mitigate climate change moving forward. As the world population continues to grow, the need for food and resources grows as well. Fresh water containment areas such as the one created in this situation could serve as fish farms to produce extra food.

Automotive Industry Impact on Climate Change

Automotive manufactures have successfully been able to sell consumers the dream of happiness and personal freedom through transportation. As climate change has become a more prevalent issue amongst world leaders, the automotive industry has aimed to make the general population think they are a part of the solution. They have done this through marketing and advertising lighter vehicles, hybrid vehicles and electric vehicles (Reid 2019). While this is great marketing, it does not tell the story of what is actually occurring in the transportation sector.

Sales of bigger diesel and petrol vehicles have increased and the technological advancements auto manufacture's promise in commercials has not come to fruition yet.

One important contributor to rising temperatures on our planet is the emission of manmade CO2 through electricity and heat, industry, and agriculture, forestry and other land use, which are the largest contributors. The transportation sector contributes with 14% to the total global CO2 emissions (AIP Conference Proceedings 2017). The transportation sector includes road, rail, air and marine transportation. The transportation sector is a large contributor to the CO2 emissions because ninety five percent of the world's transportation energy involves burning fossil fuels, largely gasoline and diesel (AIP Conference Proceedings 2017). Although the overall sector only accounts for seven percent of the global CO2 emissions, there is a strong focus to reduce the emissions of this sector.

The number of vehicles in the world has been increasing and will continue to increase. This has been due to vehicles fleet in countries showing a very fast development, like China, India and other Asian, Latin American and African countries (Mamalis et. al, 2013). Scientists expect the emission of CO2 and equivalent gases are to increase despite all of the measures in place by manufactures, whereas other sectors, like energy, industry, agriculture and waste, are projected to decrease. The ageing of vehicles varies between countries with the less fluent countries having older vehicles that have much higher emission levels. The growth in transportation will likely outweigh the actions being undertook to mitigate climate change through energy efficiencies.

The transportation sector like other forms of energy consumption is essential for human well-being and satisfaction of basic needs (Mattioli et al. 2020). Human well-being from transportation differs by world region, but humans have grown to be dependent on the ability to transport via motorized vehicles. In large cities, people are able to walk or bike to work, the grocery store and other stores to get essential goods, while people in suburbs and other rural areas rely on the ability to transport locations via an automobile. Over the past few years, there has been an increase in online sales leading to increase shipping since the product needs to be delivered to the consumer's location. The majority of delivery service companies have fleets of large vehicles that are not very fuel efficient, but the larger vehicles are need to haul more products. Amazon vans are an example of a more efficient delivery vehicle in comparison to UPS box trucks. The situation between mitigating climate change from the transportation sector

and ensuring human well-being reflects a broader issue (Mattioli et al. 2020). The political-economic factors behind connecting human needs satisfaction and energy use are likely to be challenging barriers to decoupling efforts, and hence climate change mitigation, yet to date they have drawn only limited attention (Mattioli et al. 2020).

From 2010 to 2019, the demand for sport utility vehicles (SUVs) skyrocketed, with almost all automakers recording substantial growth in the mid-to-large SUV class (Calvert 2020). This transition in demand known as “truckification” within the auto industry and came with increased profits for auto manufactures. Truckification has been the most prevalent in China and the United States. The big six countries (China, USA, Europe, Japan, Russia, India) have set ambitious reduction targets for the CO2 emissions of vehicles in the upcoming years. Since electric vehicles do not have tailpipe emissions they are considered as the only solution and as a key enabler to reach the stringent CO2 targets in the countries mentioned above (AIP Conference Proceedings 2017). The increased sales of SUVs complicated auto manufactures decarbonization strategies and introduced a multitude of consequences for emissions and climate change initiatives within the industry. As the new decade begins the sector has continued to see consumer demand for larger vehicles remain strong, which will make it harder for vehicle manufactures to obtain the ambitious CO2 reduction targets.

Fuel Economy

President Obama announced stricter fuel economy standards for the U.S. auto fleet in 2009. The standards were similar to those previously required for the year 2020 by rules adopted in 2007 during the George W. Bush administration (Yandle 2009). While the standards were similar between administrations, the driving concern was different. The Bush administration was concerned about Middle East turmoil and energy security and the Obama administration was motivated by the pursuit of climate change mitigation. The U.S. fuel economy regulatory problem has never been about technology or auto engineering (Yandle 2019). The issue is that consumers have the freedom to choose what they want rather than what authority wants them to buy. If gas prices are cheap, it enables consumers to purchase larger vehicle that are less fuel-efficient.

All along, the political economy has favored mileage standards that often do not correlate with the price of gasoline at the pump and therefore make it almost impossible for full-line producers of automobiles and trucks to respond effectively to market-driven demand (Yandle 2019). Critics of U.S. automotive producer's failure to meet fuel efficiency objectives point to the success seen in Japan and Europe. Japan's current fuel efficiency standard is 42.6 mpg, and the price of gasoline is about $5 per gallon. The European fuel efficiency standard is 43.3 mpg, and gasoline prices range from $6.50 to $7 per gallon (Yandle 2019). This would not be realistic in America unless they were able to implement a command and control economy, which would not be realistic as it hinders consumer's freedom. Consumer's freedom is difficult to calculate/measure and is not about the cost of barrels of oil rather the happiness realized from the freedom to pick out their vehicle.

Roadblocks to Transitioning to all Electric Vehicles

The travel/mileage range of electric vehicles must increase similar to that of today's combustion engines in order to be accepted by customers. Charging infrastructure for electric vehicles must grow into the same order of magnitude as todays fuel gas stations. Currently there are nowhere close to enough electric charging stations to meet the demand if a majority of cars became electric in the next year. In addition to the need of more infrastructure, the charging time needs to be significantly reduced (Choi et al 2018). Most electric vehicles take about 30-45 minutes to fully charge, which will allow the user to travel up to 300 mile per charge. The mileage is dependent on the type of battery and car so it will vary similar to that of the different types of combustion motor vehicles.

The cost of the battery and fuel cell systems must come down significantly, so that the overall cost and therefore price to pay comes closer to today's combustion engine vehicles (AIP Conference Proceedings 2017). Creation of a more ecology friendly production technique for producing hydrogen will be crucial to reduce CO2 and overall energy consumption.

In addition, electric vehicles require a considerable amount of rare-earth minerals, which are environmentally toxic to process, and mine and difficult to recycle. The rapidly growing use of electric vehicles worldwide will generate a large amount of end-of-life products in the coming decades and, in consequence, there will be an accumulation of waste electrical and electronic

equipment to be disposed of (Alfaro-Algaba & Ramirez 2020). Reusing electric vehicle batteries could be a serious problem in the future if procedures for reusing, remanufacturing, and recycling the batteries are not established. Without firm policies in place the reuse of electric batteries could lead to a significant environmental problem itself. Batteries are hazardous and have to be disposed of in a specific way due to the materials within the battery. Optimization of disassembling batteries will be instrumental in limiting the environmental impact of the transition to electric vehicles. Government legislation in terms of recyclability issues will have to be developed to hold companies and individuals responsible for the disposal of vehicles and their parts.

The Change in the Aftermarket Automotive Distribution Sector

A lot fewer parts can be sold in the aftermarket for electric vehicles in comparison to combustion vehicles. My company will need to begin developing a strategy now in order to still be in business once electric cars make up the majority of vehicles on the road. The vice president of merchandising will have to develop a strategy to get vendors to lift slow moving parts and parts that do not apply to electric cars. Utilizing Manhattan, our inventory management system, along with other data accessible through the company's ERP this transition can be successful with sincere focus and attention to detail.

Inventory levels for combustion engine parts will have to be run down before they become obsolete. Obsolete inventory, also called "excess" or "dead" inventory, is inventory a business doesn't believe it can use or sell due to a lack of demand. Inventory usually becomes obsolete after a certain amount of time passes and it reaches the end of its life cycle (McCue 2020). Once inventory becomes obsolete, a decision will have to be made on whether to keep the inventory and take up warehouse space that could be used for parts that have higher demand or write off the inventory. Writing off most or all of those goods as a loss at once could represent the breaking point for a struggling organization. However the longer you store the unprofitable inventory, the more money it will end up costing in the end (McCue 2020). Both options negatively affect the company's financial health, which are visible in their financials leading to concern from investors.

Currently the company receives large rebates for purchasing high volumes of inventory and it is a large part of the overall strategy. Most of the company's cash is consumed by inventory purchases, which is typical for product-based businesses. Without rebates associated with large inventory purchases, the company may struggle to achieve a positive net income consistently month over month. The rebates provide a large amount of backside gross profit dollars that are currently relied on. The extra cash that would be available due to smaller inventory purchase should be allocated towards automation within the warehouses to propel the businesses future success. Currently employees have to pick every part on every order and carry them to the front of the warehouse. Once the parts are placed in the front of the warehouse, they have to be sorted for distribution. In the distribution centers it can take a considerable amount of time to walk all of the parts to the front, which is inefficient. Investing in conveyer belts that bring to the parts to the font reduces the pick time and increases efficiency. Conveyer belts would also allow the company to reduce its headcount resulting in lower expenses and a higher net income.

The high inventory levels provide the company the ability to borrow more money on the line of credit. If the inventory decreases a substantial amount, it will hinder the company's ability to purchase other companies or equipment. The line of credit is currently used to finance a majority of business operations that are too much to finance through cash. This would result in the company needing to apply for business loans or some other form of financing for large projects or acquisitions. Another option for raising capital would be to go public or allow private investors to help fund the business in return for ownership in the company. Currently the shareholders are all family members that support the decision to finance the company through debt as it allows them to maintain a larger percent of ownership. If the company were to go public it would probably be costly and cause issues between current shareholders, which could lead to a larger problem than transitioning to service the smaller combustion motor vehicle market.

Conclusion

Climate change is a topic that needs to be addressed by all levels of society in order to increase the chances of civilization on earth for eternity. Climate change is not an issue that can

be handled overnight, but with the conjoined effort of corporations and individuals to develop strategies that reduce man made emissions and the willingness of corporations to change this can be reduced and potentially achieved. Successfully handling climate change would result in a world where businesses and humans can operate without harming the earth's atmosphere and oceans to the extent that is endangering human and animal lives.

One important enabler of keeping the global warming limited is the need to reduce CO2 emissions from vehicles. This can only happen via the transition from combustion to electric vehicles, which has become more prevalent over the past five years. However, it is important to note that electric vehicles are not completely carbon neutral as they require energy to recharge and are made of rare materials. There are many roadblocks to fully transitioning to electric vehicles that have to be addressed such as increased charging stations, decreasing charge time and reducing the cost of electric vehicles.

The automotive aftermarket will see major changes as the number of parts on an electric vehicle that can be sold through an aftermarket distributor. As a result, companies will be forced to revisit inventory strategies and reduce inventory for combustion motor specific car parts. If inventory is not reduced by the time electric vehicles make up the majority of vehicles on the road, companies will see increases to obsolete inventory. They also will have slower turns as the parts will have a lower demand due to combustion motor cars accounting for a lower percentage of all vehicles.

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Assessing Climate Change's Impact on Agriculture

by Nathan Augustine

Introduction

Climate change is impacting our entire planet in many ways. The change in climate impacts how we and businesses live, work, and function. Governments are working to reduce green house gas emissions to slow global warming, and to do that the government is putting pressure on companies to reduce their greenhouse gas emission or carbon footprint. This will challenge firms to look at how to handle the expenses and reduce the impact on their captial costs. Carbon credits are a way that firms are looking at utilizing as a way to cover their emissions goals at a lower cost of capital. They will accomplish this by purchasing credits from farmers who are or will implement practices known to sequester carbon and at a lower cost than making expensive changes at production facilities.

Climate change has become the agreed upon principle that the actions of humans are altering the climate of earth. Global temperatures have been collected since the 1880's, and these records provide a trend of increasing average global temperatures (Climate.gov,2021). While initially this was termed global warming, some parts of the globe may actually cool, and the resulting impact of changing temperature on rainfall, snow, ice melt, and weather pattern led to the name change to reflect the change of the overall climate. Past evaluations of climate are done through samples of ice from glaciers to evaluate carbon dioxide levels, and those levels have been found to be increasing (World Book, 2016). Carbon dioxide is an essential compound for green plants. Plants take in carbon dioxide and through photosynthesis, create energy for the plant, use the carbon for building cells, and give off oxygen. This tying up of carbon is termed carbon sequestration. Animals and humans take in food (like plants), oxygen, and break that down to produce energy and release carbon dioxide through respiration. This is the carbon cycle (World Book 2016). While this natural process may stay in balance, the burning of fossil fuels since the industrial revolution in the 40's has greatly increased the emission of carbon dioxide faster than plants can sequester it.

Carbon Dioxide is one of several compounds that are termed greenhouse gasses. The other main greenhouse gasses are Methane, Nitrous Oxide, and Fluorinated gases. Carbon Dioxide accounts for 80% of the total US emissions for 2019, methane accounts for 10%, Nitrous Oxide is 7% and Fluorinated gases are 3% (EPA, 2021). Each gas has a been evaluated

for their Global Warming Potential (GWP). Carbon dioxide is the reference point and has a score of 1 and remains in the atmosphere for thousands of years. Methane has a GWP of 28-36 over 100 years equivalent as methane generally last about ten years in the atmosphere. Nitrous Oxide has a GWP of 265-298 for a hundred-year period and remains in the atmosphere for more than 100 years. Fluorinated gases (CFC) and related compounds have a GWP in the thousands or tens of thousands (EPA,2021). All of these gasses lead to the Greenhouse Effect which is the trapping of heat received from the sun in the earth's atmosphere. The trapping of heat results in warmer nights, which is leading to our overall global temperature increase and resulting change in climate (World Book, 2016).

Carbon dioxide is the gas that is produced in the largest amount by human activity, leading many companies and governments to try to reduce the overall impact from the burning of fossil fuels. This will be accomplished in two ways: Reduction of carbon dioxide emissions and through increasing carbon sequestration. Agriculture is positioned as one player in this equation, both in fossil fuel use from the production and transportation of products, but also by altering practices that lead to higher levels of carbon sequestration. In this paper, the focus will be on agriculture's role and opportunity to impact climate change.

Methods

A literature review will be conducted to evaluate climate change, financial impacts of climate change, and the role that agriculture is playing in the carbon sequestration side of the carbon cycle. In recent years, multiple companies like Bayer, Yara, and Truterra by Land O'Lakes are launching reward programs for farmers performing practices that have been shown to increase carbon sequestration either in the past few years or into the future. These programs will be evaluated for reporting and verification needs. Once those needs are identified, an analysis will be conducted to the cost and potential revenue for Northern Country Coop. On the other side of the equation, Northern Country Coop needs to evaluate how it is transporting goods to its customers and what carbon emissions that the company needs to prepare to meet into the future.

Discussion and Analysis

Impact of Climate Change on Agriculture – Production

As climate changes it will impact the crops being grown and the crops that could be grown. Higher temperatures will help some areas and hurt others, as will changes in rainfall patterns. Crop growing areas further north in latitude will benefit from warmer weather and possibly a longer growing season which will allow them to grow different varieties of crops. Colin Polsky (2004) stated that as the climate changes in a way to allow for higher value crops to be grown, the farmers will adapt and plant those crops. Of course, there are some limitations for that theory as there needs to be a support infrastructure of inputs as well as access to a market to sell the crop. Making changes between different annual crops would also be easier to execute versus planting a long-term perennial crop like fruit trees that may take several years before they produce a crop (Polsky, 2004).

A huge player in the climate change discussion will be water rights. Dryland areas in western plains states are already dry, and reducing any water or higher temperatures may prevent those areas from growing any crops unless they have irrigation. This will impact the value of the land. It is estimated that land in the counties further west in states like Kansas and Nebraska will drop in value by one third with water restrictions, while the counties to the eastern side of those states could see land values double (Polsky, 2004). The change in climate will affect growing regions around the world. In China, crops like wheat and maize have shown a negative yield to higher temperature and reduced rainfall. Rice on the other hand was showing a positive yield to higher temps (Wang, 2014). The increase in carbon dioxide in the atmosphere is beneficial to these crops. There is a believed carbon dioxide (CO2) fertilization effect on crops that realize increased productivity from higher levels of CO2. That is as long as there is enough water. Farmers can adapt by adding irrigation systems to meet the crops water needs. With sufficient water, crops like corn and sorghum can produce at a high yield level. Systems will need to be designed to be highly efficient to prolong ground water supply for both the crops and for the population (Wang, 2014). Water concerns are making the news in 2021 as the drought in the western part of the US has caused the Colorado River to drop as there is less snow to melt to feed it from the mountains. The Colorado River provides water to multiple cities as well as

agriculture. If irrigation water is restricted by 25%, then 25% of the land will not be farmed. Another measure of the drought is that Lake Mead, which was created by the Hoover Dam to create electricity, has dropped to just 37% of capacity (CBS News, 2021).

Impact on agricultural inputs and outputs

The impact of climate change on inputs for agriculture will center around transportation and production that uses fossil fuels. Anytime product is moved on a truck, whether from the factory, to distribution warehouses, at the retail level, or from the farm to market fossil fuels are burned. It is estimated that farming accounts for 26% of global greenhouse gas production (Neom, 2020). Finding ways to increase the efficiency of delivery as well as the fuel efficiency of vehicles or the use of alternative power sources used will help reduce greenhouse gases emissions. There is a movement to reduce transportation of product to markets by processing locally. Some companies are building vertical greenhouses to produce fresh produce year-round in climates that could not support annual production. Not only can this method produce high quality products, but the transportation is also greatly reduced, and freshness is preserved (Day, 2020).

Impacts on future farming practices

As mentioned earlier, the carbon cycle is the sequestering of carbon by plants through photosynthesis and then the release of carbon through respiration of animals and microbes. Agriculture is viewed as having a great opportunity to increase carbon sequestration by changing farming techniques and practices. It has been learned over the years that tillage has led to the decrease of soil organic matter by mixing the plant residue on the surface into the soil where microbes can break the residue down and release organic matter. Intensive tillage has been shown to result in more than double the release of carbon as carbon dioxide during the first 3 weeks after tillage (Iowa State Extension, 2005). Conversely, studies have shown that changing to no-till in the Clarion-Nicollet-Webster soil series can increase soil organic matter by 1 ton per acres per year (Iowa State Extension, 2005). The increase in organic matter has several benefits. Soil is made up of billions upon billions of a small structure called colloids. Organic matter is a

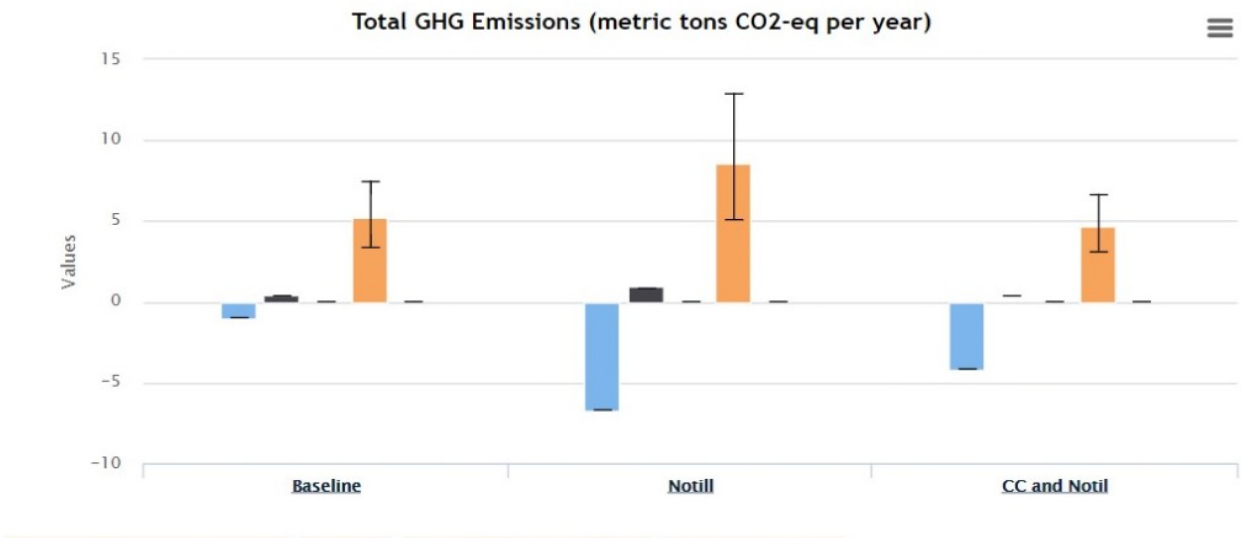
binding agent that helps hold these colloids together. By holding them together, the soil becomes more resilient and less likely to have water and wind erosion issues. Soils that have been mined of nutrients, like many in Africa, have a hard time producing crops or plant material of any type. With reduced plant growth, comes less organic matter. As that cycle continues the soils become less productive and more prone to erosion. Improving fertility practices and the increased use of no-till practices can reverse that trend. By reducing the disturbance of soil, the soil organic carbon levels begin to increase, the organic matter starts holding the soil colloids together to improve the structure. That structure allows water to move into the soil quicker and to absorb more of the rain before it begins to run off the soil creating erosion. Soils with poor structure have reduced water infiltration rates meaning it takes longer for rain water to soak into the soil and move deeper into the soil profile. Sithole (2019) found that water took 50 minutes to move 150 mm in soil worked with highly intense tillage, soils with reduced tillage took 20 minutes for moisture to move 150 mm, and no-till soils only took 5 minutes. Being able to absorb more rainfall will play a major factor in crop productivity in areas with limited rainfall and prone to draught conditions.

As mentioned earlier, organic matter holds the soil colloids together. These larger clumps are called macroaggregates. These macroaggregates result in better soil structure and the benefits just list previously, but they are also a source for increased carbon retention in soils. In a study in African soils, no-till practices increased these macroaggregates and increased soil sequestered carbon in the top 10 cm of soil, but the study also found that even after 12 years, the level of soil carbon had not increased. This study was done under a continuous maize monocrop system in soils that were highly degraded in soil health and structure. (Sithole, 2019). It is possible that these soils need more time for that trend to improve. The study does not indicate the fertility program that the continuous maize system was receiving. In work done with the Natural Resource Conservation Service (NRCS) of the US in utilizing their soil erosion software, the level of nitrogen used plays a role in the building or organic matter over time and I have observed that myself over the years as a consultant for many growers. By providing sufficient fertility to maximize crop health and production, and providing enough nutrients to support the soil microbes in the form of nitrogen either from manure or commercial forms, the levels of organic matter will increase. But it does take time, Ahmad (2019) found that it can take over 10 years to see significant increase in soil organic carbon levels if only using no-till practices. He

did find that the use of cover crops can accelerate that increase, but that is also dependent on the length of growing season available. Shorter growing seasons in the northern latitudes have a harder time getting a cover crop to establish and grow to a significant amount to add to soil organic carbon than areas to the south that may be able to grow crops year-round. Climate change will have an impact on this as it increases the growing season further north. As equipment and practices get researched and improved, the use of cover crops along with no-till have the potential to increase carbon sequestration to improve soil quality and water infiltration due to better soil structure.

This concept is being tested at various research trials around the Midwest. One site that I have had personal interaction with is located just north of Austin, MN. Sustainable Answer Acre (SAA) is a collaborative effort between private industry (Northern Country Coop and local famers) and public entities (University of Minnesota, Riverland Community College, and Mower Country Soil Conservation District), a research trial is being conducted to measure the difference between a no-till and cover crop system to a conservation tillage system in a sandy loam soil. The plot has three different nitrogen treatments on corn either through different timing of application and through the use of stabilizers that are to reduce the loss of nitrogen. These plots are taken to yield to see which system provides the best financial return for the grower based on revenue for the crop produced less the expense of growing it. In addition to that, there are observation wells that are in the plots to measure the amount of nitrogen that is lost through leaching. The goal is to coordinate above ground practices of amounts, technology, and timing to maximize yields and financial return for the grower while minimizing the loss through leaching through the soil. Along with monitoring that, we are comparing the soil structure and change over 10 years to see the impact of no-till and cover crops versus conventional tillage (Mower SWCD, 2021). When the SAA plot scenario was run through the COMET- farm program provided by the NRCS and the University of Colorado I get the following results as seen in Chart 1:

Chart 1:



The baseline practices are generating 4.6 equivalent tons of CO2 emissions per year. By switching to no-till we decrease our net emissions to 2.6 tons of CO2 per year for a net reduction of 2 tons per year. By adding a cover crop to our no-till system the emissions decrease to 0.9 equivalent tons of CO2 per year or a 3.7 ton per year reduction (Colorado State University, 2021).

Everything described above relates to the potential impact no-till can have on soils and farming practices and the benefits a farmer can see. A recent development in the past few years, and more so now in 2021, is the focus on industry purchasing carbon credits from growers to reduce their firms carbon footprint. Firms can change some practices to reduce the use and burning of fossil fuels, but it is difficult at the current time to eliminate all sources of carbon emissions. There is governmental pressure to decrease greenhouse gas emissions and it is a costly endeavor. Behrens (2009) reports that it is estimated that the cost to limit global temperature increase to 2-degree Celsius is $35-$999 billion. About 50% would need to be spent in developing countries, but the economic burden would be carried by developed countries using the Polluter-Pays-Principal. The public sector is estimated to burden 4-30% of the cost and the rest by the private sector. With that potentially high added cost to businesses, several companies are working at ways to address that. Companies like Truterra from Land O'Lakes and Agoro by Yara international look to pool grower acres together and then sell the carbon credits generated to a firm. Some firms like Bayer, are working at purchasing Carbon credits direct from the

grower. Bayer is offering growers who sign up for a 10-year contract (with an additional 10-year retention) $3/A for no-till and strip till practices and an additional $6/A for utilizing cover crops. A grower can earn both for a maximum payment of $9/A. The grower must link their farm with Bayer through their digital platform Fieldview by Climate (Bayer 2021). The practices of the growers must be validated through a third-party service to be able to qualify for payment.

Opportunities in a Carbon Market

Northern Country Coop (NCC) is an agricultural retailer that provides inputs and services for growing crops and purchases grains from local farmers. NCC employs several agronomists that consult and sell inputs to growers. NCC encourages its Agronomist to become Certified Crop Advisor (CCA) to encourage continuing education on the latest technology and practices. An additional certification that can be earned is to become a Technical Service Provider (TSP) for the NRCS. This allows an individual to do contract work for the NRCS to facilitate programs. Both of these designations provide opportunity to act and charge for consulting services to help farms complete programs that are established by the NRCS. These programs help cost share with growers to change and adopt new practices like no-till and utilizing cover crops as they work toward fulfilling their direction to reduce greenhouse gas emissions, increase carbon sequestering, and facilitate climate change adaption (USDA, 2020). Obtaining these certifications and maintaining them costs an estimated $300-$500 a year. That expense can be quickly made up when providing contract labor at $100 per hour to facilitate programs. The challenge is the inconsistent opportunity to earn that fee. Once growers are established in their practices, they no longer need assistance. Contracts with the NRCS are typically for one to three years, and once the funds run out, the consultant is no longer needed. With the increase in interest in carbon credits, I expect there to be an increase in need for third party consultants. How those third-party consultants are selected and the needed requirements is still being learned, but as the need and opportunity for carbon credit validation grows, so will the opportunity for NCC to provide that service.

Some other opportunities for NCC are to provide a service to help a smaller grower change to strip till. NCC can invest in a machine that only tills 30% of the soil and places needed fertilizer in that area for the grower to plant his crop. As the equipment is expensive and cost

prohibitive for a smaller grower to purchase, NCC can pool the needs of multiple growers to provide that service for a fee. NCC can invest in equipment that allows for the application of cover crop seed into standing corn to improve the growth potential of the cover crop. NCC can provide educational opportunities for its patrons to help them understand the contracts and what is involved so they don't sign an agreement that is not in their best interest. NCC also plans to utilize the results learned over time from the SAA plot as we work to quantify the results of no-till and cover crops.

NCC and other firms need to evaluate its own fleet of vehicles and look for the most cost-effective method of transportation. Should NCC consider switching to electric trucks and semi's when they become available? With a significant amount of corn used to make ethanol, would it be wise for a coop to switch to electric vehicles and not burn fossil fuels and/or ethanol? Government regulation will drive some of those decisions, public perception and pressure may also influence the process, but in the end the most economical method must be used to maximize company wealth and the equity of the coop's patrons.

How firms address the looming impact of reducing carbon emissions or offset those emissions by purchasing carbon credits will impact a firm's overall value. Those who act to reduce emissions in economical ways may or may not increase their firm's expenses. There may be a short-term increase in expense as buildings are converted to more energy efficient light fixtures or vehicles upgraded to more fuel-efficient or electric models, but the longer-term benefit of lower expenses should help offset that investment resulting in a positive effect on the company's free cash flow. Those firms who need to purchase carbon credits may be able to take advantage of a new market and purchase up credits at a lower cost as supply will be greater earlier in the process of establishing a carbon market. A firm like Bayer is purchasing credits for $3 an acre and in our SAA plot example for the change to no-till, the firm would get a two-ton equivalent credit for CO2 emissions, or $1.50 per ton. Let's say for an example that Bayer is able to purchase two million acres and acquires four million tons of carbon credits. Bayer may need one million tons of carbon credit for its own operation to reach desired emission levels, the remaining one million tons may be sold on the carbon market for a profit. If Bayer was able to sell those credits for $3 a ton or more, Bayer would not only cover their initial expense, but make a profit, turning the investment to reach a carbon emissions level into a profitable investment increasing the companies free cash flow and value (Brigham, 2020). Another way to look at it is

if a firm like Bayer can purchase four million tons of carbon credit for six million dollars, that may be a cheaper option than retrofitting a factory or transportation fleet to meet the same greenhouse gas emission reduction. Finding a lower cost helps reduce a firm's expenses and increases free cash flow.

If the carbon market fails to develop or there proves to be an excess supply of carbon credits available, that will drive down the price of the carbon credit or possibly eliminate the value completely. This seems unlikely at this time, but is a possibility. How companies will deal with growers who change practices away from the carbon sequestering tactics that they signed a contract to purchase remains to be seen. Potential lawsuits could drive growers away from any agreements and impact the carbon market's ability to help with climate change.

Conclusion

Agriculture is poised to take advantage of the coming carbon market and impact on climate change. Farmers look to benefit from a new source of income by being paid for existing practices that increase carbon sequestration, and NCC plans to work to facilitate what its patrons need help with. The early stages of this process will be about locking up existing growers and acres that are already employing practices leading to reduced greenhouse gas emissions. The firms that work quickly at the beginning stand to cover their carbon footprint needs at the lowest cost as the supply is the greatest at the beginning. Those firms who wait and don't act before the current supply of no-till acres is all designated, will find it much more difficult and far more expensive to get growers to convert to no-till or to effectively utilize cover crops. To convert a grower from a tillage system to a no-till system will not happen for $3 due to the cost of equipment needed for a grower to change practices. Firms that purchase early may be able to resell excess credits and realize a profit or loss depending on the carbon marketplace. Those who invest early may have a lower cost basis, giving them an advantage in their industry with a lower operating cost. How the contracts are enforced and what exceptions will be allowed is not known yet. Weather still dictates what a grower can and can not accomplish in a year. There are times when some tillage will be needed to smooth rough areas caused from erosion or equipment tracks. Farmers in general are an independent minded group, that's why they work for themselves as a farmer. Some will not be interested in restrictions placed on them by a third

party or have any desire for a third party to verify what they are doing, unless the price is worth the expense or inconvenience.

Climate change is occurring, average temperatures are increasing, rainfall patterns are changing. Governments are concerned about the potential impact of climate change. Agriculture is being looked at for its potential to contribute to the reduction of greenhouse gas emissions by minimizing the emissions from production and increasing the amount of carbon sequestered through no-till and cover crop practices. Through those practices, farmers' stand to reap the benefits of their ability to sequester carbon. Farmers can then sell that credit on a newly forming carbon market, to a firm at a lower cost than making emission lowering changes in production and transportation.

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Climate Change and Health Care: Tumultuous Bedfellows

An Examination of the Impact of the Health Care Industry on Climate

By Audrey I. Caseltine

The American Health Care System has been a tumultuous topic for many people for years; universal health care, rising prices of pharmaceuticals, and the availability for high risk, low-income people. In the decade since the Affordable Care Act (ACA) was passed it can seem almost as if nothing has changed, especially in the last year with COVID-19 putting a spotlight on America's healthcare deficiencies (Shrank et al., 2021). Healthcare advocates and experts have significant challenges ahead of them as they attempt to improve the affordability of drugs, expand insurance coverages, and create a system of "value-based care" (Shrank et al., 2021). During COVID-19 another interesting spotlight was shown on our living situations as we sheltered in place. Multiple news outlets and social media sites showed the pictures of Mother Nature taking back the planet; the less cars on the road and LA's smog cleared, the less boats on Venice's waterways the water became clear for the first time in years, and for the first time in decades people in Kathmandu could see Mt. Everest 200km away.

In November 2020 NASA released a report that showed since February 2020, with pandemic restrictions, the Earth's global nitrogen dioxide concentrations had reduced by almost 20 percent (Gray & Streiff, 2020). The lead author on the paper Christoph Keller, noted that in looking at the data and following the drop of nitrogen dioxide, they lined up "shockingly well" to the decreased numbers in the exports of gross domestic products for those same areas included in his study (Gray & Streiff, 2020). Positively, Keller also noted after life began returning to normal for some of these areas, nitrogen dioxide levels continued to stay low (Gray & Streiff, 2020). It's growing hard to ignore the impact that humans have on the climate and the impact climate has on humans once one examines these sorts of findings that come out of a pandemic year. The question remains, how do we build more sustainability into our own lives and into our healthcare system?

Health Care and the Climate

American Health Care is not the only system under the microscope, healthcare across the world is one of the largest producers of greenhouse gases (Mercer, 2019). From 2009-2015, Canadian health care was responsible for 4.6-percent of national greenhouse gas emissions, previous studies present the United Kingdom and Australia 3-4 percent of greenhouse emissions and the United States ranks closer to 10 percent (Mercer, 2019). Greenhouse gases can be

attributed to not only the heating and cooling systems for a hospital, but also the impact of medical waste and anesthetics used in surgery (Mercer, 2019).

In 2018, with a Gross Domestic Product (GDP) of $3.3 trillion, the American Health Care system was considered the fifth largest economy in the world and was the world's seventh-largest producer of carbon-dioxide (Blumenthal & Seervai, 2018). As of 2011, that level of carbon dioxide was measured at around 655 million metric tons, which was approximate 10 percent of the carbon dioxide generated in the States that year (Blumenthal & Seervai, 2018). As greenhouse gases rise, so do climate conditions and with it natural disasters, which can also adversely affect the ability for a health care system to take care of its patients (Blumenthal & Seervai, 2018). Many cannot forget the news reports and stories that come from natural disasters such as Hurricanes Katrina or Sandy – where weaknesses of a hospital were shown as power was lost and systems failed (Blumenthal & Seervai, 2018).

Meeting the Challenges of the Unexpected

Climate events can be a disrupter for the area of impact but also for the downstream areas of the supply chain. Unexpected weather events, natural disasters like earthquakes, or wildfires can leave an impact on the health care supply chain that one may not realize could happen (Chen & Murthy, 2019).

A disruption to the supply chain happened in 2017 when Hurricane Maria hit Puerto Rico (Chen & Murthy, 2019). In addition to the devastation it caused on Puerto Rico and her people, it also disrupted the supply chain. Puerto Rico is a chief manufacture of IV bags for the United States, and suddenly hospitals found themselves with a shortage of critical intravenous fluids and medications (Chen & Murthy, 2019). For a long time after the storm, as Puerto Rico slowly got back on its feet, nurses stateside had to inject medications manually and slowly by syringe instead of letting them drip in from an IV bag (Chen & Murthy, 2019).

When wildfires forced Kaiser Permanente in California to close their Santa Rosa Medical Center for two weeks to clean and restock, people in the area struggled to find care with their smoke-related illness (Chen & Murthy, 2019). Kathy Gerwigh, the Vice President of Employee Safety, Health, and Wellness and Environmental Stewardship Officer of Kaiser Permanente noted, *"The people who suffer the most from climate impacts are low income, very young, very*

old, and people with chronic conditions," she said. "in a healthcare setting, we have a responsibility to think about that" (Chen & Murthy, 2019).

As new climate issues arise or natural disasters occur, health facilities learn different ways to solve problems that they themselves or that others have underwent. Developing "hazard mitigation plans" have helped mitigate lack of preparedness and limit the amount of downtime an institution spends after a disaster, having less of an impact upon the bottom line (Blumenthal & Seervai, 2018). Many institutions, including Texas Medical Center, New York City's Bellevue Hospital, and Kaiser Permanente, have developed alternative power sources to eliminate or reduce the dependance on their respective city's electric grids (Blumenthal & Seervai, 2018). Mayo Clinic in Rochester, Minnesota also has multiple power systems in place, including solar panels and independent steam plants.

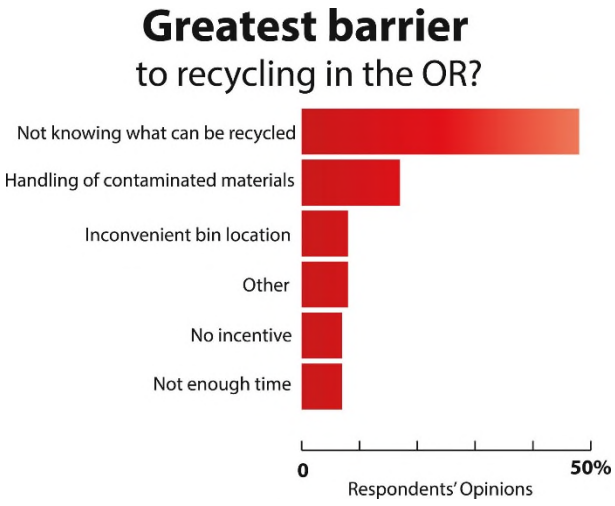
Waste from Surgical and Operating Rooms – A Mayo Clinic Survey

As the spotlight began shining brightly on recycling programs and sustainability options, some barriers were also brought forward. In a report published in 2012, it was estimated that the hospitals within the United States produced 6 billion tons of waste and was estimated to reach costs of $3.2 billion for medical waste disposal by 2017 (Azouz et al., 2019). The operating room can contribute 20-30 percent of this and can be quite costly to dispose of (Azouz et al., 2019). In 2019, a study was done at Mayo Clinic across four campuses: Rochester, Arizona, Jacksonville, and Eau Claire to try and find a solution to increase recycling out of operating rooms (Azouz et al., 2019).

To fully understand the amount of waste that can potentially come out of the operating theatre, a study in Canada among orthopedics subspecialties examined 55 procedures over a one-month period (Kooner et al., 2020). Out of the 55 procedures, a total of 341.0 kilograms of waste was collected; an average of 6.2 kilograms per case (Kooner et al., 2020).The study found that arthroplasty (joint replacement) was the leader in recyclable materials being produced per case with 2,955.7 grams (Kooner et al., 2020). The researchers found that most of the recyclable materials for all the procedures occurred during the preoperative period (Kooner et al., 2020).

Back at Mayo Clinic, researchers wanted to examine the costs benefits for recycling from the operating room. At the time of the study prior reports state the clear benefits for sharps

recycling, but at that time there had been not a clear study to examine the potential cost savings of proper sharps disposal (Azouz et al., 2019). Sharps disposal can be an expensive item in a hospital's budget. Sharps disposal ($2.00/pound) can drastically overtake a recycling budget, as plastic recyclables are 200 times cheaper ($0.01/pound) (Azouz et al., 2019). If sharps are separated from the rest of the plastic overtime sharp disposal costs can reduce (Azouz et al., 2019).



From data collected, it was clear that a lack of knowledge over what is correct "red bag" waste, as 90 percent of items do not meet the "red bag" waste criteria (Azouz et al., 2019). Other studies showed that up to 40 percent of items bagged as medical waste (and the most expensive to dispose of) from operating rooms is packaging material (Azouz et al., 2019). A further study showed that with better training and better safeguards in place, up to 60 percent of mishandled waste items could be recycled (Azouz et al., 2019).

Unlike household plastic items that are clearly marked with what type of plastic it is so consumers know how to properly recycle it, medical plastic, which is at least 20 percent of medical waste, is not labeled with the recycling classification symbol (Azouz et al., 2019).

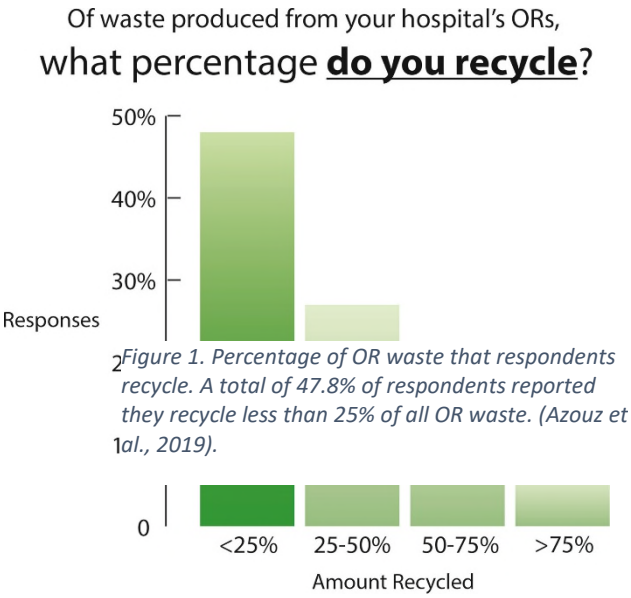


Figure 1. Percentage of OR waste that respondents recycle. A total of 47.8% of respondents reported they recycle less than 25% of all OR waste. (Azouz et al., 2019).

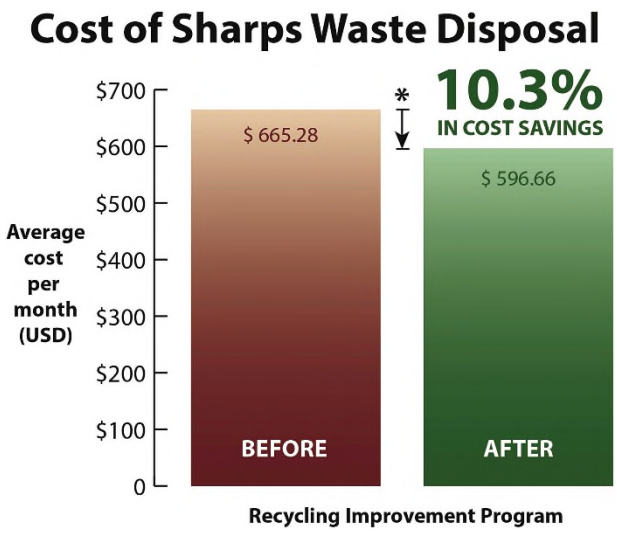
Examining sharps disposal across the four Mayo Clinic campuses included in the study would measure respondents' attitudes towards medical recycling and their knowledge (Azouz et al., 2019). Researchers sent 1,082 surveys and received 524 responses (Azouz et al., 2019). Most respondents (56.7 percent) listed that it was unclear which items are recyclable, and 39.1 percent said that they never recycled or only sometimes recycled in the OR (Fig 2). Many said that proper training and labeling of

recyclable materials would be the most effective in improving recycling from operating rooms, and 88.7 percent said they were concerned about the amount of waste that preceded from their respective hospitals (Azouz et al., 2019). Interestingly while most said they were unsure what to recycle while at work, 89.6 percent and 80.6 percent said they were active recyclers at home and in their communities, respectively (Azouz et al., 2019).

To guarantee impartial results, the outcome of the survey was initiated at an external surgical site by staff who had not taken the survey, to guarantee impartial (Azouz et al., 2019) Pre-survey, the daily average sharps waste weight per month from all operating rooms was 237.6 pounds (Azouz et al., 2019). Post-survey, the monthly sharps waste weight decreased to 213.1 pounds (Azouz et al., 2019). At the surgery center, the cost for sharp disposal was $2.80 per pound, which amounted to $665.28 pre and $596.66 post, ($68.62 difference) which is a 10.3% savings for the month (Fig 3) (Azouz et al., 2019). Over the course of a year, $68.62 is a savings of $825.84 for three surgical areas; take into account that Mayo Clinic has 122 operating rooms, the savings would be noticeable – especially when you then factor in other procedural areas not classified as operating rooms but still have sharp disposal (Azouz et al., 2019).

