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ABSTRACT

With data stockpiles growing exponentially, a bevy of new vistas for data use opens up. The digital age affords a fresh perspective for research into Information and Communication Technologies (ICT) and their potential for bringing positive change. ICT can and should be leveraged for global development and social inclusion. One of the most novel ways for achieving that end has been by adopting Data philanthropy (DP) as a practice. Specifically, DP is an emerging concept aimed at using proprietary firm data from both private and public companies for social and strategic benefit (Taddeo, 2016). Given the centrality of data in all forms of ICT, DP has proven itself to be impactful for empowering societies with better insights while giving a competitive boost to participating firms. Companies like Genentech and Pfizer and social networking sites like Reddit have been donating their proprietary data to organizations like the UN to create a sound infrastructure to facilitate firm level data sharing.

This paper investigates the impact of data philanthropy on the strategic advantages for data donor firms and how data sharing not only helps solve social issues but aids the donor firm, as well. The paper explores the theoretical foundations of CSR studies and how data philanthropy can serve as a logical extension of the same. The implications of the research are discussed and are used to support data philanthropy adoption. The article employs a meta-view of multiple examples to highlight the potential which data philanthropy holds for the various stakeholders involved. We find that the outcomes of data philanthropy include more diverse sources of innovation, making the firm more attractive to millennials in terms of employment and market, and creating a greater impact than traditional corporate responsibility programs.

Keywords: Data Philanthropy, Corporate Social Responsibility, Data Partnership, Open Data, Strategic Management, Big Data, Data Donation, Data Co-operatives, Data Privacy

1. INTRODUCTION

ICT4D – Information for Change, Information for Development

The concept of Information and Communication Technology for Development (ICT4D) aims to harnesses digital technologies to service the most pressing problems of our times like climate change, job inequality, poverty, food insecurity, financial inclusion etc. Economic, political and social life are becoming increasingly digital (Hecks, 2008). The solutions to problems of these spheres are also deeply entrenched in the digital and ICT domain. Like any classical math problem solving, the more the relevant information available, the easier it is to solve for 'x'. Data is available in abundance today and given that data is central to all paradigms of ICT backed solutions, a data driven analysis can more often than not help us diminish the inherent uncertainties of social problems and arrive at accurate predictions. It is for this reason that policy planners and governments all over the world have turned to Informatics to supplement traditional decision making processes (Hecks, 2006).
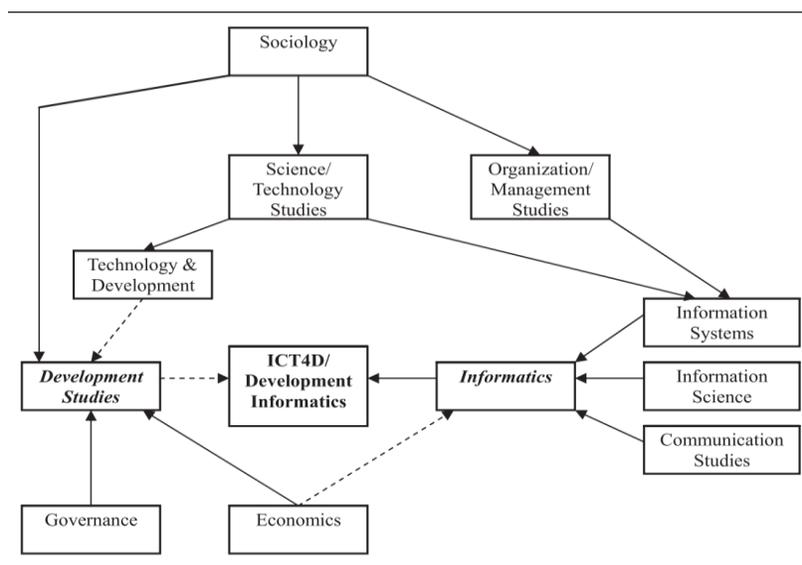

Figure 1. Informatics: a new solution for old problems (Hecks, 2006)

With great data comes great responsibility

The 21st century holds the distinction of being referred to as the age of data (Birkinshaw, 2015). In a few years humans have managed to generate more data than all of history combined, with an estimated 44 zettabytes of data created by 2020 (Desjardins, 2019). However, it is not only the amount of data which is unprecedented but our ability to do novel things with it which has sparked what we call the 4th Industrial Revolution (Shaw, 2016). How good this interaction becomes is society's onus as a whole. With Big Data becoming more of an industry than a technology, data has been transformed into a resource. How this new resource is mined and utilized includes a slew of ethical, social and strategic ramifications. The primacy and pressing need for prudent and ethical data use is the need of the hour (Martin, 2015).

Data philanthropy - Data driven socio-corporate partnerships

From the above line of thought emerges the concept of data philanthropy. Originally coined at the 2011 Davos conference of the World Economic Forum, data philanthropy gained a wide currency through Global Pulse; an innovation initiative of the UN Secretary-General (Verhulst and Sangokoya, 2014); Pawelke and Tatevossian, 2018). Data philanthropy is defined as sharing of private data assets to serve the public good (McKeever et al. 2018). This includes direct access to raw data or data driven insights, trained data-skilled personnel, and data technologies (George, et al., 2019; Susha et al. 2019). At the height of the global financial crisis of 2009, data philanthropy, as promoted by Global Pulse, gained traction from a lot of data wealthy companies who wanted to advance social good and use the collective intelligentsia of the global data science community for better predictions. This opened the door for more companies to release their data or at least their data insights for others to work and build prediction models upon. In this sense data philanthropy derives its philosophy from the idea of a Global Data Commons or a Data Cooperatives (Susha et al., 2017; Young, 2018).