The conclusion of the study was that the biggest hurdle to operating room recycling was the lack of knowledge for staff and the need for proper educational materials (Azouz et al., 2019).

Figure 3 The cost of monthly sharps waste disposal decreased from $665.28 to $596.66 (p = 0.004), amounting to a 10.3% in cost savings after the recycling improvement program was implemented at the three-OR surgery center outside of the Mayo Clinic system (Azouz et al., 2019).



Laboratories: Discovery and Sustainability

While Mayo Clinic is a traditional hospital and care facility treating patients with serious and complex illness, they are also a teaching and research facility (About Mayo Clinic, 2021). In the laboratories, vital specimens, years of research and scientific testing, and vaccines are stored in ultra-cold freezers – and these freezers are huge energy consumers (Practice Greenhealth, 2021). These freezers are specialized as they can operate between minus 40 and minus 86 degrees Celsius (Holloway & Hill, 2021). Ultracold freezers consume the same amount of energy that the average U.S. home uses per day, roughly 30 kwh per day (Holloway & Hill, 2021). The cost may be a few dollars a day but multiply that by the 1,600 ultracold freezers in service at the Mayo laboratories, and now there are savings for the budget to discuss (Holloway & Hill, 2021).

In 2018 Supply Chain Management led an initiative to replace the 1,600 ultracold freezers across Mayo Clinic laboratories and research areas (Holloway & Hill, 2021). The team took a unique approach, and much like patient care takes a multidisciplinary team approach, the freezer replacement project took a similar path (Holloway & Hill, 2021). Supply Chain Management joined with Department of Laboratory Medicine and Pathology, and Sustainability and Facilities Management and set a “total cost of ownership” approach, to look at both the initial purchase price and the operating costs of the new ultracold freezers (Holloway & Hill, 2021). The team recognized that even if a freezer had the lowest purchase price, that didn’t mean in the long run it would cost less to operate.

The team selected a group of freezers based upon selected criteria, and conducted side-by-side blind trials, to have an unbiased understanding of the performance of each freezer against both the criteria and its competitors (Holloway & Hill, 2021).

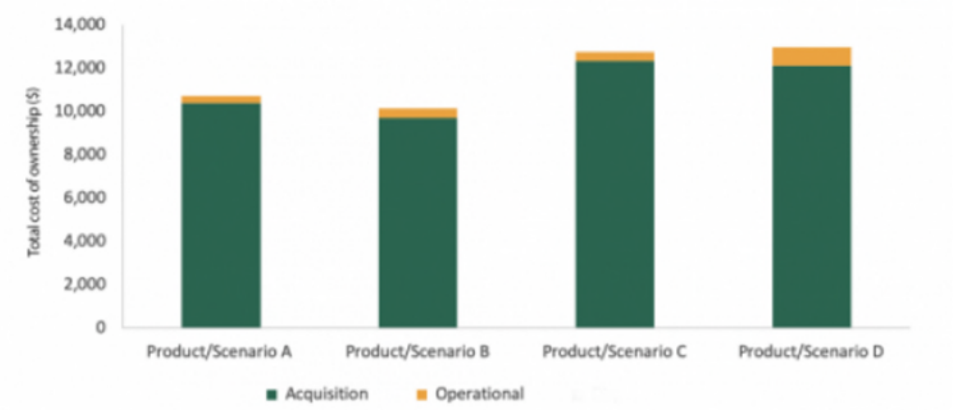


Figure 4 Cost of ownership in year 1. (Practice Greenhealth, 2021).

The total cost of ownership (Fig. 4) included the purchase price, battery considerations, and the costs associated with the energy usage each freezer required and calculated it out over the span of 10 years. (Practice Greenhealth, 2021). At the end of the first year, even though Product B had the initial lowest cost of ownership, it was not the most energy-efficient (Practice Greenhealth, 2021)., Product A was shown to be the smart choice, even though it was the second-lowest price, it was the most energy-efficient during the calculated 10 years of ownership (Practice Greenhealth, 2021).

In addition to looking at the cost of ownership for each freezer, the team also calculated the annual average cost of ownership over 10 years (Practice Greenhealth, 2021). This demonstrated the cost of acquisition against the cost of the energy to operate the freezer (Practice Greenhealth, 2021). In the Figure 5, the graph shows again that Product A is the second-lowest price and has the smallest operational costs (Practice Greenhealth, 2021). Over a 10-year period each Product A freezer would save an average of $616 in electricity and operational costs; factoring 1,000 freezers over a 10-year period meant a savings of $6 million for Mayo Clinic (Practice Greenhealth, 2021).

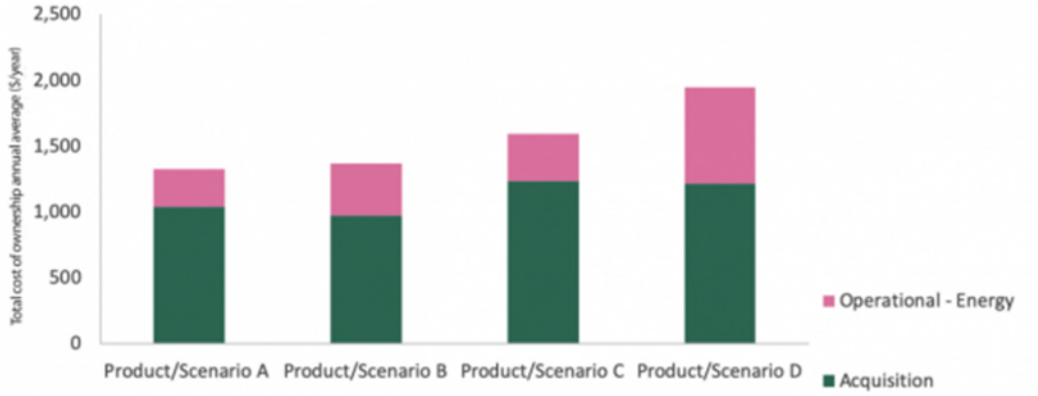


Figure 5 Annual average cost of ownership over 10 years. (Practice Greenhealth, 2021).

Capital budgeting is allowing for a slow transition over time to the new energy efficient ultracold freezer, current plans are allowing for the converting of 120 freezers each year over an extended period (Practice Greenhealth, 2021). An unplanned benefit of the new freezers are the usages of more ozone-friendly and sustainable refrigerants (Practice Greenhealth, 2021).

Sustainability Projects: LED, ROI, Oh My!

While large projects such as the freezer replacement can make financial changes over a longer time-period, some health care institutions have looked for smaller ways to get more bang for their buck. Surprisingly, though the institutions vary in size, specialties, and location across the United States, common energy issues resulted in similar sustainability changes.

I n Cleveland, Ohio, when Jon Utech, Senior Director of the Office for a Healthy Environment at the Cleveland Clinic, started looking for ways to help his institution save money and conserve energy, he found two small things that could make a big difference: lightbulbs and computers (Chen & Murthy, 2019). While investigating the energy consumed by the 50,000 medical grade computers in use at Cleveland Clinic, Utech installed software that would put the computers to sleep but keep essential software on standby when they weren't in use (Chen & Murthy, 2019). This small software upgrade created a savings of $400,000 per year (Chen & Murthy, 2019). Then Utech moved on to the lights. By making the switch from fluorescent lights

to lower-energy LEDs, Utech was able to save $2.5 million a year with a short 4-year payback on the energy costs (Chen & Murthy, 2019).

Similarly, Mayo Clinic has been working on a retrofit for converting the lighting in 20 million square feet of buildings and parking ramps over to LED (Gorden & Holloway, 2021). Currently, two employee ramps have been upgraded to LED lighting by the inhouse maintenance staff by replacing old or failed fixtures and proactively replacing old bulbs with the LED (Gorden & Holloway, 2021). Within the buildings, LED switch with the old fluorescent bulbs has begun (Gorden & Holloway, 2021).

As Brett Gorden noted in the online meeting presentation February 2021, *"…in just replacing the lights in the upper half of the Gonda building alone has reduced demand by 300kW. To put that in perspective, the solar array on top of the Damon [parking] ramp produces 150kW."* (Gorden & Holloway, 2021).

Amanda Holloway, in a personal correspondence, added additional detail for the return on investment (ROI) for the LED replacements, *"LED lightbulbs are a good example of a great return on investment. Depending on the project, we've seen an ROI of anywhere from 2 – 6 years. If we do not need to contract labor, LED projects typically have an ROI of 2-3 years (sometimes even faster)."*

One of the largest energy draws is also invisible: air. Mayo Clinic has been working on a retro commissioning project working thru all the buildings on the Rochester campus (Gorden & Holloway, 2021). Retro commissioning is a systematic process to improve an existing buildings performance of its heating and cooling systems (Gorden & Holloway, 2021). In this process that started in 2011, over 9.3 million square feet of building space has been covered as of February 2021 at Mayo Clinic Rochester. (Gorden & Holloway, 2021).

The Office of Sustainability contracts with a local consultant to determine how the systems are designed to operate and then identify any deficiencies in the system or where energy savings could be found (Gorden & Holloway, 2021). Once the facilities teams meet with the consultant, they receive the to-do list of things to fix or sequence of operation to modify and then go thru and begin to implement those corrections (Gorden & Holloway, 2021).

On average, Mayo Clinic has seen an energy reduction of about 16% after the easier changes on the to-do list of a retro commission have been completed on a building. One of the easier changes has been air duct sealing. Air ducts and vents develop leaks over time, and it has

been a huge issue especially in buildings built in the 1990s (Gorden & Holloway, 2021). Since implementing technology that seals the ducts from within, Facilities has reduced leakage by 95% (Gorden & Holloway, 2021).

The changes that are more capital-intensive require more planning and funding, but those changes have a longer payback ultimately (Gorden & Holloway, 2021). The Office of Sustainability and Facilities has prioritized the list based on the impact and the payback that will be received. (Gorden & Holloway, 2021).

At Cleveland Clinic, Utech's energy assessment also uncovered unnecessary air exchanges in the operating rooms (Chen & Murthy, 2019). For infection control, patient rooms are required to have 6 complete air exchanges per hour, and operating rooms need 15 to 20 per hour (Chen & Murthy, 2019). An air exchange involves filtering, humidifying or dehumidifying, and heating or cooling the air (Chen & Murthy, 2019). Utech found that the operating rooms were doing more then 30 an hour without any benefit – including operating rooms that were not in use (Chen & Murthy, 2019). By installing a timing system that adjusts for use and only uses the air that is necessary, Utech was able to save energy costs by $2 million a year (Chen & Murthy, 2019).

Health care institutions aren't just trying to fix what is already there, but also building for the future – planning sustainability and incorporating renewable energy (Chen & Murthy, 2019). As Kaiser Permanente was building their new San Diego Medical Center, they had a goal to set a new standard for a patient experience with a small carbon footprint (Chen & Murthy, 2019). At their new hospital, they have 1,500 solar panels to supplement the high efficient generator, all LED lights, and outdoor walking paths with native plants watered by reclaimed rainwater (Chen & Murthy, 2019). The hospital achieved platinum certification by Leadership in Energy and Environmental Design (LEED) (Chen & Murthy, 2019).

Boston Medical Center learned that the best way to both reduce their heating and cooling costs and increase the longevity of their roof, was to introduce a rooftop farm (Chen & Murthy, 2019). In just 2,568 square feet of growing space, the rooftop farm produces 6,000 pounds of fresh produce every year for the BMC cafeteria, and preventive food pantry (Chen & Murthy, 2019).

Recycling Programs – Beneficial for climate and the bottom line

Mayo Clinic has a robust recycling program, traditional items like office paper, plastics, and cardboard are all shipped to various recycling plants. Non-traditional items with more hazardous limitations like x-ray films, batteries, and fluorescent bulbs, also make the list for recycling.

Much like the stock market, recycling programs' success and profit can fluctuate based how the market has priced the product, usually by pound. Based on this it can be difficult to plan ahead for future projects and budgets, per Glen Goodsell the Recycling Coordinator in the Waste Management office of Mayo Clinic Rochester, in a private communication June 2021, "We just react to what comes in every day. It's hard to plan when there are so many changes. Month to month prices go up and down. We just steer the course and it evens out."

In examining Mayo Clinic's recycling numbers, both pounds shipped and the dollars generated, trends are noticed by the years as market prices fluctuate. In 2019, Mayo Clinic Recycling program generated $937,325 in revenue with shipping 13.2 million pounds of recyclable materials (Goodsell, 2021). In a private communication regarding the 2020 Mayo Clinic Recycling Report it was noted in an email by Goodsell, *"We recycled 11,002,438lbs of material. We had a positive revenue of $559,065 with a cost avoidance of $1,062,901. 2020 was a down year and the prices we received were quite poor. Prices have rebounded well so far in 2021. If you notice the revenue on the scrap metal of $386,299 and $2,565. We donate half of that revenue to the Sisters of St. Francis Assisi – Poverello Fund. This fund helps the poor and needy patients pay for their medical care here at Mayo. 2020 a down year we donated $184,632. In 2019 we donated $298,667 to that fund."*

Cost avoidance is the term used for referring to what it would have cost Mayo Clinic to simply throw the item away instead of recycling; avoidance is only counted on the items that could be put in the trash (Goodsell, 2021). Items such as scrap metals, used oil, yard waste, and appliances that cannot be thrown away are not factored into the cost avoidance. Keeping track of the dollars generated compared to cost avoidances demonstrates how recycling can save an institution money (Fig 6) (Goodsell, 2021).

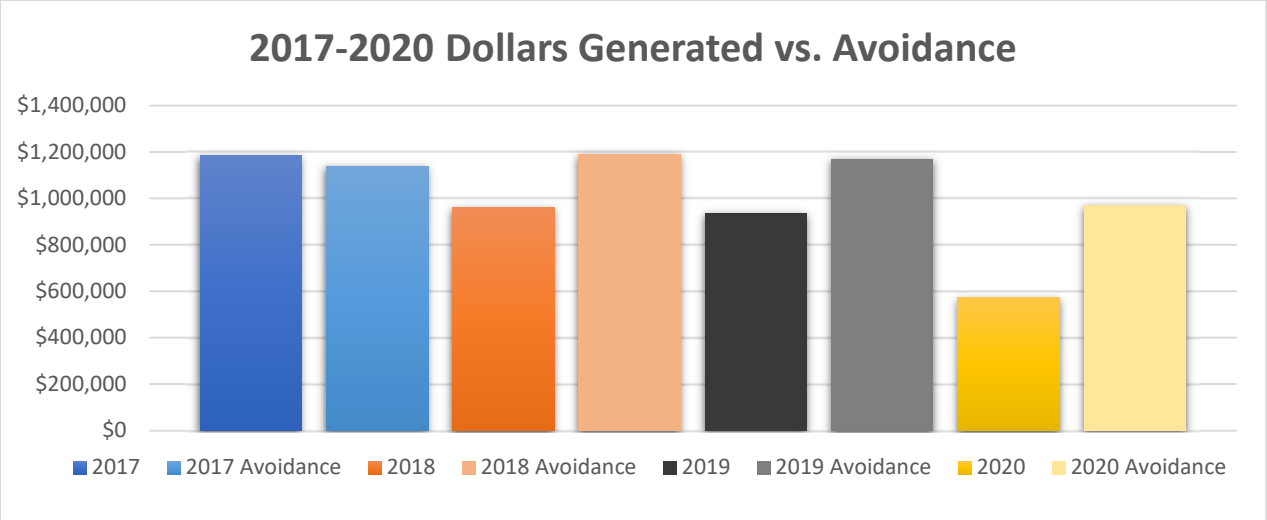


Figure 6 This graph shows the dollars generated (left column) to the cost avoidance (right column) for each year 2017-2020. From the Combined Recycling reported generated by 2017-2020 individual recycling reports (Goodsell, 2021).

Planning for the Future

Finding the funding for sustainable energy projects can be difficult. However, as projects are completed and long-term results are successful, institutions become more open to change. Local energy companies offer incentives or rebates to help encourage fluorescent light replacement. Rebates can be found with also replacing outdated and nonenergy efficient equipment. For Boston Medical Center (BMC) and Kaiser Permanente's hospital projects, investors "clamored" for the green bonds that were issued; BMC was three to four times oversubscribed (Chen & Murthy, 2019). Since 2007, more than $600 billion in these green bonds have been issued to investors (Chen & Murthy, 2019).

While internal projects help, health institutions are also looking externally into their communities to see what can be done to encourage healthy living, recycling, and climate resiliences. To encourage and strengthen clean energy, Cleveland Clinic regularly partners locally to increase tree coverage with the city and other companies within the state of Ohio (Chen & Murthy, 2019). BMC is part of the programs "Climate Ready Boston" and "Carbon Free Boston" that is an inclusive group working to make the city carbon neutral by 2050 (Chen & Murthy, 2019). To increase the demand to local and sustainable food sources, Kaiser

Permanente is partnering with food distributors, schools, and others (Chen & Murthy, 2019). All these efforts were supported through a national program called “Health Care Without Harm,” a collaborative group created to help more than 500 U.S. hospitals address climate change (Chen & Murthy, 2019).

Health care as an industry is becoming self-aware of the impact it has on the climate and their communities. Health care institutions realize they are only as strong as the communities they are in and as healthy as the people that are in them.

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The Art of Corporate Greening in a Dying Fashion Industry

by Hannah Ewing

Introduction

The amount of clothing tossed away in the United States has doubled in the last 20 years and if we do not shift towards more renewable practices, this number is predicted to triple (Brown, 2021). As of 2021, we are up to 14 million tons of textile waste yearly and it takes over 200 years for textile waste to decompose (Brown, 2021). To make matters worse, according to the World Resources Institute, it requires 2,700 liters of water to create one single cotton shirt and, as many are unaware, about 84 percent of clothing is thrown away or burned (Brown, 2021). According to the United States Department of Agriculture (USDA), cotton as a crop accounts for a quarter of all pesticides used in the United States and polyester is made with petroleum (Claudio, 2007). This all contributes to landfills, water shortages, and greenhouse gases. Why? One broad concept is to blame: fast fashion (Brown, 2021).

Fashion is a profitable industry. Most large players find cheap materials, low paid labor, and then sell their pieces at a premium price. The profit margins are good, but the cost to the environment, and in some cases, human rights, that pairs with this frivolous trend is not worth the payout (Denisova, 2021).

Corporate finance is a subcategory of finance within an organization which centers around sources of funding, financial decisions, how to configure capital, and where to place investments (Kenton, 2019). Commonly thought as those who maintain the bottom line, and, in many organizations, this bottom line is what matters most (Brigham & Ehrhardt, 2020). Understandably so, when the issue is viewed through a short-term financial lens, however what about long term?

Environmental issues are arising due to various industries. Materials are going to waste, climate change is on the rise, and emissions continue to surge. With fast fashion, unethical disposal practices, and the repression of thrift and refurbishment, there is Hell to pay (Denisova, 2021).

Thesis

In order to combat big fashion's vast ecological impact, they must adapt to the arising issue of environmental damage, modify their corporate policies, discuss the ability to recycle materials, consider refurbishment of materials and garments, edit toxic manufacturing practices, deliberate ethics, as well as explore the growing world of thrift. This piece will explore how some players are already moving towards this practical future, while others lag behind, continuing their frolicsome fast fashion business schemes.

The Media

As outlined previously, a consequence of fast fashion is textile waste (Brown, 2021). Fast fashion is the clothing equivalent to fast food (Claudio, 2007). People see it as cheap, easy, and disposable (Claudio, 2007). A large portion of the media encourages fast fashion and unsustainable buying practices (Claudio, 2007). Many sources of influence we look to today are sponsored by companies that reap profits from the continuance of fast fashion (Denisova, 2021). That is a part of the issue, but also, humans are simply trendier today than they ever have been (Denisova, 2021). The large companies cannot take all the blame, when we as consumers continue to feed into the wasteful nature of the industry.

The psychological side of things says this is not merely due to corporate corruption. Today, people use shopping as therapy, a symbol of status, and as a reward system (Denisova, 2021). Again, a lot of this upsurge of materialism and waste has arose through social media. Many influencers sponsor unsustainable clothing brands and for example, feature a new piece of clothing with each post (Denisova, 2021). On the contrary, there are influencers who feature thrift hauls, clothing refurbishment, and other environmentally conscious practices. Ashley, known for the YouTube channel, bestdressed, is a prime example of an influencer who uses their powers for good. She is consistently sharing her thrifting experiences and recommending ecological clothing brands (Youtube.com, 2021). Not all social media is bad news, there are diamonds in the rough.

We may not be able to change every company and every consumer overnight, however we can as individuals, business students, and as consumers encourage sustainable brands, thrift,

refurbishment, and green shopping practices. If enough people and businesses make the shift, the market will follow suit. The consumers control the market after all.

Human Rights

We have covered the environmental impacts of fast fashion and this topic is the primary focus of this piece. We will also be pondering how corporate practices can shift to modify these issues. However, we should also touch on the human rights issues that surround the manufacturing sector, which are paired with the environmental impacts.

About 97% of clothing is made in counties other than the U.S, so it is easy as Americans to put the origin of our clothing out of sight and out of mind (Marketing the Conscious Club, 2019). However, we must remember that the individuals who make our clothing often do not observe all of the same rights we do here in the western world (Marketing the Conscious Club, 2019). In order for the fast fashion business model to be successful, the supply chain needs to be short and everything including the raw materials and production process must be tightly coordinated (Marketing the Conscious Club, 2019). Due to this, many garment creators slip through the cracks and are exploited (Marketing the Conscious Club, 2019).

In Cambodia, 94% of factories that were inspected defied overtime regulations (Marketing the Conscious Club, 2019). There are reports of workers in Bangladesh and other countries being beaten for falling under target production goals (Marketing the Conscious Club, 2019). Many children are enslaved in factories, forced to work and buildings that are condemned continue to be used for textile production with the consequence of injured and sometimes deceased employees (Marketing the Conscious Club, 2019). Women are particularly discriminated against and abused in this industry, as women make up a majority of the garment industry's workforce (Marketing the Conscious Club, 2019).

In a study conducted on female garment workers in Bangalore, 14% of women reported being raped or sexually harassed in the workplace, 60% reported being threatened with violence, and about 45% experienced humiliation and verbal abuse on a regular basis (Marketing the Conscious Club, 2019). This must change, and much like with the environmental issues, we as consumers must use our buying power to make that change a reality.

As touched on beforehand, the root of change will begin in the consumer sector, but the change will be executed in the corporate world. Large companies will need to follow the market trends and will be forced to change their practices to satisfy their customers (Morgan, 2020). This is starting to happen as companies are uncovering the benefits of greening (Tamvada & Shrivastava, 2020).

Corporate Greening

There are several advantages when going green, or greening as they say (Tamvada & Shrivastava, 2020). Changing corporate policies and, in the fashion industry's case, investing in ethical sourcing, can seem daunting. However, not only is greening beneficial to the environment, but it can also open new market opportunities, inspire employees, push a company ahead of the curve, attract exterior stakeholders, and surge efficiency (Tamvada & Shrivastava, 2020). In fact, some experts say that going green is a perfect COVID-19 recovery strategy (Tamvada & Shrivastava, 2020).

Marketing Benefits

Incorporating green corporate policies, adding green products or modifying current products to be greener attracts a broader consumer base (Tamvada & Shrivastava, 2020). People like a sustainable niche (Tamvada & Shrivastava, 2020). Some examples include: Frugalpac's recycled paper coffee cup and wine bottle, D'Light's nonelectric lighting solutions, and ϕrsted's green energy (Tamvada & Shrivastava, 2020). Many of the companies that discover ecological niches, do not start out with a sustainability focus (Tamvada & Shrivastava, 2020). Customers want to feel good about their purchases and investors want to invest in companies who share their values (LaMarco, 2019). In 2015, a study was done on 30,000 consumers from various countries, and they found that 66 percent of the participants were willing to pay more for sustainable products (LaMarco, 2019). Among millennials, it was 77 percent (LaMarco, 2019). It seems generation may be a more significant factor than income (Lumos Business, 2021). Experts say this percentage is likely even more plentiful in the Generation Z age group (Brown, 2021). Now it is 2021 and going green is becoming more popular as time goes by (Brown, 2021). Being

eco conscious is also a great way to stand out in your industry, especially in fashion, where being sustainable is rare (Molderez & Elst, 2015). It is becoming a status symbol to be green in the corporate realm (LaMarco, 2019). For example, Dell and Honda, they are both particularly popular brands partly due to their heightened eco consciousness when compared to their competitors (LaMarco, 2019).

Employee Morale

When it comes to profits, which are very imperative in the corporate finance space, motivated, productive employees are crucial. In fact, companies that follow eco-conscious practices experience about 16 percent more productivity (Tamvada & Shrivastava, 2020). Going green can attract new talent and creativity. Likely, if employees share the values of their company, they will be more energized in their work and more committed to their work goals (LaMarco, 2019). Employees want to feel positive about the work they are doing and the company they work under (Tamvada & Shrivastava, 2020). When a company demonstrates that they care about the environment and the health of their employees, morale increases (LaMarco, 2019). In our case, most employees do not feel good about contributing to the growing issue of textile waste and the breach of human rights that unfortunately exists in the clothing supply chain (Denisova, 2021). What going green entails depends on the industry (LaMarco, 2019). However, no matter which industry, incentives for sustainability can be offered to employees (LaMarco, 2019). For example, Bank of America offered up to $3,000 in reimbursement for employees who purchased an eco-friendly car (LaMarco, 2019). For a fashion company, perhaps employees who go thrift shopping will receive a perk of some kind.

Ahead of the Curve

In most countries and states, there are sustainability regulations, guidelines, and laws that companies must follow in order to avoid fines and legal penalties (LaMarco, 2019). Each year, more are passed. As the years go by, these regulations become increasingly expansive and strict due to more sustainability awareness and ecological destruction (LaMarco, 2019). If a company changes their ways now, they can avoid heavy fines and expenses later (LaMarco, 2019). The

Environmental Protection Agency presented its 2020 Action Agenda, and it is quite strict and progressive regarding carbon emissions (LaMarco, 2019). The consequences are dire and there are plenty of benefits being offered for green companies (LaMarco, 2019). It seems getting ahead of the curve, in the long term, is financially wise.

Stakeholders

With the spreading environmental awareness, investors see that green companies are lucrative, and they are interested. Becoming greener can attract new investors and increase one's stock price (LaMarco, 2019). A study that followed stock performance from 1993 through 2009 found that highly sustainable companies have an advantage in the stock market over companies that do not emphasize greenness (LaMarco, 2019). For example, Polysolar, a company that created electricity generating windows, received double its sought amount on Crowdcube (LaMarco, 2019). As time goes by, the general public and potential investors are becoming more concerned about the environment (Staci, 2018). Today, investors appreciate good ethics, ecological consciousness, and creativity (LaMarco, 2019).

Efficiency

Reducing energy usage and reusing materials can save money, while also benefitting the environment (LaMarco, 2019). Not only should fashion companies seek ethical and sustainable sourcing, but they should also reduce energy consumption and carbon footprints. Green tax credits can be obtained (Tamvada & Shrivastava, 2020). For example, 75 percent of companies in the UK that took advantage of green technologies such as solar panels and windmills received commercial benefits. In certain companies, billions of dollars can be saved in the long run (Tamvada & Shrivastava, 2020).

ThredUp

The company, ThredUp, is a perfect example of a fashion company that has adapted to its environment and industry. ThredUp is an online clothing consignment store, so everything they sell is secondhand. They sell clothing for both women and children and mail their items in recyclable packaging (ThredUp, 2021). They have millions of items from hundreds of brands, so

there is quite a wide variety of styles to choose from (ThredUp, 2021). They are dedicated to extending the life of clothing, reducing carbon and water footprints, preventing textile waste, and modernizing thrift (ThredUp, 2021). They strive to recirculate clothing, educate and influence the public, and elevate the practice of thrifting (ThredUp, 2021). They accomplish these goals through collaborating with other brands and celebrities as well as through customers' word of mouth and social media.

Collaboration

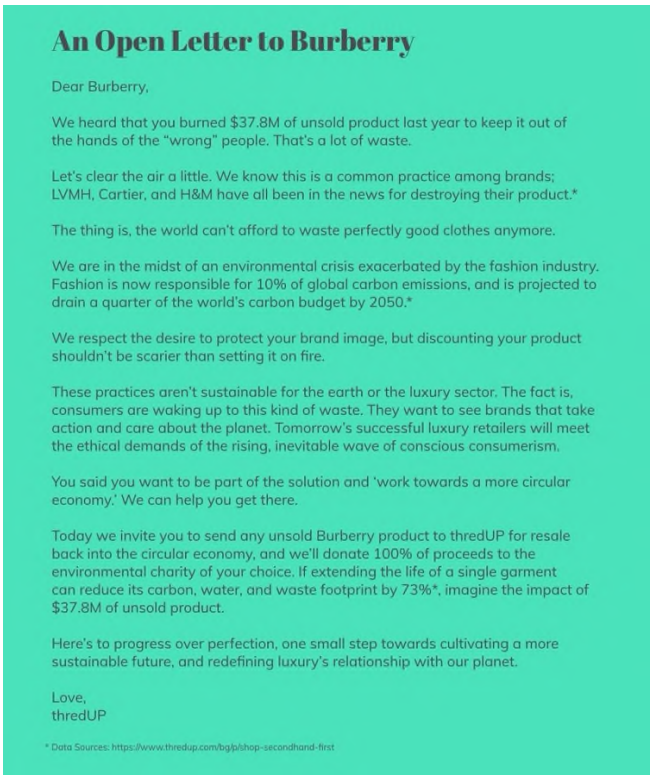
ThredUp collaborates with a wide array of ecological fashion companies to spread the word about their services and the effects of textile waste (ThredUp, 2021). They are not simply an online store, but a platform. They have a cooperation with Zero Waste Daniel, a company that creates upcycled clothing from secondhand garments and fabrics (ThredUp, 2021). They have partnered with Olivia Wilde and launched a secondhand t-shirt collection intended to destigmatize used apparel (ThredUp, 2021). They also have partnered with numerous other celebrities as well, who consigned their own items of clothing. These items are available for the public to peruse and purchase on ThredUp's website (ThredUp, 2021).

ThredUp has their website, but they also started a resale-as-a-service campaign (Lumos Business, 2021). This campaign allows companies such as Walmart, Madewell, Athleta, and Reformation to sell used clothing at their locations through ThredUp kiosks (ThredUp, 2021). ThredUp also maintains a Circular Fashion Fund, a non-profit fund for small, green businesses (ThredUp, 2021).

ThredUp challenges companies who maintain wasteful practices, such as Burberry, who was caught burning $37.8 million worth of excess inventory (Prant, 2018). ThredUp invited Burberry to send their excess inventory to ThredUp next time (Prant, 2018). If they were to do so, ThredUp pledged to donate 100 percent of the proceeds to a green charity (Prant, 2018). Whether or not they sent anything over to ThredUp after receiving the letter is unclear. Either way, ThredUp has processed 100 million garments from consumers and stores throughout the U.S and Canada and they have displaced one billion pounds of carbon dioxide emissions in the process (ThredUp, 2021). They are an authentic example of a responsible corporate citizen.

Figure 1

A Letter from ThredUp to Burberry



An Open Letter to Burberry

Dear Burberry,

We heard that you burned $37.8M of unsold product last year to keep it out of the hands of the "wrong" people. That's a lot of waste.

Let's clear the air a little. We know this is a common practice among brands; LVMH, Cartier, and H&M have all been in the news for destroying their product.*

The thing is, the world can't afford to waste perfectly good clothes anymore.

We are in the midst of an environmental crisis exacerbated by the fashion industry. Fashion is now responsible for 10% of global carbon emissions, and is projected to drain a quarter of the world's carbon budget by 2050.*

We respect the desire to protect your brand image, but discounting your product shouldn't be scarier than setting it on fire.

These practices aren't sustainable for the earth or the luxury sector. The fact is, consumers are waking up to this kind of waste. They want to see brands that take action and care about the planet. Tomorrow's successful luxury retailers will meet the ethical demands of the rising, inevitable wave of conscious consumerism.

You said you want to be part of the solution and 'work towards a more circular economy.' We can help you get there.

Today we invite you to send any unsold Burberry product to thredUP for resale back into the circular economy, and we'll donate 100% of proceeds to the environmental charity of your choice. If extending the life of a single garment can reduce its carbon, water, and waste footprint by 73%*, imagine the impact of $37.8M of unsold product.

Here's to progress over perfection, one small step towards cultivating a more sustainable future, and redefining luxury's relationship with our planet.

Love,
thredUP

* Data Sources: https://www.thredup.com/bg/p/shop-secondhand-first

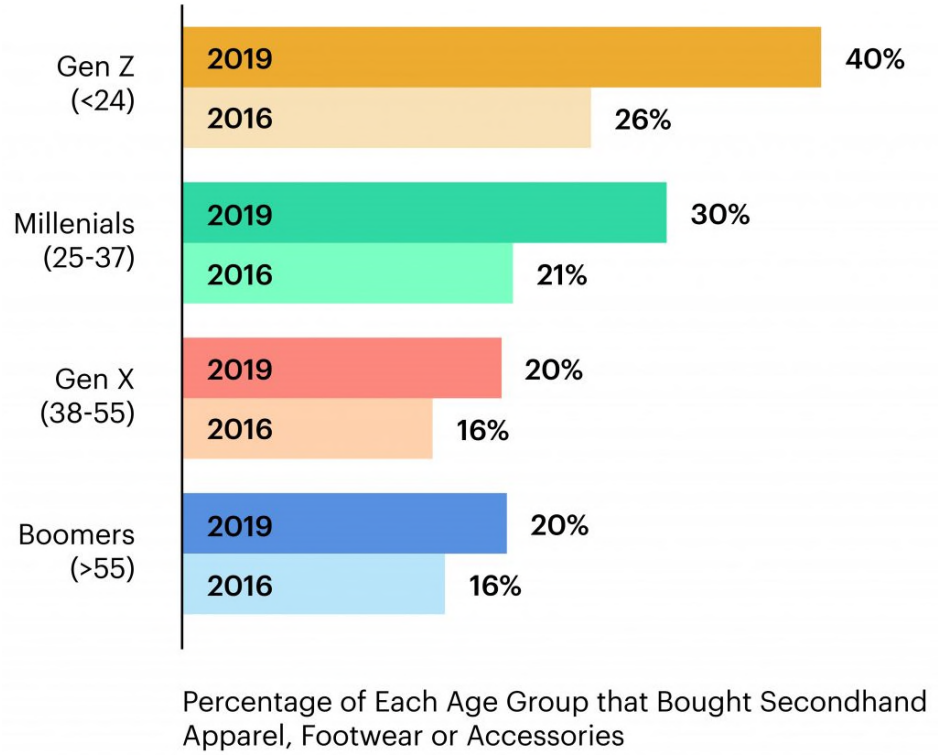
Note. Image retrieved from ThredUp's Instagram page (Prant, 2018)

Business Modeling

ThredUp recently released their initial public offering (IPO) to the stock market this year. They sought to raise $100 million (ThredUp, 2021). They have been doing well so far. Their gross profit margin is 69% and this profit is obtained from their consignment sales as well as their Resale-as-a-Service platform (Lumos Business, 2021). Resale is expected to surpass fast fashion by 2029 due to the generational shift in the market towards resale (Lumos Business, 2021). With this in mind, ThredUp appears to be a winner. Figure 2 below, retrieved from ThredUp's S-1 Form from the Securities and Exchange Commission demonstrates this generational shift.

Figure 2

Secondhand Purchases Over Generations



Note. Chart retrieved from ThredUp S-1 page 130 (Lumos Business, 2021)

ThredUp has seen a recent burst of success. In 2018, their active buyers went up 48 percent (Securities & Exchange Commission, 2021). Then in 2019, they went up another 24 percent (Securities & Exchange Commission, 2021). ThredUp may be a tough act to follow, however various companies are starting to green (Morgan, 2020). Some include Rothy's, DePop, Tentree, Everlane, Pact, Patagonia, Levi's, H&M Conscious, Reformation, Amour Vert, Eileen Fisher, and People Tree. Some of them are centered around resale and others are retail but use recycled materials (Morgan, 2020).

Conclusion

Thrift is on the rise, consumers and investors want sustainable options, and the market is reflecting this shift (Lumos Business, 2021). There are severe environmental and ethical issues due to the fashion industry's fast fashion trends and the younger generations are taking notice (Morgan, 2020). Fast fashion is predicted to dissolve, and thrift is expected to become the norm (Lumos Business, 2021). Prominent brands are starting to change their ways to accommodate this, but also reap the benefits of corporate greening (LaMarco, 2019). Corporate greening can lead to more market niches, better employee morale, attracted investors, amplified efficiency, and a company ahead of the curve (Tamvada & Shrivastava, 2020). We as consumers can use our buying power to push forward, and those who exist in the corporate realm will acknowledge that inkling (Denisova, 2021). As the corporate domain adapts and evolves, optimistically, the effects of fast fashion will be remedied, and style will come with fewer consequences (Fletcher, 2015).

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How Oil Companies Will Finance the Transition to Clean Energy Strategically

by Robert Head

Introduction

This paper aims to research an efficient way to transform a traditional oil and gas business model into a more environmentally sustainable business model. An organization must maintain profitability and market dominance that brings shareholders maximum value. In the current landscape, oil companies are faced with the dual challenge of meeting global demand that is currently 100 million barrels of oil per day for the world's 7.7 billion people while rapidly reducing carbon emissions (P.R. Newswire, 2021). Companies that attempt to minimize barrels per day dramatically will only shift demand and profits to other companies, which will weaken revenue and the ability to fund a sustainable transition. The transition to clean energy must occur systematically and strategically, maintaining profits and driving innovation. As countries progress through a shift to clean energy, it is imperative to root that transition in economic, political, and social factors to ensure progress is irreversible (World Economic Forum, 2021). Oil and gas companies with significant fossil fuel assets that pursue a sudden transition to clean energy, whether intentionally or forced, are destined to fail. Long-term sustainable change must be rooted in sound economics where all stakeholders benefit, including stockholders, consumers, suppliers, and the public. If energy companies do not transition strategically, a catalyst like the next economic downturn will reverse much of the progress to clean energy as economies turn back to cheaper, more abundant fossil fuels to help generate and preserve wealth. This self-preservation makes it imperative for oil and gas companies to transition in a profitable, systematic, and strategic way. The role of corporate finance to help fund such projects has never been more vital and is a significant success.

A strategic plan to transition to clean energy is not a one size fits all process. Large, entrenched oil giants like Exxon Mobile and British Petroleum, among others, have a massive undertaking with many current and future variables. A change framework will differ drastically among oil and gas companies, with size being the most differentiating variable. Investments from giants in the oil and gas industry will be critical for some key capital-intensive clean energy technologies (International Energy Agency, 2020). While a profitable and successful transition of entrenched oil giants is paramount to the global success of clean energy, the complexity of such undertaking is outside of the boundaries of this research. Instead, the investigation will focus on the current and future success of small and medium market capitalization energy

companies in the United States. The study will focus on the corporate financial structure required for successful transition and agile operations.

Company Sizes and Market Capitalization United Sates

A corporation is a group created under state laws that act as a single legal entity and is separate from owners and managers, and employees (Brigham, & Ehrhardt, 2020). All corporations must have a corporate charter. A corporate charter sets the framework such as corporate name, activities, number of directors, and stock shares (Brigham, & Ehrhardt, 2020). Stocks are small portions of the company that a corporation is allowed to offer. Many types of corporations differ based on the type, size, and corporate structure of the entity. As a corporation matures, it reaches a point where it becomes difficult to secure enough funding to raise large amounts of capital required to expand. Corporations can seek approval from the securities and exchange commission (SEC) to sell corporate shares on the open market to raise money. Their process of seeking support from the SECF is called taking a corporation public. Public corporations are generally group based on size, called market capitalization, as indicated by the chart below.\

Size	Market Value in Millions
Large Cap Companies	10000 and over
Medium Cap Companies	2000 to 10000
Small Cap Companies	300 to 2000

Current Oil and Gas Industry in the United Sates

There are approximately 8,000 oil and gas companies in the United States responsible for providing about 85% of domestic oil and gas (Marketline, 2020). Most of the U.S. oil and gas industry players are small to medium cap public traded companies. Renewables, notably wind and solar, are taking a role of accelerated importance in the energy industry. According to B.P.'s 2018 Energy Outlook, renewable energy will be the fastest-growing energy source, providing

around 14% of global primary energy at this future point in time (Pickl ,2019). The 8,000 US oil and gas companies will either need to innovate or consolidate. One such company that has chosen to adjust operations to a business model that supports cleaner energy is Denbury Resources Inc.

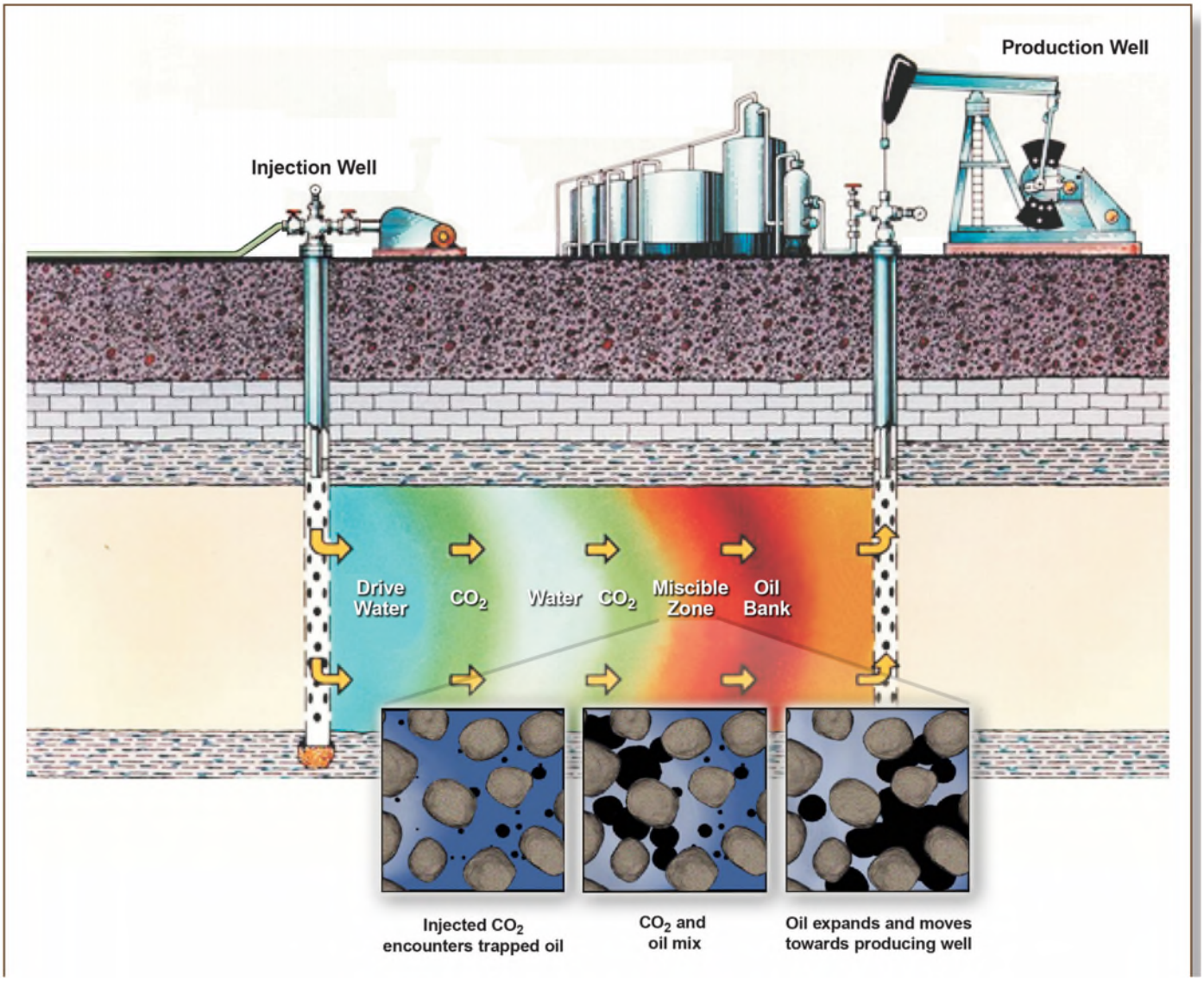
Denbury Resources Inc.

Denbury Resources Inc. is a publicly traded oil and gas company located in Plano, Texas. Denbury has a market capitalization of 3.52 B (Advameg, Inc., 2021). Oil and gas companies are beginning to incur more significant business risks as governments aggressively reduce carbon emissions. Business risk is the risk a firm's common stockholders face if the firm had no debt and is incurred from the firm's operations, which arises from uncertainty about future operating profits and capital requirements (Ehrhardt & Brigham, 2016). The acceleration of green energy places a traditional oil and gas company at risk due to stranded assets. Stranded assets are assets that have lost all value from a premature price loss. The recent Paris agreement two °C objectives requires that more than 80% of all proven fossil fuel reserves become stranded resources, and investments in such resources may become stranded assets for industrialized and developing countries (Bos & Gupta, 2019). The Paris agreement, coupled with political pressure and changing social sentiment, places economic force and an extensive incentive for oil and gas companies to either pressure cleaner energy sources as a source of a review or innovate and use technology to solve the clean energy problem. Denbury's solution has been to focus on advanced oil recovery and carbon capture.

Three Phases of Oil Extraction

The extraction of oil in the United States may contain three phases. The three phases are primary extraction, secondary extraction, and tertiary extraction. Tertiary extraction is often referred to as advanced recovery. Natural ground pressure forces oil to the top with the first extraction, but only about 10% of the oil is forced out (U.S. Department of Energy, 2020). During secondary recovery, water is injected into the well, forcing more oil out and draining to about 20 to 40 percent of the oil in place. Almost all oil fields in the United States have

undergone secondary extraction. Most oil companies that currently operate in the U.S. focus on advanced tertiary extraction. There are three types of tertiary extraction, thermal extraction, gas injection, and chemical injection. Of the three enhanced oil recovery techniques, gas injection using carbon dioxide shows the most promise for the future. There are about 114 active commercial CO2 injection projects that together inject over 2 billion cubic feet of CO2 and produce over 280,000 BOPD (U.S. Department of Energy, 2020). The reason that carbon capture shows so much promise is not because of the amount of oil it extracts but that it uses carbon dioxide as the injection gas. When the carbon dioxide is injected into the old well, it displaces the oil and is trapped in the reservoir. Carbon dioxide is the primary gas responsible for climate change. Denbury has positioned itself for the future by investing in CO2 enhanced oil recovery. CO2 enhanced oil recovery indeed has an environmental benefit. Yet, Denbury must partake in large-scale, capital-intensive CO2 enhanced oil recovery projects to remain profitable. Funding sources for such projects will depend on Danbury's capital structure.



U.S. Department of Energy, 2020

Synopsis:

- There are approximately 8,000 oil and gas companies in the United States that are responsible for providing about 85% of domestic all oil and gas

- Most of the U.S. oil and gas industry players are small to medium cap public traded companies.

- Company value will come from advanced tertiary extraction that reduces carbon emissions

- *Advanced oil recovery and carbon capture hold the most significant promise to fulfill climate challenges and remain profitable.*

Capital Structure

Capital structure is the mixture of debt and equity applied by an organization to finance projects, operations, and growth. Equity investment comes from the sale of shares in the company, which also secures claims on future earnings. Debt comes from loans, bonds, and short-term debt, which must be paid within a year. Shorth-term debt is stated as current liabilities on a balance sheet. Debt is usually considered less of a risk because debt is a contractual obligation to repay a loan. In bankruptcy, the debt is paid before owners (stockholders). A balance sheet shows a quick look at a company's capital structure by showing the amount owed and the amount invested by shareholders. Denbury is distinguished by its focus on CO2 enhanced oil recovery (EOR) and the emerging carbon capture, use, and storage (CCUS) industry, supported by the Company's CO2 EOR technical and operational expertise and its extensive CO2 pipeline infrastructure (Denbury Resources Inc., 2021). Denbury has invested heavily in projects that use EOR along with CCUS. Exon Mobile, one of the world's largest oil companies, has two active EOPR projects compared to Denbury's thirteen projects. A significant majority of Danbury's portfolio is dedicated to EOR and CCUS projects designed to reduce carbon emissions.

Major U.S. CO_2 Operators (OGJ Biennial EOR Survey 2008)

Company	Miscible Projects	Locations	Incremental Production (MBO/D*)
Occidental	29	TX, NM	90.2
Hess	6	TX	25.3
Kinder Morgan	1	TX	24.2
Chevron	4	CO, TX, NM	21.3
Denbury Resources	13	MS, LA	17.8
Merit Energy	7	WY, OK	13.6
ExxonMobil	2	TX, UT	11.7
Anadarko	4	WY	9.0
Whiting Petroleum	3	TX, OK	6.9
ConocoPhillips	2	TX, NM	5.5
12 other independents	28	TX, OK. UT, KS, MI	14.9
Total	99		240.4

* thousand barrels of oil per day

U.S. Department of Energy, 2020

Denbury Balance Sheet Assets

Assets	All numbers in millions of US Dollars				
	2021 (03/31 - 12/31)	**2020** (12/31 - 09/30)	**2020** (09/30 - 06/30)	**2020** (06/30 - 03/31)	**2020** (03/31 - 12/31)
Current Assets					
Cash and Short-Term Investments – Total	6	2	33	209	7
Receivables – Total	146	111	109	112	114
Inventories – Total	0	0	0	0	0
Current Assets – Other – Total	9	14	39	68	136
Current Assets Total	**162**	**127**	**180**	**389**	**257**
Non-Current Assets					
Property Plant and Equipment – Total (Net)	1,368	1,324	1,310	3,565	4,249
Intangible Assets – Total	--	--	--	--	--
Non-Current Assets – Other – Total	191	184	188	103	101
Non–Current Assets Total	**1,559**	**1,508**	**1,498**	**3,669**	**4,350**
ASSETS TOTAL	**1,721**	**1,635**	**1,678**	**4,058**	**4,607**

Denbury Balance Sheet Liabilities

Liabilities and Shareholders' Equity	All numbers in millions of US Dollars				
	2021 (03/31 - 12/31)	**2020** (12/31 - 09/30)	**2020** (09/30 - 06/30)	**2020** (06/30 - 03/31)	**2020** (03/31 - 12/31)
Liabilites					
Current Liabilities					
Debt in Current Liabilities	54	69	74	2,374	105
Account Payable/Creditors – Trade	180	68	211	201	73
Income Taxes Payable	--	17	--	--	10
Current Liabilities – Other	129	131	6	8	70
Current Liabilities Total	**363**	**285**	**291**	**2,583**	**259**
Long–Term Liabilities					
Long-Term Debt Total	94	89	103	185	2,226
Deferred Taxes and Investment Tax Credit	1	1	4	306	406
Liabilities (Other)	261	205	182	180	227
Long-Term Liabilities Total	356	296	288	670	2,859
Liabilities Total	**719**	**581**	**580**	**3,254**	**3,118**
Minority Interest – Balance Sheet	**0**	**0**	**0**	**0**	**0**
Shareholders' Equity					
Preferred/Preference Stock (Capital) – Total	0	0	0	0	0
Common/Ordinary Equity – Total	--	--	--	--	--
Shareholders' Equity Total	**1,002**	**1,054**	**1,098**	**804**	**1,489**
LIABILITIES AND SHAREHOLDERS' EQUITY TOTAL	**1,721**	**1,635**	**1,678**	**4,058**	**4,607**

	2021 (03/31 - 12/31)	**2020** (12/31 - 09/30)	**2020** (09/30 - 06/30)	**2020** (06/30 - 03/31)	**2020** (03/31 - 12/31)
Common Shares Outstanding	50,006,000	50,000,000	50,000,000	507,726,000	506,587,000

Denbury Inc. NYSE: DEN

DEN went public within the last year. This will significantly effect the amount of historical data available in this report.

Price Performance

Price on 6/25/21	$79.96
52-Week High/Low	$81.37 / 15.43
Volume on 6/25/21	7,368,534
10-Day Avg. Volume	2,173,798
Price 1 Month Ago	$67.02
1 Month Price Performance	19.3%
Price 3 Months Ago	$45.42
3 Month Price Performance	76.0%
Price 6 Months Ago	$24.99
6 Month Price Performance	220.0%
Price 12 Months Ago	NA
12 Month Price Performance	NA
Market Capitalization	$4.0 Billion
Beta	-285.66

Key Statistics (Latest 4 Quarters)

EPS Growth	NA
EPS Growth 3 Year, annualized	NA
EPS Growth 5 Year, annualized	18.7%
Sales Growth	3.9%
Asset Turnover	0.3x
Inventory Turnover	NA
Receivables Turnover	6.2x
Effective Tax Rate	20.1%
Total Debt to Equity	76.9x
Interest Coverage	-33.3x
Quick Ratio	0.2x
Current Ratio	0.2x
Payout Ratio	NA
Debt to Capital	0.1x

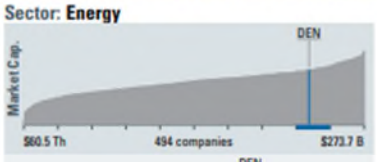
Business Description

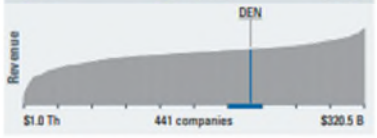
Denbury Resources Inc. operates as an independent oil and natural gas company in the United States.

Denbury Inc.
5320 Legacy Drive
Plano, TX 75024
972 673 2000
www.denbury.com

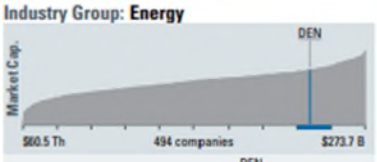
Company to Industry Comparisons (Using S&P GICS Groupings)

Sector: **Energy**

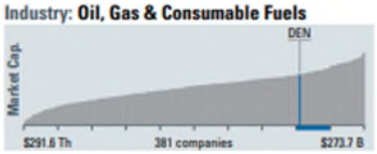




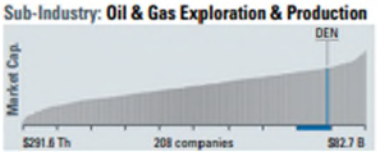
Industry Group: **Energy**



Industry: **Oil, Gas & Consumable Fuels**



Sub-Industry: **Oil & Gas Exploration & Production**



Benchmark Price Performance

Duration	Industry Group	Sub-Industry
1 Month	7.8%	12.0%
3 Month	14.6%	23.3%
6 Month	45.1%	88.4%
12 Month	58.7%	126.3%

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(Denbury Resources Inc., 2021).

Conclusion

The purpose of this research was to research an efficient way to transform a traditional oil and gas business model into a more environmentally sustainable business model.

In the current landscape, oil companies are faced with the dual challenge of meeting global demand that is currently 100 million barrels of oil per day for the world's 7.7 billion people while rapidly reducing carbon emissions (P.R. Newswire, 2021). Denbury has taken the starlet steps to

create value for shareholders by transforming its business model to one that is more conducive to the threat of climate change. Over the past year, Denbury stock has risen from $20.00 to around $80.00. While many energy companies have seen the same stock increase due to oil demand post-pandemic, Denbury has taken steps to secure long-term value using advanced oil recovery and carbon capture from wells that that once had little valuer. It is this type of innovation that will make increase long-term value.

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Early Adoption of Environmental Regulatory Changes in the HVAC Industry

by Becky Gjerde

Introduction

New regulations regarding climate change mean that companies in the HVAC industry have to change their business practices soon and aim to achieve a more sustainable business that consumes less energy. In this essay, I will look at the impact of regulations, the risk of profitability while trying to practice sustainable business practices, the financial metrics of Johnson Controls, and the effect of adapting proactively to climate change in other industries, drawing from journals and newspaper articles. Finally, the essay will end with a discussion about the way forward, highlighting the advantages and disadvantages of an early adopter and late adopter strategy for Johnson Controls.

Importance of Climate Change

In recent times, the earth has seen increased incidences of natural disasters such as floods and storms. These incidences result in massive damage to property, rob people of their livelihoods, and result in many people dying. The increase in the rate of floods, storms, and other natural disasters is not only down to forces of nature; it is a byproduct of human activity (EPA, 2020). In particular, an increase in carbon emissions has resulted in the depletion of the Ozone layer, which affects climate change in the form of erratic weather patterns that contribute to these storms and floods (EPA, 2020).

Climate change has also increased the incidences of famine globally, especially in global south countries. According to the United States Environmental Protection Agency reports, the high levels of emission in terms of carbon dioxide have resulted in more acidic rain falling. Acidic rain is harmful to crops and plants and means that harvest yield per acre has decreased worldwide (EPA, 2020). Besides acid rain, rainfall patterns have become more erratic, affecting countries that do not have advanced weather systems that help detect rain, leading to poorly planned planting seasons and a more significant impact on aquatic environments (EPA, 2020). As a result, the average rainfall globally has also decreased. Countries with no secondary water source and reliance on small farmers have resulted in smaller harvests, contributing to food insecurity within these countries (EPA, 2020).

For the HVAC industry, climate change also plays an important role when carrying out risk analysis and strategic management interventions for the future. For example, research was done by De Rebuis et al. (2020), focusing on HVAC systems and heating performance. This research indicated that buildings would eventually need less heat for the winter due to climate change due to climate change and building structures. This research influences companies such as Johnson Controls to produce heating systems and environmentally sustainable practices, they can carry out to ensure that heating systems anticipate the lower load they are expected to handle in the coming years.

Corporate Responsibility for Sustainability

As the world has gone green, there has been more pressure on the HVAC industry to make products that align with the policies globally that aim to reduce energy consumption overall. In addition, HVAC units within buildings are responsible for consuming 40% of the energy in that building (Yousef & Hamid, 2015). This consumption has required innovation within the industry. As a result, there is now a heavy focus on making more compact products and help save on energy for less energy consumption and carbon emissions from the HVAC industry (Yousef & Hamid, 2015).

Corporate responsibility for sustainability is not only limited to the HVAC industry. For example, a study carried out by Grayson (2011) showed that after surviving a hostile takeover, Marks and Spencer, a global retailer based out of London, decided to embark upon plan A, a strategy primarily driven by corporate responsibility in terms of environmentally sustainable practices and sustainability. They decided to do this because consumers demanded more of this aspect, and the competition had also started doing more regarding this facet of their business (Grayson, 2011).

The change did not only extend to them, but the CEO reached out to the suppliers about plan A and received an overwhelming response (Grayson, 2011). Over 1,500 suppliers committed to the idea and agreed to meet up regularly to exchange information (Grayson, 2011). This initiative also heavily involved the employees and the customers as well. As a result, Marks and Spencer put £200 million into this initiative for the first five years, and not only was this initiative environmentally sound, but it also led to reduced costs (Grayson, 2011). Marks and

Spencer recorded a £50 million decline in operating expenses, showing that environmentally sound practices in the long run also help with saving money (Grayson, 2011).

Johnson Controls HVAC Overview

Johnson Controls manufactures commercial and residential HVAC equipment and provides building monitoring services and high-end security systems, including AI-guided security and high-end surveillance systems. The company is aware of its corporate social responsibility and, with that in mind, has committed to having zero net carbon emissions by the year 2040 (Johnson Controls, 2021). It has created the Open Blue platform to optimize the energy buildings used for HVAC through data analytics (Johnson Controls, 2021). The company wants to cut its energy consumption in its office buildings by 55%and cut out the amount of carbon emissions by customers by creating more energy-efficient systems (Johnson Controls, 2021).

Johnson Controls is not the only company committed to cutting out carbon emissions in the HVAC industry; essentially, every player within this business drives this commitment. There have been several innovations in the industry over the years, all done to reduce carbon emissions. For example, a zoned HVAC system saves energy by ensuring that the space you occupy has optimal temperatures while keeping other zones in the house or room at different temperatures to help conserve energy (White, 2021).

Additionally, there has been innovation in the form of the creation of geothermal cooling and heating. Geothermal cooling and heating make use of the earth's resources to heat and cool the house. It taps into the earth's underground during the summer to take up air and provide a cool atmosphere in the household (EPA, 2020). The inverse happens in the summer as it again uses the earth's resources to take up heat and provide heat in the house. This method helps save massive energy on the PowerGrid for HVAC systems known for the sheer volume of energy consumed within households (EPA, 2020).

Johnson Controls Financial Snapshot

Liquidity ratios provide a measure of the company's ability to generate cash to meet its current obligations or needs (Brigham & Ehrhardt, 2020). As shown in Table 1, the comparative financial ratios show that Johnson Controls' existing assets could pay its current liabilities better than in 2017 (Johnson Controls, 2020). The networking capital to sales ratio indicates that in 2018, the liquidity was 2.3% after meeting its immediate needs and rising from 1.8% in 2017. The quick ratio shown in both 2018 and 2017 indicates that Johnson Controls cannot fully meet its current liabilities as it can only meet 76% and 77% of the current liabilities, respectively.

Table 1

Comparative ratio analysis

Liquidity Ratios	2018	2017
Current ratio	11823/ 11250 = 1,05	12292/11854 = 1,037
Quick ratio	11823 – 3224 / 11250 = 0,76	12292 – 3209 / 11854 = 0,77
Net working capital to sales	11823-11250/ 25332 = 0.023	12292 – 11854/ 24099 = 0,018

The profitability ratios measure an organization's income in proportion to its sales or revenue (Brigham et al., 2020). Johnson Controls' gross profit margins, shown in Table 2, for both 2017 and 2018 are slightly different, where 2017 has a margin of 39%, and 2018 has a margin of 37% (Johnson Controls, 2020). The decline in 2018 could be due to a higher cost of sales as the gross profit and sales were higher than in 2017. However, the net profit margin increased by 0,019%, potentially resulting from lower operating expenses.

Table 2

Profitability Ratios

	2018	2017
Gross profit margin	9380/ 25332 = 0,37	9339/ 24099 = 0,39
Net profit margin	2383/ 25332 = 0,094	1819/ 24099 = 0,075

The financial leverage ratios assess the financial risk a company has taken (Brigham et al., 2020). In this case, Table 3 shows the total debts to total assets ratio shows that debt financed 54% of the assets in 2018, a decrease from 58% in 2018, which is a positive change as it's a lesser risk on the company (Johnson Controls, 2020). The long-term debt to total assets ratio shows that Johnson Controls' long-term debt financed 20% of the assets in 2018, a positive decline from 23% in 2017 (Johnson Controls, 2020). The debt-to-equity ratio shows the use of debt and equity as capital to finance the assets of a company (Brigham et al., 2020). In this case, the debt-to-equity ratio has decreased from 1,42 in 2017 to 1,17 in 2017. The decrease is good as it shows that the company depends less on debt and shareholder's equity (Brigham et al., 2020).

Table 3

Financial leverage ratio analysis

	2018	2017
Total debt to assets ratio	11250 + 15089 / 48797 = 0,54	11854 + 18452 / 51884 = 0,58
Long term debt to assets ratio,	9654/48797 = 0,20	11964/51884 = 0,23
Debt to equity ratio Total debt/ total shareholder’s equity	11250 + 15089 / 22458 = 1,17	11854 + 18452 / 21367 =1,42

Industry Regulations and How They Relate to Climate Change

In the USA, the Environmental Protection Agency (EPA) is the legislative body that regulates the HVAC industry regarding climate change issues. A primary concern has been refrigerants and what they emit into the atmosphere. Several legislations have been enacted over the years to regulate this concern, including removing R140A and R134a from use in chillers and air conditioners (U.S. Energy Information Administration, 2019). However, this mandate was challenged in court, and companies got a temporary reprieve as the court ruled in favor of the plaintiff (C. Forth, personal communication, June 9, 2021).

Individual states have also proactively put in place regulations that help control environmental pollution from HVAC organizations. For example, California has legislation that aims to reduce gas emissions by 40 percent (Department of Energy, 2017). Also, it requires new air conditioning equipment that is environmentally sustainable by 2023 (U.S. Energy Information Administration, 2019). California has been an early adopter of proactively managing regulations that impact climate change, and 24 other states within the United States are following in adopting these regulatory mandates (De Rubeis et al., 2020).

Question and Hypotheses

Maintaining Profitability While Mainstreaming Climate Change Sustainability Goals

There are many examples of organizations that have achieved profits while implementing climate change sustainability goals into their operations. Donato and Nascimento (2006) looked at one such company. Their study was a case study that looked at Natura, a Brazilian cosmetics company that emphasizes sustainability and profitability. The case study found that the organization has increased production by 25%, with a simultaneous decrease of 8.5 percent in power usage and 5% water usage through sound environmental practices such as recycling. In addition, the company's financial statements indicate that they are highly profitable and have grown into one of the largest cosmetics companies in Brazil and have also been able to expand on their customer base.

Montabon et al. (2015) focused on supply chain management practices within organizations. They argued that current supply chain management practices and theories focus

on benefitting climate change practices instead of focusing on sustainability first. They propose a new model called the ecologically dominant logic, which challenges the current sustainability logic by putting climate change issues first on social and environmental impact. Although their research covers topics theoretically, there is no evidence that these supply chain practices would lead to profitability if implemented. Therefore, people should evaluate the economic impact and create supply chain management practices that do not harm (Montabon et al., 2015).

Haanaes et al. (2013) argued that it is possible to reach profitability and still implement climate change issues while achieving profitability. They give the example of a farmer in Egypt who took up more ecologically friendly cotton farming and produced a high-end product. They also discuss a survey which analyzed 1,000 companies of different sizes and value and concluded that sustainability ended up breeding profitability across the board. However, they do note that profits come in the long run, so when taking up this approach, it is mainly about the end game.

The Value of Sustainability Initiatives

As mentioned by Haanaes *et al.* (2013), proactive sustainability initiatives lead to competitive advantage. For example, the farmer in Egypt created an elite product more elastic than conventional cotton by being proactive. It also has soft factor benefits such as good public perception from customers, resulting in good purchase decisions biased towards your product from customers. Being proactive also allows you to do research on the initiatives taken and be in a place to get discoveries that will enable you to cut costs in terms of production and other supply chain processes.

Should You Be an Early Adopter of Climate Change?

Being an early adopter has several advantages. Legislation on climate change issues will continue to be stricter (Anderson, 2020). Early adoption means that the organization is ahead of the curve. While competitors grapple with meeting new regulations, the organization would be a leader in the HVAC industry and would have already implemented work processes that comply or closer to compliance with new environmental laws.

Early adoption also leads to better work processes. Eweje (2020) highlighted that early adopters in the Japanese SME industry could benefit from early adoption. For example, the investment in clean energy had resulted in them cutting out inefficiencies in production, which meant they could produce the same product at a lower cost. Additionally, most of the participants in the study argued that early adoption had promoted innovation and allowed them to stay ahead of the competition.

Responsibility to Climate Change

Upcoming Regulations for 2023 Energy Efficiency in HVAC Equipment

Several regulations will affect HVAC equipment soon. The new requirements include SEER, an acronym for seasonal energy efficiency ratio, which is how cooling systems are measured. A higher SEER means the equipment being made meets the standards of energy efficiency. In addition, heat pumps have also been affected as they are required to have more heating efficiency, and this will be measured through the heating seasonal performance sector (U.S. Energy Information Administration, 2019). These new laws are expected to reduce carbon emissions and save customers billions in electricity bills (Department of Energy, 2017).

Risk and Return of Sustainability Initiatives

Cost Savings at Johnson Controls Wichita, KS Plant

Johnson Controls' Wichita plant, which manufactures residential HVAC equipment, is an example of a proactive climate sustainability change that also contributes to the company's profitability. The Wichita plant is completely powered by wind power, a renewable resource drawn from a nearby farm. This move helps reduce the carbon footprint and helps with profitability by saving $2.5 million in electricity over two years (Johnson Controls, 2021). In terms of transport and logistics, the organization also intends to use electric vehicles in its fleet to reduce its carbon footprint (Johnson Controls, 2021).

Honeywell Project Helps Improve Energy Efficiency in Newark, NJ

The city of Newark contracted Honeywell to improve energy efficiency. The project's main aim is to have upgraded infrastructure in seventeen buildings, which will help with energy savings. For example, energy savings will come by making the city's boiler plant more energy-efficient, lighting will be upgraded with more efficient LED bulbs, and HVAC systems will be upgraded to allow engineers to manage them centrally and, therefore, conserve energy (Honeywell, 2019).

Discussion

Positives of Early Adoption

One of the positives of early adoption is that there are profits in the long run. By adopting early, there is time and money that is invested into research. The research usually yields results and allows the organization to gain a competitive advantage over competitors (Grayson, 2011). Therefore, through early adoption, the organization will be able to have more efficient processes and maximize profit in the near future.

Another advantage of early adoption is customer perception. More and more customers have become environmentally conscious. When purchasing products that include HVAC systems, they consider the mechanisms put in place by a supplier to be environmentally conscious (Anderson, 2020). Early adoption would allow Johnson Controls to have a positive perception from customers and potential customers; it would positively influence purchase decisions and ensure that the customers on board have a higher chance of being retained.

Government regulation that is stricter on environmental pollution is inevitable. The changes in environmental law are coming in thick and fast. Early adoption helps the organization stay ahead of the curve and avoid potential massive fines. Even if they don't come in the United States, globally liberal governments are in power, and they want to cut out carbon emissions. Early adoption means that export markets remain viable for Johnson Controls, and they might even take up the market share of late adopters.

Negatives of Early Adoption

As articulated in an interview with the director of tech services,

" It is a more challenging decision in our business right now. The regulatory situation drives everything at the national or state levels. It's gotten worse because the frequency of changes from regulatory bodies (EPA, DOE, ASHRAE, IBC) has accelerated. Before this recent efficiency change, the last one was 2010. Before that, it was 1998. Before that, it was the 80s. The DOE has the mandate to review standards for efficiency every three years and take action every six." (B. Rocky, personal communication, June 3, 2021).

This means that early adoption due to rapid changes in the law might not be enough, and there will still be a need to make changes despite being early adopters.

Additionally, early adoption is capital intensive. The director goes on to say,

"Huge issue in responding to constant changes and shifting budget away from R&D to net new product design and resources to create next-generation products like coils or inverter drives. It's a continual balance across the industry because we need more engineers, more designers, and more test facilities to the cost of $1.5MM test rooms, and it's all the necessary capital to retool, expand, and pivot processes. It costs $3-4MM in the factory to update the process for handling a different refrigerant because you can't intermix. There will be a period where we have to build both to accommodate regional specs, both 454B for California, 410A for the rest of the country" (B. Rocky, personal communication, June 3, 2021).

This shows that the cost of early adoption will be hefty. Given that we are just coming out of a global pandemic, the organization is not strictly liquid. Additionally, a focus on proactively innovating strictly to accommodate changing regulatory requirements opens up the potential for disruption from outside the industry (C. Forth, personal communication, June 9, 2021).

Positives and Negatives of Late Followers

The positives of late followers include making use of research by early adopters. While organizations try their best to protect intellectual property, some of which can be protected, and

Johnson Controls could use this to their advantage. They could imitate technology and have saved money on the research they would have carried out if they had been early adopters.

Additionally, another positive of a late follower is that there is no need for massive investment now, so the company can recover from COVID-19 losses without worrying about additional expenses. This action will allow the organization to pay dividends for shareholders and be liquid enough to succeed in the future (Brigham et al., 2020).

Negatives of late followers come from customer perception. First, there is a risk of losing customers, as customers have become very conscious that there is a need for environmental protection. Additionally, even government contracts for sustainable climate development projects are not often given to late followers because they have not shown the requisite range to put in place mechanisms to implement environmental protection issues.

Conclusion

From the above discussed, Johnson Controls and other HVAC industry companies have to put climate change issues in their strategic planning (Johnson Controls, 2020). Regulations will only continue to be stricter. The literature reviewed and the financial statements also indicate that adopting early in climate change is the way to go. Business requires a balance of risk and reward, and while there might be challenges early days, there are massive amounts of money to be made in the long run. The threat comes at the price of being a leader in your field and gaining a competitive advantage over opponents. Historically, Johnson Controls has been a late follower on residential equipment and tends to be a mid-follower on commercial HVAC products (C. Yates, personal communication, June 8, 2021).

A primary challenge will be to innovate to meet regulatory standards while also managing product development to ensure that new consumers are not priced out of the market. We must adopt new technology that performs to meet environmental standards and energy efficiency improvements (C. Yates, personal communication, June 8, 2021).

However, the liquidity ratio at Johnson Controls indicates that the company is an excellent place to invest in clean energy, so there is no reason not to take on this undertaking.

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Corporate Response to Climate Change and Potential Regulations

by Garret O. Garness

Introduction to Climate Change

In this research paper, I will examine the topic of climate change and its relationship to Cintas Corporation. Climate change is certainly a subject matter that has received an exorbitant amount of attention lately, and it is widely debated on how to deal with the problem. Many argue that it is an issue that must be tackled by governments, while others point to the corporations and large companies. Nonetheless, we understand that climate change is occurring, and we have identified that one of the key causes of the issue is greenhouse gas pollution. The responsibility of corporations to reduce and eliminate these greenhouse gas emissions may be wise for corporations like Cintas to consider sooner rather than later, to be proactive if any future governmental regulations come down the pipe in years to come.

Currently, it is expected that the world climate increase will likely reach 1.5 degrees Celsius sometime between 2030 and 2052 (Rochlin, 2021). While the immediate effect of this global warming is up for debate, the truth remains that at some point we cannot continue this same course. Otherwise, the effects of our current greenhouse gas emissions may become irreversible. Therefore, economies around the globe have began to see many corporations and other businesses get on board with the creating an environmental policy for their businesses. While some are more stringent than others, it seems to be a step in the right direction.

In the future it is possible that future governmental and political regulations could force companies to track their carbon footprint to reduce greenhouse gas emissions. In fact, the European Union is already requiring cargo ship captains to monitor, track, and report their carbon emissions while entering European Union ports (Zaman, 2017). One innovation that has come from this regulation has been the institution of “smart ships” that allow for more efficient travel for ships and eliminates some level of human error (Zaman, 2017).

Environmental policies and regulations relating to greenhouse gas emissions may become the norm in the near future. The simple fact that legislation on the Green New Deal is even being debated in the United States is an indication that climate change is being taken seriously by governmental agencies. Despite the Green New Deal being a dramatic shift from current policy, it may resemble a future that businesses must adapt to. Having a proactive approach may be the best way for large corporations, like Cintas, to survive under these potentially new policies and regulations.

Introduction to Cintas Corporation

Cintas Corporation is a business that is headquartered out of Cincinnati, Ohio. They supply over one million businesses on an annual basis with products and services such as "corporate uniforms, entrance and logo mats, restroom supplies, fire protection products, promotional products, cleaning products, first aid and safety products, and training" (Cintas, 2020). I currently work at the Cintas location in Maple Grove, Minnesota. This location operates as a uniform and facility services rental location. The local production facility at this location operates as a laundering facility, which I will use as an example throughout this research paper. However, Cintas certainly has a much larger significant footprint in many other areas, considering the corporation has over 500 facilities in North America and over 40,000 employees overall (Cintas, 2020).

How Climate Change Applies to Cintas Corporation

Cintas Corporation used a total of 4.58 million gigajoules of energy in its 2020 fiscal year at its production facilities (Cintas, 2020). Of this energy, 79 percent of that energy was natural gas consumption. Cintas is acting towards reducing its total energy usage and natural gas consumption, but this is still a significant amount of energy and resources that can be reduced to lower its impact on climate change. As the CEO of Cintas, Scott Farmer once said, "Our company is dedicated to operating to the highest ethical and safety standards, creating a diverse and inclusive workplace, providing sustainable products and services, and caring for our communities. We're committed to doing the right thing and we're excited about the progress we believe we can make in the future" (Cintas, 2020).

Current Cintas Initiatives with Data and Analysis

Cintas clearly has a made a commitment to the climate change initiative in recent years. Between the 2019 and 2020 fiscal year Cintas reduced its overall energy consumption across all plants by 7.4 percent, despite having a 2.8 percent increase in laundry processed in the 2020

fiscal year (Cintas, 2020). They were able to achieve this by reducing the energy required to launder 100 pounds of product by 10% (Cintas, 2020). According to the Textile Rental Services Associate of America, this indicates that Cintas uses 30 percent less energy than the industry average.

Furthermore, through its marketing strategies Cintas has attempted to educate other businesses and create awareness about how they can become part of the solution to climate change. In 2016, Cintas put out a press release that described five easy steps to support the environment through cleaning. The steps described were the following:

1. "Ditching disposables in favor of reusable options,
2. Installing dilution control systems,
3. Switching to smarter paper towel dispensers,
4. Using matting to reduce the need to clean, and
5. Looking for products and services that support green building certifications" (Cintas, 2016).

All these initiatives in some way can help reduce waste, energy, and pollution which contribute to the climate change problem.

Additionally, Cintas is in the process of converting many of its production facilities' lighting to all LED light bulbs. In the facilities that have already made the transition, results are showing that the energy to produce lighting has been decreased by 50 percent (Cintas, 2020). New washers, boilers, steam tunnels and building heating systems are also being updated to provide more efficient energy solutions. For example, the Cintas location in Maple Grove, Minnesota, uses the washers' hot wastewater to heat its facility. This is a great example of using technological advances to reduce and reuse the amount of energy needed for a facility. According to the book, *The Business of Climate Change: Corporate Responses to Kyoto,* conserving energy in production, transportation and buildings is one of the top suggested methods for corporations to acclimate to the increased awareness on climate change (Begg, Van Der Woerd, & Levy, 2005).

Another initiative of Cintas is lowering the greenhouse gas emissions from its vehicles. Cintas does this in many ways. New technology in vehicles has increased fuel efficiency, which results in lower emissions per vehicle. At the Cintas plant in Maple Grove, they have invested in 24 new vehicles within the last 2 years (Beyer, 2021). With an estimated two miles per gallon

better fuel efficiency, the company has reduced its emissions and the fuel consumption by a significant amount. Overall, Cintas lowered its direct scope greenhouse gas emissions by 7.8 percent in the 2020 fiscal year (Cintas, 2020).

Other methods that Cintas is exploring to reduce vehicle emissions are alternative fuels and route optimization. Similar to the example of cargo ships tracking their emissions at European Union ports, Cintas has added “smart truck” vehicle trackers to their trucks. This allows for Cintas to monitor a vehicle’s path more carefully while servicing its customers. Ultimately, one of the goals of this new technology is to lead to a more optimized route for the vehicle, which means the truck will not be using as much fuel per trip. Cintas also encourages its drivers to turn off the vehicle while servicing each customer, rather than letting the truck idle. Again, this is another example of saving fuel and reducing emissions from each vehicle.

Continued Focus on Climate Change Initiatives

With so many current initiatives underway at Cintas to reduce greenhouse gas emission and other pollutants, why should a corporation continue to have such a strong focus on the climate change challenge? MarketLine recently conducted a SWOT analysis of Cintas. Two notable items listed as a threat to Cintas were current stringent regulations, and risk of environmental regulations (MarketLine, 2021). This is a significant concern for the corporation, especially considering President Biden recently announced that the United States has a goal of reducing greenhouse gas pollution in the United States by 50-52 percent in the year 2030 compared to levels recorded in 2005 (The White House, 2021). Such a large reduction in greenhouse gas emissions is considered to be a lofty goal that will require action from companies like Cintas for it to be achieved.

According to Wright and Nyberg in their 2017 publication in the Academy of Management Journal, businesses need to be at the forefront of the climate change movement, because they have the ability to create innovative ideas to decarbonize the economy and can have the biggest reduction in greenhouse gas emissions (Wright & Nyberg, 2017). Furthermore, they go on to suggest corporate initiatives are rarely long-lived because they deteriorate over time unless policy and regulations dictate the normal behavior of the business (Wright & Nyberg, 2017). If this theory holds true, this indicates that the United States government and other

authorities will likely create policies and regulates to monitor corporate behavior and their actions, or lack thereof, towards reducing emissions. If, and when, these stricter policies come into play, harsh penalties could be put into play for corporations that do not do their part in meeting expectations and reducing greenhouse gases and other pollutants.

While this can be a harsh reality for corporations, it is not all doom-and-gloom. According to the scholarly article, *Climate Change Regulation: Implications for business executives*, in the European Business Review corporations that are proactive in their climate change decisions can create a competitive advantage and create economic opportunities such as reducing costs in the long-term (Polonsky, Miles, & Grau, 2011). For Cintas, this is especially important considering the principal objective of the company is to (in-part) maximize the long-term value for our shareholders and working partners, which is instilled into the employees upon being hired by Cintas.

Identifying potential investments

There are many ways in which a corporation can reduce its impact on the environment to negate climate change. Some simple ways include the following:

1. “Measure and analyze greenhouse gas emissions,
2. Reduce energy consumption,
3. Try renewable energy,
4. Reduce waste,
5. Optimize employee transportation,
6. Choose greener infrastructure and equipment,
7. Choose sustainable suppliers,
8. Raise awareness among employees, clients, and stakeholders,
9. Promote environmentally friendly ways of working, and
10. Mobilize for the Climate Change Challenge” by urging climate change action by lawmakers (Fournier, 2017).

These ideas can all be related to a potential investment that Cintas may be considering continuing being a leader on the climate change front. In the next section, I will be analyzing a hypothetical project that Cintas is considering. The hypothetical project is a scenario in which the Cintas location in Maple Grove needs to replace five vehicles in its fleet. It is considering purchasing five EV trucks instead of five gas-fueled vehicles. The company wants to know if the investment will pay off financially considering the amount of money it will save on fuel costs, given that the EV vehicles are a larger initial investment.

Capital Budgeting Process for Potential Project

To determine if these projects should be accepted or rejected, I will be calculating the Net Present Value of each project. However, according to the book, *Corporate Finance: A focused approach (7th Edition),* the net present value of a project is one of the most common measures to determine if a company should move forward with a project (Ehrhardt & Brigham, 2020). Conversely, it is important to note that while these quantitative measures are important in the capital budgeting process, they should not be the sole criteria when determining the validity of a project or making a reject/accept decision (Ehrhardt & Brigham, 2020).

Analysis for Project #1

Project - Replacing 5 Gas-Fueled Vehicles with EV Vehicles	
Assumptions	
Vehicles drive 30,000 miles per year	
Cost of gas fuel is $3/gal	
Gas-fuel mileage is 10 mpg	
Cost of electricity for EV is $10/day	
250 driving days in a fiscal year	
Price of Gas-Fueled vehicle is $30,000/vehicle	
Price of EV vehicle is $100,000/vehicle	
EV and Gas-Fueled vehicle maintenance costs are equal	
EV and Gas-Fueled vehicle lifespans are equal at 10 years	
r=	6%

CALCULATIONS

Cost of GAS-FUELED Vehicle for the Year

	30,000	miles
÷	10	mpg
=	3000	gallons of gas per vehicle
	3000	gallons of gas per vehicle
x	5	vehicles
x	$3.00	per gallon of gas
=	$45,000	total fuel cost of 5 gas vehicles
	5	gas-fueled vehicles
	$30,000	price per vehicle
	$130,000	total cost of new gas-fueled vehicles

Initial Investment =	$130,000
Fuel Cost per Year =	$45,000

Cost of EV Vehicle for the Year

	250	driving days in a year per vehicle
x	$10	electricity charging per day per vehicle
x	5	vehicles
	$12,500	total electricity costs of 5 EV vehicles
	5	EV Vehicles
	$100,000	price per vehicle
	$500,000	total cost of new EV vehicles

Initial Investment =	$500,000
Electricity Cost per Year =	$12,500

ANALYSIS

Therefore, we know the initial investment of the EV vehicle is -$370,000 more than the gas-fueled vehicles because $130,000 - $500,000 = -$370,000.

We also know the cash flow is equal to $45,000 - $12,500 = $32,500 because we are saving that much money per year by using electric vehicles instead of gas fuel.

Inputs

Initial Cost and Expected Cash Flow

Year	0	1	2	3	4	5	6	7	8	9	10
Project EV (1)	-$370,000	$32,500	$32,500	$32,500	$32,500	$32,500	$32,500	$32,500	$32,500	$32,500	$32,500

NPV -$130,797.17

According to the Net Present Value of this Project, Cintas should not purchase the EV vehicles because the NPV is negative, meaning it is more financially responsible to purchase the gas-fueled vehicles.

However, now let's analyze the same scenario factoring in an additional $25,000 in new sales per year as a direct result of Cintas's switch to EV, because customers value this green initiative.

Inputs

Initial Cost and Expected Cash Flow

Year	0	1	2	3	4	5	6	7	8	9	10
Project EV (2)	-$370,000	$57,500	$57,500	$57,500	$57,500	$57,500	$57,500	$57,500	$57,500	$57,500	$57,500

NPV $53,205.01

According to the Net Present Value of this project incorporating projected new sales, the EV project should be undergone because the NPV is positive.

Conclusion

In conclusion, this research paper has uncovered the importance of battling climate change from a corporate perspective. With the potential for new regulations and policies coming from the United States' lawmakers, it is an important time for corporations to determine the actions they can take to be proactive to this possible change. If done correctly, the actions they take can not only be environmentally friendly, but also financially positive.

Using a hypothetical project for Cintas Corporation as an example, I have briefly presented a small step in the capital budgeting process that would help leaders decide on adding EV vehicles to their fleet. With greenhouse gas emissions from gas-fueled vehicles being one of the biggest concerns of climate change, this is a very real situation that managers and executives may be faced with in the future. However, as I have mentioned previously in this paper, there are several other corporate initiatives and decisions that can also impact climate change. Nonetheless, determining the Net Present Value for every project decision is just as vitally important as the hypothetical project that was presented.

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Recommended Climate Change Practices in Health Care

by Igor Seremet

Introduction

Climate change is commonly discussed in all modes of media, and it is gaining traction because it is a reality. While some politicians use climate change as the running platform for their political agenda without a genuine intent to take action, the business world is taking matters into its own hands. Businesses across the globe are innovating on how to reduce the impact of their organizations on the environment. They are responding to their customers' demand for sustainable practices and finding ways to remain profitable. Shareholders are also becomingly increasingly active on the issue. They call for better disclosure and transparency related to operational procedures and long-term planning related to climate change. For example, following investor pressure, oil giant Royal Dutch Shell set carbon emission goals and linked them to executive pay, effectively incentivizing executives to prioritize climate change as a part of the future business model (Hodge, 2019).

Climate risk awareness and adaptation across industries and organizations vary. Some organizations that are directly impacted by climate change tend to have a good understanding of the impact on their operations. For example, Pacific Gas & Electric Corp. (PG&E) filed for bankruptcy protection when it was linked to the deadly wildfires caused by the downed powerlines that ignited the nearby vegetation. The destruction of fires was compounded by the drought conditions caused by climate change (Hodge, 2019). Other organizations are taking a more aggressive, proactive approach raising awareness of climate change and causing shock in the stock market. Tesla, for example, recently announced that it would no longer accept Bitcoin payment for its vehicles, citing a sharp increase in energy usage trends caused by bitcoin mining. Bitcoin dropped $5,000 in value in the hour of trading following the announcement (Vetter, 2021).

Amazon Incorporated, a multinational e-commerce technology company, proves that organizations can be environmentally conscious and remain profitable. Amazon has purchased 100,000 vehicles from an electric vehicle startup Rivian to reach net-zero carbon emissions by 2040 by reducing delivery times from two-day to same-day. Jeff Bezos, the CEO of Amazon, stated that increasing the speed of deliveries decreases carbon emissions because same-day deliveries require local warehouses, therefore, eliminating the need for carbon-heavy planes (Howard, 2019). While counterintuitive at first, this novelty approach helps the environment and

Amazon's bottom line. By vertical integration, Amazon is increasing supply chain coordination and decreasing shipping costs.