There is growing agreement that social partnerships like data collaborations and data philanthropy are needed for the complex and "wicked" problems of the 21st century which are beyond individual abilities (Susha et al. 2019). Over the years there have been multiple cases which have proven why data philanthropy is an idea whose time has come for the benefit of society. In this paper, however, we focus on the nuances of data philanthropy, the challenges and

criticism it faces, and the value it adds to firm donors. We look at some successful examples of companies who are embracing the idea of data philanthropy and how it goes beyond the impact of traditional CSR charities. Our primary research questions are as follows:

- How does data philanthropy provide strategic advantage to the firm?
- How does data philanthropy help to maximize profit for the donor firm?

The paper begins with a literature review, then we discuss the method used in this paper. We then proceed to the theoretical foundations and examples of various types upon which we base our reasoning about the strategic advantages of data philanthropy. Finally we discuss our propositions and the implications of our research. We wrap up with a conclusion, discussion of limitations, and call for future research.

2. RELATED WORK

Given the high potential for bringing change, more organizations and corporations are adopting data philanthropy as an integral part of their manifesto. This translates to a high volume of quality literature, technical manuscripts, case studies and op-eds by stalwarts. This provides the primary loci of the paper's literature review. The extant scholarships on the subject revolves around driving home the importance of publicly available data, resolving the privacy concerns of such data sharing, creation of mutually agreed upon frameworks and business paradigms to share data and/or insights (Pawelke and Tatevossian 2018). The current research on the social and strategic implications of Big Data, data driven social partnerships (Susha et al. 2019), data privacy (Lev Aretz 2019) and good practices (Mzuku and Van Belle 2018) also provides some key critical insights.

To understand data philanthropy, we must understand both data and the concept of corporate philanthropy. Post industrial revolution, life began changing at a much rapid pace than before. Social structures became more complex and with the advent of internet, the immensity and complexity of data further increased. Today, as per IBM, over 2.5 quintillion bytes of data are generated every day (McKeever et al., 2018). Data-driven firms from across the spectrum are starting to invest into data in order to glean insights and useful predictions. This fits proprietary data into the classical taxonomy of a resource in a resource-based view of an organization (Barney 1991) and also passed Barney's VRIN classification (George et al. 2019). The Resource Based

View (Barney, 1991) provides one of the driving theoretical foundations for our study and helps us quantify data as a resource, the prudent use of which helps better the strategic advantage of a firm in this age of data.
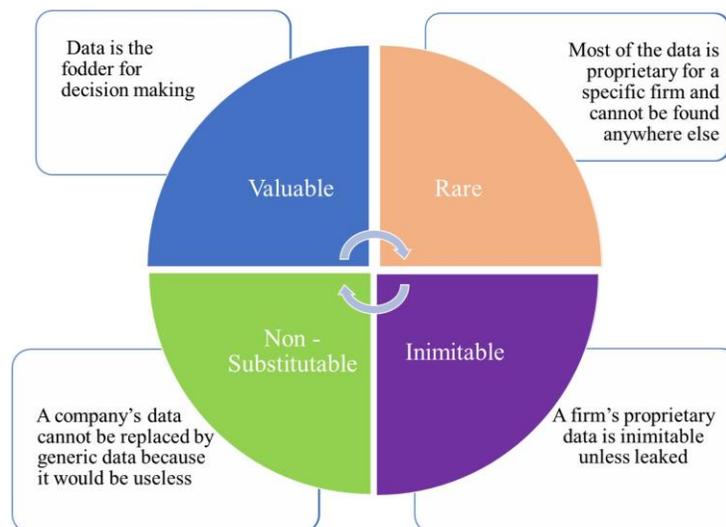

Figure 2. Data as a VRIN resource from George et al. 2019

A majority of this data is what we call massive passive data or data exhaust. This is the data collected by private companies like Google, Facebook, Netflix, and Verizon and usually resides beyond the firewall of organisations. "Massive passive" data sources are not necessarily impotent. These data sources have enormous potential for bringing change. Big Data can isolate the less conspicuous undertones of social issues. This helps identify hidden trends and patterns which can be effective in alleviating a humanitarian crisis (Lev Aretz, 2019). Take for example, the Nepal earthquake in 2011. After tragedy struck Nepal, Ncell, Nepal's network provider released its data to Flowminder, a firm that builds population displacement models to map the displacement of populations across the country to create hot-spots and help in providing directed assistance (Lev Aretz, 2019). Another noteworthy example is DMC International Imaging (DMCii) and the data it provided to Algeria to track the spread of locusts (Stempeck, 2014). At the other end of the spectrum, the recent debacle of Facebook and Cambridge Analytica demonstrated how insights from passive data where used to influence voters. This shows that data is an extremely powerful resource which is as good or as bad as we make it.

The other concept we examine is Corporate Philanthropy which chiefly manifests itself in the form of Corporate Social Responsibility (CSR). Over the years, there has been a change in the functioning of corporations. Though most of them promote profit maximization and shareholder primacy, it has become standard practice to contribute towards societal good as well. We see that in the rise of novel legal entities such as Benefit Corporations and creative and impactful CSR activities. The strategic importance of CSR activities provide other theoretical foundations for our study as we shall see.

Data philanthropy is a digital manifestation of Corporate Social Responsibility (Mzuku and Van Belle, 2018). Extending CSR to include Data Philanthropy helps in not just giving back to the society but also ensures strategic advantages involving business continuity, better talent hiring, enhanced reputation, inroads into newer markets etc. This has been well articulated by Porter and Kramer as they discuss Strategic Philanthropy as a means of improving the collective competitive business space (Stempeck, 2014).