According to Illya Azaroff, an associate professor in architecture at the City University of New York and founding co-chair of the Design for Risk and Reconstruction Committee, most companies still regard climate change risk as long-term risk. They are not taking action because they see it as a hindrance and a cost, not a value generator. Illya believes that "Climate risk is a long-term financial and operational risk that all organizations need to deal with--it cannot be ignored (Hodge, 2019, para. 28)." He suggests that all managers should look at the short- and long-term financial and risk benefits of being an "early adopter" (Hodge, 2019, para. 25).

Taking Illya Azaroff's advice, we look at the climate effects and risks at Mayo Clinic and propose two recommendations to reduce our organization's impact on climate change while gaining operational efficiencies. First, the paper estimates the Net Present Value (NPV) of a project to replace paper statements with electronic equivalents. The NPV shows that the interest payment savings from reduced Days Sales Outstanding (DSO) would be cash flow positive after the first two years. Second, it suggests a simple option to reduce power consumption of idle devices at Mayo's primary care clinics with the use of smart plugs.

Recommendation 1: Replace paper processing with digital equivalents

According to the United States Environmental Protection Agency (EPA) greenhouse reporting program report from 2019, the pulp and paper sector accounts for 35.2 million metric tons of carbon dioxide (CO2) emissions per year. The industry consists of facilities that manufacture market pulp which is the primary ingredient used to make paper and paper-related products. Facilities with pulping processes emit greenhouse gases from recovery units, lime kilns, and stationary combustion units. In addition, the facilities that produce paper and paper products from pulp emit CO2 from their manufacturing process, coating and laminating processes, printing, etc. Additional emissions result from landfills and waste treatment facilities. However, their effects are reported in the waste sector (GHGRP Emissions by GHG, 2020).

Mayo Clinic suffers from an overabundance of paperwork. Medical organizations use paper products in their everyday interactions with patients and business partners. They use paper for pamphlets, patient registration forms, front desk check-ins, medical records, billing,

insurance claims, etc. According to InstaMed's ninth annual Trends in Healthcare Payments Report, 90 percent of healthcare providers still use paper and manual processing for patient billing and collections (LaPointe, 2019).

Given Mayo Clinic's high reliance on paper, our organization is at risk of being impacted by the shortage of paper supply in the future. The supply shortage will drive up prices and affect all our processes, from patient care to administration. An excellent example of supply chain disruption driven by events caused by global warming is the case of Western Digital. After the 2011 flooding in Thailand, this hard-drive supplier had to cut its production by 40% sustaining $199 million losses due to lost sales. Reduced production and the supply chain issues affected the U.S. computer manufacturers, causing further shortages in the supply of electronics and driving up prices (Hodge, 2019). To mitigate the risk of paper supply shortage due to climate change, Mayo Clinic needs to completely replace all paper processes with digital equivalents.

Paper processing is expensive. The cost includes direct costs such as the paper, ink, printer devices, and the indirect cost such as the labor cost of preparing, sending, receiving, and processing mail. There are also hidden costs such as lost mail and lag time in sending and receiving mail correspondence, error correction, fraud risk, lost productivity, etc. According to the Research firm Sterling Commerce, the average cost of processing an individual paper invoice is between $12 and $30. Some firms narrow this gap to between $12.90 and $15 and some have it as high as $40 (Sverrisdóttir, 2020).

Paper use and processing are also environmentally immoral. In today's world of digital interactions and the internet-of-things, it is simply wasteful and irresponsible to continue to use paper when paper processing can be replaced with digital equivalents. As leaders, we need to initiate activities that remove all dependence on paper. This effort will result in a decrease in waste and greenhouse emissions. While it will require a capital expenditure initially, replacing paper will pay dividends in the long term. It will allow us to recoup our expenses in the form of administrative simplification and reduced revenue outstanding. It will also put us better positioned to advance and improve overall patient care and experience through data mining.

To determine the current value of the future cash flows resulting from gained efficiencies, we calculate the Net Present Value (NPV) of replacing paper for revenue cycle and billing activities. Similar analysis should be completed for each department with input from subject matter experts for their respective areas. For illustrational purposes, we assume that all manual

paper billing processes are replaced with a digital payment processing platform called InstaMed, which provides fully automated billing and payment collection services. The NPV estimate will consider the upfront one-time investment in the Document Management System (DMS) and staff training. It will also consider the annual costs of providing technology and internet access to the patients who do not have sufficient technology to receive statement notifications. The analysis will then offset the capital expenditure costs with the benefits that result from the complete conversion from paper to electronic invoicing to show a positive NPV after the first two years of the implementation.

Initial Investment

As required by the government and Mayo Clinic's compliance office, all documents and billing transactions must be retained for audit purposes for seven years, so our analysis will show the returns of the switch to digital over seven years. Since digital documents replace physical, there will be a cost of $1.30 per electronic document (Redard & Leicht, 2010). Storage is only one portion of this cost. The hardware, software, and IT hours required to protect, share, and manage the unstructured data are accounted into the total annual cost (Blanchard, 2018). Still, this storage cost is a decrease compared to the total storage and handling fees of $3.90 per printed document today (Redard & Leicht, 2010).

With 1,113,000 million patients per year and 123,000 hospital admissions with 4.8 average days of hospital stay, our organization sends approximately 25,730 hospital and 990,000 clinic statements per year, assuming our clinics operate 261 and hospital 365 days a year (Mayo Clinic, 2012). Let's consider that even the simplest of Evaluation and Management (E&M) clinic visits often require labs and other diagnostics procedures. We estimate $1,200 on average per clinic invoice, and $13,900 per hospital overnight stay. With an estimated 30 percent of the sum paid by the patient and with an average cost of manual paper invoicing of $13.95 and $3.50 for fully automated invoicing plus the 2.99 percent for payment processing per patient transaction (LaPointe, 2019), and the corresponding physical/digital storage costs, the switch to digital would result in an increase in annual costs to over current paper processes (see Appendix A for calculations).

Period(Year)	Additional cost of Electronic Statements
1	$539,893
2	$567,449
3	$596,483
4	$626,954
5	$658,985
6	$692,679
7	$728,017

The initial project investment includes a one-time cost of staff training to bill electronically for all services. To provide a conservative estimate, we assume that all 4,500 physicians and scientists (Mayo Clinic, 2012) provide patient care and bill for their services. This is an overestimation given that a portion of our providers works in a non-profit section supporting research activities and does not bill patients. Aside from physicians, an additional 1,150 staff, such as coders, revenue analysts, compliance officers, etc., are involved in billing activities. According to ATD Releases 2016 State of the Industry Report (2016), organizations spend an average of $1,252 on training and development activities per employee. The total cost of staff training is then $7,073,800. With an additional 50 percent of the training cost allocated for investments into a Document Management System (DMS) for interacting, searching, indexing, and retrieving digital records, the total first-year investment is $10,610,700 (see Appendix A for detailed calculation).

Providing Technology and Internet Access to Patients

According to the National Consumer Law Center (NCLC), consumers must have the right to receive statements in the manner that works for them. This means that patients have the right to choose between paper and electronic statements. NCLC states that paper versus electronic should be the result of free choice and not coercion (Wu and Saunders, 2016). This law poses a risk that we can never implement digital invoicing in full. However, this should not scare us from proceeding. This means that we must make electronic statements such an attractive option that our patients will always choose it over paper statements.

NCLC states that over 53 percent of Americans with less than a high school education and 55 percent of those 65 or older do not have a broadband internet connection at home. This

lack of Internet access prohibits them from receiving electronic statement notifications. NCLC argues that this digital exclusion will disproportionately harm these groups (Wu and Saunders, 2016). To remove this barrier, Mayo Clinic must provide the technology and internet access to our patients that need it. Mayo Clinic should provide an internet-enabled device to our patients, at our expense, so they have no reason to choose the paper option.

Annual Cost of Technology

On average, Mayo Clinic sees an increase of 5.1 percent of new patients per year (Commins, 2019). According to Wu and Saunders' report from 2016, approximately 55 percent of them do not have sufficient technology and Internet connection. With 3.14 people average family size in the United States (Statista, 2021), there are 9,943 families we must provide with an Internet device and Internet access. A simple internet-enabled device such as Amazon Kindle is currently $90 (Amazon.com, 2021). It is a one-time cost to us to gift it to our patients upon check-in for their visit. We can connect that device to the Internet by partnering with immerging satellite Internet providers and keeping it connected until the outstanding account balance reaches zero. With an average of 2.78 medical visits per year (Ashman et al., 2019) and 45 – 60 day Days Sales Outstanding (DSO) for the well-performing healthcare organizations (Evans, 2021), we would have a maximum of 139 days a year (about five months) of Internet connectivity per family. The key to delivering the Internet service would be to establish a flat fee per device that includes all connection fees and the ability to control the Internet service on and off remotely.

Reduction in Days Sales Outstanding (DSO)

One way to reduce DSO is to improve invoicing practices by reducing the time it takes to send out an invoice. "Automated invoicing solutions can make it, so your employees don't have to manually create each invoice, significantly speeding up the process" (Kubicki, 2021, para. 15). Reduced DSO improves cash flow. Most healthcare services are performed on credit; the patient doesn't pay upfront unless they are seen for an elective cosmetic procedure. The physician's time, equipment, lab work, supplies, etc., are all expenses until the institution recuperates that

money from the insurance or the patient. Automating invoices will improve DSO and, therefore, directly improve cash flows.

To calculate the potential benefits of reduced DSO, we consider interest payment savings. Assuming that we follow the healthcare industry average and reduce DSO by 14 days annually using electronic invoicing, our daily interest savings are $75,843 in the first year. After year four, we must maintain a minimum of three days of DSO due to built-in min-wait institutional policies. The min-days allow for any corrections in the documentation and the corresponding charge capture before a statement can be created. For comparison purposes, our model also assumes a 1-day annual reduction in DSO for paper interactions even though that's not likely, but it provides a level of buffer by providing a more conservative estimate.

Offsetting the annual costs of technology by the DSO savings, we conclude that the project would be cash flow positive around year three (See Appendix B).

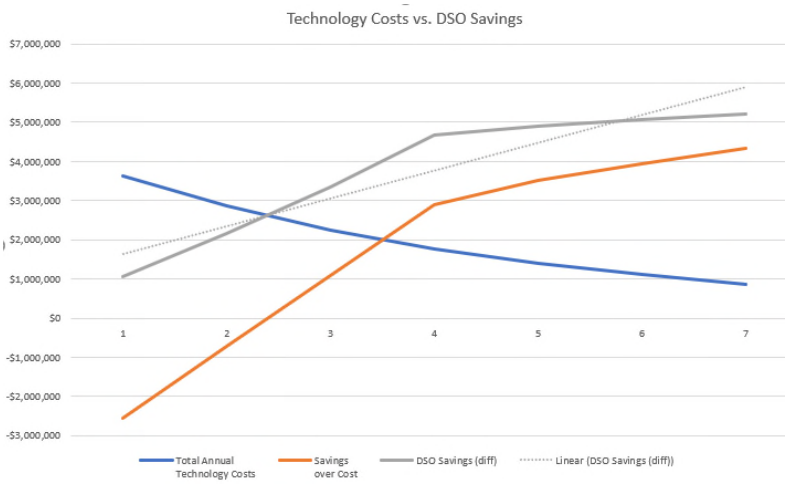


Figure 1: This diagram shows the effects of providing patients with technology and internet access to view billing notifications affects DSO. DSO savings exceed the technology costs around year three. See Appendix B for detailed calculation.

Administrative Simplification

Health Insurance Portability and Accountability Act (HIPAA) has adopted a series of administrative transaction standards for health organizations and health plans to communicate with one another electronically. These standards provide tangible benefits for patients by providing real-time insight into their financial liability before undergoing medical care. It helps patients understand their financial obligations upfront. The standards also provide health care organizations and health plans timely sharing of meaningful data while reducing paperwork and

promoting efficiency. These efficiencies translate to significant savings when organizations fully implement the standards (Amatayakul & Lazarus, 2016).

Mayo Clinic stands to save significantly by fully embracing all digital interactions and transmissions. This is only possible by eliminating all paper interactions. For example, administrative simplification could reduce our revenue cycle workforce by 15 percent, directly translating to savings and offsetting our project investments (Amatayakul & Lazarus, 2016). Administrative simplification will also reduce the greenhouse effects on the environment and the overall rising of healthcare costs.

Artificial Intelligence (AI)

As important as the savings are, the real value of all-digital processing is in the ability to mine the data. This cannot be done with paper processing; it is only possible with digitized records. With the use of AI, our organization will continue to research and advance patient care. Mayo Clinic will be able to individualize medical treatment; the providers will be able to tailor patient care and treatment based on patient's genetic makeup. AI will also prevent costly errors and find patterns and opportunities for additional revenue. For example, Liberty Mutual Group, a casualty insurer that implemented electronic invoicing with the law firms they work, discovered through AI mining that some attorneys bill them for more than 24 hours a day. They audited two of their case files and found $28,000 of overcharges due to a prohibited billing formula (Smunt & Sutcliffe, 2014). With the number of commercial and government insurers Mayo Clinic interacts with, compounded by the number and complexity of compliance and billing rules, the opportunity for errors with paper statements is significant. The errors cost us money, time, and resources spent to rebill. Using computers to automate error identification and correction will be a cost savings.

Net Present Value (NPV)

With the considerations mentioned above for the capital investments and the corresponding efficiencies gained from administrative simplification and reduction in DSO, the NPV for the project is positive over the seven-year period. A positive NPV indicates that the

total earnings represented in current dollars exceed the project's anticipated cost (See Appendix A). Therefore, the initial investment of replacing paper for billing and invoicing would be profitable and environmentally conscientious in the long term.

Discount rate	6.00%		
Period (Year)	Future Free Cash Flows (FFCF)	Present Value (PV) Factor	Present Value Cash Flow
0	-$10,610,700.00		
1	-$2,027,381.46	0.943	-$1,912,624
2	-$140,940.12	0.890	-$125,436
3	$1,692,670.41	0.840	$1,421,199
4	$3,516,180.85	0.792	$2,785,145
5	$4,162,621.32	0.747	$3,110,553
6	$4,645,860.27	0.705	$3,275,148
7	$5,070,772.28	0.665	$3,372,353
		Sum of Discounted Cash Flows	$11,926,337.20
		Net Present Value (NPV)=	$1,315,637.20

Figure 2: Net Present Value (NPV) of paper replacement project with electronic equivalents for billing. See Appendix A for detailed information.

Recommendation 2: Reduce Power Consumption

With 1,668 million metric tons, the power plants are the highest contributors to CO2 emissions in the world (GHGRP Emissions by GHG, 2020). The power sector consists of facilities that produce electricity by primarily combusting fossil fuels. As demand for computing grows, so does the need for electricity. To reduce the impact on the environment, we need to adopt technologies across our organization that reduce the power consumption of computing devices.

Virtualization of Servers

One way to reduce power consumption is to virtualize all our physical servers. Server virtualization is splitting a physical server into multiple isolated servers with the use of a software application. A single physical server can host multiple servers, with each running its

operating system independently. With virtualization, we can eliminate the need for dedicated physical servers.

Virtualization reduces the costs of the acquisition and installation of physical servers. Because virtualization is powered by software, adding servers no longer requires purchasing of the hardware components and installation in our data centers. We can acquire an additional virtual machine partition almost instantaneously, saving time and money with a few clicks. It also allows for dynamic expansion of capacity based on the need. In a traditional physical server configuration, we pay for the hardware whether or not we use it. As a result, some physical servers only partially utilize their computing capacity. With virtualization, we can dynamically assign resources based on the need. This ability to scale up and scale down dynamically saves us money by maximizing computing capacity per dollar using a pay-per-use structure.

We no longer need our on-premise physical servers with server virtualization, thus decreasing electricity consumption and heat output. With virtualization, the University of California in Santa Cruz reduced the number of their server from 240 to 54. The remaining 54 servers are hosted on just eight physical machines. Their virtual environment behaves identically to their physical environment proving that there is no loss in operating capability. Their project reduced peak usage by 20 kilowatts and saved $22,000 in annual energy costs alone (University of California, Santa Cruz, 2007).

Limit Power Consumption with Smart Plugs

While virtualization should be our first choice where possible, we cannot virtualize all our devices. However, we must implement policies and technology to limit their power consumption. For example, our clinic devices, such as the desktop computers in our primary care and specialty offices, are utilized a part of the day. Let's say that our clinic hours are 6 AM to 6 PM. Then those devices are sitting dormant 12 hours a day. Adding weekends and holidays into consideration, the portion of unused time exceeds the time used. If powered on, these devices are unnecessarily wasting energy and contributing to global warming in the form of excess heat.

A simple way to address the problem is to train our providers to power off devices at the end of the day and turn them on at the start of the workday. A more comprehensive solution that eliminates dependency on human behavior is to implement a smart plug system. A smart plug is

a device that plugs into any standard outlet transforming it into a smart outlet. What makes it smart is that it can be controlled remotely over the computer network. With a local or enterprise-wide centrally controlled power consumption policy, we can utilize smart plugs to turn clinical devices on and off automatically using pre-defined rules.

Benefits of Centrally-Controlled Auto Start/Shutdown policy

For a desktop with an average power consumption of 100 watts and 12 hours of inactive use a day, our annual wasted energy cost amounts to $43.80, assuming $.10 per kilowatt-hour (How much power, 2021). Given a price of $24.99 for a smart plug, our return on investment (ROI) is a whopping 75% within the first year ($18.81/$24.99 x 100). Given the insignificant initial costs and return potential, we must immediately implement smart plugs in our clinic settings. They are an easy and inexpensive solution to help the environment and save us money.

The additional benefit of smart plugs is the added network security. A clinical device cannot be compromised if it is powered off. Therefore, smart plugs limit access to our devices, reducing the risk of blackhat vulnerabilities. As good stewards of our patient data, it is our responsibility to act ethically to minimize exposure risk where possible and smart plugs provide that benefit out of the box.

Risk

The risk of enterprise-wide fully automated use of smart plugs is the complexity of rules and exceptions needed to accurately and efficiently control shutdown and startup events. With our clinics located in three different states and the rules such as "*turn off at 6 PM*", our policy must account for three different time zones, at a minimum. The management of those rules then becomes more involved and costly. It requires that information technology (IT) professionals maintain them and, potentially, the input from the clinics' administration and operations staff to understand the rule exceptions and ensure accurate operations fully. This fine-tuning of rules will result in opportunity costs compared to the current outlets, which have no additional cost aside from the power used.

Some argue that smart plugs themselves can come with critical security issues that expose them to blackhat events. Theoretically, the hackers could seize control of the plug and therefore control the power of the device. While the risk is there, this does not leave us any more exposed than the current environment. Even if a hacker controls the plug, it does not immediately access the controlled device. Arguably, the risk is still lower given that a malicious attempt would provide access to only one device at a time, whereas the current environment leaves all powered devices exposed.

Conclusion

The world is still not doing enough to keep the global emission increase below the recommended levels; instead, the emission levels are rising. With the current trend, we will likely see more frequent extreme weather events resulting in significant impact to businesses resulting in affected supply chains, operations, and financial losses. In 2019, U.S. federal agencies issued a warning that predicted: "… the damage will knock as much as 10% off the size of the U.S. economy and result in specific costs of $141 billion from heat-related deaths, $118 billion from sea-level rise, and $32 billion from infrastructure damage" (Hodge, 2019, para. 4).

The time to act is now. We need to prioritize risk assessment of the impact of climate change on Mayo Clinic and take steps to adapt immediately. Energy conservation and green initiatives that limit greenhouse gas emissions must be part of our organization's long-term plan.

We can take small steps immediately, such as using smart plugs to control energy use by our clinical desktops, but we must also take bold steps forward and lead the healthcare industry by example. It will not happen magically; we need to invest our time, energy, and capital in bold, systemic changes. We must not see it as a cost but an opportunity to gain efficiencies, an opportunity to do the right thing for our children, our patients, and the planet. Every organization has a role to play to limit the effects of global warming. It is the right thing to do, both ethically and economically. We must do our part to get the climate change mitigation efforts back on track.

Appendix A

NPV input and Calculation

Variables and Input

Line item	Cost/Quantity
Patient responsibility (%)	30%
Total patients (per year)	1,113,000
Hospital Admissions Rate (count)	123,000
Hospital days of patient care	588,000
Average hospital stay (in days)	4.8

Hospital Admission Information	Cost/Quantity
Hospital days	365
Hospital Invoices (day)	70
Average hospital cost (per day)	$13,600.00
Patient responsibility (30%)	$4,080.00
Hospital Invoices (year)	25,730

Processing Costs (per invoice)	Cost/Quantity
Manual invoice cost	$13.95
Storage cost (manual)	$3.90
Automated invoice cost	$3.50
Per transaction cost (%)	2.99%
Storage cost (automated)	$1.30

Clinic Visits Information	Cost/Quantity
Clinic days (per year)	261
Clinic invoices (day)	3,793
Approximate invoice charges (E&M, labs...)	$1,200.00
Patient responsibility ($)	$360.00
Clinic invoices (year)	990,000

Cost of Employee Training		
Physicians & scientists	4,500	
Other clinical staff involved in billing	450	
Coders	300	
Revenue Cycle staff	300	
Miscellaneous admin	100	
Total staff invoved in Revenue Cycle activities		5,650
Cost of training (per employee)		$1,252.00
Total Training Cost		**$7,073,800.00**
Additional IT Infrastructure changes		**$3,536,900.00**
		$10,610,700.00

Paper vs. Electronic Statements - Cost vs. Savings

Period (Year)	Count of Clinic Invoices	Count of Hosptial Invoices	Cost of Paper Billing	Cost of Electronic Billing	Difference (change in Cost)	DSO Improvement	Overall Cost
1	990,000	25,730	$18,130,773	$18,670,666	$539,893.19	-$2,567,275	-$2,027,381
2	1,040,490	27,042	$19,055,446	$19,622,896	$567,449.42	-$708,390	-$140,940
3	1,093,555	28,422	$20,027,289	$20,623,772	$596,482.79	$1,096,188	$1,692,670
4	1,149,327	29,872	$21,048,702	$21,675,656	$626,953.90	$2,889,227	$3,516,181
5	1,207,943	31,396	$22,122,201	$22,781,186	$658,985.33	$3,503,636	$4,162,621
6	1,269,549	32,998	$23,250,464	$23,943,143	$692,679.10	$3,953,181	$4,645,860
7	1,334,296	34,681	$24,436,239	$25,164,256	$728,016.85	$4,342,755	$5,070,772

Net Present Value (NPV)

Discount rate	6.00%		
Period (Year)	Future Free Cash Flows (FFCF)	Present Value (PV) Factor	Present Value Cash Flow
0	-$10,610,700.00		
1	-$2,027,381.46	0.943	-$1,912,624
2	-$140,940.12	0.890	-$125,436
3	$1,692,670.41	0.840	$1,421,199
4	$3,516,180.85	0.792	$2,785,145
5	$4,162,621.32	0.747	$3,110,553
6	$4,645,860.27	0.705	$3,275,148
7	$5,070,772.28	0.665	$3,372,353
		Sum of Discounted Cash Flows	$11,926,337.20
		Net Present Value (NPV	$1,315,637.20

Appendix B
Annual Technology Costs vs. DSO Savings

Inputs - Technology Investments vs. DSO Savings

Per Family Technology Cost	
Amazon Kindle	$90.00
Internet service	$55.00
5 months of internet service	$275.00
Technology Cost reduction (annual)	25%
	$365.00

Patient/Family Counts	
Estimated new patient growth rate	5.10%
Annual interest rate	6.00%
Patients per year (first year)	1,113,000
New patients per year (first y ear)	56,763
% patients without Internet access	55%
People per family	3.14

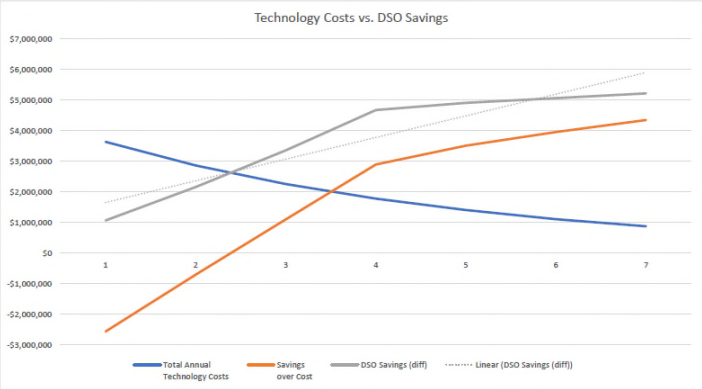
echnology Cost effects on Days Revenue Outstanding (DSO) Savings

Year	Count of Hospital Statements	Patient Responsibility Hospital Statements	Count of Clinic Statements	Patient responsibility Clinic Statements	Total Patient Responsibility
1	25,730	$104,978,400.00	990,000	$356,400,000.00	$461,378,400.00
2	27,043	$110,335,440.00	1,040,490	$374,576,400.00	$484,911,840.00
3	28,423	$115,965,840.00	1,093,555	$393,679,800.00	$509,645,640.00
4	29,873	$121,881,840.00	1,149,327	$413,757,720.00	$535,639,560.00
5	31,397	$128,099,760.00	1,207,943	$434,859,480.00	$562,959,240.00
6	32,999	$134,635,920.00	1,269,549	$457,037,640.00	$591,673,560.00
7	34,682	$141,502,560.00	1,334,296	$480,346,560.00	$621,849,120.00

Current DSO (days)	New DSO (days)	Daily Interest	Current DSO Cost	New DSO Cost	DSO Savings (diff)
60	46	$75,843	$4,550,581	$3,488,779	$1,061,802
59	32	$79,712	$4,702,981	$2,550,769	$2,152,211
58	18	$83,777	$4,859,087	$1,507,993	$3,351,095
57	4	$88,050	$5,018,869	$352,201	$4,666,668
56	3	$92,541	$5,182,310	$277,624	$4,904,686
55	3	$97,261	$5,349,377	$291,784	$5,057,593
54	3	$102,222	$5,519,976	$306,665	$5,213,310

Year	New Patients	Families w/o Technology	Technology Cost (per family)	Total Annual Technology Costs	Savings over Cost
1	56763	31220	$365.00	$3,629,077	-$2,567,275
2	59658	32812	$273.75	$2,860,601	-$708,390
3	62701	34486	$205.31	$2,254,907	$1,096,188
4	65899	36245	$153.98	$1,777,441	$2,889,227
5	69260	38093	$115.49	$1,401,050	$3,503,636
6	72793	40037	$86.62	$1,104,412	$3,953,181
7	76506	42079	$64.96	$870,555	$4,342,755

Visual Depiction of Breakeven Point



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Inequality in Corporate Finance

by Patrick Coghlan

Introduction

In the United States, wealth inequality is becoming a major issue of our time. As the wealthiest country in the world, the United States has seen the gap between the rich and the poor become the largest that is has been in decades with the majority of the wealth being held in the top 1% of people. This gap is further shown when looking at racial and social minorities, as well as amongst women. According to the Organization for Economic Co-operation and Development, growing inequality between 1990 to 2010 removed close to five percentage points off of cumulative GDP per capita. Similar declines in GDP were seen in other developed countries (Ingraham, 2018). This inequality further disrupts and ultimately slows down economic growth, thus suppressing the value of a business. Higher inequality lowers growth by depriving the ability of lower-income households to stay healthy and accumulate physical and human capital (Debla-Norris et al, 2015).

It is crucial to understand the history of wealth inequality in the United States and how it has grown over time. Much of people's wealth is tied up into the stock market, which in the 1980's saw a participation rate of about 20-30%. This wealth grew to around 50% during the 1990's due to many companies offering a 401(k) account to employees, accounting for much of the growth (Chien, 2020). While this growth has led to more Americans having stock investments and thus wealth growing, the other 50% of the population does not work in industries that offer a 401(k) or investment portfolio, thus unable to accumulate wealth. In order to help resolve growing wealth inequality, as well as increasing economic growth, it is in the best interest of corporate America to reflect the populations of the country and expand access to more individuals to participate in a growing and healthy economy.

Who Has the Wealth and Who is Left Behind?

When discussing wealth inequality, it is important to look at who has wealth and what those demographics are. In the United States alone, the top 10% of households held 70% of the country's wealth while the bottom 50% of households held 2% of wealth. This gap between the top 10% and that of the middle class is over 1,000%. This grows another 1,000% when looking

at the top 1% of earners (Yglesias, 2019). In 2019, middle class families had a median portfolio size of $13,000 and would have gained around $2,000 during that year's market. Families in wealthier groups had a medium of $170,000 in their market portfolios and gained roughly $27,000 during the year. Overall, 14% of individual income went to 1% of the wealthiest American households, a population that is disproportionately white (Gebeloff, 2021). This group of extremely wealthy individuals then tend to hoard their wealth in property assets, such as art, that counts towards their wealth, but is not taxed. Also, many old their wealth in offshore accounts in areas that do not have as many regulations and taxes, with an estimated 4% of US household net financial wealth, or 2% of total US wealth, was held in offshore tax havens, thus not paying back to help build the economy (Saez & Zucman, 2016).

Much of this inequality can be explained by simply looking at how possessing more wealth creates more opportunity to use that money to create more money. Much of this is done through investing into the stock market to produce greater returns on those investments. People living in lower socio-economic households do not have the opportunities to invest and grow their wealth, thus are unable to build similar economic security that the wealthy have. These lower socio-economic households often must then rely on debt in order to get by and after debt payments, they then must spend their remaining income on items that do not increase wealth (Cingano, 2014). By creating larger poor and middle class, communities have a much harder time in reinvesting taxes to help build up the communities. Many of these communities have less investments in ensuring higher quality education, resulting in community members needing to take more debt to obtain more quality education in order to justify higher incomes. This under investment in education can lead to poor children ending up in lower-quality schools, thus less able to go to college and achieve social mobility, leading to lower labor productivity (Debla-Norris et al, 2015).

Inequality by Gender

In the United States, the U.S. Census Report shows that the medium full-time salary for women is 82 cents for every dollar that a man makes. These numbers are not simply indicative of discrimination. Women are often more likely than men to consider factors other than pay, such as negotiating maternity leave, and due to a disproportionate expectation of family and childcare,

women are often unable to relocate for possibly higher paying positions (Daugherty, 2021). Due to this wealth inequality and women statistically earning less than their male counterparts, many women report hesitancy in investing, even in lower risk portfolios. Women tend to prefer putting their wealth into real estate, cash, or bonds and avoiding equities (Itkin, 2014). Women occasionally also see their earnings and pension contributions disrupted when they take time out of the workforce to raise children, thus slowing their ability to save money. Due to this, many women prioritize keeping their money safe and not taking risk with investments (Ryan, 2021).

Women also face other issues within the financial industry, such as discrimination in the work force, resulting in less women working in the stock market. Some women also report that the convoluted jargon of investments is a difficult barrier, and they also feel talked down to and patronized by investors and institutions. By focusing on attracting more female investors, asset managers would be able to gain more fees that come from higher-yielding assets. Many businesses have sought to cater to women's financial interests, like online investment app, Robinhood, who has made it their mission to "democratize" the industry, attracting more women in merely months than many traditional brokerages have managed in years (Ryan, 2021).

Inequality by Race

Much like disparities amongst women in the financial sector, people in racial and ethnic minorities also are disproportionately underrepresented in the financial sector and also have less access to building wealth. When examining assets such as savings, investments, retirement and pensions, and homeownership, it is revealed that white families had eight times the wealth of black families and five times the wealth of Hispanic families. When looking at other racial communities, such as Asians, American Indians, and Native Hawaiians, data showed that they had less wealth than white families, but more than Hispanic and black families. Women in these communities hold less wealth than their white counterparts (Mollenkamp, 2021).

There are numerous reasons for this racial wealth gap. Income inequality has historically created this disparity, offering families in these racial and ethnic groups less opportunities to build their wealth through investments and property. While two-thirds of American's wealth comes from homeownership, the United States has a history of enacting policies that have limited or not allowed for minority groups from accessing housing and developing. African

Americans, who already have a disproportionately low share of the nation's wealth, also have much lower levels of assets.

One study examining racial inequality in wealth found that while African Americans they make up 14% of the population surveyed, they only accounted for 8% of 2019 income and 5% of the money in liquid assets and 2% of Wall Street holdings. Another reason is achieving a higher education has many barriers, particularly from communities that already have less access to wealth. The average college graduate earns nearly 75% more than the average high school graduate. Asian Americans have the highest graduation rates, at 74%, while 54% of Hispanics, 40% of African Americans, and 39% of American Indians achieve higher levels of education. This disproportionate graduation rate thus lowers the earning potential for people in these communities and thus do not allow them to invest and grow wealth (Mollenkamp, 2021).

Who Makes Up Corporate America?

By understanding who is disproportionately underrepresented in wealth, it is also worth looking at the demographics that shape corporate America. In 2019, there were only 33 women Fortune 500 CEOs, or only 6.6 %. At that time, there was only one woman of color among that list, as well as four other black and 11 Latino Fortune 500 CEOs. To further add to this inequality, roughly 80% of all board seats were filled by white executives (Beatty, 2019). While these statistics are disappointing, there has been an increasing push for corporations to add more diversity to their boards and executives.

Why Corporate America Should Enact Diversity and Inclusion Initiatives

While there have historically been efforts to have diversity on boards and represented in business, those initiatives often are not given enough attention to really increase diversity amongst a business. Women, racial, and social minorities are often tokenized and are selected from candidates who come from similar backgrounds to those already on the board and seen as a better "fit." This has reduced the effectiveness of bringing in diverse populations to help add new ideas and perspectives (Landaw, 2020). Over the past decade, and particularly the past few years, Corporations have been getting more push to include more diversity in their business from the

top down, as well as to focus their products on those who have disproportionately been ignored. By adding diverse populations to the board and leadership, corporations are able to improve upon cognitive diversity. This cognitive diversity on a board has been shown to significantly enhance the businesses overall performance, particularly when these diverse directors are added with professional backgrounds, skills, and perspectives in areas pertinent to a company's business or strategic plans that were previously lacking in the CEO and other directors. These diverse directors are able to share valuable insights and expand the board's understanding of the company and the strategic and operating issues it faces (Landaw, 2020).

Corporations can also build their own business by investing in recruiting diverse and underrepresented populations into other areas of their business as well. Through this recruitment these populations and investing in their workers, a company can reduce income inequality while also building a stronger company. By not doing so, a company can actually hurt their own growth, and the overall economy, but diminishing worker motivation and reducing the velocity of money. Since the 1970s, productivity has increased over 73%, while the inflation adjusted hourly worker pay has only risen about 11%, while CEO pay has increased by 1,000% (Hopp, 2016). This can lead many workers to not be motivated to work harder when they themselves do not see the benefits of that work, thus working under their potential.

Inequality also slows economic growth by reducing the velocity of money by shifting cash to people who tend to spend it more quickly. Middle and lower socio-economic status individuals have more of a focus stretching their income to get by and are not spending on other "luxury" items. With that, the more money given to a wealthy individual tends to then be saved and reduces the number of times that dollar will be spent in the economy (Hopp, 2016).

Through diversity and inclusion initiatives, companies can create many benefits for them by creating a stronger organizational culture. They are able to have a larger talent pool for recruiting, thus able to recruit the best talent. Two-thirds of job seekers report that they look into a company's commitment to diversity when looking to make employment decisions. As the work force shifts younger, there is more scrutiny amongst the workforce to what a company's policies and reputation are (Beckman, 2020).

Diverse companies also can strengthen their company by retaining their talent, thus reducing turnover and increasing institutional knowledge. Turnover related costs to find, hire, and train employees is incredibly costly with some reports estimating costs up to $10,000 to

replace a departing employee and $211,000 to replace an executive. Retaining talent has been tracked to show direct financial correlation due to higher job satisfaction. This leads to ‘virtuous cycle’ of retention, reduces spending on recruitment, improves in bottom line results, and leading to greater profitability (Beckman, 2020).

Finally, diversity tends to foster greater innovation, creative decision-making, and a willingness among employees to take risks and challenge the status quo. Teams that lack diversity are more likely to simply fall back on older solutions and failing to think outside the box.

How D&I Leads to Greater Stock Performance

In addition to the benefits of recruiting more diverse populations and investing in them, diversity and inclusion initiatives also can lead to greater stock performance for a company and increase their overall performance. In recent years, there has been more of a focus on corporate ethics and how corporations are ethically treating their employees. Human happiness and social progress is better served by bringing down wealth inequality, and also leads to more stable economies (Galbraith, 2012). This question, and scrutiny of how ethical businesses are, are also on the minds of potential investors who scrutinize companies on how they have incorporated gender, social, and racial diversity into their company. As wealth shifts to millennials, investors are seeking higher standards regarding diversity, pay, and overall employee satisfaction for potential companies to invest in. According to Morgan Stanley research in 2016, the more females in the workforce correlates with higher average returns. Their research looked at companies based on their metrics of gender diversity, the top third experience 2% higher average relative return than their peers. Over a six- year period, these gender diverse companies had a 1.1% annual better return on equity than firms with less diversity (American Banker, n.d).

Increased diversity among a business also allows a business to serve a more diverse customer base due to their employees being better able to relate and serve those customers, as of 2019, African American consumers have a buying power of $1.2 trillion with their buying decisions often influenced in the mainstream. A company that not only appeals to this market but shaped those choices from diversity from the top down, have seen higher profits. Similarly, the LGBTQ community has an estimated buying power of $917 billion and these consumers report

they pay higher attention to a company's commitment to diversity when deciding what brands to purchase, with three-quarters of LGBTQ buyers saying they have or are willing to switch to LGBTQ-friendly brands (Beckman, 2020).

Women also are often the key to a business's growth and success. Women account for 85% of all consumer purchases and determine 89% of decisions on bank accounts. With that in mind, women also report that they feel misunderstood by investment marketers and cite a lack of respect, poor advice, contradictory policies, and red tape as obstacles when dealing with financial institutions. It behooves companies to value these consumers and by having a workforce that reflects these communities and understands their needs, lifestyle, and culture, they can gain a competitive advantage (Beckman, 2020).

Recommendations and Conclusion

As discussed, there is a drastic and ultimately harmful inequality in wealth between the wealthiest 1% of Americans and the 90% the rest of the population. This inequality is even greater when looking at people of color and women. This inequality has led to a slowing of the United States, as well as global, economy and reduces the potential for growth that businesses could face. Governmental policies at both the state and federal level have been proposed to help alleviate the dramatic wealth gap, such as an annual 2% tax on wealth over $50 million and another 1% on wealth over a billion. This would eliminate loopholes, such as wealth held in art and real estate, with an estimated 75,000 households, or .1%, having to pay this tax. This would generate roughly $2.75 trillion over ten years (Saez & Zucman, 2016). While these types of policies are heavily debated amongst governments, businesses can take steps to diversity their companies from the CEO and board level all the way down. Businesses can recruit demographically diverse board and director candidates who have strong business backgrounds and represent communities regularly forgotten. This includes female candidates, candidates of color, and also candidates from other social minorities. Along with diversifying their business, companies should also incorporate regular diversity and inclusion trainings amongst all staff in order to foster a positive, safe, and productive work environment that allows for peak productivity and satisfaction.

By identifying communities regularly ignored, a company can also access communities with massive spending power and who seek brands that understand their needs and do not simply pander to them. By understanding those communities, companies can increase their sales revenue while also attracting new, more socially conscious investors. In an ever more competitive environment, these companies will be able to rise above competitors who fail to incorporate diversity and inclusion into their business while also contributing to the reduction of the wealth inequality gap.

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Correlation Between Income Inequality, Healthcare Inequality and How it Affects Business

by Laura Dykstal

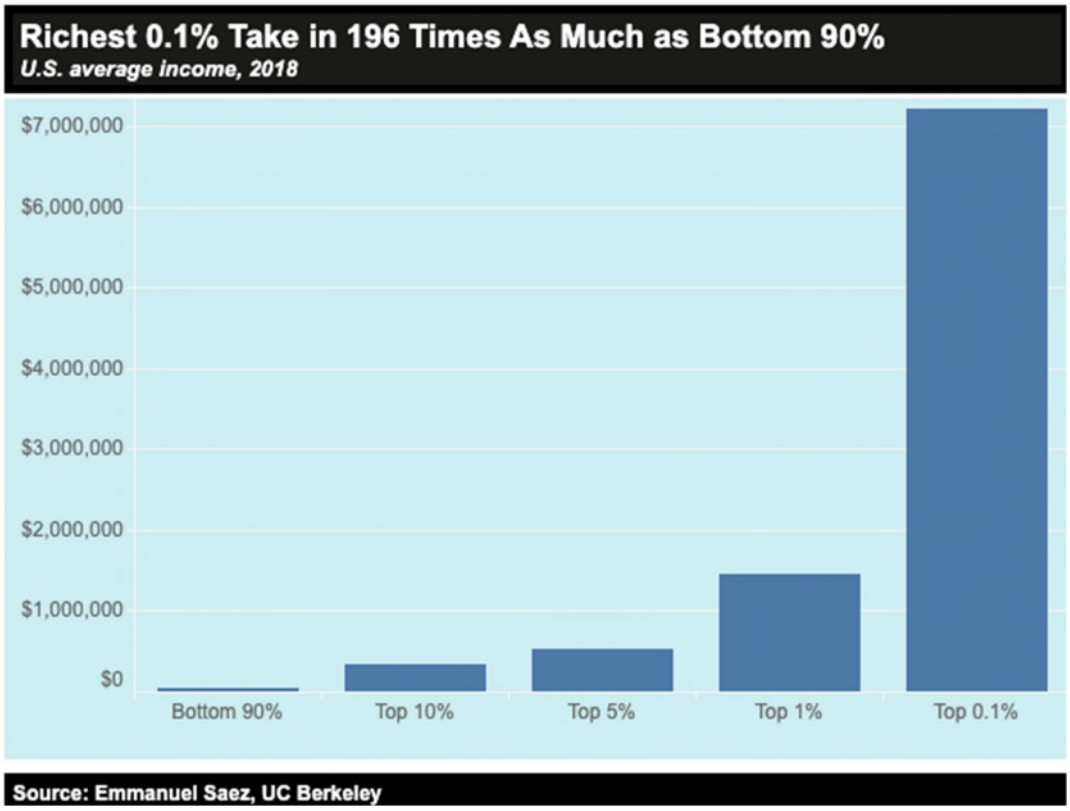
Introduction

Income inequality is defined as how unevenly income is distributed amongst a population and has been a problem in the United States for more than 30 years (Income Inequality, 2021). Research has shown that men and women in the top 1% of income distribution live from 10-15 years longer than those in the bottom 1% (Income Inequality, 2021). Why is this? In the United States, income inequality and health care inequality are correlated, and the higher income, the better your health will be (Amadeo, 2021).

Economists have formed methodologies for calculating the degree of income-related inequality in health care expenditures by using a summary index (Chen et al., 2004). However, it has been extremely challenging to assess the extent of change in inequality over time or variances amongst different subclasses of the population due to a lack of research in the area (Chen et al., 2004). The purpose of this paper is to look at how income inequality influences poor health outcomes, the differences between healthcare access and financing for low-income and high-income populations, how it affects business, and potential recommendations to improve income inequality.

Income Inequality and Poor Health Outcomes

Income is a broad term for the overall revenue an individual acquires. This can comprise savings interest, dividends from owned stock, sales profits, wages, and salaries (Income Inequality, 2021). However, income does not include the monetary value of possessions, such as how much a home is worth or other tangible or intangible assets. According to a data analysis graph from 2018 created by Emmanuel Saez at UC Berkeley shown below, income inequalities are so prominent that it shows the top 10% of wealthy Americans have more than nine times as much income as the bottom 90% of the population (Income Inequality, 2021).



(Income Inequality, 2021).

Based on some statistics between 2011 and 2013, 38% of families making less than $22,500 a year reported being in poor or adequate health, and 12% of families making more than $47,700 a year reported being in poor to fair health. Even if both populations were covered by health insurance, this still occurred (Amadeo, 2021). Overall, adults who live off a low income are three times more likely to end up with health care issues that interfere with daily life (Amadeo, 2021).