Data sharing as a CSR activity impacts the overall business and social paradigm. Many companies have formed what might be called a data cooperative, a form of a public-private partnership in which different government, non-profit and private organizations exchange data and insights. This helps in addressing the problem of lack of data which impedes effective problem solving. A mutual exchange of data also helps alleviate a corporation's concerns of losing strategic market value (Young, 2018). Shared data resources are made available to the general public or external researchers by either signing specific Non-Disclosure Agreements (NDA) or by creating an Application Programming Interface (API).

A holistic synthesis of the above leads us to data philanthropy. It aims to leverage and implement a "data for good" framework. This generates public goodwill and helps in attracting millennial talent, foster innovation, generate better business insights and empower society on a whole (Buckley et al. 2016). We should care about millennials and Gen Z because they will make up the lion's share of workers and consumers in the years to come. Deloitte's Millennial Survey for 2019 revealed that almost half of millennials would quit their current job within two years if possible. News of this sort is a warning bell for employee retention. Deloitte's Millennial Survey has shown year after year that there is growing unrest among millennials who have altered

ambitions (Doyle et al., 2014). Millennials, the report notes, have different yardsticks to measure businesses. They believe a business should prioritize the production of high-quality goods and services (36 %) and generate jobs (35 %) over sheer profit making ("The Deloitte Millennial Survey," 2019). Organizations participating in data philanthropy and opting to be drivers of change may be more attractive to millennial talent with greater social welfare concerns.
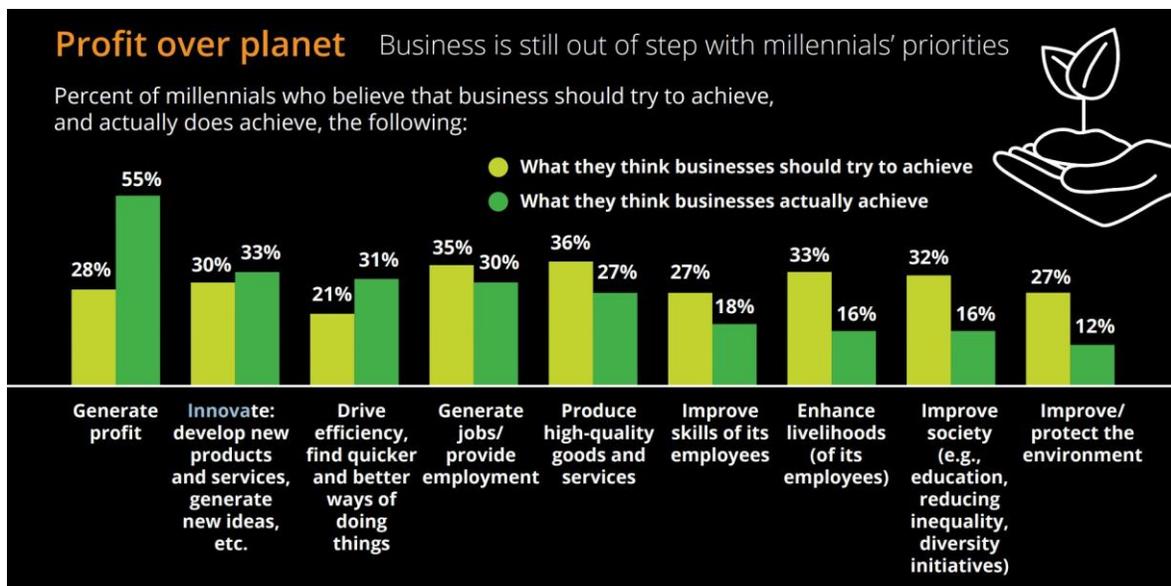

Figure 3. Changing Attitudes of Millennials from the Deloitte Millennial Survey 2019

Data philanthropy achieves many of the goals traditional or social philanthropy seeks plus adds value for the firm. It is the next step in creating shared value (CSV) in an increasingly digital paradigm (Porter and Kramer 2019).

Table 1. Public Value Propositions of Data Sharing from Young 2018

Public Value	Campaign	Comments
Situation Response and Awareness	Facebook's Disaster Maps Initiative	Facebook data helps more targeted relief efforts
Knowledge Creation	LinkedIn's Economic Graph	Better insights on the economic conditions, recruitment patterns, job seeker behaviour
Public Service Design and Delivery	Waze's Connected Citizen Program	Crowd source traffic data for seamless urban commute

Prediction and Forecasting	Google Flu	Data program to track and predict influenza outbreaks
Impact Assessment	Sport England's #ThisGirlCan Campaign	Used data from Twitter to better comprehend girl's view on exercise and physical activity

Owing to such substantial public value, firms are beginning to embrace Data Philanthropy with much more enthusiasm (Team WD 2019). Since not all data is the same, how a firm chooses to share its data depends a lot on the context, type and resources available. Data sharing models usually operate between conservative self-mining to giving public direct access to data. The following figure and table illustrate the various pathways of data philanthropy succinctly.