According to Frederick Zimmerman, a lead author and professor at UCLA Fielding School of Public Health, higher-income individuals' health remains steady (Neilson, 2019). At the same time, those in the lower-income bracket have continued to decline significantly over time (Neilson, 2019). A study was conducted to look at the various factors contributing to healthcare disparities, including race, gender, and income (Neilson, 2019). They found that income inequality was the most significant predictor of poor healthcare outcomes (Neilson, 2019). Nevertheless, health care alone only accounts for 10 to 20% (Neilson, 2019). Other things

such as living conditions and other societal and environmental factors make up health care disparities.

Fig. 1. Index of health and social problems in relation to income inequality in rich countries. Income inequality is measured by the ratio of incomes among the richest compared with the poorest 20% in each country. The index combines data on: life expectancy, mental illness, obesity, infant mortality, teenage births, homicides, imprisonment, educational attainment, distrust and social mobility. Raw scores for each variable were converted to z-scores and each country given its average z-score (Wilkinson and Pickett, 2009).

This shows the likelihood that the more unequal a population is in a specific area, the more likely there may be residential segregation amongst income inequality, leading to worse health. Overall, most studies provide prodigious confirmation that more considerable income inequality is correlated to worse health in a population. There is a positive linear correlation in the line graph above on income inequality and the index of health and social problems (Pickett et al., 2014).

Causes of Health Care Inequality

We've looked at statistics and data that have proved a correlation between health care inequalities and income inequality, but what are the reasons lower-income families have worse health? Healthcare inequality is a broad term defined as systematic variances in the health status

of various populations (Leonard, 2021). The reasons for healthcare inequality may include lack of access, poor health status, poor quality of care, and other various determinants of health.

Income inequality and healthcare inequality are often a double-edged sword because poor health can also lead to lower income. Sometimes one leads to another or vice versa. If individuals have a chronic illness, it is challenging for them to find employment or keep a steady income job. This may also include alcoholism and drug addiction (Amadeo, 2021). A 2013 study showed that high blood pressure affects 38.6% of the poorest fifth compared to 29.9% of the wealthiest fifth in the same research study (Amadeo, 2021). In addition, low-income families in poor health were 15% higher than more affluent families (Amadeo, 2021). Segregated neighborhoods with a much lower income status do not have accessibility to the best medical care at clinics, hospitals, or even the best medical technology, especially in rural locations (Amadeo, 2021).

Age is often a determinant of poor health because elderly individuals are more likely to be poor. For example, in 2016 alone, almost half of the people on Medicare were making less than $26,200, and 10% of them were below the poverty level (Amadeo, 2021). The other significant contributing factors to healthcare inequalities are the rising cost of health care and the general lack of access to health insurance, especially for those with lower incomes.

A study in 2018 discovered that medical expenses alone moved 7 million people beneath the federal poverty line, and 530,000 people declare medical bankruptcy each year (Amadeo, 2021). Collection agencies' number one job is to collect money for medical bills, and over 530,000 people declare medical bankruptcy every year (Amadeo, 2021). Even if those with low income do receive healthcare coverage, it is challenging to find adequate care in poor city neighborhoods (Pittsburgh Post-Gazette, 2014). This is alarming that healthcare is becoming increasingly unaffordable when those in the lower-income brackets are already struggling with poor health; this will only continue to contribute to declining health for those living in poverty.

Inequality in Health Insurance

The United States is the only developed country that relies on private health care insurance (Amadeo, 2021). As a result, individuals who work and have access to corporate-sponsored health care plans have much easier access to health care than individuals who do not

(Amadeo, 2021). It was estimated that in 2017 about 167 million people under the age of 65 receive corporate-sponsored healthcare (Rook, 2019). An estimated 70% of the uninsured are considered living in poverty (Simon, 2013). Even the working poor have a hard time qualifying for Medicaid, and health insurance companies continue to raise their deductibles. Between 2007 and 2017, medical deductibles doubled, and even employers have reduced the amount they pay, so the average employer-sponsored health plan deductibles have also risen 255% (Amadeo, 2021). Uninsured individuals are more likely to avoid going to clinics for preventative care measures, resulting in waiting until a medical condition gets much worse before getting any care, especially when it is an undetected illness (Simon, 2013).

The Affordable Care Act (ACA) was implemented to decrease the high number of uninsured Americans by increasing affordability and accessibility, financing medical care, and decreasing costs for individuals already insured (Simon, 2013). The ACA required that everyone above a certain income bracket needed to have health insurance. The Medicaid program was stretched to cover individuals who couldn't afford health insurance (Powell, 2019). The Supreme Court created a hurdle for citizens in 20 states because some states decided to opt out of the Medicaid expansion plan, leaving 4 million in poverty ineligible for coverage (Powell, 2019). Research has shown that Medicaid expansion in Oregon showed that adults that went on Medicaid coverage were more likely to seek outpatient treatment and purchase prescriptions and much less likely to have stress or depression than those that didn't receive coverage (Orgera et al., 2020).

Overall, the ACA was a good step in improving health care outcomes and inequality for low-income minority and ethnic groups, individuals with pre-existing health conditions, and it also helped increase access to healthcare coverage. Still, access to health insurance isn't the perfect solution for all healthcare inequality and access issues (Powell, 2019). For example, how does the lower-income population that is uninsured impact others and the economy? It costs the United States billions of dollars a year, raises healthcare costs in the country, increases crime, causes mental health issues, and decreases employed citizens. Under these circumstances, it also negatively affects tax revenue (Leonard, 2021). The economy and society need to recognize the adverse effects of income inequality on healthcare and business in general.

Income Inequalities & Effects on Business

Why should businesses care about income inequality? Because the rich and poor gap continues to grow, those with more wealth will be more able and willing to spend their money. In contrast, those with lower incomes will be inhibited, directly affecting businesses that sell products or services to consumers. Historically before the 1970s, households had an increase in purchasing power as the economy continued to expand, coinciding with the rise of individuals getting college educations (Kalish, 2011). This all flipped in the early 1970s when those with degrees ended up gaining larger incomes and fewer people were acquiring further education (Kalish, 2011). At the same time, those that were much less educated stayed at the same pay rate and skewed the income distribution in the United States. To put this in perspective, between 1949 and 1979, the top 20% had an increase in income of 99%, and from 1979 to 2003, they experienced another income increase of 45.7% (Kalish, 2011).

In comparison, those in the lower 20% saw their income increase by 116% between 1949 and 1979 and only a 3.5% increase between 1979 and 2003 (Kalish, 2011). Over time, the economy started emphasizing hiring more specific skilled labor versus unskilled labor outsourced to other countries to provide cheaper labor. In addition, technology and globalization have caused a need for a more skillful workforce in the United States (Kalish, 2011).

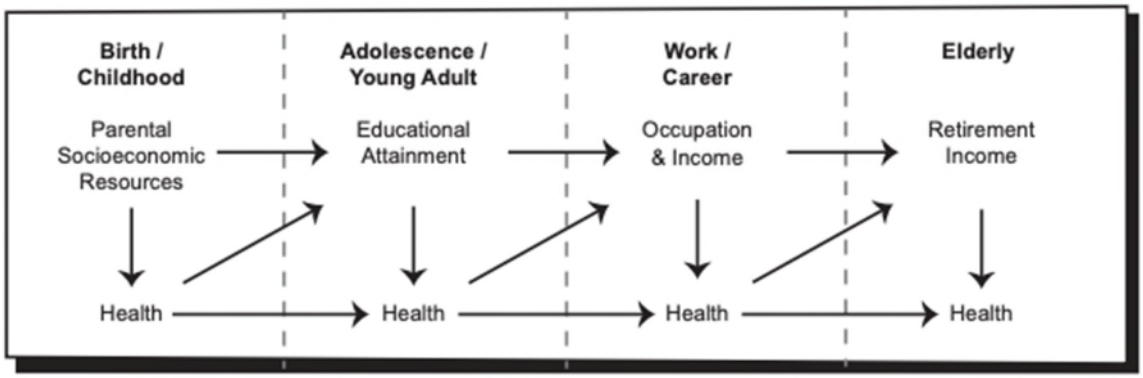
Even though the individuals with lower education faced stagnant pay, it didn't stop them from taking on debt. One example was the numerous housing market crash when banks were overly willing to hand out loans, amounting to a vast increase in consumer debt, the most significant percentage landing on lowest-income households (Kalish, 2011). Unfortunately, the outlook for the upcoming decade is that consumers will not take on considerable debt, and the income distribution gap will only get wider (Kalish, 2011). As a result, it is expected that even the middle-class will dissipate or maybe even disappear. We will be left with only lower and upper-income households, which will create difficulties in companies targeting consumers with the ability to pay. The middle-class elimination could result in a market share battle amongst competitors (Kalish, 2011). Therefore, companies will need to differentiate themselves even more. Firms will need to increase equity or seek other markets such as selling overseas. In that case, they may have difficulty keeping costs low and may need to raise prices on their products and services (Kalish, 2011).

Furthermore, suppose companies start to struggle with selling to current markets in the United States with a limited group of consumers able to spend money, namely high-income households. It could also harm stock prices and dividends to stockholders unless they choose to move to a new market and see how they do, but that would not be a guaranteed success, consequently riskier for investors. Now that we have gone over income inequality, its correlation to healthcare inequalities, and how it affects businesses, some potential actions can be taken to improve income inequalities, which could, in return, improve healthcare outcomes and the economy.

Recommendations to Help Improve Income Inequality

One of the biggest things that can be done to help with income inequality is starting at the root of the problem and creating policies to assist lower-income households. Many channels of socioeconomic status (SES) are independently related to health outcomes from birth to adulthood. For example, view the below diagram that visually displays the correlation with health and other various socioeconomic factors (Simon, 2013).

How SES and Health Affect Each Other over Time



Source: Stephanie Robert, 2012, "Social Policy Is Health Policy."

(Robert, 2012)

The first factor that could help with income inequality would be raising the minimum wage in the United States. Research has shown that higher wages would help almost 4.6 million of the lowest-paid workers get out of debt and put at least $2 billion back into the nation's

overall income (Powell, 2021). Second, tax reform can help increase earned income tax credit (EITC). As a result, it would provide more funding for single parents and pull more families with children out of poverty because it allows for refundable tax credits to workers that make lower wages (Powell, 2021). Third, financing education for early childhood programs and increasing employment and training programs for adults (Simon, 2013). Both are instrumental for success throughout an individual's lifetime because higher quality early education during childhood can make all the difference in increasing economic mobility, productivity, and a decrease in inequality (Powell, 2021). Fourth, access to employment and training programs can assist individuals with acquiring a job, providing access to affordable and safe housing for lower-income families, improving infrastructure, and reducing pollution (Powell, 2021). Lastly, ending residential segregation has been an enormous link between upward mobility for residents residing in isolated lower-income areas, including segregation by race (Powell, 2021). There are several different ways that income inequalities can be improved. Still, these social and economic policies could help with a reduction over time. It would be unrealistic to think one overarching solution will improve income inequality. Overall, there needs to be a combination of policy improvements at a federal, state, and local level to ensure that vital improvements occur nationwide.

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Impact of Gender Inequality on a Firms' Profitability

by Darcey L. Holloway

Introduction

Sustainability is most often defined as meeting the needs of the present without compromising the ability of future generations to meet theirs. It has three main pillars: economic, environmental, and social (Beattie, 2019). Most international and domestic public companies are being evaluated and rated on their environmental, social, and governance (ESG) performance by various third-party providers of reports and ratings (Huber, Comstock, Polk, & Wardwell, 2017). Institutional investors, asset managers, financial institutions and other stakeholders are increasingly relying on these reports and ratings to assess and measure company ESG performance over time and as compared to peers (Huber, Comstock, Polk, & Wardwell, 2017). This assessment and measurement often form the basis of informal and shareholder proposal-related investor engagement with companies on ESG matters (Huber, Comstock, Polk, & Wardwell, 2017).

Global sustainable investment now tops $30 trillion – up 68 percent since 2014 and tenfold since 2004. The acceleration has been driven by heightened social, governmental, and consumer attention on the broader impact of corporations, as well as by the investors and executives who realize that a strong ESG proposition can safeguard a company's long-term success (Henisz, Koller, & Nuttall, 2019). Evidence has shown that improving the status of women is critical to sustainable development and would fall under the pillar of social justice. But is there a business case supporting gender equality in the workplace? My research will focus on answering that question. I will explore the drivers of inequality and gender bias in practice. I will review scholarly research on gender equality and financial performance through a quantitative and qualitative lens, then look at strategies and results of select firm's efforts to combat gender inequality.

Drivers of Inequality

Compensation

Gender inequality in pay is so prevalent that Equal Pay Day was originated by the National Committee on Pay Equity (NCPE) in 1996 as a public awareness event to illustrate the

gap between men's and women's wages. March 24 symbolizes how far into the year women must work to earn what men earned in the previous year (United States Census Bureau, 2021). On average it is estimated that women make 82 cents for every $1 earned by men of all races. The gender wage gap is more significant for most women of color where Asian women make 87 cents, White women make 79 cents, Black women make 63 cents, American Indian women make 60 cents and Hispanic or Latino women make 55 cents per $1 earned by a man (Bleiweis, 2020). It has been found that the gap in earnings is not so much a disparity of equal pay for equal work but rather jobs dominated by women are paid less and the proverbial "glass ceiling" for professional women is real.

Typically gender pay gap explanations fall into one of three processes. First, woman may sort into lower paid jobs and firms than men, known as *allocative inequality* (Klein, Hammond, Hill, & Stice-Lusvardi, 2021). These are the jobs typically lower paying and dominated by women. Second, female-dominated jobs may pay less than male-dominated jobs, known as *valuative inequality*. Fundamentally, valuative inequality suggests despite the requisite skills and other pay-relevant factors being similar, jobs primarily held by women are devalued, and thus, paid less than jobs primarily held by men (Klein, Hammond, Hill, & Stice-Lusvardi, 2021). Third, women may receive lower pay than men in the same job at the same firm, known as *within-job pay inequality.* These gaps in pay raise for various reasons, as when women receive lower initial pay and smaller raises or because "employers consciously or unconsciously discount" the merits and performance of female workers (Klein, Hammond, Hill, & Stice-Lusvardi, 2021). One example of how *within-job pay inequality* occurs would include implications of women that do not negotiate their job offers.

One study of graduating MBA students found that half of the men had negotiated their job offers as compared to only one eighth of the women, a general pattern that has been replicated in survey studies of working adults and in laboratory experiments (Bowles, 2014). The theories investigated included negotiation skills and general confidence. What research found after repeated studies, is the social cost of negotiating for higher pay has been found to be greater for women than it is for men (Bowles, 2014). The research shows that when evaluators see women advocating for themselves in the form of pay negotiations, they are less inclined to want to work with them. The social cost of negotiating for pay is not significant for men, while it is significant for women (Bowles, 2014).

In the substantial literature on gender pay inequality, scholars often agree that allocative and valuative inequality continue to be major causes of the pay gap. Some scholars contend within-job pay inequality is small to non-existent and thus no longer an important cause of gender inequality (Klein, Hammond, Hill, & Stice-Lusvardi, 2021). I contend that the gap of equal pay for equal work has narrowed significantly however research shows this applies to traditional forms of pay and performance-based rewards. Research also shows that workers today are also being paid in the form of equity-based awards, where the value is tied to the employing organization's stock (Klein, Hammond, Hill, & Stice-Lusvardi, 2021). Some estimates suggest about 32 million U.S. workers own stock or options in their firms; moreover, such pay can substantially impact workers' wealth. Nonetheless, research on gender inequality in these awards is virtually unexplored (Klein, Hammond, Hill, & Stice-Lusvardi, 2021).

Wealth

Differences in income play a role in wealth inequality. One important factor contributing to different levels of wealth is people are paid different wages. There are several reasons why some people are paid millions while some merely earn minimum wage but one thing we know for sure is that gender does contribute to a difference in wages in society and hence economic inequality (Leung, 2015). One important aspect of wealth accumulation are retirement savings and the gap between men and women is large. According to the Transamerica Center for Retirement Studies, American women in 2017 held $42,000 in median retirement savings, compared to $123,000 for men. Both pension plan and Social Security payouts reflect in part past earnings (Inequality.org, 2021). In addition to a lower accumulation of wealth into retirement, women have longer life expectancies which necessitates women's savings stretch longer.

Domestic Burden

Finely, family gender roles are a driver of inequality. Working women have a double burden in that in addition to holding down a full-time job, they carry a greater responsibility of household chores and childcare. The women in the Workplace 2017 report found that more than

half of the women surveyed do all or most of the household work. And women with children and partners are 5.5 times more likely to do all or most of the household work than are men in the same family situation (Devillard, Hunt, & Lareina, 2018). Uneven care responsibilities help explain gender inequality impacts on women at work. Research has shown that gender inequality in unpaid care work is the missing link in the analysis related to gender gaps in labor outcomes such as labor force participation, wages, and job quality (Ferrant, Pesando, & Nowacka, 2014). But how do these drivers of inequality play out in practice?

Gender Bias in Practice

Hiring, Development, and Promotion

Women experience gender bias in both hiring and promotions in the workplace and are also impacted by unconscious bias. Research has shown that women face unique obstacles throughout the entire organizational entry-performance-promotion process that contribute to gender stratification in leadership (Samuelson, Levine, Barth, Wessel, & Grand, 2019). The cause of underrepresentation of women in promotion to leadership positions has been difficult to prove. One study has challenged the idea of "glass ceiling" for women which depicts a top-down barrier to advancement and argues that the obstacle is more of a "bottom-up" phenomenon. Whereas men tend to climb the career ladder, women more often must navigate a career "labyrinth" (Samuelson, Levine, Barth, Wessel, & Grand, 2019). The research argues that there are two notable barriers deserving intervention and those are leadership development and organizational entry.

Challenging job and project assignments have been used by organizations to develop employee leadership attributes. Research suggests these experiences have numerous positive impacts on employee learning, evaluations, and advancement (Samuelson, Levine, Barth, Wessel, & Grand, 2019). Diminished access to novel or challenging experiences involving high levels of responsibility (i.e., developmental opportunities) can negatively impact organizational decision-makers' perceptions of an employee's preparedness for leadership (Samuelson, Levine, Barth, Wessel, & Grand, 2019). For example, it has been found that although men and women reported receiving a similar number of developmental opportunities in their workplace, the prestige and visibility of the opportunities received by females were rated significantly lower

than those received by males (Samuelson, Levine, Barth, Wessel, & Grand, 2019). Without access to developmental growth opportunities not only is equal attainment of leadership preparedness inhibited but lagging skill attainment is real.

Women also report facing barriers to organizational entry leading to inequity in hiring. It has been argued that with a larger proportion of males in leadership positions that applicant pool and hires often remain mostly male (Samuelson, Levine, Barth, Wessel, & Grand, 2019). Selection biases may be another reason for disproportionate hiring rates of men and women (Samuelson, Levine, Barth, Wessel, & Grand, 2019). For instance, there is evidence that women are hired less often when selection criteria emphasize stereotypically masculine characteristics (which also tend to be associated with desired leadership qualities) and when men are making the hiring decision (Samuelson, Levine, Barth, Wessel, & Grand, 2019).

Another characteristic of the "ground-up" phenomenon is early exit from an organization due to negative experiences of being in the minority. This phenomenon has been referred to as tokenism. Tokens are members of a numerical social minority in which the numerically dominant members control and shape the culture of a group (Samuelson, Levine, Barth, Wessel, & Grand, 2019). Token women in work environments often perceive their organizational climate as inequitable to women, and report feeling less satisfied with their job, excluded from important networks, higher levels of job-related depression and lower self-esteem, leading to exit from the organization (Samuelson, Levine, Barth, Wessel, & Grand, 2019).

Unconscious Bias

Women face three interrelated biases that contribute male advantage in the workplace. First, male workers are seen as more capable and are likely to be seen as more "key" or critical to a firm's success and thus, more important to retain and develop (Klein, Hammond, Hill, & Stice-Lusvardi, 2021). Second, building on this idea, employees that are seen as more capable are also likely to be viewed as having a greater quantity and quality of job opportunities motivating employers to retain male workers through development, promotion, and compensation (Klein, Hammond, Hill, & Stice-Lusvardi, 2021). Third, views that women will not want to disrupt their community of friends and family may lead to perceptions that women are less willing to relocate for job opportunities than men (Klein, Hammond, Hill, & Stice-Lusvardi, 2021). These

unconscious biases along perception of women's social roles may suggest to managers that at some point women will take on caregiving duties leading to questions of a woman's commitment to their careers.

Covid

When discussing unconscious gender bias in practice we would be remiss not to mention the immediate and heavy toll the global pandemic has on women in the work force. As a female who was impacted by a global reorganization late fall of 2019, I have spent a frustrating 22 months looking for work. I have watched women of school age children juggle working at home, while caring for and tutoring their children. One in four women are considering leaving the workforce or downshifting their careers versus one in five men (McKinsey & Company, 2021)**.** While all women have been impacted, three major groups have experienced some of the largest challenges: working mothers, women in senior management positions, and Black women. This disparity came across as particularly stark with parents of kids under ten: the rate at which women in this group were considering leaving was ten percentage points higher than for men (McKinsey & Company, 2021). The question to be answered by this research is what impact does gender inequality have on a firm's financial performance if any?

Gender equality and a firm's financial performance

Quantitative data

Throughout my research I had difficulty in locating quantitative, academic studies that could demonstrate gender inequality at a firm, proving causation of negative financial performance. What I did find is a global study analyzing the macro impact of gender inequality on earnings. Apart from being the right thing to do, eliminating gender inequality makes economic sense. Given that gender inequality effects individuals throughout their life, economic costs are measured in terms of losses in human capital wealth, as opposed to annual losses in income or economic growth (The World Bank, 2018). In the World Bank body of research, they determined that wealth is the assets base that enables countries to produce income (Gross Domestic Product or GDP) (The World Bank, 2018). A country's wealth includes different types of capital. However, the largest component of countries' wealth typically resides in their people and if gender equality in earnings were achieved, countries could increase their human

capital wealth, and thereby their total wealth substantially (The World Bank, 2018). The research found that for the 141 countries included in the analysis, the loss of human capital wealth due to gender inequality is estimated at $160.2 trillion if we simply assume that women would earn as much as men, this is about twice the value of GDP globally (The World Bank, 2018).

The Peterson Institute for International Economics conducted a study that looked at the correlation of women in corporate leadership positions and improved firm performance. They found a positive correlation specifically in C-suite level and firm profitability. For example, a profitable firm at which 30 percent of leaders are women could expect to add more than 1 percentage point to its net margin compared with an otherwise similar firm with no female leaders (Noland, Moran, & Kotschwar, 2016)

In yet another US study, Fortune 500 companies with the highest representation of women on their top management teams experienced better financial performance on measures of ROE (35.1 percent higher) and Total Return to Shareholders (34 percent higher) than companies with the lowest women's representation (Catalyst.org, 2004) ROE is the return on equity and is a measure of financial performance calculated by dividing net income by shareholders' equity. Because shareholders' equity is equal to a company's assets minus its debt, ROE is considered the return on net assets (Fernando, 2021).

Gender considerations are also important for companies looking to tap into the female consumer base. As primary shoppers for households, they control as much as 70 percent of household purchases and $20 trillion in global consumer spending (Millennium Challenge Corporation, 2015). Ignoring this powerful consumer base can have steep negative consequences to the corporate bottom line (Millennium Challenge Corporation, 2015). Further, studies show that companies with the highest percentage of woman board directors outperform those with the least on return on invested capital by 26 percent and on return on sales by 16 percent (Millennium Challenge Corporation, 2015). According to the research group Catalyst, more diversity leads to more innovation, independence, and good governance, all of which help improve profits (Millennium Challenge Corporation, 2015). Dicks Sporting Goods improved performance after sitting a female CEO providing credence to this finding.

Qualitative Data

As a female, I took notice of a recent advertising campaign launched by Dick's. The Inside Moves campaign flashed images of a boardroom filled with females, planning, designing, speaking to women and girls' athletes. I needed to know more. On February 1, 2020, Dick's President, Lauren Hobarat was named CEO. Inside Moves featured eight C-Suite female executives and did not mince words. Dick's Sporting Goods are investing in women internally and championing women strategically, a winning combination. When looking at the historical performance of their stock I see that for the three years prior to Hobarat becoming CEO, Dicks was trading for an average of approximately $40 a share between the years 2017 to 2020. At the beginning of Q2 2020, share price has taken off trading at $95.19 a share at market close June 19, 2021. Yahoo Finance reports Dick's Sporting Goods shares gained 7.6% over the last one month. The company possesses a Momentum Score of A. Momentum scores are based on the rated companies one-year total returns. Dicks has performed strongly and consistently over the past 12 months and earned the top score.

Discussion

Improvements have been made regarding gender equality in the workforce, including board, C-Suite, and leadership positions however, much more must be done to combat the inequality that still exists. With the absence of causation of female C-suite and leadership to stock performance, we must look to the vast research available demonstrating a strong correlation regarding timing of new female leadership and improving and sustained stock performance at companies.

We have established that globally achieving gender equality in the workplace could deliver an estimated $160.2 trillion dollars into the GDP globally. Stronger economies, greater wealth, translates to improving and sustained stock performance of corporations. In addition, an emerging zeitgeist, ESG-oriented investing has experienced a meteoric rise. Global sustainable investment now tops $30 trillion-up 68 percent since 2014 and tenfold since 2004 (Henisz, Koller, & Nuttall, 2019). The acceleration has been driven by heightened social, governmental, and consumer attention on the broader impact of corporations, as well as by the investors and

executives who realize that a strong ESG proposition can safeguard a company's long-term success (Henisz, Koller, & Nuttall, 2019). ESG links to cash flow in five important ways: (1) facilitating top-line growth, (2) reducing costs, (3) minimizing regulatory and legal interventions, (4) increasing employee productivity, and (5) optimizing investment and capital expenditures (Henisz, Koller, & Nuttall, 2019).

If we look at which ESG links apply to gender inequality and profitability, all but reducing costs directly align to improvements found with gender equality. A strong ESG proposition can grow top-line growth by helping companies tap new markets. For example, in a recent, massive public-private infrastructure project in Long Beach, California, the for-profit companies selected to participate were screened based on their prior performance in sustainability (Henisz, Koller, & Nuttall, 2019). A stronger external-value proposition can enable companies to achieve greater strategic freedom, easing regulatory pressure (Henisz, Koller, & Nuttall, 2019). With more and more countries enacting laws that address gender inequality, adopting equitable promotion and pay practices for women in the workplace will avoid any enforcement barriers to business. Diversity programs have a positive impact on motivation and productivity. A European Commission study found that 60 percent of companies identified improvement in motivation and efficiency as a key benefit of diversity policies (European Commission, 2003). Finely, foresight flows to the bottom line, and leaning into the tailwinds of sustainability presents new opportunities to enhance investment returns (Henisz, Koller, & Nuttall, 2019).

Conclusion

Is there a business case supporting gender equality in the workplace? My research has uncovered strong correlation to a substantially improved financial performance with females acting in leadership roles on boards and in C-Suites. Gender equality in the workplace is not only the right and just way to conduct business, but it will also improve a firm's profitability.

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Business and Community Colleges: Partners to Create an Equitable Society

by Sunny J. Ainley

Introduction

Health and social disparities continue to grow in the U.S. side-by-side to income and wealth inequalities (Corak, 2013). Economic mobility—defined as the ability of individuals to increase their income—is key to a strong economy and thus a strong corporate climate. However, economic mobility has become more difficult in part due to rapidly advancing technology innovation and the resulting altered workforce needs, barriers to education and training opportunities, and persistent race and gender biases (Zessoules & Ajilore, 2018).

Although it may be argued that some social and financial inequality is a necessary evil for an incentivized and growing economy, research also shows that countries with more significant economic disparity experience greater social volatility and unrest (Keeley, 2015). Countries with fewer educational opportunities and investment in human capital tend to have larger gaps in income equality (Corak, 2013). An undereducated and poorly skilled labor force affects not only the poor but also society as a whole (Jimenez, 2020). Access to educational opportunities is foundational to both individual and collective economic prosperity (Corak, 2013). As the workforce development engine of our nation (EDC, 2011), can community colleges—partnered with business and industry—improve economic equality for individuals, corporations, and society?

Inequality

Inequality and disparity each have a slightly different definition, but both refer to an imbalance where someone or something has more than the other does. Research indicates certain racial groups experience higher income and wealth inequality, which are inextricably tied to health, educational, and employment disparities (OECD, 2018). This interdependency worsens as our global economy becomes less industrial and more knowledge-dependent (OECD, 2019). Lack of or inadequate education leads to lesser paying or "poor" employment opportunities,

lower incomes, less wealth accumulation, limited access to health services and other critical social services (Corak, 2013).

There are many significant issues related to discrimination and the lack of access to opportunities for people within certain racial and gender groups that contribute to inequality. However, this paper will focus on the relationship between income inequality, education, jobs, and economic prosperity.

Economic Inequality

A country's economic health influences the standard of living and well-being of its population. Economic strength creates societal prosperity in terms of income and wealth, employment prospects, opportunities for advancement, and other more socioeconomic considerations (Murphy et al., 2014). The presence of an ever-increasing rate of income inequality is challenging the simplistic view of prosperity and its impact on economic growth. There is evidence that extreme income and wealth disparities impede economic growth (Keeley, 2015). Global wealth is unequally distributed between North America, Europe, and all other countries. North America and Europe held 67% of total wealth while representing only 20% of the world's population as of 2015 (CrashCourse, 2015). The U.S. has experienced a seismic flip-flop of wealth distribution since the 1950s and continues to demonstrate a widening of the wage, income, and wealth gap. Midcentury, the wealthiest one percent earned only 13% of total U.S. income while the bottom 50% earned just over 20%. The 1990s saw a reversal of income distribution between the top one percent and lower 50% (Time, 2020), and as of 2015, the top 20% accounted for 83% of total national income (CrashCourse, 2015).

Income inequality creates a domino effect that affects an entire society, nation, and the globe regardless of individual wealth. COVID-19 is a contemporary example of how inequality relates to well-being. A recent study published in the Journal of Internal Medicine states that individuals with greater income inequality tended to have higher COVID-19 death rates (Oronce, 2020). Economies rely on a healthy and able workforce to thrive and grow (Keeley, 2015). An important contributing factor to the increasing income and wage gap is the growing digitization and automation of work activities and the need for more advanced, technical, and cognitive thinking abilities (OECD, 2018). Business and industry rely on innovation, quality, productivity,

and higher-level thinking skills to remain competitive in this environment (OECD, 2018). Poor business performance results in lower returns for shareholders and decreased employment opportunities for all. There is a greater need to invest in and strengthen a community ecosystem of schools and local employers that creates educational, training, and career opportunities and pathways to address this growing skills gap (Seramount, n.d.).

It will be equally important to embrace and enable underrepresented populations in these activities. A diverse workforce is a social and well-being concern, and an economic and competitive necessity as our businesses and marketplace globalize, demanding greater creativity of thought, diversity of perspective, and a workforce that reflects the consumer population (Seramount, n.d.). Diverse workplaces produce improved communication, teamwork, cooperation, and customer service results (Seramount, n.d.). Companies are now measuring business value for diversity and inclusion activities, realizing that there can be quantifiable positive business value (Seramount, n.d.).

Building an Ecosystem of Value

Education and skills development are necessary ingredients to improve an individual's income and social and economic mobility. They are also imperative to advance our nation and the world's human capital capabilities and narrow the ever-increasing skills gap. A critical stakeholder is in this formula is business and industry. Companies employ individuals and provide wages and income streams for the workforce. Compensation is directly related to an employee's qualifications, capabilities, working skills, and education attainment level. Income inequality in of itself does not directly suppress economic mobility, barriers to and lack of opportunities to resources and opportunity that support income growth and wealth accumulation do (Corak, 2013).

Community colleges and the business community can collaborate in ways that improve access to opportunities to education and increase a company's productivity, competitiveness, and bottom line. Collaborative education-corporation workforce programs such as tuition reimbursement, internship, and apprenticeship programs offer potential methods to upskill and educate historically underserved populations while improving a sponsoring corporation's competitiveness and expense levels.

Community Colleges

There are approximately 1,044 community colleges that serve more than 41% of all undergraduate students across the entire United States (AACC, n.d.). As indicated by their name, community colleges are educational institutions embedded within a community that serves the local region's population, providing 2-year degrees, credit certificates, and often, 2-4 year degree options (AACC, n.d.). They are also the workforce arm of our country, providing specialized, industry-relevant certifications, and customized dislocated and incumbent worker training programs in partnership with local businesses (EDC, 2016).

Community colleges attract lower-income and diverse, underrepresented populations due to the affordable and accessible education and training options available, compared to most 4-year educational institutions. Yearly tuition is 65% less expensive than that of a 4-year institution. More than half (53%) of the nation's community college student population identify as a race other than White, representing 3.6 million students in total. Many community college students come with additional life challenges: 68% work while attending school, 15% are single parents, 20% report having a disability, and an impressive 29% are first-generation college attendees (AACC, n.d.).

Public-Private Partnerships

Community colleges provide a concentrated pool of richly diverse and underrepresented citizens, all seeking educational opportunities and the prospect of a better life. Deeper development and connectivity to the business community would provide tremendous value to students in the form of real-life work experience and exposure to different careers and industries. Community colleges would gain a richer understanding of the employment, skills, and knowledge requirements to support a thriving economy. Finally, businesses would gain real financial value when engaging with and supporting students to diversify and feed their workforce pipeline (Clark, 2011). Tuition assistance, internships, and apprenticeships are three highly

impactful partnership programs that can enrich the entire community ecosystem of individuals, educational institutions, and businesses.

Partnership Programs

Tuition Assistance. Tuition assistance and reimbursement programs in the U.S. have increased by 26% since 1994. U.S. employers currently spent $177 billion on formal education, and the spending trend does not look to slow down anytime soon. With good reason. By offering tuition assistance benefits to current and potential employees, companies can realize true return on investment from lower turnover rates, increased retention and engagement, higher worker productivity, talent pipeline development, and an enhanced perception among consumers (Inside Higher Ed, 2018).

Walmart Inc. is one such example. Walmart employs more than 2.2 million workers and generates $520 billion in annual sales (Walmart, 2020). Many of its employees come from lower-income families with no formal post-secondary education (Inside Higher Ed, 2018). In 2016, the company launched a tuition assistance program that allows employees to register for and attend college courses for $1 a day. Soon after, it launched "Live Better U," an internal corporate college with outsourced, industry-savvy faculty, for the same low cost of $1 per day (Inside Higher Ed, 2018; Kline, 2019).

Guild Education currently organizes Walmart's college educational network, sourcing courses and degrees from colleges across the country for its employees. Using the Lumina Foundation's formula, the Guild calculated that for every company dollar invested in tuition reimbursement, employers receive $208 in return on investment (McKenzie, 2018). Additionally, Walmart has improved its public relations image and is creating an internal management pipeline with targeted degrees aligned to their specific business needs (Inside Higher Ed, 2018). The Guild works with other well-known corporations such as Chipotle, Lyft, Starbucks, and Taco Bell. Their clientele's employees account for 2.7 million American workers, all potential education seekers (Inside Higher Ed, 2018).

In 2016, the Lumina Foundation completed a study for Cigna, a multinational managed healthcare and insurance corporation, assessing the company's tuition reimbursement return on investment. Lumina calculated that the company decreased employee turnover and retention

costs by $1.8 million—a 129% return on investment. Employees who participated in the tuition reimbursement program were 10% more likely to be promoted, 8% more likely to be retained, and, for those in entry-level positions, earned a 57% higher incremental wage over three years (Lumina Foundation, 2016).

Internships. Company-sponsored internships provide students with a professional service experience that relates to or aligns with their career goals. Students are supervised and mentored by practicing professionals and often receive college credit for the experience (NACE, 2020). Internships provide a real-life learning lab where students can apply their coursework to work activities and roles. Internships also facilitate essential professional connections and expose students to a professional setting and common business practices, providing a smoother transition to the workforce (Hora, 2019). Research shows that almost 50% of jobs are found through family connections, and that wealthier families have access to more and higher-powered relationships than those of lower-income families (Corak, 2013). Community college-supported internships can level the playing field for lower-income, less connected individuals, bridging the gap between student and internship sponsor, and potential employer.

Companies that collaborate with community colleges to sponsor interns can produce real measurable value and innumerable intangible benefits. The Society for Human Resource Management (SHRM) estimates that one in three people quit their job annually (2019). Departure costs alone can add up to 33% to 150% of an employee's salary (SHRM, 2019: Lumina Foundation, 2016). More than 50% of all interns are hired upon program completion, and almost 42% of those employed stay five or more years (NACE, 2020). Internships offer a "try before you buy" approach for both the intern and the sponsor, eliminating recruitment efforts and improving retention and turnover rates, thus lowering company administrative costs. Program costs include intern wages, supervisory and recruitment costs, and other considerations (NACE, 2020).

Interns also support work that positively impacts the businesses while participating in a program (Samdahl, 2010), spending 50% of their program time on project management, analytical, and problem-solving work and 30% on logistical and communication activities (NACE, 2020). The Institute for Corporate Productivity's 2020 "ROI of Internship Programs" survey of 331 well-known and multi-industry companies noted five measurable benefits of internship programs: increased labor productivity, decreased workload for other employees,

enriched supervisory experience, enhanced company image, and improved employee retention as (2020). Intangible benefits included the addition of fresh ideas and perspectives, a diverse workforce pipeline, and deeper community goodwill (Samdahl, 2010).

Apprenticeships. Similar to internships, apprenticeships leverage the power of collaboration between business and industry and a potential workforce to provide contextualized training and development that feeds a company's employee pipeline and empowers an apprentice through hands-on learning that leads to good jobs (Zessoules & Ajilore, 2018). A good job not only provides livable wages, benefits, and advancement opportunities, it is also bred within an environment where high-quality employment can thrive and evolve as work changes (Jimenez, 2020).

The community college's role in apprenticeship programs is to recruit program candidates and often manage the training program's development and delivery. Training is frequently credit-based and funded by the state or federal government, providing a debt-free degree (DOL, n.d.c). Registered apprenticeship programs are administered and funded through the U.S. Department of Labor and are often managed at a state level. Apprenticeships differ from internships in formality, structure, and scope. A typical apprenticeship lasts between 1-3 years, requires a training plan that aligns to a targeted occupation, and leads to an industry-recognized certificate or certification (DOL, n.d.b).

Businesses that participate in apprenticeship programs reap similar returns on their investment as tuition assistance and internships through increased workforce productivity of highly-skilled employees, a more diverse workforce, and reduced recruitment, turnover, and retention costs (National Apprenticeship, n.d.; DOL, n.d.a). Retention rates top 91% after nine months of employment. Unlike tuition assistance and internship programs, apprenticeships are heavily subsidized by the federal government, which pays training and instructional costs, up to 75% of an apprentice's wages, supervisory costs, and even costs for recruitment, placement, career services, and supplies (DOL, n.d.b). The National Apprenticeship estimates that for every $1 invested, a company will receive $1.47 in return on investment, a 47% return (n.d.). As a publicly funded program, there must be societal value to justify the means. It is estimated that the public receives $28 of value for every $1 invested in the program (National Apprenticeship, n.d.).

The Business Case

Current and future workers seek out a community college education to develop their skills and gain knowledge in hopes of landing a good job, developing a career path, and getting financial and personal benefits. Community colleges serve a concentrated and richly diverse workforce pool, with 53% of their students representing minority populations and lower-income groups (AACC, 2020). The mission of a community college is to facilitate and support each student's educational goals, understanding that education is not the means to the end. Partnering with the business community to provide financial assistance, immersive work experience, and potential employment behooves a college and directly supports its goals and mission.

It is more difficult to convince the business community of the intrinsic value that workforce partnerships can bring when collaboration is not directly tied to business outcomes. Although community enrichment and social good are becoming a part of many companies' values and vision, the primary goal for a business is to produce goods and services that meet or exceed customer expectations and provide profits and gains for its employees and shareholders. However, this may be a shortsighted perspective. Lower individual income means less spending power for those individuals, which translates into a smaller market from which to draw consumers, and perpetuates intergenerational social immobility (Corak, 2013; Keeley, 2015). Supporting educational opportunities, work experiences, and career pathways lift up an individual's prospect of economic prosperity and that of the community and society, including business and industry.

Additionally, the U.S. labor market is in crisis and will continue to struggle as millions of baby boomers continue to leave the workforce, labor force participation rates hover at 1970's recession rates, and birth rates drop annually, hitting a 35-year low in 2019 with little to no end in sight (Hetrick et al., 2021). Human capital is at the heart of a business. Scarcity drives up costs. If the workforce is diminishing and the skill levels are inadequate, companies will struggle to stay competitive and even solvent. Joining forces with education to equip and empower students to participate in the workforce of tomorrow is socially responsible and makes good business sense. The cost of recruitment, retention, turnover, and training will only increase as the labor pool diminishes.

Companies like Walmart have glimpsed into the future, believe the business case, and have seen quantifiable business returns on its investment in employee education. As noted, before, for every dollar of tuition assistance invested, Walmart receives $208 in returns. The table below outlines theoretical return on investment to demonstrate the potential tuition assistance if 1% to 5% of Walmart's current employee base completed two years of community college and attained an associate degree.

Table 1

Investment in Employee (expense)		
		Cost of Associate's Degree ($3,770 x 2 = $7,540)
2020 employee base = 2.2 million Annual cost of tuition = $3,770	1% of employee base = 22,000 2% of employee base = 44,000 3% of employee base = 66,000 4% of employee base = 88,000 5% of employee base = 110,000	$165,880,000 $331,760,000 $497,640,000 $663,520,000 $829,400,000

Return on Investment (ROI)		
	Cost of Associate's Degree	Multiplied by Rate of Return = $208
1% of employee base = 22,000	$165,880,000	$34,503,040,000
2% of employee base = 44,000	$331,760,000	$69,006,080,000
3% of employee base = 66,000	$497,640,000	$103,509,120,000
4% of employee base = 88,000	$663,520,000	$138,012,160,000
5% of employee base = 110,000	$829,400,000	$172,515,200,000

Sources: AACC, 2021; Hora, 2019; SalaryList.com, n.d.; Walmart, 2020

Contractual expenses with the Guild are covered by a revenue share agreement between the participating colleges and the Guild (McKenzie, 2018). It is understood that there are administrative costs associated with operating these educational programs for Walmart. However, above the $208 return, Walmart experiences many significant intangible benefits that

are not easily quantifiable, such as community goodwill, thousands of brand ambassadors, and an improved public image (McKenzie, 2018). If 5% of Walmart's employees completed a 2-year degree on a part-time basis, say three years, Walmart's annualized return would be almost $58 billion. Per student return would amount to $1.57 million.

The Guild has set its sights on helping 31 million employees across the country access this tuition assistance program in partnership with other Fortune 1000 companies (McKenzie, 2018). That could produce significant returns for our nation's corporations.

The Institute for Corporate Productivity is a professional association centered on business optimization and productivity through human capital performance (Samdahl, 2010). The Institute surveyed 331 well-known companies regarding their experience with and value gained from sponsoring internships. Among the respondents was Seagate Technology, a data storage production and technology company (Seagate, 2020). As the skills gap continues to burgeon, high-tech corporations like Seagate will most certainly experience a dwindling pool and pipeline of talented, skilled, and work-ready employees. Both Walmart and Seagate's competitive livelihood depends on this talent supply, even though each has markedly different employee segments.

Similar to Walmart, potential collaboration with community colleges could produce real business value. Building a solid pipeline of advanced skilled and educated workers must start from a variety of sources, not exclusively at a bachelor's degree level. Community colleges empower longitudinal educational attainment from 2-4 year degree completion.

Demonstrating the power of workforce development and ROI for Seagate, Table 2 theorizes potential financial outcomes from a collaborative internship program for 1,000 interns.