Table 2. Pathways of data philanthropy

| Pathway	Description	Example	Description
1	Firm self-mines in-house data and releases insights in public	MasterCard's Donation Insights	Helped analyse trends in donations and philanthropy which helped organisations understand the causes people care about and demographics of philanthropy
2	Firm brings in external researchers to mine in-house data and release insights in public	Facebook's CommAI Visiting Research Program	Provides for a select researchers and data scientists to work with Facebook on machine learning research and publish their work for the world
3	Firms establish Data Cooperatives to aggregate and work upon data	UN's Global Pulse Program	Collect data from various sources and fields to solve issues related to sustainability, climate change, humanitarian lapses etc.
4	Firm shares its data with external researchers	Neilsen and Feeding America	Sharing data pertaining to food purchases to fight food insecurity at a national level
5	Firm allows direct public access to its datasets	Twitter	Allow students and data scientists to access its live data and tweets via the twitter API

Accessibility of Data to the Public
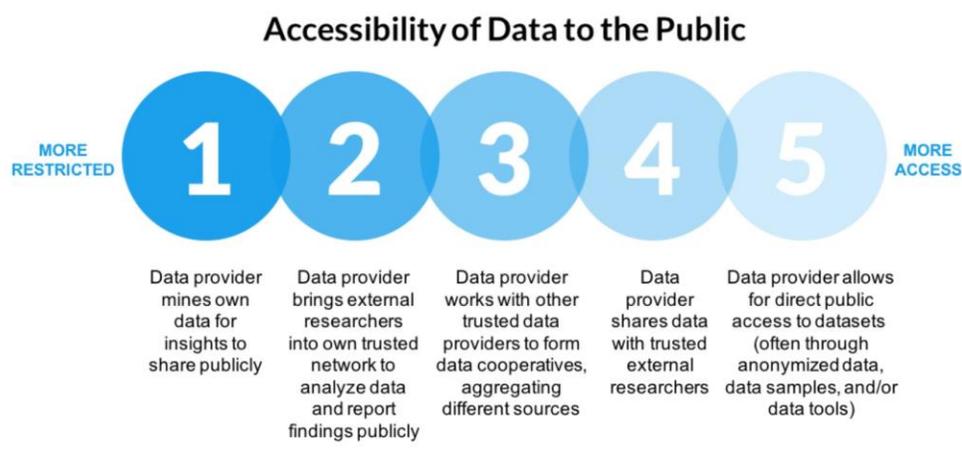
Figure 4. Data Philanthropy Pathways (Pawelke and Tatevossian, 2018)

With firms embracing data philanthropy, there emerges an obvious logistical roadblock: implementing the norms of data privacy in letter and spirit. Corporate (or any type) data sharing might, at first glance, appear at odds with data privacy. However, as technology and database methodologies of Extract, Transform, Load, Aggregate become more sophisticated, it becomes easier for firms to share data en masse which cannot be traced back to any individual user. As noted earlier many firms which have particularly sensitive and personal data prefer to opt for a more stringent data philanthropy pathway and release general trends, aggregates or insights into the public domain. Despite this, there is still an absence when it comes to an internationally accepted and mutually agreed upon rubric to share data. Resources like The Data Manifesto (*Data Values and Principles* 1999), Fair Information Practice Principles (FIPs) (Lev Aretz, 2019), Signal Code, and the International Red Cross Handbook on Data Protection in Humanitarian Action (Alemanno, 2018), propose different frameworks to help more firms and organisations adopt comprehensive data philanthropy practices. OECD (Organisation for Economic Co-operation and Development) has teamed up with Mastercard and an initiative aimed at formalising data sharing models. Together the two firms are working to analyse general trends in data sharing and suggesting ways to make them better and more efficient (Alemanno, 2018).

The data philanthropy process involves multiple stakeholders (Lev Aretz, 2019)

We break down the stakeholders in data philanthropy into three groups; Problem holders, data holders, and skill holders. Problem Holders are closest to the general public and include

governments, non-governmental organisations (NGOs), and non-profit organisations. The problem holders are well positioned to provide other stakeholders with valuable knowledge about the various metrics of the project. Since they voice the interests of the target population, problem holders help in creating a more inclusive solution and bridge the dichotomy between the perspectives of the public and that of the skills and data holders.

In contrast, data holders generate the data. This group includes large data-producing firms like Google, Netflix, Verizon, or Facebook. A corporation's interest in data is situational and context driven. It might pertain to collected data or derived IP and insights. This group is a primary stakeholder in any data philanthropy model owing to their large reserves of data, although the concept of "data ownership" also leads to legal questions and red flags, which we will discuss shortly.

The last group of stakeholders may be the smallest but is critical for anything useful to come out of the activity. These are the skill holders. These stakeholders have the technical expertise to engineer data and extract insights from it. Amongst other stakeholders, they interact the most with raw data. Their work includes cleaning the data, visualising it and finally communicating insights or predictions to the other stakeholders for things like policy planning, strategic decisions, publications etc.

3.   THEORITICAL FOUNDATIONS FOR STUDY

The chief theoretical foundations for our study stem from how we can measure the performance of a corporation and how CSR activities are linked to a firm's strategic advantage. This paper, then extrapolates the extant theories and build upon the same to show how data philanthropy can be a logical extension to CSR activities. To contextualize our research it is imperative to understand the metrics of the firm's performance, what it means to be at a strategically advantageous position.

Traditionally a firm's performance is judged on the basis of the Resource Based View as proposed by Edith Penrose's book "The theory of the growth of the Firm" (Falkenberg & Brunsæl 2011). Penrose's assertions were built upon by Barney who proposed the VRIN classification (Barney 1991) to analyze a firm's resources. Strategic advantage can be defined as maximizing upon the same valuable, rare and non-imitable resources (Falkenberg & Brunsæl

2011). Today these frameworks have been extrapolated to include the value addition a firm's strategic footing has by factors like the talent being attracted to the firm. This includes talent in terms of employees (their motivation and retention), senior management (CEO and board of directors) and investors. In addition to these, market reputation also factors in as a strategic advantage booster (Branco, M. C., & Rodrigues, L. L. 2006).