Table 2

Cost of Turnover and Retention	
2020 employee base = 42,000 Average employee salary = $94,577 Estimated employee retention loss rate = 31% Administrative cost of turnover and retention = 1.5 times employee salary	Annual employee turnover/retention loss: 42,000 x .31 = 13,020 employees Annual turnover/retention expense: 13,020 x ($94,577 x 1.5) = $1.85 billion

Return on Investment (ROI)	
Internship pool = 1,000 Percentage of post-internship hire = 50% Intern retention rate, 1 year = 69% Intern retention rate, 5 + years = 42%	Annual employee turnover/retention loss: 42,000 x .31 = 13,020 employees Annual turnover/retention expense: 13,020 x ($94,577 x 1.5) = $1.85 billion Cost savings per hired/retained intern: (1000 x .50) x .69 = 345 retained 1 year (1000 x .50) x .42 = 210 retained 5 + years 345/13,020 = 2.65% 210/13,020 = 1.61% $1.8 billion x .0265 = $47,700,000 $1.8 billion x .0161 = $29,980,000

Sources: Agovino, 2019; Lumina Foundation, 2016; NACE, 2020; SalaryList.com, n.d.; Seagate, 2020

The stakes are high in the information technology sectors when it comes to recruiting, hiring, and retaining skilled employees. Internships, similar to apprenticeships, each resemble an employment experience (albeit shorter than an apprenticeship) and incur similar expenses, as would a normal new hire, including recruitment, salary, supervision and mentorship, training, and supplies and equipment costs (Mueller, 2020). Marginal internship costs compared to hiring and employment costs seem negligible. The Institute for Corporate Productivity's survey respondents noted other valuable qualitative business benefits such as increased team productivity due to decreased workload, enriched mentorship experience for supervisors, and brand improvement as a desirable company for which to work (Samdahl, 2010). Additional noted benefits were a fresh point of view and perspective, a more diverse and creative employee base, an organic, ongoing word-of-mouth recruitment team, community goodwill, and loyal, life-long customers (Samdahl, 2010). Given the net-zero expense factor, Seagate's potential net

return essentially amounts to almost $30 million per 1,000 sponsored intern cohort. Seagate currently generates $10.5 billion in revenues and profits of $1.46 billion. The ROI of internships would represent a decrease in administrative expenses and an increase in revenues.

Saving $30 million today may not represent the most impressive financial outcome for a corporation such as Seagate. However, for tomorrow and days to come, corporations countrywide and across the world will be hastily crunching numbers and analyzing the cost impact of a dried-up and inadequately skilled labor force. At the same time, production will suffer, innovation and ingenuity will stagnate, and businesses will scramble and vie for the same scarce pool of human capital. Costs will rise, margins will fall, and competitiveness will diminish. Human capital investments may be the future business priority, regardless of automation, robotics, and artificial intelligence (OECD, 2018).

Rising Tides Lifts All Boats

In a capitalistic economy, income and wealth among workers will vary widely. However, large inequalities in income and wealth significantly affect the workers and businesses, government, and society. Moreover, businesses are considerably impacted in several ways. For example, studies show that rising income and wealth inequality can be linked to declining business and economic growth due to barriers to educational opportunities, reduced demand for goods and services as the middle-class spending power weakens, and decreased outside investments as a result of increased social and political unrest (Keeley, 2015). Therefore, addressing income and wealth inequalities is imperative for long-term business and economic sustainability success.

Low-wage earners—those earning at the bottom of the income scale—are often under-skilled and lack any (or enough) post-high school education. This disparity is even more pronounced among certain racial and ethnic groups and people from low-income backgrounds due to a lack of equitable access to opportunities and intergenerational social immobility.

Education is one of the most effective ways to close the income and wealth gaps and increase the lowest earners' upward mobility. Community colleges exist for this very reason. Yet, businesses have long argued that they do not need to invest in post-secondary education for their workers and future workforce because the labor pool seemed sufficient. Unfortunately, today's

labor market is remarkably different. Up to 70% of U.S. businesses now report a talent shortage (Hetrick et al., 2021).

There is untapped potential for businesses to access the workers they will need while improving income inequality. That potential lies in collaborating with community colleges. Three programs have demonstrated a significant return on investment: tuition assistance, internships, and apprenticeships. For example, Walmart's tuition assistance program has shown to have a $208 return to Walmart for every dollar it invests. Internships and apprenticeships have also proven to produce returns through cost savings and access to a rich and talented employee pipeline.

Moreover, all programs have innumerable intangible benefits that can also contribute to the company's bottom line. Income and wealth equality cannot progress without an incentivized business community motivated to engage in educational and work-readiness programs. Without such, the economy suffers, growth stagnates or declines, and the environment in which companies do business becomes unprofitable. Companies can help alleviate income and wealth inequality AND improve their competitiveness, profitability, and market position.

It would be misleading to ignore the many challenges and barriers to operationalizing a collaborative ecosystem that embraces lower-income workers and the racially discriminated, leverages the strengths of community colleges, and encourages business and industry to help develop the workforce of the future with the understanding that there is financial and economic value in participation.

As are most educational institutions, community colleges are being asked to do more with less (OECD, 2017). Students, parents, and businesses expect increased student support services such as mental health resources and built-in pre-and post- wraparound services to ensure college and post-graduation work readiness. Many publicly funded educational institutions face regular budget cuts and rely on state or federal financial allocation to support student learning and outcomes. Fiscal policy review and advocacy for additional funding streams will be critical to ensure a robust and sustainable workforce partnership with business and industry.

Additionally, disparity of opportunity still exists for underrepresented students who wish to participate in tuition assistance, internship, and apprenticeship programs due to their socioeconomic situation. For example, of those wishing to participate in internships, 64% were

unable to due to current work requirements, an already heavy course load, and insufficient internship pay to supplant current wages (Hora, 2019).

The business community expects education to produce "shovel-ready" employees who are emotionally, socially, professionally, and technically prepared. However, until the workforce drought becomes a crisis, there may be little incentive to build a business case around collaborative activities discussed in this paper. Therefore, it is my hope that the business community will demonstrate a deeper commitment to engage in this community ecosystem by supporting not only students that align to a business's specific employment needs, but to help our colleges and communities scale at a universal level, providing outside resources, supportive mentorship, and immersive work experience for many.

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American Inequality: Paid Family Leave

Keeping Employees Engaged and Productive and the Firm Profitable

by Elliott Jenneman

Introduction and Perspective Background

Perspective Background

In free-market capitalist economies, the invisible hand of self-interest influences market forces to achieve equilibrium between supply and demand. Companies that can meet demand with quality products made from the least amount of resources and highest efficiency with the most perceived value will capture much of the market share. The capturing of market share usually equates to higher profits and more significant returns for equity holders. Equity holders employ managers to act as their agents to run the firm. It is the ultimate responsibility of management to execute the directives of firm ownership.

In 1970 Milton Friedman, arguably the most famous economist of the twentieth century, published his paper defining the Friedman Doctrine on Corporate Social Responsibility and argued that corporate managers have only one job, to make as much money as legally possible for the shareholders. Friedman said, “[A] corporate executive is an employee of the owners of the business. He has direct responsibility to his employers. That responsibility is to conduct the business in accordance with their desires, which generally will be to make as much money as possible while conforming to the basic rules of the society, both those embodied in law and those embodied in ethical custom” (Friedman, 1970, para. 4). The Friedman Doctrine has been an influential force in American business; however, there has been a shift from its rigid adherence to profit above all else since Freidman’s publication. For example, BlackRock, the $7 trillion asset management firm, committed to hastening sustainability investing (Warren, 2020), and Starbucks adopted paid family leave after investors submitted a proposal to the annual shareholder’s meeting (Redden, 2017). Although profits and positive investment returns are still the objectives, corporate leadership has an increased call to action in sustainability and equality from shareholder demands.

Introduction

In today's world of seemingly endless litigation, almost every contract has a multitude of fine print. The fine print explains the lesser-known terms and conditions of the agreement in detail, so all parties involved are informed of the obligations and benefits of the contract. Most people do not read all the fine print and can be surprised at the nuances of the agreement. The excitement or fear of seeing a positive pregnancy test for many women and couples can be significant. Having a baby also has lots of "fine print," and many parents are surprised when learning the lesser-known facts, obligations, and challenges of parenthood. Those who have children know what is coming, and first-time parents will experience a crash course in sleep deprivation, exhaustion, mood swings, and, for most in the United States, a substantial increase in financial pressure.

One of these lesser-known facts is that the United States is the only developed nation that does not have a national paid parental leave law on the books. Only eight countries, Marshall Islands, Micronesia, Nauru, Palau, Papua New Guinea, Suriname, Tonga, and the United States, lack such a policy (Sholar, n.d., para. 2). Excluding the United States, the combined Gross Domestic Product of the remaining seven countries is less than the net worth of Jeff Bezos, founder of Amazon.com (The World Bank, 2020b & Forbes, 2021). The inequality all Americans face by not having widespread paid parental leave policies could financially be a threat to families, communities, businesses, and the economy.

Research Intent and Organization

The average cost of having a child is about $10,000, according to Hoffower and Borden (2019). This cost is associated with only the hospital stay. It does not factor in other expenses like pre- and postnatal care, household purchases like cribs, clothes, diapers, formula, travel expenses, and lost wages. All of the costs mentioned are unavoidable, except for lost wages. Horowitz et al. (2020) of the Pew Research Center conducted a survey that indicated that most workers in the United States support paid family leave policies. From the data collected by Horowitz et al., workers are demanding access to paid family leave benefits, much like when

consumers demand a particular product or service. Can employers meet workers' demands by offering paid parental leave while still maximizing the returns of equity holders?

This paper will analyze and attempt to answer the question using the Friedman Doctrine as a backdrop. Paid family leave is evolving into one of "the basic rules of the society" that is "embodied in ethical custom" as attitudes about the family and work-life balance become more progressive. This paper is organized into two sections. The first section examines two key business financial areas related to paid family leave: costs associated with employee turnover and employer-sponsored health insurance costs. Second, analysis and discussion of the data are presented, followed by concluding remarks.

Research Data

Examination of Employee Retention and Turnover Costs

All businesses must bring a product or service to the market to earn a profit. It is the responsibility of the firm's sales and marketing departments to make known what the product or service the firm is attempting to sell. If a business has the world's best product, but no consumer knows about it, all the firm has is the world's best product or service and a negative bank account. Letting consumers know about a product or service is the first step to a profitable undertaking. Higher valued products and services charge a higher premium due to input values or scarcity. This concept is no different for hiring staff. The firm with the highest perceived value for workers will attract more talented people. A study by Deloitte (2016) found that 77 percent of workers stated that paid parental leave would sway their choice of employers and that millennials are more likely to value paid leave. Secondly, the survey found that half of employees would forego raises to access paid family leave. Like understanding the market conditions of the products a firm sells, management needs to know how to find the best available workers to meet the demands of shareholders.

Realized and Hidden Turnover Costs

Finding high-quality employment candidates can be difficult, but retaining current employees is just as taxing. Turnover costs can devastate a budget, profitability, and investor returns. The inability to retain employees burdens those who continue to work and can create negative company culture. Studies have shown that turnover costs can cost up to 1.2 to two times the exiting worker's annual salary. (Taylor, 1993, p. 20). Costs associated with employee turnover can be classified as realized and hidden costs. Realized costs directly relate to hiring like advertising the position, recruiter fees, training labor hours, pre-employment screenings, and hiring events. Hidden costs are not as obvious and include inefficiency with the outgoing employee, degraded relationships with customers and vendors, and performance reduction for overburdened workers that must fill the gap. The hidden costs can account for up to 80 percent of the overall expense of employee turnover. (Taylor, 1993, p. 20)

A case study by Philips (1990) found that the productivity of the departing employee would start to wane six weeks before the departure, sixty percent of the final month would see close to no productivity, and employment vacancies last around thirteen weeks. The replacement

Cost of Turnover by Type	Cost in 2021 Dollars
The inefficiency of the leaving employee	$14,985.00
The inefficiency of incoming employee	$17,760.00
The inefficiency of associated employees	$3,552.00
Vacant position losses- 6 weeks	$20,160.00
Average recruitment and direct hiring costs	$5,550.00
Total realized and hidden costs	$62,007.00
alary of an example worker	$33,300.00

Table 1: Cost of Turnover by Type. Taylor, 1993. (Converted to 2021 dollars)

employee would not reach maximum efficiency for 13.5 months, and productivity would be near minimum for nearly five months. The outgoing and incoming employee's inefficiency has a double effect on remaining employees that must make up the difference. Philips reports that managers spend about fourteen percent, and co-workers spend about ten percent of their time

assisting the new employee to reach minimum efficiency levels. Lastly, direct hiring costs average around $4000 per employee but can be higher in some areas. (Society for Human Resource Management, 2017). Table 1 shows each of the turnover costs reported by Taylor using key elements of Philips's study with a property management firm as an example in 2021 dollars.

Work-Life Balance

Work-life balance (WLB) is an area of focus among employers to reduce turnover and increase productivity. Jaharuddin and Zainol (2019) examined WLB and how it relates to employee engagement and turnover. Work-life balance means "an employee is achieving balance between work, home, and other life roles. [Work-life balance] is essential in achieving psychological, emotional and cognitive stability of employees, which promotes organizational effectiveness" (Jaharuddin and Zainol, 2019, p. 106). Their analysis established a link between work-life balance, job engagement, and employee turnover intention. They tested four hypotheses on WLB and job engagement and their respective effects on turnover intention:

- Hypothesis one: there is a positive relationship between WLB and job engagement.
- Hypothesis two: WLB is correlated with turnover intention.
- Hypothesis three: Job engagement is correlated with turnover intention.
- Hypothesis four: Job engagement acts as a mediating factor between work/life balance and turnover intention. (Jaharuddin and Zainol, 2019, p. 109)

They concluded that their finding supported all hypotheses except number four and indicated a correlated relationship between WLB and turnover and engagement and turnover (Sum of Squares 45.235, F-test Value 66.808). An F-test considers the relationship between two variables and their impact on an outcome. In this case, both WLB and engagement are significantly tied to turnover intention. When employees have more control in their professional and personal lives, they can balance both aspects more effectively. The more an employee is engaged with their employer, the less likely they are to develop turnover intentions. Because both WLB and job engagement have a positive relationship and are associated with lowering

turnover, the results cannot conclude an ordered consecutive relationship among WLB, job engagement, and turnover. In other words, job engagement is not a bridge between WLB and turnover. This implies that firms should mitigate disengagement and support WLB initiatives to see lower turnover rates.

From a management perspective, increasing worker productivity lowers variable costs of production. Bellet et al. (2019) concluded that happier employees result in higher customer satisfaction, are better at following guidelines set for them by management, work faster, and are more effective in reaching company goals. Management policy changes that create positive emotions, i.e., happiness, contentment, joy, purpose, etc., can increase production by 13 percent (Bellet et al., 2019, p. 29). For the average non-exempt worker, a 13 percent increase in production equates to 5.2 labor hours for a standard forty-hour workweek. Happy employees can produce the same amount as unhappy employees while avoiding overtime costs. Assuming a $20 per hour wage, employers who have less happy employees will spend around $156 extra per week per employee in overtime to match a firm's production with happier employees. Table 2 shows a side-by-side comparison of the overall cost difference between happy and less than happy employees for a 100-worker manufacturer of widgets related to production goals. The increase in production data is confirmed by Ernst & Young in a 2016 study of paid family leave. Their findings indicate that 80 percent of employers who offer paid family leave reported a positive increase in employee morale, and more than 70% reported an increase in productivity.

Labor and Per Unit Costs of Happy Versus Unhappy Employees			
100 workers Ave. $20/hour	Happy Employees		Unhappy Employees
Production quota units/week	4,000		4,000
Labor hour/week	4,000		4,520
Gross wages/week	$80,000.00		$95,600.00
Total difference $15,600.00		Per unit difference	$ 3.90

Table 2: Labor and Per Unit Costs of Happy & Unhappy Employees

General Mills Retention, Turnover, and Effectiveness

Companies with strong financial performance usually have strong employee satisfaction, engagement, high work-life balance, and retention rates. According to Jane Harkness (2018, p. 1) of the recruiting firm ForceBrands, General Mills ranks as one of the top places to work. It offers 20 weeks of paid parental leave for the birth parent and 12 weeks for the non-birth parent. The company has been around for almost 100 years, and its employee turnover rate is a meager three percent. General Mills employs about 35,000 full-time employees (General Mills, Inc. (GIS), 2021), and half of them have worked for the food manufacturer for at least a decade, and ten percent have over 20 years of service (Harkness, 2018, p.1).

A metric that can gauge how well a company utilizes its human capital is revenue per employee. General Mills generated over $500,000 in revenue per employee in the first quarter of 2021 and ranked first in its industry and fifth overall in revenue per employee (CIS Market, 2021b). The firm has consistently ranked high over the years in this analysis. It shows that the employees at General Mills are engaged, motivated, and perform at a high productivity level. Metrics investors use to measure how well management utilizes equity and assets are return on equity (ROE) and return on assets (ROA) ratios. General Mills has a five-year average ROE three times that of industry competitors at 30.91 percent, and its five-year average ROA of 7.19 percent is nearly twice that of competitors (CIS Market, 2021a). Management at General Mills effectively uses equity and assets, including human capital, to generate positive returns for shareholders while combating the inequality of paid family leave through its generous program. Although paid family leave is not the sole reason for asset and equity effectiveness, it is part of a broader benefits package that management uses to extract higher production from workers.

Diversity and Productivity

Paid family leave policies can help promote a more diverse workforce. Labor participation rates for women have decreased over the last two decades (Cannon et al., 2015). The lack of policies that support women's participation is a contributing factor (Blau & Kahn, 2013). Employees with family ties tend to stay anchored to their employer (Rodgers & Rodgers, 1989). Almost all women, 93 percent, who had access to paid leave after the birth of a child were employed with the same company one year postpartum versus women who did not have access to paid leave (Houser & Vartanian, 2012). Workplace diversity at all levels in an organization

leads to greater productivity. Productivity is the measure of efficiency and effectiveness. A process that is efficient but not effective or effective but not efficient is not productive. Sexena (2014) lists ways diversity boost productivity:

- ✓ Diversity stimulates innovation and productivity and creates a world-class culture that can outperform the competition.
- ✓ Multicultural organizations are found to be better at problem-solving, possess a better ability to extract expanded meanings, and are more likely to display multiple perspectives and interpretations in dealing with complex issues.
- ✓ Organizations employing a diverse workforce can supply a greater variety of solutions to problems in service, sourcing, and allocation of resources.
- ✓ Employees from diverse backgrounds bring individual talents and experiences in suggesting ideas that are flexible in adapting to fluctuating markets and customer demands (p. 83).
- ✓ A diverse collection of skills and experiences (e.g., languages, cultural understanding) allows a company to provide service to customers on a global basis.
- ✓ A diverse workforce that feels comfortable communicating varying points of view provides a larger pool of ideas and experiences.

Sexena (2014) points out that diversity brings out better innovation because of different perspectives. Diversity among employees promotes efficient and effective exchanges of ideas. Because paid family leave policies suggest lower turnover for employers, employees with family ties add unique problem-solving views, an assortment of talents and aid in meeting demand in a global marketplace. Relationship building in business transactions takes precedence over the lowest-cost approach, and more firms adopt strategic partnerships with suppliers and customers (Achilles, 2019). Firms that possess a workforce with varied backgrounds will achieve more success in creating and managing strategic alliances through relationship building. Paid family leave policies help facilitate a more diverse workforce that leads to higher productivity, improved internal and external relationships, and the tools to meet new challenges in the global marketplace. Ultimately paid family leave equates to higher profits for shareholders.

Employer-Sponsored Group Health Insurance Costs

Health care expenditures continue to rise in the United States, growing 4.6 percent in 2019. As a percentage of Gross Domestic Product, health care costs account for nearly 18 percent of total GDP (Centers for Medicare and Medicaid Services, 2020). Private employer-sponsored health insurance has become a standard benefits package for employees since the reconstruction period after World War II. It is required by law for employers with 50 or more employees by The Patient Protection and Affordable Care Act of 2010.

Historical Context

The genesis of employer-provided health insurance resulted from concerns of runaway wages during the war effort. Massive government spending along with many available workers drafted for the war effort caused inflation concerns. In 1942, Congress passed the Stabilization Act that limited how much an employer could raise wages (U.S. Congress, 1946). Companies needed to fill open positions to keep up with production but could not raise wages to attract workers. Instead, employer-sponsored health insurance was marketed as a benefit instead of higher wages. After much of the industrialized world was destroyed from World War II, the United States, virtually untouched by the war, became the economic powerhouse that drove the reconstruction effort. Demand for products was high, and due to the casualties of the war, American businesses were left in great need of workers. This need for workers puts companies in a weaker position when bargaining with labor unions. Nevertheless, the unions successfully negotiated more robust employer-sponsored health insurance that evolved into the plans that are familiar today.

Employer-Sponsored Group Health Insurance Structure

Employers usually contract a health insurance company to manage their employer-sponsored group health insurance benefit packages offered to employees. Since the Patient Protection and Affordable Care Act passage, employers with 50 or more workers must provide a health insurance plan that is affordable and meets minimum coverage requirements. Group plans

work by charging premiums for each employee based on the risk pool that the employee is in and at the level of coverage the employee selects. Employees can choose an individual or family plan or opt-out of the employer group plan. In March 2020, employers paid two-thirds of the total premiums for family plans that averaged over a $13,000 per annum contribution for family coverage (U.S. Bureau of Labor Statistics, 2020). As a general rule, premiums can increase yearly based on the number of claims an employer group makes.

Health Insurance Usage Reduction

Employers must consider the fiscal impact of policies and the effect of those policies on employees' mental, emotional, and physiological well-being. For example, paid family leave is documented to have physical and psychological benefits to mother and child. Parent-child bonding is improved (Knittle, 2017), children are generally healthier (Sparks, 2018), postpartum depression is better managed or negated, and children grow to have a better disposition, emotional intelligence, and cognitive ability (Van Niel et al., 2020). Firms that provide health insurance coverage that, in conjunction, enact healthier policies that aim to reduce the health plan claims will see more stable health insurance costs.

Mental and Emotional Health. Early parent and child bonding plays a crucial role in the foundational construct of the child's long-term emotional health. Knittel (2017) proposes that four out of ten infants do not develop robust bonds with their parents, which causes an emptiness in their psyche. Knittel equates it to going through life with only a cup half full, and the constant search for someone to fill it leads to destructive behaviors. Unconditional love and support from a parent are what cause the cup to be full. Van Niel et al. (2020) confirm that quality interactions between parents and children are linked to better emotional intelligence, properly secure attachments, and eventual higher academic performance. Improved personal life satisfaction will spill over into job performance, adding to the firm's overall productivity.

Depression is a serious public health challenge. About 80 percent of those with depression reported functional impairment, and over 25 percent have severe difficulties at work (Centers for Disease Control and Prevention, 2016). Van Niel et al. (2020) reviewed 280 published journal articles and reports from 1996 to 2019 and analyzed the physical, mental, and

economic effects of paid family leave on parents and children. They reported that in a paralleled grouped, controlled, and randomized study of almost 4000 women, participants that did not have access to paid family leave had higher overall maternal depression screening scores and increased severe depressive disorder diagnoses. For women during the postpartum period, 20 percent of the deaths are due to maternal suicide. Among those studied that had access to paid family leave, "every additional week of paid maternity leave was significantly associated with decreased odds of experiencing symptoms of postpartum depression. This effect persisted until they have reached more than 12 weeks" (Van Niel et al., 2020, p. 114). The Centers for Disease Control and Prevention (2016) estimates that depression causes 200 million lost workdays costing employers $17 to $44 billion annually.

Physiological Health. Breastfeeding an infant has been shown to have many short- and long-term benefits that can reduce employer-sponsored health insurance claims. It is linked to better overall health and reduces instances of medical care (Sparks, 2018). In California, where paid family leave is law, breastfeeding rates have increased by ten to twenty percent, and exclusive breastfeeding has increased three to five percent. There is also a significant benefit to breastfeeding for the mother as well. For each year a woman breastfeeds, her risk of breast cancer reduces 4.3 percent from findings of a sizeable 150,000-woman study (Van Deusen & Willets, 2018). This benefit is cumulative across multiple children. For instance, if a mother with three children breastfed each of them for one year, her likelihood of breast cancer would reduce by 12.9 percent.

Families with access to paid family leave have a significant reduction in the likelihood of rehospitalizations, 46 percent for infants and 51 percent for mothers, respectively (Van Niel et al., 2020). Hoffower and Borden (2019) have established that the average cost of childbirth is $10,000. Rehospitalization could be even higher depending on the reason, which would add another significant claim to an employer group plan adding to future costs. Vaccinations are a leading reason for the dramatic increase in improved public health since the latter half of the twentieth century. They account for the prevention of many deadly and debilitating childhood diseases, which reduces hospitalizations. Van Niel et al. (2020) found that vaccination rates increase in those with paid family leave. Vaccines prevent or lessen the severity of the illness,

which decreases the burden on the healthcare system, insurance companies, and indirectly firms that sponsor employee health insurance plans.

Analysis of the Data, Recommendations, and Conclusion

The aggregate information from research studies, business surveys, and government reports conclude that paid family leave benefits the families that use it and the firms that adopt it into their benefits package. Companies that offer paid family leave demonstrate to employees that work-life balance is a priority, reducing turnover intention. Similarly, by providing an income while an employee is on leave, employers foster engagement and a sense of gratitude in the employee. Employees who feel gratitude and appreciation will be more loyal to their employer. A Boston College Center for Work and Family (2019, p. 4) survey found that seventy-five percent of those polled "agree that they are more likely to remain with their current employer because their employer offered expanded leave" and "[thirty percent] of respondents reported an increase in loyalty to their employer." Employees that feel loyalty to their employer, happy with their positions, and are engaged will be better, more productive employees. The increased loyalty was more substantial in men (27%) than women (12%).

Considering the current fertility rate in the United States is 1.7 births per woman (The World Bank, 2020), and the cost of replacing workers that leave can be double the position's annual salary; an employee would have to have five to eight separate qualified 12-week family leave events to equal the turnover costs of replacing that employee. For an example, consider a mid-level position in a firm that pays an annual salary of $60,000, and the sum of the realized and hidden cost of replacement is figured to be 160% of the salary or $96,000 (the mean of the range of total costs as presented by Taylor). Thus, the replacement costs are equal to eighty-three weeks of pay of the original salary, which translates to just under seven 12-week segments of family leave.

Paying an employee for not working on the surface does not appear to be a good business practice. A paid family leave policy is akin to retained earnings on a balance sheet. It is something that is reinvested back as an asset for the firm. Except the reinvestment is human capital, something many firms say is their most valuable asset. Like any other investment, paid family leave does carry risks. Some employees might not value the policy as it might not pertain

to their situation or other work-related circumstances that cause production slowdown, poor morale, or an employment separation. Still, the aggregate data suggests that paid family leave is mutually beneficial for employees and employers. However, the risk seems minimal because the average fertility rate in the United States is less than two children per woman. Turnover costs are a $1 trillion fixable problem for U.S. employers (McFeely & Wigert, 2021). Ultimately, paid family leave provides a better work-life balance, which improves employee morale and happiness, leading to increases in production and policy adherence. An increase in workers' efficiency, effectiveness, and satisfaction lowers costs and raises profits, yielding greater returns for shareholders.

Adopting policies like paid family leave can positively impact employee diversification that sets the stage for increased production and strategic alliance goals. Paid parental leave policies allow for more women to stay in the workforce and allow men to boost their skills as caretakers (Boston College Center for Work & Family, 2019). Diversity in the workplace creates improved strategies that lead to higher revenues. Homogenous firm goals executed from a diverse platform broadens the swath of capturable markets, leading to improved returns to owners.

The health benefits from paid family leave are astonishing. The health data shows that employees with access to paid family leave are healthier and utilize insurance less. The lack of mental health care is a significant public health concern. Since postpartum depression is costly to the woman herself and her employer, billions of dollars are lost each year from depression. Firms that adopt paid family leave policies will combat mental health decline and concurrently improve productivity and mitigate the risk of lost production from depression symptoms. Because paid leave is associated with improved future academic performance for the new child, firms can invest in future talent by offering their parents paid family leave. Paid leave is linked to higher rates of breastfeeding and vaccinations, both of which play a prominent role in reducing health care expenditures. The cancer reduction benefit women receive by breastfeeding limits the risk of further lost production for employers and fewer claims on insurance policies.

Recommendations

Firms develop short- and long-term plans to market their products and services, support spending on research and development, and make investments to create the highest returns for equity holders. Comparatively, attracting the best-skilled workers available should be part of a business's overall plan to capture as much of the human capital market to create the highest returns for equity holders.

Unlike the German employment relationship style of structured cooperation through co-determination and the Japanese style of familial benevolence, the United States has an adversarial system based on a compromise between employer and employee. Employers hire the best available worker at the lowest cost, and employees agree to sell their time and talent to the employer with the highest perceived net benefit. If an imbalance occurs in this dynamic, employers or workers will adjust to create an equilibrium. For example, suppose unemployment is high, and a surplus of workers is in the market. In that case, employers can be more selective to capture higher talent at lower costs, and workers accept a lower perceived benefit for employment. Conversely, if worker availability decreases while production demands outpace capacity, an increase in labor is needed. Thus, employers either take lower-quality workers, allow opportunities to be missed, or raise the perceived benefit of employment to meet production demand.

Paid family leave aligns the firm with the rest of the world and creates a competitive edge in talent recruitment and retention by creating a higher perceived net benefit. Only 14 percent of workers have access to paid family leave (Stroman et al., 2017). Since more Millennials are entering the professional career market and Baby Boomers are retiring, demand for a paid policy will increase. As current economic conditions improve, firms can gain an advantage in talent acquisition and retention over competitors by offering a paid family leave policy as they fill positions lost due to the COVID-19 pandemic.

The data provided illuminates better overall health for employees and their families with paid family leave, lowering health insurance costs. As companies look for additional ways to manage healthcare premiums, enacting a paid family leave program could assist in keeping costs stable. In addition, paid family leave can be part of a more extensive wellness program that aids

in employee work-life balance. Employers have a vested interest in the health of workers because it leads to higher production.

Conclusion

Controlling costs is a core fundamental to profitability. Firms that choose to adopt paid family leave are executing a mutually beneficial policy for employees and shareholders. Managers have a responsibility to make as much money as legally possible for the business owners. When all is accounted for, paid family leave aligns well with the Friedman Doctrine because it increases returns for shareholders. From the aggregate data, firms that do not have a paid leave policy seem to violate that responsibility.

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Salary Inequality Among Genders Within the Information Technology Sector

by Corey Tedder

Gender Pay Inequality Within the Information Technology Industry

Many are aware of the unfortunate fact that given the same role and responsibilities within an organization, the salary and/or hourly rate of pay is vastly different between genders. Often time the male demographic, in comparison to its female demographic counterpart, earn a higher wage for the same role entailing the exact same responsibilities. The Information Technology (IT) industry is no different with many males working as IT professionals. The unfortunate concern of wage inequality is the topic to be explored with the goal of discussing the following: Would a change in strategy to analyze and compare employee demographic data as well as their corresponding skill set help to alleviate and better balance the unfortunate, yet large inequality in salary between that of males and females within the IT sector? What are the approaches the industry is currently using today and their corresponding pros and cons? Should we as executives always base salary for a new opportunity on their most recent salary in a similar position?

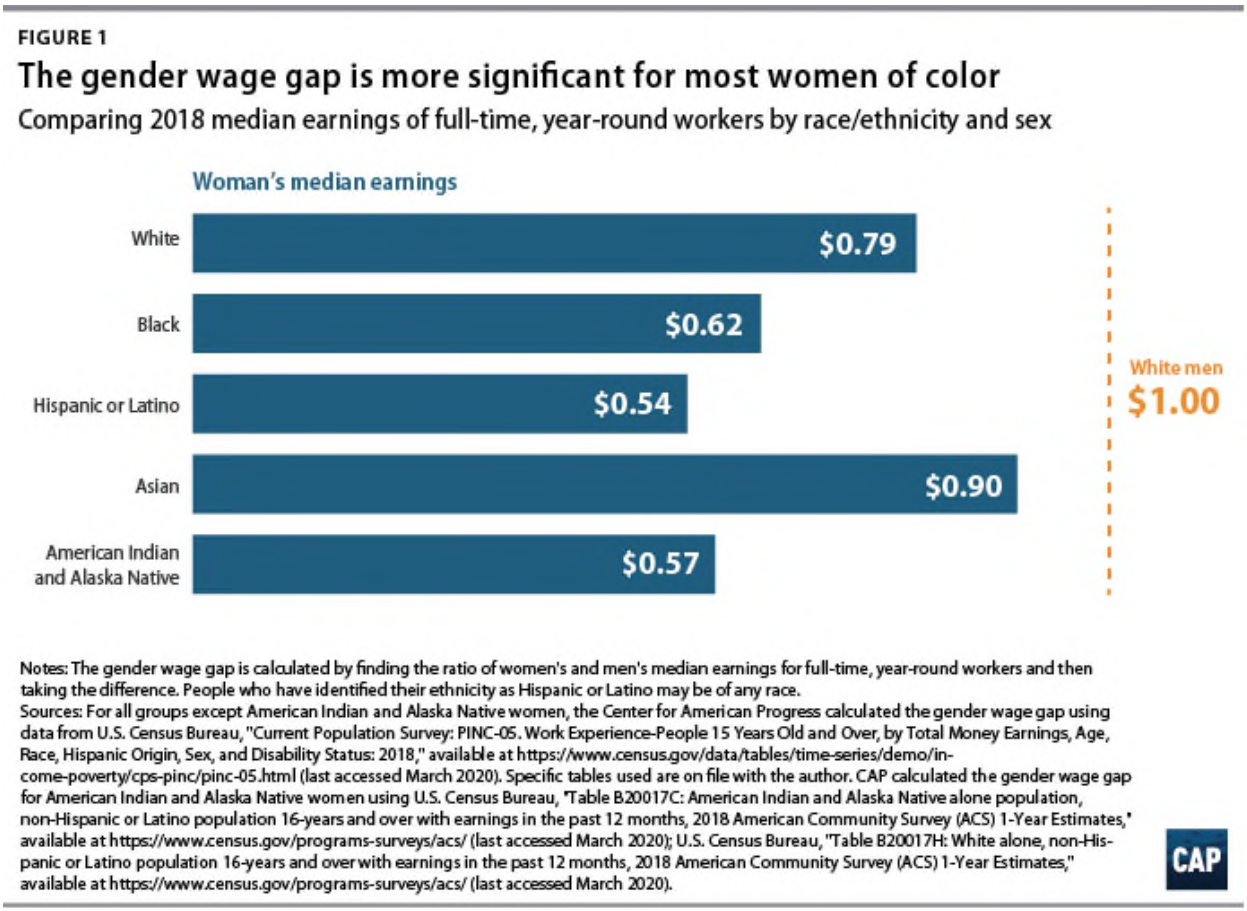
What is Inequality?

Merriam-Webster defines inequality as "the quality of being unequal or uneven: such as social disparity, disparity of distribution of opportunity, lack of evenness, or the condition of being variable" (Merriam-Webster). Joining Merriam-Webster's definition of the vast differences in salary between the male and female demographics and inequality, research will either confirm that industries have recognized the dilemma or have in some cases failed to recognize the dilemma and the consequential effects that has resulted from both. The comparison in the difference of salary amongst male and females within the *same* role is referred to as like-for-like analysis (Smith, 2017).

How is Inequality Applied to Wages and Salaries in the Workplace?

Bleiweis and the professionally written articles displays the imbalance between all women charted in comparison against the Caucasian male. Figure 1 enables the interpretation of

many statistics regarding the pay women, including women of color, receive in comparison to their counterparts and in a wholistic approach:



(Bleiweis, 2020)

Derived from the year 2018, one can conclude that for the exact same one U.S dollar earned by a Caucasian male, the maximum potential to be earned of the same U.S dollar is 90 %. Out of all races, the Asian female has the potential to earn the most, specifically 90 cents of the same U.S dollar (Bleiweis, 2020). The Bureau of Labor Statistics, the calculation of how much any given woman earns in comparison to its male counterpart slightly deviates from the male counterpart, ranking in at 82 cents per dollar (Jones, 2021). Thus, studies indicate that the issue of wage inequality has progressively gotten worse as time passes. It is time the imbalance be addressed with the completion of a thorough analysis. More specifically in the IT sector, "*It was found that males were earning more than females. Only 14% of businesses have a median pay*

gap for women and 8% have no gender pay gap at all. Women earn up to 28% less than their male colleagues in the same tech roles." (The Gender Pay Gap in Tech, 2020). The vast difference in pay described in the previous source affects the buying power of females in the IT industry. Less pay equals less of an income for the female demographic, and in turn, the placement into a different social class than the male demographic counterpart. The placement into a lower social class puts restrictions on livelihood access to the 'finer things in life'. In the next section, we explore a few of the potential reasons as to why the wage inequality amongst males and females exists in the workplace.

Why is Wage Inequality a Factor in the Workplace?

From conducting a substantial amount of research, credible sources claim there are three causes for the inequality in pay between the two demographics with differences in the industries that should be worked by each (assumed roles based on gender norms), differences in years of experience, differences in hours worked, and last, but certainly not least: discrimination. (Bleiweis, 2020). Jasso explains the reasoning from a psychological perspective, implying that individuals are quick to place judgement on certain topics they are passionate about without holding back their bias opinion for the category the individual placing judgement represents. For example, a male may not be as passionate about the subject matter of wages being unequal, with between that of males and females, since the individual now analyzing the problem is male in gender and has the upper hand in the circumstance. (Jasso, 1997). Applying the concept one step further, an entrenched manager that fits the description and acts in the described way previously mentioned may act in such a way, harming the shareholders with an ultimate decline in company performance.

Differences in Company Value vs Performance

Brigham describes company value and the corresponding factor that impacts the value of a company. The factor impacting the value of a company is the amount of income that is generated by the assets owned in a company (Brigham et.al, 2020). The dividends paid and stock prices are not accurate indicators of the *value* of a company. However, the dividends paid in any

given period can be used to calculate the value, in dollars, of the stock being analyzed. Dividing the dividend paid out in any given period by the sum of one and the rate required by investors allows one to calculate the mentioned value of the stock. Looking from an additional perspective, the free cash flow model "...defines the total value of a company as the present value of its expected free cash flows discounted at the weighted average cost of capital (i.e., the value of operations) plus the value of nonoperating assets such as T-bills." (Brigham et.al, 2020). The amount of free cash flow generated by the company and analyzed using the respective model, to be discussed in a later section. Applying the knowledge learned thus far, the increasing price in stock over a substantial amount of time would be a key measurement of an increase in *performance* of a company's financial operations. Contrary to an increase in performance of a company, the downfall in the price of stock and/or free cash flow would lead one to believe that the company is *performing* at a lower level. Thus, a company's *performance* differs greatly from a company's *value*. The wage inequality problem should not affect the value of a company, however it has potential to affect the financial performance of said company, should stock prices decline due loss of economic support.

Weighted Average Cost of Capital, Value, and Social Effects

The weighted average cost of capital (WACC) is summarized well from the perspective of investors in a company. An investor views the WACC as the minimum rate of return that the investor needs while from the company perspective, WACC is viewed as a cost (Brigham et.al, 2020). The goal is to maintain the WACC at the lowest level possible, thus also maintaining the company's value. WACC is comprised of components—debt, common, and preferred stock shares (Brigham et.al, 2020). Since there remains an inequality amongst salary between male and female demographics within the IT sector, the potential for devaluation occurs if the problem is brought to light with external factors such as generation of a social movement, both before and post-Covid-19 global pandemic, which changed the way the world interacts. The commonly referenced #BLM, also known as Black Lives Matters, is an example of a national movement that created world attention to improve and eliminate the unnecessary and unfair treatment amongst African Americans from all perspectives including the inequality in wages. Most everyone is aware of #BLM and any comment made from any company's leader presents a risk.

Said comment could easily be interpreted incorrectly and lead to a devasting loss in revenue generation, and in turn company value, resulting from a newly created negative connotation and public perception of the company and its image.

Resolution Approaches

The most direct method is to resolve the difficulty of the inequality in pay is outlined in a well-thought-out manner by Barnard-Bahn. The mentioning of a Pay Equity Audit is the first step toward success and a sufficient resolution to the problem. The brief steps to complete a Pay Equity Audit is listed in Figure 2 below:

Steps Toward Completing a Pay Equity Audit	
Step	Additional Details
Ensure the accuracy of the salary data being analyzed is in its most up-to-date version.	Clean the data
Calculate a regression model to factor in variables to account for the difference	Graph a linear regression to illustrate deviations in the data
Remediation	Evaluate and implement a plan to identify provide an immediate fix (band-aid resolution).
Identify Operational Gaps	Identify the root cause of inequality

(Barnard-Bahn, 2020)

Gap, Inc is pioneering the way toward success with equal pay with the following tactics implemented: Female representation from entry-level to leadership roles, principles of equality stemming from its co-founders, the presence of female influencers, an organizational culture fostering mentorship as well as sponsorship with family-friendly policies, and a thorough pay equity process as a final measure to identify any wage inequality attributes before it occurs (Smith, 2017).

In late quarter 3 of the year 2017, the White House reverted the requirement for companies to release salary information that included both the corresponding gender and demographic. Many companies that are larger in size continue to release this information as

means of continuous improvement to act/conduct business in an ethical manner. “At the current rate, women will not see equal pay in the United States until 2059. For women of color, the rate is slower, with black women having to wait until 2124 and Hispanic women having to wait until 2248.” (Smith, 2017)

According to Miller, the focus should be placed on the reward structure with the HR function of the organization. Equally as important, there should be a healthy level of communication between the HR function and the employees to assist in the creation of a positive employee outlook/morale in the workplace. The CEO pay ratio has recently been a factor that many employees of companies across the board are utilizing to compare their pay to that of the top-level executive. “That might force some companies to rethink how they compensate their workforce. And the pay ratio disclosure, at least at public companies, could be a good starting point for larger conversations. “Companies have some work to do. They need to make the case to their employees that they are paid fairly,” Seelig says.” (Miller, 2016). Companies have recognized the dilemma at hand and seemingly are brainstorming/identifying effective ways to mitigate and resolve the issue at large.

Risk Avoidance

Safely assuming, and with exceptions, most businesses operate for at least two reasons: to avoid bankruptcy and generate a net, bottom line, profit. Brigham discusses the bankruptcy aspect in the text, in which, the structure of the company’s foundation (structure) helps to mitigate liability associated with decision making-- from the perspective of the company versus the personal interest of the individual making the decision. The foundation of business creation comes in multiple forms: general partnerships, limited liability partnership, and limited liability company (LLP and LLC, respectively) and a corporation (S-Corp). In a general partnership structure, the general partners (a minimum of one) carry full liability for the business operations (Brigham et.al, 2020). The formation of a limited liability partnership or limited liability company helps to lower the risk of losing all investments from one single individual by spreading the risk amongst the partners. The partners in a limited liability partnership are only responsible for the percentage of their investment in the company versus a standard or limited partnership where each partner is held accountable for each other’s debts (Brigham et.al, 2020).

Upon the creation of articles of incorporation or a limited liability partnership/company, the personal interest of partners or investors involved in the operations of the business is no longer at risk of loss. The incorporation creates a new entity separate from all individuals and all liability is placed under the entity, removing the personal liability from the executives that founded the corporation (Brigham et.al, 2020). The presence of an unequal pay structure between males and females, especially in the IT industry creates liability and room for questions from governing authorities. To apply the knowledge learned thus far, in most cases, it should be safe to assume that corporations are the safest means for running a company and its operations, alleviating liability from individuals while increasing peace of mind for every day decision making.

Relationship to Portfolio Risk and Diversification

The peace of mind as well as stress of bearing an indefinite amount of individual liability as an executive of a company can be offset in more ways than that of the foundation of its structure. Brigham goes on to explain that a sinking fund in addition to an emergency fund are two separate ways to offset the overall liability of any one individual within the executive management team. Emergency funds are accounts, usually liquid assets, designed to be readily available at any given moment, should a less than desired event take place, such as a natural disaster destroying the company's headquarters (HQ). On the other hand, a sinking fund is designed to ease with the retirement, commonly known as the repayment, of government bonds that are issued to aid in the startup phase of the business (Brigham et.al, 2020). These mentioned concepts are industry accepted ways to recover from financial hardship, if, for example, accounts payable outweighs accounts receivable for an extended amount of time: a possible result of the lack of portfolio diversification amongst demographics, and in turn, pay within the IT industry.

Just in the same manner that a financial portfolio should be diversified in the type of investments that make up mentioned financial portfolio, diversification should be applied to the financial aspect of being a business leader. Harvard Business Review mentions in their article a few questions that align to the portfolio diversification. Company executives should ask themselves how they conduct business in their market better than their competitors as well as all necessary strategic assets instead of a select few strategic assets (Markides, 2014). To apply this concept to the human resources function of the business, specifically talent acquisition, strategic

assets (employees) should be diverse in nature to produce the best combined result of product or service in any given market. Diversification both financially and from a personnel perspective helps to promote a healthy work environment by fostering ideas and approaches from different cultural outlooks all around the globe.

Concluding Statements

Overall, the statistics of growth inequality are being analyzed from a different perspective, between countries as opposed to within countries. While the wage inequality within countries is raising, the same inequality between countries is falling. “Rising inequality and mounting anxiety about jobs have contributed to increased social tensions and political divisiveness. Populism has surged in many countries.” (Qureshi, 2020). The widely known and rapid #BLM social movement can be applied here from the viewpoint that African American females are just as important as their Caucasian counter parts as many views the inequality as unjust and discriminatory in nature, despite the toughness to prove in a legal environment.

The wage inequality problem from a financial perspective and its harsh effects on the female demographic, especially those employed the IT industry has been explored. The reasons why companies face this difficulty is explored with a structured way to address the issue as well as various other approaches that a business can take to mitigate the issue. With most any on-going issue, there usually is a recommendation to be made to continue making progress with the issue at hand. In addition to the awareness being made of the issue, the gain of worldwide attention and the inclusion of the wage inequality should allow the person with the most influence and resources to make the necessary change in their organizations while others follow suit.

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Gender Inequity in the Tech Industry Workplace

by Katie Bloyer

Introduction

Inequity is defined as “injustice and unfairness” (Meriam-Webster, n.d.). Together as “inequity” those words have power and distinction; however, once broken down and looked at individually, those words express the complexity of the term. Inequity bears the weight of both chronic unfairness *and* the violation of individual rights. It makes sense then, that inequity is often used to describe women’s experience in the workplace. Not only have inconsistencies in pay persisted along with disproportionate promotion and consideration for leadership, but hostility and harassment have historically made the workplace experience very different for women than it has for their male counterparts. Across industries, not only does this have an obvious impact on the day-to-day culture of firms, but it also has an impact the talent pipeline, recruitment and even the educational credentials sought by women.

It has been well documented over the past few decades that disparities between men and women at work exist, but unlike many other similar concerns in the United States, the key solutions for overall gender inequity have seemed to live in the private sector and the industries that house such behavior, and not as much in the public realm. While some could argue that well-placed regulations have helped, issues of unequal pay, unequal promotion, and hostile environments have persisted in the workplace. It is disheartening to have to review that such legislation would be necessary, but here goes. In 1938 the Fair Labor Standard Act ensured at least minimum wage pay to both men and women (Spiggle, n.d.). In 1963 the Equal Pay Act stated that a woman could not earn less simple because of her gender. In 1964 Title VII of the Civil Rights Act made it unlawful for a firm to discriminate based on sex, race, religion or national origin(Spiggle, n.d.). In 1973, the Pregnancy Discrimination Act ruled it illegal to discriminate based on pregnancy or related conditions (Spiggle, n.d.). Most recently, in 1993, the Family medical Leave Act regulated that companies with greater than 50 employees must allow female and male employees up to 12 weeks unpaid time off to care for newborn or newly adopted children (Spiggle, n.d.). Even more disheartening is the fact that these legislative actions exist, is the fact that they have not worked. Loopholes in the regulations have allowed for simple inequalities and even more brash, poor behavior, to exist right up to today.

Another factor that makes the case for addressing overall gender inequity in the workplace being a private sector undertaking is that women *are* being educated now at even higher rates than their male counterparts (Day, 2019). 41.7% of female full-time workers under age 60 are likely to have bachelor's degrees as compared to 36.2% of males (Day, 2019). Examining the workforce as a whole, there is not a staggering disparity between men and women entering the workforce, nor clearly is there indication that women are less educated as men, yet a pay gap persists at even higher rates for educated women. According to the US Census Bureau, educated women still only earn 74 cents for every dollar their male counterparts make (Day, 2010). That is compared to reports by the Bureau of Labor Statistics that in 2020 women in the United States earn 82 cents for every dollar made by men, when you remove any focused lens on educational levels (Day, 2010). In addition, the Census Bureau does find that there are occupations and industries who have essentially neutralized the gender gap (for example: positions in health care, skilled trades and social work); it also finds that women and men concentrate toward different occupations, which brings us to the focus of this paper (Day, 2010).

With this general background and data in place, the focus of this paper is on women in the technology industry. This is an industry which will both demonstrate alignment with the evidence outlined above and add layers of complexity based on differentials in popularity between genders that start long before women enter the workplace. It is well documented that gender inequity in the tech industry surpasses that of other major employment industries in the United States (Daley, 2021). This paper will focus on the perceived reasons behind this, the corporate implications of such inequity, and the financial implications involved.

Inequity in the Tech Industry

While other industries have been able to generate some traction in the areas of gender inequity in the workplace over recent years, the technology industry has not made significant progress. Sources acknowledge as little as a 2% increase in the hiring of female software engineers in the past two decades (Daley, 2021). While the U.S. Bureau of Labor Statistics reports that women make up nearly half of the workforce in the United States, within the tech industry and computing roles nationally, they make up only 25% (White, 2021). This is true while the growth of the tech industry and STEM jobs have surpassed overall employment growth

in the US (White, 2021). As implied above, the roots of these differences begin long before the workplace. While girls perform as well in science and math during grade school as their male classmates, girls are less likely to picture themselves as a mathematician or to draw a female when asked to draw a scientist (Berwick, 2019).

Obviously, this is a stereotype that likely does not simply exist in the minds of the child, it unfortunately must exist in the minds of their teachers and parents – as children do not come to such conclusions in a bubble. Accelerate forward 10 years in those girls' development and only 19% of computer science degrees are pursued by women (White, 2021). That number is down from 27% in 1998 according to data from the National Center for Science and Engineering Statistics (Berman, 2021). This might be the one key area that defies the private versus public sector focus on gender inequity. As it relates to the tech industry (and all STEM related industries as well), it is the public sector (i.e., parents, teachers, communities *and* the educational system) that need to evolve and reverse the unfair stereotypes that limit girls' interest in science, technology, engineering and math in the first place.

Beyond that, there is much well documented work to be done in the private sector within industry firms. As many as 48% of women in STEM jobs have reported some degree of discrimination during the recruitment and hiring processes (Daley, 2021). Once hired, 39% of women have experienced gender bias when being considered for promotions. While articles have reported that tech CEOs prefer employees with liberal arts degrees for their critical and alternative thinking skills, women with such degrees might have even more barriers to speaking up as they are not deemed as technologically savvy (Segran, 2014). While not exclusive to the tech industry, women starting or growing their family experience time away from work - which is often seen as a setback to their career growth – if not actually used against them by their male counterparts. A recent study by Accenture and Girls who Code found that by the age of 35 – 50% of women had left technology careers (Maynard, 2021). Only 21% of women in tech felt they could thrive in the industry (Maynard, 2021) and 78% of women feel they have to work harder than their male counterparts to prove their worth (Sullivan-Hasson, 2021).

An extra layer to all of this which has brought gender inequities even more into the spotlight is the 2020 Covid-19 Pandemic. Across industries, data showing that women were strongly impacted by the extra burdens of lock-down is clear. Dividing time between work, educating their children, keeping their families healthy, and maintaining a level of normalcy

while stuck at home proved to be a lot – especially for those with no escape to the office. While some have thrived in the new work-from-home environment, 57% of women reported feeling burned out by balancing their multiple duties while working from home (White, 2021). While many were "lucky" enough to get to work from home, it is reported that women in the tech industry were two times more likely to be laid of or furloughed then their male colleagues (Daley, 2021). It is estimated that the pandemic caused a 30 year setback in the women's labor force – as of early 2021, the rates of women in the workplace were at 55.8% (Jones, 2021). That is the same rate as 1987 (Jones, 2021).

Financial Implications

A 2020 Report put out by McKinsey titled "Diversity wins: How inclusion matters" found that the likelihood of financial outperformance increased by 25% when companies had gender diversity on their executive teams (McKinsey & Company, 2020). Another study by Catalyst found that firms perform 53% better in regard to return on equity when they have women in leadership positions (Zynczak, 2016). As an investor looking at firms across the industry, it is likely that a >50% better performance in management of revenues, costs, and investment capital would sway the weighted average cost of capital significantly (Ehrhardt & Brigham, 2019). Other reports find that start-up firms in the tech industry are more likely to be acquired if they have more female executives than their competitors (Bailey, 2020). Knowing that many start up firms structure and build their companies with the hope of being acquired, gender equity might rise in importance more quickly for small firms.

Another interesting fact to consider is that statistics show that women out-use men in social media (Zynczak, 2016). This means that products and platforms that women utilize at the highest rates are created by men. At the rate that women contribute to the consumer economy, the financial implications of attention to this detail should not be overlooked. Making small changes across private firms utilizing the above information could have huge impact on the success, profitability and timelessness of consumer-based tech products.

What Can and Should Organizations Do

It is not hard to draw conclusions about some of the actions that leaders at tech industry firms should make in order to promote and ensure gender diversity in the workplace but putting that through a lens that industry leaders appreciate can be more of a challenge. As described above, there are many societal factors that *could* be blamed for the disparities found in organizations, however, they are not the only element of the problem, and they are definitely not the element that executives have power over. Alison Wynn completed a year long case study of a large tech firm in Silicon Valley and found that while interviewing leaders at the firm, the executives most often recognized Individualistic and Societal pathways to changing the workspace but failed to align with Organizational pathways toward change (Wynn, 2019). The Individualistic and Societal pathways acknowledge biases and cultural barriers to gender inequity, while the Organizational pathway focuses exclusively on actions that can be taken by a firm: reviewing org processes, treating men and women equally in the workplace, mitigating bias at the organizational level, and changing hiring and promotion processes (Wynn, 2019). Her research raises questions about whether leaders in the industry truly do not see the Organizational biases or simply think that the biases of society are more powerful. While her case study was only within one specific firm, it is not too much of a leap to expect that this might be the case across other industry firms as well.

It has been observed in the college setting that women were more likely to stick with an engineering degree path if paired with a female mentor than if paired with a male mentor during their first year (Berman, 2021). Paired with Wynn's research of other workplace modifications that should take place in order to address the Organizational Pathways mentioned above, this idea might be one of many mechanisms that firms could utilize. Wynn does also specifically recommend more transparent assignment of compensation, broader recruiting strategies (verses pipeline from current employees), and insuring that measurable and specific evaluation tools and criteria are used both annually and with regards to promotion (Wynn, 2019).

The small changes that have a bit impact (both directly on employees lives, but also on the culture and ideals of a firm) are not truly that difficult to make. Firms such as Patagonia who have implemented practices to promote women in the workplace (such as on-site childcare) have demonstrated the positive financial implications (Bailey, 2020). Patagonia has reported a 100%

return rate of women as they transition into motherhood (Bailey, 2020). This is above industry standard. Many other firms have also implemented small changes like this that have positively impacted their workplace (both for female *and* male employees), and have reduced rates of turn over, made stronger decisions, and demonstrated strong success in their product and financials. If you look at the corporate implications of off-boarding, re-hiring, and on-boarding new employees, anyone looking at the bottom line of these firms would recognize the financial risk associated with experiencing up to 50% turnover of a workforce as women choose to leave firms and the industry.

Organizations that are doing gender equity well

While the "top 5" firms in the tech industry (Microsoft, Apple, Facebook, Google and Amazon) are slowly doing better than the industry standard and employ roughly 34.4% women (although not necessarily in tech/STEM roles) there are several companies to note who are well known for seeking and accomplishing gender equity in the workplace (Daley, 2021). A few stand out due to their financial successes in addition to diversity work.

Perhaps most notable for its female employment rates is Bumble, the dating platform app. Founded by a woman (Whitney Wolfe Herd) who had already co-founded another successful dating platform (Tinder), Bumble reports that women make up 85% of employees and 80% of the executive team (Lui, n.d.). Bumble's financials as a private company through Q4 of 2020 were impressive, with Year-over-year revenue increases greater than 45% (Bumble, 2021). Going into their IPO in February of 2021, the company was generating profitable returns and was in good position to leverage the public offering to grow. The company offered 50 million shares – the price of which jumped 63.5% within the first week – not only raising Bumble a cool $45million but exceeding expectations (Deagon, 2021). On the outside, it certainly seems like Bumble is doing alright, but it is the firm's internal decisions regarding parental leave policies, full coverage health insurance, and flexibility for employees that fosters invested, engaged and dedicated employees (Lui, n.d.).

Etsy is another firm that has done recruitment and hiring well - boasting that 56% of overall employees are women. Even better is that 33% of engineers are women and they are supporting Etsy online storefronts for entrepreneurs – 87% of which are women (Liu, n.d.).

While since going public in 2016 the company has always shown consistent, steady growth, Etsy is a quiet success of the pandemic-forced online boom. Its stock peeked in December 2020 at $233 per share – almost four times its pre-pandemic average of about $60 per share (give or take) (YahooFinance, n.d).

Despite the overall industry gloom, the list of companies who *are* getting gender equity right could go on for a while, but the last firm we will discuss is LinkedIn. What makes their accomplishments most interesting is the earlier mentioned fact that most social media sites are used by women more frequently than men (Zynczak, 2016). There is one exception to that: LinkedIn. As the only major social media site utilized more by men than women, it is intriguing to note that LinkedIn has 42.9% female employees, with 21.8% on the tech side of the business (Liu, n.d.). Between 39.1% of firm leaders being women and the initiatives they participate in to widen candidate diversity in the pipelines for employment across industries, their out-performance of industry standards is sure to have an impact outside of the walls of their business.

Conclusion

As United States based workplace industries have grown, morphed and progressed over the past 20 years, there is clearly evidence that in many cases the tech industry has lagged behind. While this paper has focused on the evidence as supported by data and statistics of unfairness and injustice in the workplace as it relates to hiring practices, recruitment processes, pay, and diversity – there are many reports and trends supporting the hostility of the tech industry workspace that this paper has chosen not to address. As a leader in the era following the rising of the #metoo movement, it does not seem as necessary to discuss workplace misconducts that should have never been tolerated, as it does to address the more pervasive and subtle disparities, inequities and injustices that continue to occur. It is those long-standing, individual, societal and organizational pathways of bias and practice that must be uncovered, discussed and amended. The power of chronic bias and discrimination has had an obvious impact on the workplaces of the tech industry, but also likely contributes to underperformance of individual firms and an overall decrease in the industry's health and agility. It is time to double down on correcting these disparities at the organizational level – in order to create a workplace in which women can thrive and succeed. The health of the industry may depend on it.

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Achieving Long-Term Recovery Outcomes for Substance Use Disorders

by Dawn Bacon

Introduction

In my work as a Public Housing Director, I oversee subsidy programs that serve people with some of the most significant barriers. Many live with co-occurring mental illness and substance use disorders (SUD) as well as histories of long-term homelessness. All too often, I see people leave treatment only to go right back to using drugs and/or alcohol. They cycle through detox, incarceration, hospital stays, and treatment. Along the way, they accumulate more complications that make it more difficult to live healthy and productive lives. This can include trauma such as domestic violence or assault. It may also encompass legal issues, employment loss, poor rental history, and worsening health conditions. Failing to interrupt and stop this cycle is costly for the person and for society. Sacks et al. (2015) estimate the direct and indirect costs of substance abuse in 2016 was 442 billion. These costs may even exceed 600 billion annually (National Institute on Drug Abuse, 2018). It should be acknowledged that people exiting treatment represent a subgroup of all substance users and also have a greater severity of dependence (Dennis & Scott, 2007). According to Lipari & Struther (2017), only 7.6% of adults with a SUD in 2014 also received treatment in that year. A number of studies have found that moving to less intensive treatment options following inpatient treatment increases recovery results (Dennis & Scott, 2007). Unfortunately, too many people leave more intensive supports without subsequent treatment. Stein et al. (2009) found that half of Medicaid-enrolled adults leaving detoxification or residential treatment services received no follow-up care within 30 days of discharge.

This paper focuses on less intensive treatment options that support long-term recovery maintenance as well as the outcomes and funding of these options. Reflecting on my own observations of people going in and out of treatment, this paper poses the following questions: What options are currently available to support long-term recovery from addiction? How effective are those options? How are they funded?

Before delving further into this topic, it is important to clarify the meaning of substance use disorders. In 2014, approximately 20.2 million adults aged 18 or older had a past year of SUD (Lipari & Van Horn, 2017). Chesire & Piotrowski (2019) note that substance use disorders (SUDs) include substance abuse and dependence for many types of substances, including alcohol, illicit, and prescription drugs. They state, “these disorders are characterized by recurrent

problems in everyday life and physical or emotional distress and impairment that are caused or exacerbated by the use of substances of abuse" (p. 1).

Models of Care and Funding

Models of care occur on continuum and consist of short-term stays in a detoxification center, assessment and screening, inpatient treatment, half-way house/sober home, outpatient treatment and aftercare, (hereafter referred to as continuing care). Continuing care is highly individualized and can vary in its intensity based on a person's needs. It may include self-help or 12-step groups, recovery-focused social networks, ongoing monitoring with addiction counselors, and attending outpatient group and/or individual therapy sessions. Historical approaches to SUD treatment have been short-term and episodic in nature (McKay, 2009; MN Department of Human Services, 2018). The assumption is that when a person gets addicted to drugs and/or alcohol they go to treatment, get better, and the process is complete. There is a growing understanding in research and literature that SUD is a chronic, long-term condition where people can experience multiple instances of relapse and remission. (McKay, 2009; National Institute on Drug Abuse, 2018) Approaching it as a chronic condition holds promise for a more efficient system; one that maximizes remission and minimizes relapse and the need for more intensive treatment. Dennis & Scott (2007) wrote "for optimal outcomes, treatment systems and interventions should be able to address the long-term aspects and cyclical dynamics of this disorder" (p. 47).

Although private health plans may provide coverage to treat substance disorders, the majority of SUD treatment is funded with local, state, and federal dollars (National Institute on Drug Abuse, 2018). Public policy changes over the last decade have had a huge impact on the treatment of substance use disorders. For years, many private insurance plans limited coverage for SUD treatment while covering other kinds of care (McCabe et al., 2007). The passage of the Mental Health Parity and Addiction Equity Act of 2008 followed by the Affordable Care Act (ACA) in 2010 have resulted in more coverage for substance use treatment, and efforts to better integrate SUD treatment within the broader health care context (HHS, 2016). According to a legislative report by the MN Department of Human Services, "treatment admissions covered by managed care organizations increased from 17.1% in 2013 to 24.7% in 2016" (p. 28). For

publicly- funded medical assistance, expansion brought on by the ACA has accompanied major increases in spending on substance abuse treatment (Andrews et al., 2018). This has put pressure on many non-profit providers that have operated primarily with grant funding and fundraising. Boozang et al. (2014) noted that shortly before the passage of the ACA in 2008, 40% of non-profit facilities did not accept private insurance or Medicaid.

Research continually points to the separation that has existed between substance abuse treatment programs and the medical field (Andrews et al., 2018; McCabe et al., 2007; MN Management and Budget, 2017; U.S. Department of Health and Human Services, 2016). Implications extend well beyond provider capacity to funding structures themselves. Insurance pools that "carve out" SUDs from other medical conditions create a lack of coordination of care that drives up costs and lowers quality of care (American Society of Addiction Medicine, 2020; McCabe et al., 2007). The lack of procedure codes commonly found in the medical field may also make it more difficult to evaluate and make system adjustments to maximize efficiency for treatment of SUDs (MN Management and Budget, 2017).

MN has made significant changes to their overall funding structure for addiction treatment services. In 2020, legislation was passed that changed the rate methodology for payments made by the Chemical Dependency Consolidated Treatment Fund (CCDTF). The CCDTF is the largest source of funding for SUD treatment in the MN, paying for 45% of all admissions (MN Department of Human Services, 2006). Legislation was passed in 2020 to change the CCDTF rate methodology from a county-negotiated system to a statewide standardized system based on need (MN Statutes, 2020). In 2017, the U.S. Department of Health and Human Services and the Center for Medicare & Medicaid Services issued a letter communicating a new direction and reforms of SUD services. Minnesota responded with a request for a five year demonstration project that was approved and is currently underway. The MN Department of Human Services (2018) described the overall aim of the project as follows: *moving from an acute, episodic-based system to a client centered model of care, with an emphasis on managing SUD as a chronic disease. These changes remove barriers that have prevented Minnesotans on Medical Assistance from accessing substance abuse treatment. The reform package allows patients to more quickly access services, and adds important services like withdrawal management, care coordination and peer support.*

The demonstration project will use universal criteria for assessing levels of care known as the American Society of Addiction Medicine (ASAM). ASAM provides a standardized way of matching a person to the appropriate level of treatment or intervention (ASAM, n.d.). Over the last year, enrolled demonstration providers delivering these services have received a significant rate enhancement of 15% over the Fee for Service per diem base rate for residential and 10% over the base rate for outpatient services (MN DHS, n.d.).

Despite the expansion and increase in funding nationwide, there remains a great deal of variation from state to state as to what treatment options are covered or not covered under Medicaid (Andrews et al., 2018; McAuliffe & Dunn, 2004). I live in a Minnesota City that borders North Dakota. Minnesota was identified by Andrews et al. (2018) as a state with low restrictions to SUD treatment under Medicaid while North Dakota is considered a state with medium restrictions. At the same time, Minnesota has more people who need treatment that are not receiving it than most other states (MN Department of Human Services, 2006).

Cost Effectiveness

There is ample research showing that substance use treatment is money well spent. The National Institute on Drug Abuse (2018) states that "according to several conservative estimates, every dollar invested in addiction treatment programs yields a return of between $4 and $7 in reduced drug-related crime, criminal justice costs, and theft. When savings related to health care are included, total savings can exceed costs by a ratio of 12 to 1" (p. 11). Ettner et al. (2006) reviewed costs and outcomes for services provided by 43 treatment providers across 13 counties in California. They found that the societal benefit far exceeded treatment costs by a ratio of 7:1. The MN Department of Management and Budget (MMB) completed an analysis of sixteen SUD services and found that all but one had benefits that exceed costs including five where taxpayer benefits alone exceed costs (MMB, 2017). A report by the Department of Human Services (2006) notes that "many other human service expenses in other program areas are attributable to alcohol and other drug abuse. A low end estimate for the costs of child out-of-home placements per year attributable to substance abuse is $28 million" (p. 18).

Current research on cost effectiveness is mostly reflective of traditional inpatient and outpatient treatment programs and looked at from the standpoint of societal costs and benefits

rather than the perspective of the person undergoing treatment. Additional research is needed to evaluate the cost-effectiveness of emerging practices to promote continuing care; services like peer support services and recovery management check-ups (U.S. Department of Health and Human Services, 2016). If increasing the use of continuing care services will reduce more intensive services, it is logical to surmise that this holds tremendous potential for cost savings. As shown in table 1, a comparison of 2017 rates under the CCDTF program is as follows:

TABLE 1:

SERVICE	COST
Inpatient Hospitalization	$306 per day
High Intensity Residential	$177.48 per day
Non Residential Individual Session	$71.40 per hour
Non Residential Group Session	$34.68 per hour

Note. Rate reform grid with dollar amounts . Adapted from MN Department of Human Services. (2017, January 18).

Barriers and Emerging Practices in Continuing Care

A persistent question driving my study of this issue is, “What prevents people from participating in continuing care or activities that support long-term recovery”? What I learned is that there is an abundance of offerings of long-term recovery supports nationwide and in my community. However, the barriers to participation are significant and complex. These barriers are being addressed by adding more service options that promote engagement and continuity.

Options currently available include primarily outpatient individual or group treatment as well 12-step community-led programs like Alcoholics Anonymous or Narcotics Anonymous. Weisner et al.(2003) points to the growing body of research suggesting that self-help or 12-step groups have a positive impact on treatment outcomes.

Although there is variation from state to state on the extent of coverage for SUD treatment options, (McAuliffe& Dunn, 2004) public and private insurance plans are far more likely to

cover outpatient services than inpatient care, which is much more costly (McCabe et al., 2007). Support groups are offered with little to no cost and are widely available (Timko et al., 2019).

A search of meetings where I live in Moorhead, MN yielded opportunities every day of the week, with a total of 47 group meeting times for AA and 21 group meeting times for NA within a 10-mile area (Find Recovery, n.d.). Self-Management and Recovery Training (SMART) has also emerged as an alternative to the traditional 12-step program. This is a four-point program led by trained volunteers and has a different philosophical framework. A weekly program is available in Moorhead at the Lost and Found Recovery Center (Smart Recovery, n.d.).

Personal costs impact the extent to which a person engages with long-term recovery supports. Salome et al. (2003) looked specifically at costs and benefits from the perspective of people receiving treatment. They found that individually incurred costs were significant, actually exceeding program specific costs. These costs included things like loss of employment income and leisure time as well as paying for child-care or transportation. This came up in interviews I conducted with two local treatment providers in Moorhead MN. I asked them for their observations about what prevents people from continuing with outpatient and other activities that support sustained recovery. Chris Ferris is the Program Director at Anchorage, an inpatient and outpatient substance abuse treatment center. He stated that many people struggle with schedule conflicts; trying to balance work obligations and taking care of kids. With those challenges, he said that people can slowly fall out of the routine of going to meetings and cutting back on other activities in their recovery plan (personal communication, May 26, 2021).

Reform efforts are underway to expand the menu of options for continuing care services. One example is increasing access to medication monitoring. Evidence has found that people who are recovering from opioid addiction are more successful when they have access to maintenance medications, such as methadone. Under a physicians' supervision, these drugs can help a person's brain chemistry gradually transition out of a state of dependence without the high that comes with it. The treatment can reduce withdrawal and cravings and has been shown to reduce rates of relapse (National Institute on Drug Abuse, 202). In recent years, Minnesota expanded benefits to include care coordination, withdrawal management, and peer recovery supports. (MN Department of Human Services, 2018).

A less visible but pervasive barrier to engagement in continuing care activities is stigma around addiction. People can be reluctant to embrace an identity of someone who lives with addiction. This reluctance aligns with the traditional paradigm of seeing addiction as an acute vs. chronic condition. Beth Nelson is the Treatment Director, Clinical Supervisor and Co-Founder of Lotus Center. She shared her observation that it isn't socially acceptable to say the words, "I'm struggling to get high right now". This prevents many people from even walking in the door, much less continuing with a long-term recovery plan. Although it is improving, she knows of many people who have been kicked out of treatment centers and shamed or looked down upon by staff for drug use (personal communication, May 21, 2021). Botticelli (2016) points out that only 1 in 9 people get treatment.

Lack of treatment interventions can lead to death or incarceration. Gruber (2018) notes that the most negative externalities associated with alcohol and drugs include violence and crime. A growing movement has emerged known as harm reduction. Harm reduction focuses less on total abstinence and more on minimizing and reducing use and other high-risk behaviors (National Harm Reduction Coalition, n.d.). The Lotus Center in Moorhead is the newest treatment center in the city and was founded entirely upon the principles of harm reduction (The Lotus Center, 2021). In addition to changing societal views on addiction, the harm reduction approach of meeting people where they are and not seeing relapse as failure holds particular promise for counteracting stigma and managing addiction as a more chronic, long-term condition.

Discussion and Conclusion

In my daily work, I see the personal and system costs associated with substance use disorders. Unfortunately, the rates of SUDs are increasing (U.S. Department of Health and Human Services, 2016). Research demonstrates that treatment is extremely cost effective (Ettner et al.,2006; National Institute on Drug Abuse, 2018; MN Management and Budget, 2017). Improving and prioritizing continuing care has tremendous potential to maximize and build upon this success. The MN Department of Human Services requires treatment providers to collect data in a variety of areas. One is the assessed potential for relapse or continued use. In 2016, 76.9% were rated as serious or extreme in this area (MN Department of Human Services, 2018, p. 6).

Health policy that provides for parity in substance abuse treatment coupled with Medicaid expansion will likely result in more people being able to access much needed treatment. Changes to access and their impact will need the attention of research. Deck et al. (2006) wrote that "the role of coverage in promoting access to treatment has been largely ignored in substance treatment literature."

As the system expands, reforms will be essential to serving people in a way that minimizes the frequency and duration of relapse. In order to track progress, I recommend the following outcomes be measured: (a) referrals to higher levels of care vs. early interventions when the person may only require a lower intensity service (b) length of stay in treatment and (c) returns to treatment. This won't be achieved through funding cuts and service denials, but through a dual focus on early intervention coupled with more robust and effective continuing care supports. McKay (2009) emphasizes the need for better continuity of care as well as services that people find more attractive and accessible. Having worked in the social services field for decades, I have seen the difference between handing people a list of numbers to call vs. personally introducing someone to a program or service. Given the forces of stigma around addiction, it is hard for a person to initiate and navigate long -term supports without some initial guidance. In Minnesota, new services like care coordination are being introduced and current services are being delivered differently based on promising and evidence-based practices. As this happens, further research will be necessary to measure and understand the quality and cost-effectiveness of such strategies.

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Funding of Local Police Departments

by Michael J Fulton

Introduction

While policing has become a steadfast symbol of law and order in a well-structured society, it is a relatively new institution on the World's political stage. In 1829, London Sir Robert Peel founded the first modern police department (Hahn, Jeffries, 2003). American cities quickly followed suit with Boston turning its previous 'night watch' system into a day watch as well, in 1833. Effectively making it the first modern police department in the United States. By 1880, all major American cities had a police force (Potter, 2013). This is a mere 140 years before calls for defunding or abolishing police gripped most major metropolitan areas in the nation. After 140 years of established policing, what is the most efficient method to move funding away from policing while still maintaining public safety?

Funding of the Police

Before the topic of defunding the police can be discussed, it is important to discuss how the police are funded. In the fiscal year of 2017, state and local governments spent $117 billion on police departments. This accounts for 4% of all direct expenditures. Most police spending originates at the local or local level with 87% originating at that level. This accounts for 1% of all state expenditures and 6% of all local expenditures (Criminal Justice Expenditures: Police, Corrections, and Courts, 2021).

While police spending, as it relates to total expenditures, has remained unchanged since 1977, other services have grown and shrunk. Further, over that time crime has seen peaks and valleys with a trend towards overall drastically lower crime rates in the 1990s (Auxier, 2020). When looking at the total expenditures, it is better to take a look at the whole picture than narrow in on a specific city or region. Local budgets are set up differently and numbers can be misleading as to whether police departments truly take a larger or smaller portion of a locality's budget. New York City seemingly has an on average police budget in terms of percentage of total expenditures. However, one must take into account that New York includes school expenditures in budget numbers, while other jurisdictions do not. When this is factored into the analysis it reflects a much higher percentage dedicated to police spending in New York City. This could make the expenditures be misleading. This is just one example of being aware when comparing local police budgets (Auxier, 2020).

With the phrase ‘defund the police’ becoming popular, it is imperative to look at what this means, what we demand of law enforcement, how effective law enforcement is and if there are repercussions for these political decisions? To examine these points, the question must first be asked, does a well-funded criminal justice system even have benefits for society?

Purpose of a Well-Funded Criminal Justice System

The overall goal of police agencies is to provide for the public safety of the community which they serve. This simple goal is reflected in mission statements from departments across the nation, like that of Saint Paul, Minnesota which reads, “Protect the peace and maintain public safety through trusted service with respect” (City of Saint Paul, 2020). While police are arguably the most visible aspect, the criminal justice system is also made up of courts and corrections. Police prevent, respond and investigate crime and then taking the suspected offenders into custody. The courts then play a role in determining the guilt of the suspected offenders. Corrections are responsible for restitution and rehabilitation of offenders.

Does the system of holding people accountable under our current system effectively deter crime? This is a very debated question. There are also questions whether or not the deterrence of crime warrants the spending and expansion of police powers. While those are important questions, there is no simple formula to measure them. One thing that can be done is to look at what raw data is available and attempt to measure the effect of a well-funded criminal justice system.

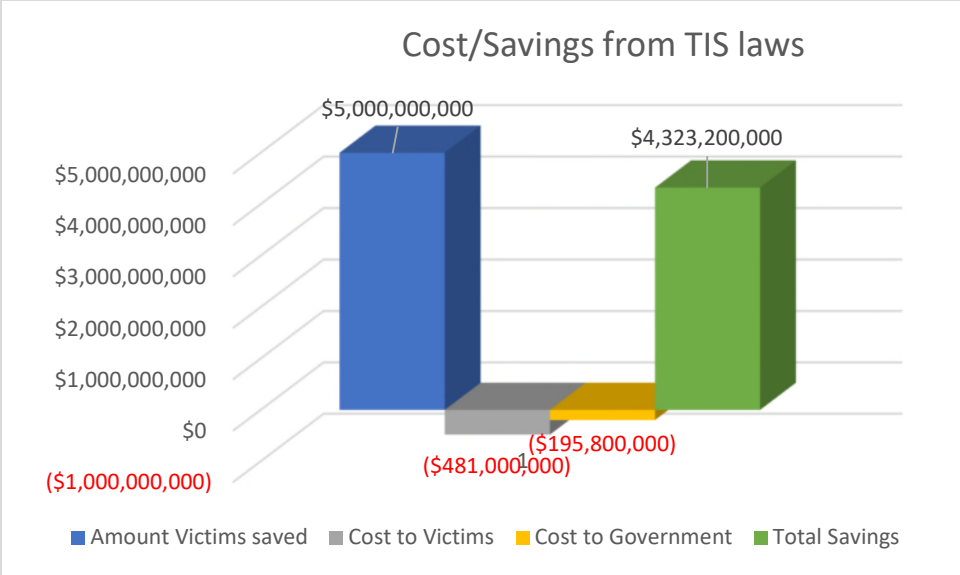
In a study from 2002, data was examined to see if there is a correlation between the adaptation of truth in sentencing (TIS) guidelines and a crime reduction. In short, TIS imposed stiffer penalties on criminal behavior. This took an investment in the criminal justice system and was adopted by 29 jurisdictions. This was a common reform adopted at federal and local levels through the 1990s. The results were longer sentences for violent offenders, which were the targeted crimes in TIS. The results of the study showed the jurisdictions which enacted TIS had a decrease in the amount of crime where the guidelines were used. Further, the crimes which did not have the guidelines saw a general rise in those offenses. This shows a correlation between accountability for the crimes and people choosing to commit them (Shepherd, 2002).

Crime with TIS	Total Change	Percentage Change		Crime without TIS	Total Change	Percentage Change
Burglary	-35,522	-24%		Larceny	-80,240	-3%
Rape	-3,789	-12%		Burglary	156,669	20%
Murder	-1,056	-16%		Auto Theft	62,994	15%
Aggravated Assaults	-40,179	-12%				

(Shepherd, 2002)

Cost-Effectiveness of Funding the Criminal Justice System

Being able to protect society from being victims of violent crimes such as rape, murder, and assaults is important in a society of law and order. However, in the real world, there is a finite number of resources available to put into the criminal justice system. TIS costs the federal government $195.8 million. However, when the amount of money saved from victims of targeted crimes is added with the resulting higher amount of lesser crimes and government costs there is still a net saving of $4.5 billion. There are additional financial costs to these types of programs, such as the long-term costs for housing more inmates for longer. There is also more to the criminal justice system than arrests, sentencing, and preventing crime.



(Shepherd, 2002)

The cost-effectiveness is not just for the criminal justice system, but specifically for law enforcement as well. There are studies indicating that investing in police officers shows a return of $8.50 for every $4 invested in law enforcement (Donohue and Ludwig, 2007).

Guiding Law Enforcement into the 21st Century

While deterring crime is a foundational function and investing money in staffing police officers and funding a criminal justice system is shown to be cost-effective, there are costs to society aside from dollars that must be considered. There is a cost to the communities not just from victims, but from the criminals who are taken out of the community and incarcerated (Shepherd, 2002). There is a level of accountability, transparency, and overall expectations of law enforcement. This has come center stage in the last decade in America. To address some of these issues President Obama implemented a study of law enforcement. This committee put forth recommendations to guide police departments into the 21st century. This study recommended law enforcement be built on 7 pillars. These pillars are identified as:

- Building Trust and Legitimacy
- Policy and Oversight
- Technology and Social Media

- Community Policing and Crime Reduction
- Training and Education
- Officer Wellness and Well Being

(Final Report of The President's Task Force on 21st Century Policing, 2015)

Reforms and recommendations come in the form of changes in culture and mindset (Final Report of The President's Task Force on 21st Century Policing, 2015). This involves moving away from a warrior mindset and adopting a guardian mentality. Some reforms come with a price tag. These include trust and legitimacy, policy and oversight as well as technology and social media all being improved by programs such as the Body Worn Cameras (BWC).

Body Worn Camera Programs

BWC is an investment in a new technology that can serve to give transparency to law enforcement. It lets the public have access to what police see, encounter, and do from a firsthand perspective. When questions are raised about an officer's actions, BWC footage can be used to shed light on situations. This can serve both to hold officers accountable as well as protect them and gather evidence (Vezner, 2016). This helps build trust and relationships between officers and the community (Final Report of The President's Task Force on 21st Century Policing, 2015). While this report touts the effectiveness and needs for BWC, it is not a free technology. For example, the Saint Paul (MN) Police Department started a BWC program in 2016 and immediately warned of the cost. The initial cost of the program is $1.3 million. While federal grants help offset some of these initial costs, the city is liable for the yearly maintenance costs. These costs are estimated at $721,000 annually, with most of that going to data storage. Additionally, the department plans on dedicating five employees to a unit strictly dedicated to managing BWC (Vezner, 2016).

Community Oriented Policing

Aside from the accountability, transparency, and technology investments called for, the Department of Justice study also recommended renewing the Community Oriented Policing

(COP) approach for law enforcement. While at times COP approaches and effectiveness have been debated, many experts believe this is a solid approach to amend relationships between officers and their community. In a 2014 study, COP reported an increase in satisfaction with police officers, more positive opinions, as well as more legitimacy to law enforcement. There, however, was no noticeable effect on the crime itself (Bennett et al, 2014). In a 2019 study, it was determined that nonenforcement interactions with the public improved feelings towards officers, especially amongst black residents (Peyton et al, 2019).

One of the important aspects of COP is an emphasis on those informal contacts. Not just interacting with an officer when enforcement is taking place. This can be done through sending officers to community events, foot patrols, bike patrols, and the establishment of police subdivisions in easily accessible public places. This all takes funding and police officers available to engage in these activities. In June 2020, then Presidential Candidate Biden pledged $300 million to get officers out of their cars and interacting with the public (Norwood, 2020).

Cost of New Legislation

June 2020 was the time when the nation was calling for police reforms in the wake of the George Floyd death in Minneapolis. Proposed legislation bears his name, also known as Police Reform Legislation, H.R. 1280. This bill proposes several police reforms and accountability measures. This includes gathering data on traffic stops, use of deadly force, and other issues of transparency. The Congressional Budget Office (CBO) was tasked with assessing the cost of the proposed legislation. The Honorable Jason Smith wrote the following:

“The bill would require all state, local, and tribal law enforcement agencies to report demographic data to the Department of Justice (DOJ) for all parties involved in law enforcement actions—including traffic stops and the use of deadly force. CBO has determined that provision is an intergovernmental mandate as defined in the Unfunded Mandates Reform Act (UMRA) that would exceed the threshold established in UMRA of $85 million in 2021, adjusted annually for inflation.” (Smith, 2021)

Of the approximately 18,000 law enforcement agencies in the United States, it is estimated 6,000 of them would need new or upgraded technology to comply with the proposed reporting standards. It is estimated these upgrades would cost millions of dollars to maintain and

even higher first-year investments (Smith, 2021). Taking on the reforms in this proposed legislation would cost hundreds of millions of dollars to law enforcement agencies.

Legislation such as Police Reform Legislation, H.R. 1280, and BWC programs would be in step with the guiding principles of the Final Report of The President's Task Force on 21st Century Policing. These reforms could increase transparency, accountability, legitimacy, and community relations. If you coupled reforms with investments in COP, there is a road map towards improving the quality of policing in the United States. However, these reforms and strategies will cost hundreds of millions of dollars in recurrent expenditures on top of more one-time fees to start the programs. This seems counter to the defunding of the police. Asking more of the police while proposing cutting budgets can seem counter intuitive. It can be seen as opposing forces, those who want to defund the police and those who are in or supportive of more funding to police departments. These are not mutually exclusive, there is common ground that must be pointed out.

Calls to ‘Defund’ the Police

Defunding means shifting funds from police departments and investing in other areas to improve the quality of life. Very few people are truly seeking to ‘abolish’ the police altogether. These investments can be in black-owned businesses, recreational centers for at-risk youth, and social services. These social services would be to assist those suffering from being unsheltered, mental health, and substance abuse (Ray, 2020). Most police officers would agree with many of these notions.

In reality, there does not need to be a confrontational tone between those supporting defunding and those who work as or support law enforcement officers. The majority of officers and police leadership voice frustrations for being tasked with societal problems that are not crime-related. Leadership has been concerned with departments being tasked with unsheltered populations, mental health, and drug abuse responses (Jackson, et al, 2020). Police officers frequently get tasked with calls ranging from potholes in the street to cats in a tree (Ray, 2020). This is not only frustrating to officers, but a misallocation of resources that could be utilized in addressing criminal issues. The unburdening of officers of these issues could potentially free up those resources to address criminal issues (Ray, 2020). These free resources could be an

invaluable investment of funds into other aspects to improve the quality of life for many citizens. This is a goal all would like to achieve, but there must be caution when taking resources from police departments to reinvest elsewhere. As a society law enforcement is being tasked with expensive, yet needed, reforms, being tasked with responsibilities outside of a criminal justice scope, being stripped of funds, and having no other entities in place to relieve these non-law enforcement functions. The problem with this combination can be seen playing out in many American cities, including Minneapolis, MN.

Problems with Defunding Police

In June 2020, Minneapolis City Council members stood in front of a sign saying ‘defund the police’ and 9 members vowed to defund and dismantle the department in its current form. The council had wording in their resolution to not only defund but have no requirement for a police department in the city (Sepic, 2021). The council then proceeded to funnel money away from the police department, ultimately at a much smaller amount than desired. Ultimately, eight million was cut from the budget and after a threat of veto from Mayor Frey, the level of officers remained unchanged (Schneider, 2020). Despite this change of plan from the city council, the city experienced unprecedented violence more than doubling the number of homicides in the first six months of 2021 compared to 2020 (Sepic, 2021). According to Mayor Frey, this is directly tied to the city council's move to defund and dismantle the police department.

In an email exchange between Minneapolis councilmember Phillipe Cunningham and Mayor Jacob Frey; the lack of coordination, a plan, or understanding amongst those who called to defund the police can be seen. Cunningham wrote to Frey concerned about the rise in gun violence in his ward and cited the 200 police officers who left the Minneapolis Police stating his ward cannot wait for new officers to stop the gun violence. Mayor Frey responded in part with, "Your public commitment to defunding and abolishing the police department, your absolute lack of support for adequate police staffing levels…have detracted from the essential work at great cost to the city of Minneapolis" (Flood, 2021). This demonstrates the danger of a lack of leadership and planning when it comes to ultimately investing police funds into other services.

The lack of understanding when it comes to law enforcement can also be seen in a statement from Minnesota ACLU member Munira Mohamed's statements on reforms to the

Minneapolis Police. She stated, "When you don't have police stopping people for such minor traffic enforcement violations such as tinted windows or registration, what you do is you save them time and you have them actually focus on violent crime, and you actually have them solve murders" (Sepic, 2021). The issue arises in part that Minnesota State Statue 169.98 POLICE, PATROL, OR SECURITY GUARD VEHICLE. Subdivision 1b reads:

> “Only a person who is licensed as a peace officer or part-time peace officer under sections 626.84 to 626.863 may use a motor vehicle governed by subdivision 1 to stop a vehicle as defined in section 169.011, subdivision 92. In addition, a hazardous materials specialist employed by the Department of Transportation may, in the course of responding to an emergency, use a motor vehicle governed by subdivision 1 to stop a vehicle as defined in section 169.011, subdivision 92.”