A conventional route firms take to help enhance the above and balance their social responsibilities is Corporate Social Responsibility (Carroll 1979). Leading firms like Google, General Mills, Whirlpool have constantly shown an unwavering commitment to their social responsibilities encompassing local communities, employees and the world markets at large (Guarnieri, R., & Kao, T. 2008). Such firms have utilized CSR as a tool for competitive advantage by opting for CSR activities which help enhance their resources, reputation, talent retention and other metrics of performance as mentioned above. More and more companies are opting for the Freeman's argument of serving the wider stakeholder over Friedman's profit primacy model. This shift reiterates the fact that CSR outcomes add considerable value to a firm's strategic footing when they fit Barney's VRIN classification (Falkenberg & Brunsæl 2011), develop better human resource capabilities (Brekke & Nyborg 2004), attract ethical investors (Baron & Diermeier 2007; McWilliams & Siegel 2011) and preempt regulatory or punitive action by the government (McWilliams & Siegel 2011).

Data philanthropy and corporate data sharing comes across as a logical extension to CSR activities which add value to a company's strategic position. A firm's data is a resource and as per RBV and Barney's VRIN classification, can be a source of strategic advantage. Sharing this proprietary data as a service or in anonymized form can help the donor firm get better insights, increase the value of its data in the market, and increase market reputation. These may result in the ability to charge higher prices in the future, attract better investors. McWilliams & Siegel 2011 provide empirical support for how investors seem to show more interest in socially responsible firms. This would help in offsetting untoward costs and unseen risks which might beset a new field like Data Philanthropy, incentivizing firms to better adopt DP as an extension to pre-existing CSR activities. In addition to theoretical evidence we also take into consideration multiple case studies to drive home the importance of data sharing and how it corroborates the positives and outcomes which might be expected if a firm engages in it. These outcomes, which

range from better market reputation to increased public good to increased demand all provide a competitive impetus to their respective firms as we shall see.

4. METHODS

For this paper, we took into consideration several examples to help us understand the correlation between data philanthropy and increased firm strategic position while providing a public good. These diverse examples are a practical manifestation of our theoretical foundations we dealt with earlier and allow our analysis to be representative of the general trend and help to craft propositions which can be extrapolated to fit any type of firm. We take a look at Microsoft, Neilsen, National Institutes of Health, and the United Nations Global Pulse Program's initiatives. These examples are taken from pioneering firms which in a lot of ways initiated a healthy practice of data sharing in their respective domains. In addition to being pioneering firms, the amount of information available to the researchers pertaining to the firm's practices, variety/differences from other programs, and demonstrable benefits to the firm allowed for an exhaustive examination.

5. SUCCESSFUL EXAMPLES OF DATA PHILANTHROPY

Orbital Insight's renewed investor traction

From a business point of view profit and strategic market positions remain one of the strongest determinants of influencing corporate decision making. Data philanthropy can help bolster both as is evident from the example of Orbital Insights, a data analytic firm. Orbital shared Geo-tagged data and satellite imagery with World Bank to track poverty trends across the globe (Insight, 2017). This partnership, apart from helping academicians and non-profits to be better equipped to fight poverty, allowed Orbital to attract significantly more investors than in the past. It raised a capital of 78.7 million dollars eventually (Lev Aretz, 2019). Apart from the social change data philanthropy projects bring about, they also help increase the credibility of the firm. This increases the bargaining power and investor traction which go a long way in benefiting a corporation.

Neilsen's strategic boost

When it comes to sharing data, many a firm shy away from releasing their data lest they should lose their strategic advantage and market position. Neilsen is a great example of how data sharing can help in actually bolster a company's market perception. Neilsen Holdings is an American multinational firm specialising in information and data driven measurements. Neilsen decided to open its data sources to Feeding America; a USA based non-profit organisation tackling food insecurity. Neilsen's philanthropic arm Neilsen Cares supplied Feeding America with data about individual food purchases of people. They created an interactive map to visualise key indicators of food insecurity in every state of America. (*Nielsen and Feeding America Collaborate to "Map the Meal Gap" - News Center,* 2019). Apart from the obvious positive social impact Neilsen also benefited with a much improved public perception for the subsequent quarters. The public value of its data and insights also increased manifold (McKeever et al., 2018).

Orbital Insight Development Classifier Mapping Buildings

Figure 5. Orbital Insights geospatial feature mapper

Figure 6. Neilsen's Interactive Food Map

Microsoft's Profit and user base increase

To understand how corporations can increase their profits by participating in data philanthropy, we look at Microsoft. After its LinkedIn acquisition in 2016 (*Microsoft to acquire LinkedIn,* 2016), Microsoft became the proprietary owner of what is perhaps the most exhaustive employment portal in the world. Microsoft decided to provide workforce report to multiple communities around the globe so that those companies could help identify their local skills gap better. There was considerable worry that the data outflow might jeopardise business for LinkedIn and blunt its proprietary advantage. John Paul Farmer, former director of civic innovation, recalls the project sparking considerable concern at the time of its inception. He notes that giving away data actually helped ramp up business for LinkedIn with more people choosing LinkedIn and thinking about what other data the portal might have. This led to more people and businesses choosing the premium LinkedIn services (Live, 2018).