This is a statutory restriction preventing non-law enforcement officers from conducting traffic stops. This would require more than a city council resolution but would require state legislation to be altered to make this a plausible idea.

Conclusion

Policing has a long history in the United States, it has become a symbol of a stable society. Law enforcement has a history of adapting to society, albeit at times slower than should be. Studies have shown that investing in the criminal justice system is economically sound. Increasing police enforcement and sentencing has been shown to reduce crime in the targeted categories (Donohue and Ludwig, 2007). The reduction in victimization not only saves more victims being harmed but saves on the financial cost to society (Shepherd, 2002).

As we know, enforcing laws and incarcerating offenders does not come without a societal cost (Shepherd, 2002). There is more to law enforcement than simply arresting offenders and providing more services by state and local government than police officers. As society has evolved, so must policing. President Obama commissioned a study guiding law enforcement into the 21st century. Some of these guiding principles include changing the mentality of law enforcement, investing in technology, improving transparency, building legitimacy, and using COP (Final Report of The President's Task Force on 21st Century Policing, 2015).

These reforms can come in the way of BWC programs, committing officers to COP events, and upgrading systems to track data. It is estimated that these costs alone would be hundreds of millions of dollars (Smith, 2021). These investments are just some of the recommendations voiced in the Final Report of The President's Task Force on 21st Century Policing. In a time when defunding police has become a popular slogan, the needed reforms for law enforcement can be forgotten.

Officers and activists agree that too much responsibility is placed on law enforcement that is far outside the scope of the criminal justice system. Officers and reformists both cite mental health, substance abuse, and a host of other non-crime functions tasked to law enforcement as a waste of resources (Ray, 2020). As the debate continues with defunding the police and reallocating resources to other social services, the funds needed for reforms cannot be forgotten. Very few are calling for the actual abolishment of the police, despite rhetoric from places such as the Minneapolis City Council (Ray, 2020). Most agree the police need to exist and most agree law enforcement needs reimagining. This is a very complicated issue with much at stake for the community. A plan and leadership are needed. When those do not exist, the present-day challenges we experience in Minneapolis arise.

In the first six months of 2021, the murders in Minneapolis more than doubled compared to 2020. (Sepic, 2021) Further, Mayor Frey laid this directly at the feet of the City Council’s calls to defund and abolish the police department. The apparent quarreling transpiring between the city council and the mayor gives at least the appearance of no plan being made to relieve the pressure from the police department while cutting funds (Flood, 2021). There is a need and a desire for reform from both the community and within law enforcement. Minneapolis has been an unfortunate example of how quick actions may not lead to the desired outcomes. However, this does not mean that investments in areas other than law enforcement will negatively affect crime. It is the opinion of law enforcement officers this will indeed lead to safer communities in the long run.

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The Implications of Good versus Bad Forecasting and the Potential Impact on Housing and Urban Development

by Crystal Von Ende

Introduction

Forecasting is defined as a way “to calculate or predict (some future event or condition) usually as a result of study and analysis of available pertinent data” (2021). Forecasting was created out of necessity during a time of great instability within the nation where there was, “severe economic, social, and scientific turbulence churning at the dawn of the twentieth century” (Silverthorne, 2014). Collectively, “people were eager for any semblance of stability and predictability. From this need for certainty emerged a group of entrepreneurs who promised to apply scientific methods to predict the economic future, and in essence moderate the risk of investing in capitalistic ventures” (Silverthorne, 2014). The idea of forecasting is to help businesses plan better for the future. Forecasting is something that can be tailored to whatever industry it is needed for. A common forecast that individuals may utilize daily and be familiar with is the daily or weekly weather forecast. This information was created for people to be prepared for mother nature. By being prepared this can help you understand how to dress for the day or can help you decide what to pack on a trip. The weather also impacts other industries, such as farming or entertainment for outdoor events. While weather forecasts rarely are 100% accurate, this is also true for forecasting in general. You will not get 100% accuracy.

While this idea may make some perfectionists cringe, it should be known that typically you should be aiming to find a confidence interval or level for your data that you are comfortable with presenting. A confidence interval indicates, “how sure you can be. It is expressed as a percentage and represents how often the true percentage of the population would pick an answer that lies within the confidence interval. The 95% confidence level means you can be 95% certain; the 99% confidence level means you can be 99% certain. Most researchers work for a 95% confidence level” (Siegle, 2015).

When analyzing the idea of forecasting, one must look at the importance of forecasting itself. The housing market is a relevant and hot topic right now, and within this market forecasting is specifically important. The paper will focus on the role forecasting plays in planning for the future regarding affordable housing. Affordable housing is a public policy issue that is important to address, and forecasting can help plan for these future needs. The paper will also touch on tips for better forecasting methods and highlight how to recognize if your efforts have been effective.

Good vs Bad Forecasting

When thinking about forecasting, understanding that you will never be able to predict the future with 100% accuracy is good to keep in mind. Sometimes in larger organizations or companies, "forecasting can become a trap rooted in bad assumptions that sit on top of years and years of decisions and results that are now clearly outdated and no longer the market standard. Do not fall into this trap; do not tolerate lazy forecasting" (Carroll, 2019).

In my own line of work, I utilize forecasting daily. I am another set of eyes on the data before finalization where we consistently, "adjust forecasts based on refining the process of how raw data is collected" (Cosper, 2017). My organization's process is very manual. A forecast is determined by project managers and there are a variety of factors that go into the creation of a forecast. Some items my technology company analyzes to determine forecasts are previous data, current resources, and the needed budget. While I shared how my company operates, generally a forecast that is deemed as good, is one that is going to help an organization be prepared for the future. If the forecasting was poorly done, then it will amount to a waste of time and resources for the forecaster and parties involved.

Why is Forecasting Needed?

Previously, we had mentioned different scenarios where an individual may have interacted with forecasting in their day-to-day life. Different industries were mentioned that utilize forecasting since it is something that is a versatile idea that helps organizations to be successful for a variety of reasons. In my current position, one of my main jobs is to be a final check for multiple projects and their forecasts. These forecasts help my business plan in a variety of ways. When thinking about the future of housing across the US, forecasting can be useful and help the country stay organized and be prepared. Forecasting assists the US Government in organization and preparedness which helps in budgeting and tracking of progress overall. The paper highlights why forecasting is needed specifically when it comes to affordable housing, and how the government can utilize forecasting in planning for the future.

Organization/Preparedness

The affordable housing need is on the rise and will not go away. The need for affordable housing and housing that overcomes the reputation of affordable housing of the past is more necessary than ever, “although the demand for rental housing is stronger than ever, regulatory barriers, a lack of government subsidies, and local anti-development sentiment have limited developers’ ability to meet this demand. Developers and policymakers will need innovative strategies to reduce these constraints” (2017).

Overall, the government can utilize forecasting to see the future trends and needs of units for families and individuals where in 2030, “4.6 million new multifamily units will be needed. More than 1 million of these units will be needed in the top five housing markets of New York, Dallas-Fort Worth, Houston, Miami-Fort Lauderdale, and Atlanta. This demand can be attributed partly to trends in population growth” (2017).

With this expected surge in the need for affordable housing, especially propelled by COVID-19, it was forecasted that there would be,“demand from buyers who delayed purchasing homes because of the pandemic; from existing homeowners who need larger spaces to accommodate parents working from home and children attending school virtually; and from condo owners who are seeking to escape multifamily buildings for single-family houses to mitigate exposure to the virus” (Orton, 2021).

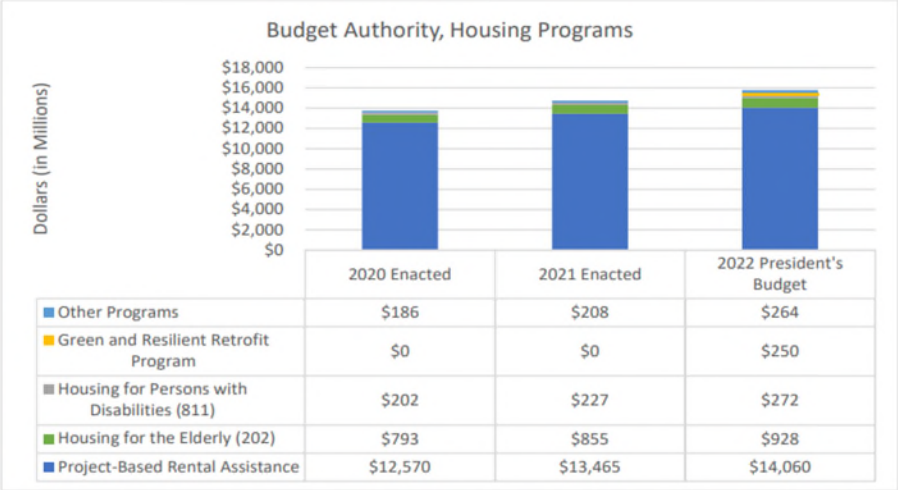
It is important for the US Government to act immediately to prepare for these needs of the country as the population continues to grow and recover from the pandemic as well.

Budgeting

Each year the current administration releases the proposed budgets for the upcoming fiscal year, “On May 28, 2021, the Biden-Harris Administration submitted to Congress the President’s Budget for fiscal year 2022. The 2022 President’s Budget requests $68.7 billion for the Department of Housing and Urban Development. This is approximately $9 billion more than the enacted level for 2021, to meet urgent housing challenges and build 21st century housing infrastructure by strengthening the federal housing safety net, tackling homelessness, increasing

access to affordable housing, advancing equity in our housing policies, and addressing the climate crisis" (HUD, 2021).

Forecasting allows the Government to study and look at past budgets to determine future ones. Budgeting is important because there must be money to cover the needs of the future for housing specifically. By figuring out this part now, the government can avoid spending money elsewhere to make up for any housing needs that are not met. In the budget there is specifically money allocated to help find affordable housing for those in need, "The Budget requests $15.3 billion for rental assistance programs managed by the Office of Housing, including Project-Based Rental Assistance, Housing for the Elderly (Section 202), and Housing for Persons with Disabilities (Section 811). This funding level provides over 1.3 million low-income households and vulnerable populations with rental assistance, as well as funding the construction of 2,000 additional Section 202 and Section 811 units, giving the Nation's most vulnerable populations access to safe and affordable rental homes" (HUD, 2021).



	2020 Enacted	2021 Enacted	2022 President's Budget
Other Programs	$186	$208	$264
Green and Resilient Retrofit Program	$0	$0	$250
Housing for Persons with Disabilities (811)	$202	$227	$272
Housing for the Elderly (202)	$793	$855	$928
Project-Based Rental Assistance	$12,570	$13,465	$14,060

https://www.hud.gov/sites/dfiles/CFO/documents/2022_Budget_in_Brief_FINAL.pdf.

Note. This graph was created to show the proposed budget for the year 2022 for the Department of Housing and Urban Development in the US. *Budget In Brief*. US Department of Housing and Urban Development. (2021, May 28).

Overall, it is the government's responsibility to plan for these needs as it is getting harder to become a homeowner at an affordable price. A safe space or place to call home should not be unattainable for anyone. For 2022, the President has asked for an increase in funding, which

would align with the trends we are seeing as affordable housing will become even more prevalent in the future.

Tracking

Besides monitoring a budget, forecasting can be used by the government to track the overall progress on projects, initiatives, or goals when it comes to housing and the demand that is needed to be met. If your actuals are way off from what was forecast, this is an indicator that there might be a need for re planning or organizing. In my own organization, we typically have an initial forecast that gets updated regularly due to influences that impact the data. Sometimes with the unknown and outside influences, these are variables that can impact your forecasting greatly, but there is no way to really prepare for this. All in all, the tracking of data leads to good organization and allows for an organization to see where they need to focus and where they need to apply appropriate effort. As time passes, the data that is gathered can be used to discover any trends that are forming. Regarding the Department of Housing and Urban Development, forecasting was used to compare data from past years including 2021 against what would be needed in 2022.

By tracking data through forecasting the government can know what is ahead and can try their best to prepare for the increased needs of affordable housing. In this case, “the market is unable to meet housing demand for all income levels, subsidies, a scarce resource, are needed. Panelist Priya Jayachandran, senior vice president for affordable housing development at Volunteers of America, discussed the continued loss of affordable housing despite increasing need. The federal government no longer funds any new rental assistance subsidies, and although the Low-Income Housing Tax Credit (LIHTC) program is by far the largest source of new affordable housing, it has not kept pace with population growth and demand” (2017).

From the previous graph, we know that the Biden Administration has requested more funding to keep pace with the growing demand for housing. Only time will tell if the government was prepared enough from the use of forecasting. If it is found that the government was ill prepared it will be necessary to readjust and to fix what is not working.

Housing: How Forecasting Helps Predict the Demand for New Housing Over Time

With COVID-19 many people were seemingly stuck at home during the pandemic. After adapting many organizations have designed work from home models pushing forward, adding to the demand of housing. Currently the supply of housing is not meeting the demand of buying, “The problem is new home construction isn’t keeping up with demand. So now you have investors and buyers fighting for fewer homes, which is pushing prices up. Despite the ongoing economic impact of the pandemic, households seeking more space, assisted by low mortgage rates, drove the demand for new homes higher" (Campsi, 2021). Tax incentives were created to encourage homeownership but in the current state of the economy and the housing market it does not allow for individuals to take advantage of it, making it difficult to become a first-time homeowner. Again, this aligns with the idea that affordable housing is needed more than ever, and this is evident from the requested budget that is created from data taken from forecasting.

Where to Improve Methods?

For my own organization, our manual process has worked over the years but now that we are continuing to grow, we have had to re-evaluate our needs especially when it comes to forecasting, “An honest review of forecasting within your organization will help root out the bloat and inefficiencies and create a more nimble, cost-effective organization” (Carroll, 2019). Processes should be continually evaluated to measure the effectiveness and efficiency, and if it is found that some part is not working, this is an indication that change is needed. It is important to readjust when necessary to improve methods across the organization, but especially when using forecasting techniques.

Recommendations/Helpful Tips for Improvement

In my own time forecasting and researching general ways to improve methods, I have learned techniques and practices that would benefit any business or organization that desires to utilize forecasting. Beyond evaluating your processes continually, another general tip is to utilize some sort of checklist to keep one organized as they forecast. In a study focusing on forecasting

methods and principles the authors provide a checklist that shows, “accuracy can be improved by using one of 15 relatively simple evidence-based forecasting methods. One of those methods, knowledge models, provides substantial improvements in accuracy when causal knowledge is good” (Armstrong & Green, 2017). The study also provided the checklist that the authors created:

Exhibit 1: Forecasting Methods Application Checklist

Name of forecasting problem: _____

Forecaster: _____ **Date:** _____

Method	Knowledge needed		Usable method	Variations within components
	Forecaster*	Respondents/Experts†	(☒)	(Number)
Judgmental methods				
1. Prediction markets	Survey/market design	Domain; Problem	☐	[ ]
2. Multiplicative decomposition	Domain; Structural relationships	Domain	☐	[ ]
3. Intentions surveys	Survey design	Own plans/behavior	☐	[ ]
4. Expectations surveys	Survey design	Others' behavior	☐	[ ]
5. Expert surveys (Delphi, *etc.*)	Survey design	Domain	☐	[ ]
6. Simulated interaction	Survey/experimental design	Normal human responses	☐	[ ]
7. Structured analogies	Survey design	Analogous events	☐	[ ]
8. Experimentation	Experimental design	Normal human responses	☐	[ ]
9. Expert systems	Survey design	Domain	☐	[ ]
Quantitative methods *(Judgmental inputs sometimes required)*				
10. Extrapolation	Time-series methods; Data	n/a	☐	[ ]
11. Rule-based forecasting	Causality; Time-series methods	Domain	☐	[ ]
12. Judgmental bootstrapping	Survey/Experimental design	Domain	☐	[ ]
13. Segmentation	Causality; Data	Domain	☐	[ ]
14. Simple regression	Causality; Data	Domain	☐	[ ]
15. Knowledge models	Cumulative causal knowledge	Domain	☐	[ ]
16. Combining forecasts from a single method… ☐ **17. Combining forecasts from several methods…** ☐		**SUM of VARIATIONS** **COUNT of METHODS** [ ]		[ ]

https://faculty.wharton.upenn.edu/wp-content/uploads/2017/11/ForecastingMethods-225-Last-Wk-Paper-1312018.pdf

Note. This checklist was created by J Scott Armstrong and Kesten C Green. Armstrong, J. S., & Green, K. C. (2017, August 1). Forecasting Methods and Principles: Evidence-Based Checklists. The Wharton School, University of Pennsylvania, Philadelphia.

It was suggested to analyze the list where, “Exhibit 1 lists 15 individual evidence-based forecasting methods. They are consistent with forecasting principles and have been shown to provide out-of-sample forecasts with superior accuracy. The Exhibit also identifies the knowledge needed to use each method. Combining within and across methods is recommended” (Armstrong & Green, 2017).

This checklist enables businesses to make the forecast entirely their own. In the end there is not a singular correct or wrong way to forecast, as forecasting is something that is created to fit

with an organization's specific needs. Remember as an organization the aim is not for perfection but progress. Forecasting is a tool that can help businesses succeed if taken advantage of to track and stay organized day to day.

It is important to ensure an organization reviews collected data and only utilizes relevant and credible data. A final thought to keep in mind when forecasting, is understanding that personal biases can impact an organization's forecasting methods negatively. It is best to separate ideologies and subjectivity from fact-based forecasting, "Use accuracy percentages to analyze factors that could have contributed to bias, especially where inaccuracy is extreme. Bias can be eliminated only through trial and error. Believing in a foolproof forecasting system is dangerous" (Cosper, 2017).

Conclusion

Overall, when forecasting, data needs to be continuously collected and recorded so a trend can be identified in the gathered data, "Comparing your data against target goals is one of the fundamental tactics of data analysis" (Li, 2017). With this analysis of data, organizations can understand their operations better and are able to note what is ultimately the best move for themselves as they work to be successful. In the end forecasting is technically inaccurate, but the goal is to be able to come up with a margin that is attainable and can be hit.

In the beginning it was emphasized that the methods of forecasting can be tailored to specifically meet the needs of any organization. The paper focused on the importance of forecasting while providing real life examples of everyday use and specifically touched on the idea of its usefulness when it comes to understanding the future needs of affordable housing, specifically in the United States.

To conclude the research, there were recommendations given that organizations can utilize to master the art of forecasting. Without the creation of the method of forecasting it would be difficult to be organized and prepared for the future. Forecasting is a process that can be completed manually, but in today's world it would not be difficult to find technology companies that will try to convince organizations to go to an automated system. The success of an organization depends on careful planning and the ability to utilize forecasting will help these organizations reach their goals while tracking how it was accomplished.

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The Impact of COVID-19 on International Trade

by Harman Mundian

Introduction

In 2020, the entire world was plagued with a virus known as the coronavirus disease 2019, also commonly known as COVID-19 (World Health Organization, 2020). As a response to help contain the coronavirus disease, and save many lives, many countries and local governments engaged in shelter in place orders (Lempinen, 2020). In addition, borders were closed between countries in order to prevent the spread of coronavirus internationally (Department of Homeland Security, 2020). Due to the closing of borders, the need for workers to shelter at home, and the temporary closing of factories and other workspaces, international trade and finance were impacted. It can be argued that the world depends on international trade now more than it ever has in history. In order to understand how the coronavirus impacted international trade, it is important to ask the questions:

- Were there any changes in trade patterns due to COVID-19?
- Were there any changes in trade volume due to COVID-19?
- What are the implications of changes in trade patterns and trade volume?
- What can be predicted for international trade after the end of the pandemic?

Background on COVID-19 and its Impact

In 2020, the entire world was afflicted with an airborne virus whose origins were unknown (World Health Organization, 2020). This virus was called coronavirus disease 2019, also known across the world as COVID-19. Many can argue that countries were not prepared for worldwide pandemic. In fact, previous pandemics in recent history, such as the 2009 H1N1 virus pandemic were much smaller and contained with very little involvement of the general public (Centers of Disease Control and Prevention, 2021). By March 2020, multiple countries in the world were exposed to the virus (World Health Organization, 2020). It was later discovered that the coronavirus was spread from human-to-human transmission.

In order to combat this virus, governments around the world ordered their citizens to shelter in place (World Health Organization, 2020). By enacting shelter in place orders, the

government hoped to stop person to person transmission. Saving human lives became the first priority, cconomics and other factors came second. As a natural reaction to shelter in place orders, non-essential businesses had to be shuttered and closed down (McPhillips, 2020). By shuttering non-essential businesses, the economy saw less of an input of money and less of an output of goods and services (McPhillips, 2020). For many states and countries, the local shutdowns amounted to a large number of temporary and permanent job losses and businesses permanently closed down.

In addition to shelter-in-place orders and the shutdown of non-essential businesses, international borders were closed down (Mallapaty, 2020). Closing international borders due to COVID-19 was unlike previous pandemics. In the past, only countries with concentrated outbreaks were subject to border closure (Mallapaty, 2020). By closing international borders, international trade between countries was impacted. In order to understand how much a worldwide pandemic can affect the economy, it is important to analyze how international trade was affected during a pandemic.

Impact of COVID-19 on International Trade

Changes in Trade Volume

Generally, with the closure of international borders, changes in trade patterns and changes in trade columns can be expected. The COVID-19 virus expectedly brought dramatic changes to trade patterns and trade volume. It should be noted that world trade was already showing signs of contraction prior to the COVID-19 pandemic (International Finance Corporation, 2020). However, during the beginning of the pandemic, China, the world's largest exporter, saw a swift decline in exports (Hildago, 2020). China saw a dramatic decline of approximately $100 billion in exports in February 2020. The United States and Germany saw declines in April, May and June of 2020. These declines in exports are consistent with the origins of the COVID-19 virus and the subsequent spread into other international countries (Hildago, 2020). Countries such as Australia and Malaysia also saw steep declines in their trading volumes (Verschurr et al., 2021).

The value of global merchandise saw a decrease of approximately 6% (United Nations Conference of Trade and Development, 2020). The decrease in the value of global merchandise

was the biggest decrease in the trade of merchandise since the 2009 recession, also known as The Great Recession. Although the decrease of the value of global merchandise was drastic in response to the COVID-19 pandemic, it was still less than the 9% decrease in value predicted by economists (United Nations Conference on Trade and Development, 2020).

Although many countries saw a decrease in exports and the overall value of global merchandise declined, some countries were able to see an increase in exports (Hildago, 2020). Brazil, a major exporter of soybeans and beef, saw an increase in their exports. In fact, Brazil saw an increase of approximately $200 million in beef exports (Hildago, 2020). Vietnam was also successfully able to increase their trade volumes (Verschuur et al., 2021). It is worth noting that these exports can be considered essential.

Non-essential markets, or markets that did not have a large demand due to shelter-in-place orders, such as the delivery market, the transportation market, and the garment market all saw steep declines in exports (Hildago, 2020). In fact, the Chinese garment market saw a massive $1 billion decline compared to its 2019 levels. China is an exporter of many goods, thus, theoretically, would be able to balance losses in one market with gains in another. However, a decline in non-essential goods would be detrimental to countries that had a comparative advantage, or vastly depended on exporting goods that were considered to be in non-essential markets (Eiteman et al., 2018). This was apparent when the country of Kenya saw a 50% decline in one of their major non-essential exports, flowers (International Finance Corporation, 2020).

Implications of a Decrease in Trade Volumes

In general, the decrease in trade volume is not ideal for countries and their economies. In fact, decrease in trade can lead to an elimination of jobs and lower wages (Scott, 1998). In most cases, a country would like to avoid a decrease in trade at all costs. A decrease in trade volume can also damage trade competition. A decrease in trade can be observed on the balance of payments statement, also known as the BOP, of a country (Kandil, 2009).

A decrease in trade volume can also impede the economic growth of a nation (Blavasciunaite et al., 2020). In addition, a decrease in trade, especially when caused by a pandemic, can also lead to supply and demand shocks in the economy (International Finance Corporation, 2020). Many countries that have the ability to dictate monetary policy, have to

engage in monetary policy efforts in order to reverse the effects of a decrease in economic growth (Eiteman et al., 2018). One can hope an increase in trade volume can bring international economies back to pre-pandemic levels.

Changes in Air Cargo Trade Patterns

As previously mentioned, the coronavirus pandemic has also brought changes in trade patterns. International goods have primarily been transported through airline cargo and through shipping cargo. It is worth noting that only an estimated 1% of global trade is transported through air travel (Willis Tower Watson, 2021). According to the International Air Transport Association, international cargo dropped approximately 8% in 2020 (Willis Tower Watson, 2021). However, different geographic regions saw varying levels of decline in air transport. In fact, some countries actually saw an increase in air transport. In November 2020, months after the beginning of the pandemic, Europe was still seeing an approximate 14% decline in airline cargo demand. In the same time period, Asia saw a decline of approximately 11% and the Middle East saw a decline of 2% (Willis Tower Watson, 2021).

In contrast, North America saw a 5% increase in demand for air cargo. With the increase of e-commerce during the pandemic and the need to transport vaccines in climate-controlled containers, it is possible that airline shipping might increase and be favored as the main method of transporting goods as time goes on (Willis Tower Watson, 2021).

Changes in Shipping and Rail Trade Patterns

Maritime trade accounts for 80% of shipping exports and imports in regions such as the European Union (International Chamber of Shipping, 2020). In 2019, the value of world shipping was estimated around $14 trillion. The shipping industry internationally ships products such as iron ore and grains, which cannot be shipped through air or road transport (International Chamber of Shipping, 2020). As previously mentioned, it is worth noting that world trade was already facing a slight decline in 2019 (United Nations Conference on Trade and Development, 2020).

It is estimated that shipping travel accounts for approximately 11 billion tons of goods per year (International Chamber of Shipping, 2020). However, maritime trade saw a dramatic drop in 2020. In fact, maritime trade dropped approximately 4% in 2020 (United Nations Conference on Trade and Development, 2020). This drop in maritime trade was the largest drop in recent history. Prior to this drop, the last time the maritime trade industry saw a drop was during the 2009 recession (United Nations Conference on Trade and Development, 2020). The causes for the drop in maritime shipping can be attributed to port closures, a decrease in demand and smaller shipping companies filing for bankruptcy (Sta Law Firm, 2020). In order to combat the decrease in cargo volumes, the shipping industry focused on reducing costs and cutting capacity.

Many argue that the COVID-19 pandemic has illustrated the need of digitalization in the maritime trade industry (United Nations Conference on Trade and Development, 2020). Railroad shipping has also seen an approximately 20% drop in shipping (Bhattacharjee et al., 2020).

Predictions on International Trade after the End of the Pandemic

As vaccines are introduced around the world and as more and more countries and economies reopen, world merchandise is expected to increase by approximately 7% in 2021 (World Trade Organization, 2020). This number is still uncertain as of June 2021 because many economies have not fully reopened yet. Although the decline in trade is similar to that during the Great Recession, the increase in trade and GDP cannot easily be predicted due to uncertainties surrounding the virus (World Trade Organization, 2020). However, predictions show that North America can possibly expect an 11% gain in volume of world merchandise trade. In addition, Europe can possibly expect an 8% increase, and Asia can expect a 6% increase in the volume of world merchandise trade (World Trade Organization, 2020).

One can predict that supply of non-essential goods will increase around the world as compared to 2020, due to the reopening on non-essential factories and industries. The increase in e-commerce can also attribute to an increase of supply of non-essential goods. Hopefully, countries such as Kenya, who is a dominate player in exporting flowers to European countries, can see a dramatic increase in their exports (International Finance Corporation. 2020). As

previously mentioned, it is unclear how long it will take countries to reach their pre-pandemic levels of trade.

As a direct response to the reopening of economies, it is expected that the value of global merchandise will increase (United Nations Conference on Trade and Development, 2020). Many countries can eventually begin to see an increase in economic growth and the reintroduction of certain jobs (Scott, 1998). In addition, many countries will see a growth in their GDP, for example, the United States expects a 4.9% growth in their GDP in 2021 (World Trade Organization, 2009). It is also predicted that Europe can expect a 5% increase and Asia can expect a 6% increase in real GDP at market exchange rates (World Trade Organization, 2020).

It will be interesting to see if there are any changes in trade patterns throughout 2021 and beyond. As previously mentioned, the airline transport of goods can be expected to increase as vaccines and other goods require climate-controlled containers (Willis Tower Watson, 2021). Also, as more and more transport companies have adapted to the pandemic by cutting costs and adopting digitalization in their companies, it will be interesting to see how this impacts trade profitability and efficiency in the future (United Nations Conference on Trade and Development, 2020). In addition, as more e-commerce business are introduced, international shipping and trade can see potentially see an increase in the near future.

Conclusion

In conclusion, the coronavirus disease 2019 pandemic caused many countries around the world to engage in shelter-in-place orders in order to preserve human life (World Health Organization, 2020). Many countries did not, and still have not fully reopened their economies. Although shutting down was beneficial to preserving human life, by doing so, international world trade was affected in multiple ways. Due to the closing of borders and other social distancing measures, the normal processes of creating and transporting goods was expectedly disrupted.

In order to understand the impact of COVID-19 on international trade, it was important to research any changes of trade patterns, changes of trade volume, and the implications of these changes. In addition, it was important to make predictions on the changes of international trade after the end of the pandemic. The majority of countries around the world saw a decrease in in

trade and global merchandise (United Nations Conference on Trade and Development, 2020). In addition, there was also a decrease in airline cargo shipping, maritime cargo shipping and rail cargo shipping. One can make a hopeful prediction and hope that trade volumes and GDP increase for countries as more vaccines are introduced and as economies open, preferably sooner rather than later. Although these predictions are still unclear as of June 2021, world economies seem to be heading in the direction of success.

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Foreign Direct Investment and Political Risk in the Ukraine

by Kevin Coughlan

Abstract

Foreign direct investment is essential for a country's economic prosperity and an option for a firm to consider when seeking to increase revenue. Ukraine has struggled to attract foreign investment for nearly thirty years since its independence. Many political, economic, and security risks exist for multinational enterprises, and investors are still hesitant about committing to foreign direct investment. In recent years, Ukraine's government has made efforts to improve and enable the investment environment. This paper outlines some areas of consideration firms should address when considering foreign direct investment in Ukraine.

Foreign Direct Investment and Political Risk in Ukraine

Foreign direct investment is essential for a country's economic prosperity and a firm's growth. Foreign direct investment can be made by establishing at least a 10 percent voting power in a foreign firm or expanding a business into a foreign country (Corporate Finance Institute, n.d.). What differentiates direct foreign investment from other types of investment is the element of control, which "represents the intent to actively manage and influence a foreign firm's operations" (Corporate Finance Institute, n.d., para. 3). This paper examines aspects of foreign direct investment decision and political risks, focusing on the foreign direct investment decisions, market decision and entity structures, and political, economic, and security risks in the context of Ukraine.

Since its independence in 1991, Ukraine has struggled to attract foreign investment and has encountered significant economic, political, and security challenges, which have made for a risky investment environment. Despite these challenges, Ukraine is located on the EU's border, giving it favorable logistical access for trade. Ukraine's abundant natural resources include a highly educated and cost-competitive workforce (International Finance Corporation, 2021). In February 2021, the Law of Ukraine No. 1116-IX "On State Support for Investment Projects with Significant Investments in Ukraine", aiming to attract high-value foreign investment, went into force (Government of Ukraine, 2021). Passing this law shows and confirms the government's commitment to foreign investment. Ukraine's natural resources, coupled with the government's recent laws enabling foreign investment and understanding that privatization ability and revenue

are critical pillars for economic prosperity in initiatives to attract foreign investment, make the country an interesting consideration for firms looking to enter a new market (Prokhorov & Yablonovskyy, 2020).

Foreign Direct Investment Decision

Foreign direct investment-friendly policies attract investors but must be supported with consistency and sustainability for investors to have confidence they can execute their strategy and generate forecasted profiles before they commit to investing (Roberts, 2018).

Multinational corporations make foreign direct investments based on their global expansion strategy and from a financial perspective to increase revues and lower costs. OLI Paradigm theory framework of Ownership Advantage, Location Advantage, and Internationalization Advantage frames the factors for multinational corporations to evaluate when deciding on foreign direct investment (Eiteman et al., 2019). These three conditions are a sound foundation for examining Ukraine as a suitable country for foreign direct investment.

Ownership

A firm must exhibit sound and specific competitive advantage in its home market to stave off copies from occurring in foreign markets (Eiteman et al., 2019). Foreign direct investment also allows a multinational corporation to gain more control or operations and marketing strategy versus alternative means of licensing or exporting (Eiteman et al., 2019). The control over these facets of operations and strategy will combat or reduce the risk of competitors copying a firm's specific competitive advantage.

Location

Market imperfections or comparative advantages are typical factors in location advantage (Eiteman et al., 2019). Ukraine has a highly educated and cost-competitive workforce and ample natural resources (U.S. Department of State, 2020). This highly educated and cost-competitive workforce is considered a comparative advantage depending on the industry (International

Finance Corporation, 2021). Ukraine's Association Agreement with the EU also is a promising step to gaining access to the EU market with greater ease.

Internationalization

Internationalization advantage helps a firm maintain its competitive advantage by gaining control of its value chain (Eiteman et al., 2019). The OLI Paradigm states that the key for a multinational corporation to maintain competitive advantage is through control of proprietary information and human capital, especially when its research generates new information or products (Eiteman et al., 2019). From a financial management perspective, minimizing transaction costs is key to success for a firm's internationalization strategy, and owning a foreign direct investment reduces agency costs from asymmetric information and monitoring foreign partners and suppliers to ensure performance and security of the firm's intellectual property Eiteman et al., 2019). If the firm can self-finance using institutional capital, it will lower its global costs by eliminating the need for significant debt or local foreign debt to initiate foreign operations and the need for joint venture with partners (Eiteman et al., 2019).

Financial Strategy

Financial managers must weigh proactive and reactive factors for the above three advantage conditions. Ukraine's economic and financial markets can become segmented due to regulatory changes, lack of transparency, corruption, cronyism, perceived foreign exchange risk, and other market flaws (Eiteman et al., 2019). Foreign exchange exposure is a high risk to be considered, given Ukraine's economic, political, and security volatility. Volatility will affect transactional, translation, and operational exposures. Financial managers must monitor the local currency and economic, political, and security environments closely. If the currency depreciates, it will affect all outstanding and unpaid contracts from the local office with foreign entities and vice versa. Operationally, a short- or long-term currency depreciation will decrease cash flow on realized changes - future sales volume, prices, and costs (Eiteman et al. 2019).

Finally, currency rate fluctuations will affect the translation exposure of the firm when consolidating financial performance for reporting purposes, the severity of which depends on the amount invested in the country compared to the firm's other global operations.

Market Decision and Entity Structure

Options

The choice of how to enter the Ukraine market will be firm and industry-specific. From a behavioral approach, including culture, legal and regulatory, and institutional environments, Ukraine shares closest similarities with Russia, Eastern, Baltic, and Southeastern European countries, and countries from the former Soviet Union, with the caveat that any countries included in that group which are European Union members will have significant legal and regulatory environmental differences. A network perspective to market entry will have different benefits and risks depending on the firm's risk appetite, corporate expansion strategy, and industry. Some industries could have minimal network opportunities, given the nature of the industry.

Entity Structure

Entity structure in Ukraine depends on if the owner is an individual or company, and the greater the foreign presence, the greater the investment, capital risk, and level of managerial effort (Eiteman et al., 2019). The most common structure for individuals in Ukraine is a Private Entrepreneur or a Limited Liability Company (Contact Ukraine, n.d.). The most common options for business incorporation are Limited Liability Companies (Subsidiary Company), Joint Stock Company (public or private), Joint Venture, or Representative Office (Contact Ukraine, n.d.). Examples of U.S. and foreign firms' registration in Ukraine are Citibank as a Joint Stock Company, Honeywell as a Foreign Company, Nestle as a Limited Liability Company, and Pepsi as a Limited Liability Company (Youcontrol, n.d.).

Financial impacts

Regardless of entity type, individual or corporate, Ukraine has a flat 18 percent corporate income tax based on their Ukrainian-sourced income (PricewaterhouseCoopers, 2021). Passive income is subject to a 15 percent withholding tax rate, but reduced treaty rates might lower that rate depending on the county (PricewaterhouseCoopers, 2021). For example, in 1994, the U.S. established an income tax treaty with Ukraine titled "Avoidance of Double Taxation and the Prevention of Fiscal Evasion with Respect to Taxes on Income and Capital, with Protocol" for American businesses in Ukraine (Internal Revenue Service, 1994). The treaty's purpose was to increase economic cooperation, facilitate trade and investment, and reduce tax avoidance by entities from both countries (U.S. Congress, 1995).

Ukraine does have a stock market, the PFTS Stock Exchange, where Join Stock Companies can publicly trade shares and raise capital; according to PFTS Stock Exchange's website, there are 114 legal entities (PFTS, n.d.).

Culturally, management for the company considering foreign direct investment must consider if the quality and level of work match what the cultural norms are in the country. Increasing employee pay could improve productivity, but it will not solve a significant cultural difference. Walmart's failure in Germany was partially due to them failing to understand the local culture and forcing employees to do things that were not in line with cultural norms or sensitivities. Failure to address the cultural aspect of foreign operations can lead to employees taking legal action against the firm, which would affect operating profitability and reputation and, if severe enough, cause high financial costs and losses for the firm (Eiteman et al., 2019).

Political, Economic, and Security Risk

Country-specific

Measure	Year	Index/Rank	Website Address
TI Corruption Perceptions Index	2019	126 of 180	http://www.transparency.org/research/cpi/overview
World Bank's Doing Business Report	2019	64 of 190	http://www.doingbusiness.org/en/rankings
Global Innovation Index	2019	47 of 129	https://www.globalinnovationindex.org/analysis-indicator
U.S. FDI in partner country ($M USD, historical stock positions)	2018	$402	http://apps.bea.gov/international/factsheet/
World Bank GNI per capita	2018	$2,660	http://data.worldbank.org/indicator/NY.GNP.PCAP.CD

Ukraine Key metrics and Ranking. Source: U.S. Department of State's 2020 Investment Climate Statements: Ukraine (U.S. Department of State, 2020).

"Ukraine is rated Caa1/B/B by Moody's/S&P/Fitch respectively, lower than some emerging markets in Latin America and above those in Africa." (International Trade Administration, 2020, para. 2). Political stability is a concern in Ukraine. Ukraine's efforts to combat and reduce corruption are often stymied by oligarch and the politicians they support (International Trade Administration, 2020.). Further, the country lacks transparency in its tax and customs institutions, including harassment from officials from both institutions. Following the election of a new Ukrainian president in 2019, the government and parliament promoted a reform-based agenda, including passing dozens of laws to improve the current business environment and attract new investment (U.S. Department of State, 2020). COVID-19 has decimated external demand for Ukrainian goods, and government actions to reduce the spread of the virus significantly disrupted domestic production and consumption, spurring the International Monetary Fund (IMF) to forecast the country's GDP to shrink by 7.7 percent in late 2020 (U.S. Department of State, 2020). The IMF released its World Economic Outlook Database in April 2021 and projects 4.04 percent GDP growth in 2021 and 3.4 percent GDP growth in 2022 (International Monetary Fund, 2021).

Civil unrest and the fighting in the easter part of the country presents significant instability risk, much of which is dictated externally by Russia. The lack of de-escalation and peace continues to deter investors.

Ukraine does have a highly educated and cost-competitive workforce and ample natural resources, giving it significant investment potential (U.S. Department of State, 2020). Geopolitical competition has also benefited Ukraine by securing an Association Agreement with the EU, giving Ukraine preferential market access, and furthering economic integration with the EU, which will improve the business environment if successful.

Firm-specific

Given the security instability due to the fighting in the east, charged national politics, and corruption instability risks are of concern for a foreign multinational looking to invest in Ukraine, especially in the eastern conflict regions if they are in mining.

Government risks are present as well. Corruption in the tax and customs institutions can stall or stop operation, decreasing revenue and strategy implementation. Licensing and registration are lengthy and costly for foreign investors (U.S. Department of State, 2020).

Despite these limitations, the Ukrainian government is making efforts to improve foreign investment. One such change is that the Ukrainian government will appoint a government manager to a foreign firm investing more than $100 million to help navigate and resolve obstacles to conduct business (U.S. Department of State, 2020).

Financial impacts

A significant risk is that Ukraine has limited financing resources, so a firm must rely on institutional capital or external non-Ukrainian funding (International Trade Administration, 2020). Ukraine also has a costly regulatory environment that could affect tax implications and operations and production, compounding revenue loss (International Trade Administration, 2020).

Categorizing potential financial losses and political risk can be separated into three categories: First, losses in operating profitability; second, restricted transferability and convertibility; and third, financial asset losses from reputation and expropriation (Eiteman et al., 2019). Generally, financial losses grow as they progress from lower losses in the first category of losses in operating profitability – rate of return restrictions – to higher financial cost or losses

in the third category of actual asset loss (Eiteman et al., 2019). Cases may arise when certain category one losses, such as a major breach of contract or regulatory changes, cause higher financial costs or losses than a category three asset seizure (Eiteman et al., 2019).

Based on a one to ten ranking, one being the lowest risk, Ukraine is ranked at a six in the Organization for Economic Co-operation and Development's Country Risk Classifications (Organization for Economic Co-operation and Development, 2021). The Country Risk Classifications include transfer and convertibility risk and cases of force majeure, which include expropriation, and war, revolution, and civil disturbance, which are occurring or have occurred within the last five years (Organization for Economic Co-operation and Development, 2021).

Expropriation had been common until recently in Ukraine and still presents a risk, but as Ukraine has evolved politically and economically, its government understands privatization revenue is a key objective for a new market economy: private ownership is more efficient than public ownership; privatization of state-owned entities reduces anti-corruption activities within those enterprises; increase in competitiveness and reduces the incentive to grant preferences; and privatization can bring new direct investments (Prokhorov & Yablonovskyy, 2020).

Conclusion

Foreign direct investment gives firms more control of operations, marketing, strategy, and increased revenue opportunity and exposes firms who chose to invest greater risk exposure. Ultimately, it is a firm's strategy and risk appetite that will dictate whether foreign direct investment in Ukraine is an action that will assist in executing their global strategy and meet their financial goals.

Ukraine faces difficult economic, political, and security conditions, and the advent of COVID-19 compounded its challenges for the near future. The conflict in the eastern part of the country has been ongoing since 2014, and there is no clear peace resolution currently and seemingly for the near future. Given the political instability and geopolitical situation, expropriation could occur if political leadership changes, which would cause asset loss. Regulatory changes could occur, increasing costs for foreign firms and reducing or eliminating the financial incentive to operate in the country. Legal entities face limited in-country options to access finance to raise capital. Lack of legal enforcement, transparency, and corruption continue

to be powerful deterrents for foreign investment. Financial managers of any firm operating in or considering foreign direct investment in Ukraine must be attuned to all challenges and constantly monitoring the currency rate to gauge and guard against significant exchange rate risk. These challenges and events are red flags for any firm considering foreign domestic investments into the country.

Despite these challenges, Ukraine's current president, government, and parliament have made positive changes to create an enabling investment environment, including the passage of recent laws promoting investment and attract foreign investments. Ukraine can pose competitive advantages due to its educated and cost-competitive workforce and is making progress with its European integration, albeit slow and with significant challenges ahead. Ukraine offers a variety of entity types to suit the industry-specific needs and risk appetite of a firm. Ukraine is making historic headway with its strongest industry, Agriculture, by adopting land reform, which has not been done since its independence in 1991.

The law goes into effect on July 1, 2021, and the market will only be open to Ukrainian citizens and entities until the government holds a referendum for citizens to vote to allow foreign citizens to purchase agriculture. This law will not allow foreign entities to purchase land but might present foreign firms opportunities for joint ventures or licensing and is seen as a significant step toward economic prosperity. Though the safety in numbers approach can be sometimes misleading, major U.S. and foreign firms are operating in Ukraine, which is an encouraging sign. The U.S. Government also has an established tax treater to eliminate double taxation, which promotes trade with the U.S. While significant foreign direct investment risks remain, Ukraine presents a potential market opportunity for foreign direct investment in the future as the government enacts additional investment-friendly legal improvements and if the conflict is resolved.

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