6. DISCUSSIONS, IMPLICATIONS, AND PROPOSITIONS

Data philanthropy facilitates change that impacts business and social climates

One of the best examples of how data philanthropy can help drive change at a large scale comes from the National Institute of Health (NHI). Healthcare is one of those wicked problems that is everyone's issue because it impacts businesses on a micro level and society on a macro level. NHI facilitated the collection of aggregate data from the top bio-pharmaceutical companies to better analyse Alzheimer's Disease (McKeever et al. 2018). Each of the participating firms had large quantities of data-sets available including information on a patient's medication preferences, reorder frequencies, and symptoms. Since this was a collaborative effort, the amount of data collected was much more than a single researcher could have collected. The participating firms mutually gained from the insights the research continues to produce impressive strides in looking for potential cures.

The United Nations Global Pulse program which we were introduced to in the beginning of the paper is also one of the stalwarts when it comes to leveraging data philanthropy for general good. Its flagship project was the Data for Climate Action Innovation Challenge (George et al., 2019). The challenge was a global hackathon with data sets provided by nine companies; BBVA Data & Analytics, Crimson Hexagon, Earth Networks, Nielsen, Orange, Planet, Plume Labs, and Schneider Electric. Microsoft and Tableau provided the tools for cloud setup, visualisations etc. The program tried to leverage the larger data science community to find innovative solutions to the complex problem of Climate change, which is too big a problem to be solved by one organisation or government. Like healthcare, climate issues impact both micro and macro aspects of business and society. The research that ensued at multiple levels of academia and the innovation that was sparked helped initiate a new dialogue and put problem solving in motion.

Questions to answer while moving ahead

Data philanthropy being a new field has some structural challenges inherent to it. Not just as an extension to CSR but also on its own merit, there are some questions which firms should try and answer to extract maximum benefit from DP. The challenges to data philanthropy usually span across regulatory, organisational, data driven and societal bottlenecks (Susha et al., 2019). There are concerns about data ownership, legal provisions, paucity of resources and lack of quantitative data to establish objective co-relations, all of which impact firm decisions to engage in data philanthropy and the value of the activity for the firm. DP, just like traditional CSR

activities involves multiple stakeholders and moving ahead we need to bring the all of them on the same page when it comes to discussing the following concerns:

Whose data is it anyway?

The biggest gap in the current understanding of data philanthropy stems from the definition (or the lack thereof) of data ownership. We saw how firms own "massive passive data" or "data exhausts" which can be used to derive valuable insights for the firm and the society at large. We then presented a case as to how sharing that data (data philanthropy) can help advance strategic and social benefits. But underlying the entire paper is a basic assumption that this data exhaust is "owned" by the company. Many legal experts call this basic assumption into question. They posit that the vast quantities of data are not owned by the companies in the first place and hence they have no right to donate or share that data publicly. Privacy advocates rightly note that the customary "Accept License" rarely resembles a true, clear and educated consent to data use, reuse and donation (Lev Aretz, 2019).

Reconciling legitimate privacy concerns

We alluded to the Facebook-Cambridge Analytica incident earlier in the paper. To throw some more light, what essentially occurred was Facebook allowing private researcher Aleksandra Kogan access to the private information of thousands of Facebook members. Kogan sold this data (and the data of the Facebook members' connected friends) to Cambridge Analytica who then used this data to target consumers and allegedly influence voters. This accident aptly symbolises what can go wrong in a data sharing atmosphere if data philanthropy is not implemented responsibly. Apart from data leaks, even well curated and well anonymized data is far from foolproof (Lev Aretz, 2019). Some experts support the use of differential privacy methods of adding noise to the data so as to alleviate concerns of individuals getting identified from data sets, however, this method too is prone to occasional breaks and requires much more nuanced expertise to implement. Privacy concerns get exacerbated further if one looks at the question of ownership as discussed above. Most users never agree to the secondary use of data and in the absence of a clear agreement, user data cannot be released in public.

All quiet on the legal front

To include data philanthropy practices in a mission, companies need sound legal backing to avoid expensive lawsuits from the shareholders or regarding IP breaches. Despite an increasing number of firms adopting some sort of data philanthropy, there is conspicuous absence of legal scholars in the dialogue (Lev Aretz, 2019). Legally, the question of ownership we tackled above also presents an unsolved problem requiring a standardised answer. For a successful transition from theory to practice we need to define the ambit of "responsible" data philanthropy and make use of the legal canon in crafting our definition. This would involve defining a number of concepts, such as:

1. What defines public good?
2. How are personal privacy concerns reconciled with the general public good?
3. Would data donations be eligible for tax breaks?
4. Should it be categorized as a CSR activity or be given a category of its own? (Lev Aretz, 2019)

The entire research can be succinctly described using our principle propositions and the key implication as under:

Sr. No	Context	Proposition
1	With more and more transactions becoming data oriented, data stores hold tremendous power and the insights obtained from them has considerable potential for better decision making processes	DP can provide firms with strategic advantage by enhancing the insights they get from their existing or publicly available data. This can set off a cycle of better decisions leading to better sales and profit, more innovation. The donor firm gets to access the collective intelligentsia and can increase its reputation
2	A firm which comes across as more socially responsible has been shown to have better investor traction, more customers and better talent (Brekke & Nyborg 2004)	DP can provide firms with strategic advantage by attracting and retaining better human resource. Firms which use their data for furthering social good enhance their market reputation and attract more talent.
3	A successful and advantage enhancing CSR activity tries to maximize the unique and special resources a firm has which fir Barney's VRIN classification.	DP can provide firms with strategic advantage by being an extension to their CSR portfolios. Data remains the most pertinent VRIN resource of the 21st century and using it in DP models can help bolster competitiveness.

Our research take us to our primary implication and helps us draw conclusions as under

Implication: Data philanthropy, though a new field, is one replete with vistas of opportunity both for corporations and academic researchers. For the former it can serve as a great tool for strategic advantage given the sheer abundance of data unique to the firm and its user base and its VRIN capabilities. For the latter Data Philanthropy research is core to business studies, CSR theories and information systems. DP is a practice and a discipline whose time has come.

Last, there are significant lessons for practice. At a time when large corporations are viewed with suspicion and mistrust (Shichor, 2018), data philanthropy can provide a means to mitigate such negativity with the transparency and social benefits inherent to data philanthropy. We suggest that well-conceived data philanthropy programs that highlight transparency and openness while protecting personal and confidential data could aid firms suffering from public anger while simultaneously increasing their own understanding and usage of their data (Vaast and Levina, 2015).

At this point in the study, a review of our primary research questions is warranted. Our research questions were focused on the strategic and corporate advantage a corporation might gain from adopting data philanthropy. As to the strategic advantages we saw through examples, by participating in data philanthropy a corporation can:

- Increase investor traction and increase market reputation.
- Generate social goodwill and increase competitiveness of the business infrastructure.
- Attract and retain millennials to its workforce, thereby insuring new blood and maintaining workforce quality.
- Engender innovation and leverage it to adopt better business practices and smarter problem solving.

As to the legal and process explanations of present data philanthropy models we identified the key concerns which need to be addressed going ahead. They were:

- The standardization and re-definition of public "good" and reconciliation with data privacy concerns.
- The ownership rights of data and its eligibility for tax cuts.
- The lack of legal framework and absence of legal scholars in the extant dialogue.

7. CONCLUSION

The potential of Information and Communication Technology based solutions on societal development is immense. From using blockchains and AI to further financial inclusion, to creating braille supported e-literature for social inclusion, ICT provides us with some of the most innovative ways to solve our most pressing problems. International organizations like World Bank have reiterated the importance of Informatics in solving problems pertaining to social development especially in lesser developed countries. With large amounts of data being generated every day, the potential of data driven solutions increases manifold. This is primarily what encouraged us to take up this study and examine Data Philanthropy as a sustainable model of increasing competitive advantage, bolstering innovation and bringing about key improvements in the social ethos of communities worldwide.

As is evident, we have moved beyond the debate as to whether open data can bring about positive change. The extant research and theories around data use more than conclusively demonstrate how data philanthropy offers potential for both strategic corporate benefit and public good. Data philanthropy allows corporations, governments and non-profits around the world to make better data driven decisions and help solve traditional problems in a digital way. One also does not need to go far to infer the problems which beset the present norms and ideas of data philanthropy. Firms considering data philanthropy must investigate both sides to determine what type of data philanthropy and the level of openness is most appropriate for their goals.

Like any study, this work has limitations. First, additional primary data from the example firms would greatly enhance this work with more unique and individual perspectives. In future research, we suggest that a more comprehensive survey of as many possible firms as can be determined would yield improved insights. Second, a larger number of examples would perhaps reveal different relationships. We also call upon researchers to extend this work with in-depth case studies and quantitative analyses on the performance of data philanthropy donors to better understand the relationship between data philanthropy and strategic advantage and to compare its value with other types of CSR.

The domain of data philanthropy deserves special attention given the scope of the problem to be both technical and business oriented, which is the primary loci of Information Systems

practitioners and researchers. Moving ahead it would be beneficial for practitioners and researchers in data philanthropy work together to increase awareness about the concept and why it matters from not just a social standpoint but also a strategy management point of view. Further, a collaboration with legal experts would also be beneficial so as to progress from a firm-to-firm volunteer basis to a more universal paradigm.

8. REFERENCES

Alemanno, A. (2018). Big Data for Good: Unlocking Privately-Held Data to the Benefit of the Many. European Journal of Risk Regulation, 9(2), 183–191. https://doi.org/10.1017/err.2018.34

Asgary, N. H., & McNulty, R. E. (2017). Contributions and challenges in the struggle to end poverty: The case of Kiva. Information Technology for Development, 23(2), 367–387. https://doi.org/10.1080/02681102.2016.1233856

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. Journal of Management, 17(1), 99.

Baron, D. P., & Diermeier, D. (2007). Strategic Activism and Nonmarket Strategy. Journal of Economics & Management Strategy, 16(3), 599–634. https://doi.org/10.1111/j.1530-9134.2007.00152.x

Beyond the Information Age | WIRED. (n.d.). Retrieved January 24, 2020, from https://www.wired.com/insights/2014/06/beyond-information-age/

Birkinshaw, J. (n.d.). Beyond the Information Age | WIRED. Retrieved January 24, 2020, from https://www.wired.com/insights/2014/06/beyond-information-age/

Bloomberg. (n.d.). Data Philanthropy and Data For Social Good. Retrieved January 24, 2020, from https://www.youtube.com/watch?v=CIN48j4Z1_U

Branco, M. C., & Rodrigues, L. L. (2006). Corporate Social Responsibility and Resource-Based Perspectives. Journal of Business Ethics, 69(2), 111–132. JSTOR.

Brekke, K. A., & Nyborg, K. (2004). Moral hazard and moral motivation: Corporate social responsibility as labor market screening (Working Paper 2004,25). Memorandum. https://www.econstor.eu/handle/10419/63093

Carroll, A. B. (1979). A Three-Dimensional Conceptual Model of Corporate Performance. Academy of Management Review, 4(4), 497–505. https://doi.org/10.5465/amr.1979.4498296

Cinnamon, J. (2019). Data inequalities and why they matter for development. Information Technology for Development, 0(0), 1–20. https://doi.org/10.1080/02681102.2019.1650244

Data Philanthropy: Where Are We Now? • UN Global Pulse. (2013, May 8). UN Global Pulse. https://www.unglobalpulse.org/2013/05/data-philanthropy-where-are-we-now/

Desjardins, J. (2019). How much data is generated each day? | World Economic Forum. https://www.weforum.org/agenda/2019/04/how-much-data-is-generated-each-day-cf4bddf29f/

Falkenberg, J., & Brunsæl, P. (2011). Corporate Social Responsibility: A Strategic Advantage or a Strategic Necessity? Journal of Business Ethics, 99(1), 9–16. https://doi.org/10.1007/s10551-011-1161-x

George, J. J., Yan, J. (Kevin), & Leidner, D. E. (2019). Data Philanthropy: Corporate Responsibility with Strategic Value? Information Systems Management, 0(0), 1–12. https://doi.org/10.1080/10580530.2020.1696587

Guarnieri, R., & Kao, T. (2008). Leadership and CSR - a Perfect Match: How Top Companies for Leaders Utilize CSR as a Competitive Advantage. People and Strategy; New York, 31(3), 34–41.

Gx-dttl-2014-millennial-survey-report.pdf. (2014).

Gx-millenial-survey-2016-exec-summary.pdf. (2016-a).

Gx-millenial-survey-2016-exec-summary.pdf. (2016-b). Retrieved January 24, 2020, from https://www2.deloitte.com/content/dam/Deloitte/global/Documents/About-Deloitte/gx-millenial-survey-2016-exec-summary.pdf

Heeks, R. (2007). Theorizing ICT4D Research. Information Technologies and International Development, 3(3), 1–4. https://doi.org/10.1162/itid.2007.3.3.1

Heeks, R. (2008). ICT4D 2.0: The Next Phase of Applying ICT for International Development. Computer, 41(6), 26–33. https://doi.org/10.1109/MC.2008.192

Husted, B. W. (2005). Risk Management, Real Options, Corporate Social Responsibility. Journal of Business Ethics, 60(2), 175–183. https://doi.org/10.1007/s10551-005-3777-1

Insight, O. (2017, January 11). Leveraging Commercial Applications to Help the World Bank Map Poverty. Medium. https://medium.com/from-the-macroscope/leveraging-commercial-applications-to-help-the-world-bank-map-poverty-79bca51814ee

Lev-Aretz, Y. (2018). Data Philanthropy. Hastings Law Journal, 70(6), 1491–1546.

Manifesto for Data Practices. (n.d.). Retrieved January 24, 2020, from https://datapractices.org/manifesto/

Martin, K. E. (2015). technology, and identifies the ethical issues it faces. These issues arise from reselling. 19.

McKeever, B., Greene, S., MacDonald, G., Tatian, P., & Jones, D. (n.d.). Data Philanthropy: Unlocking the Power of Private Data for Public Good. 50.

McWilliams, A., & Siegel, D. S. (2011). Creating and Capturing Value: Strategic Corporate Social Responsibility, Resource-Based Theory, and Sustainable Competitive Advantage. Journal of Management, 37(5), 1480–1495. https://doi.org/10.1177/0149206310385696

Microsoft to acquire LinkedIn—Stories. (2016, June 13). https://news.microsoft.com/2016/06/13/microsoft-to-acquire-linkedin/

Mzuku, K., & Van Belle, J.-P. (2018). Data Philanthropy in South African Organisations: Attitudes, Readiness and Perceived Concerns. IADIS International Journal on WWW/Internet, 16(1), 70–84. https://doi.org/10.33965/ijwi_2018161105

Nielsen and Feeding America Collaborate to "Map the Meal Gap." (2015, September 15). News Center | Nielsen. http://sites.nielsen.com/newscenter/nielsen-and-feeding-america-collaborate-to-map-the-meal-gap/

Petrenko, O. V., Aime, F., Ridge, J., & Hill, A. (2016). Corporate social responsibility or CEO narcissism? CSR motivations and organizational performance. Strategic Management Journal, 37(2), 262–279. https://doi.org/10.1002/smj.2348

Porter, M. E., & Kramer, M. R. (2019). Creating Shared Value. In G. G. Lenssen & N. C. Smith (Eds.), Managing Sustainable Business: An Executive Education Case and Textbook (pp. 323–346). Springer Netherlands. https://doi.org/10.1007/978-94-024-1144-7_16

Richter, U. H. (2010). Liberal Thought in Reasoning on CSR. Journal of Business Ethics, 97(4), 625–649. https://doi.org/10.1007/s10551-010-0529-7

Sharp, Z., & Zaidman, N. (2010). Strategization of CSR. Journal of Business Ethics, 93(1), 51–71. https://doi.org/10.1007/s10551-009-0181-2

Shaw, J. (2014, February 18). Why "Big Data" Is a Big Deal. Harvard Magazine. https://harvardmagazine.com/2014/03/why-big-data-is-a-big-deal

Shichor, D. (2018). Thinking About Punishment (or the Lack of it): The Case of the Economic Meltdown. Journal of Business Ethics, 147(1), 185–195. https://doi.org/10.1007/s10551-015-2989-2

Stempeck, M. (2014, July 24). Sharing Data Is a Form of Corporate Philanthropy. Harvard Business Review. https://hbr.org/2014/07/sharing-data-is-a-form-of-corporate-philanthropy

Strategic Activism and Nonmarket Strategy—Baron—2007—Journal of Economics & Management Strategy—Wiley Online Library. (n.d.). Retrieved January 24, 2020, from https://onlinelibrary.wiley.com/doi/full/10.1111/j.1530-9134.2007.00152.x

Susha, I., Grönlund, Å., & Van Tulder, R. (2019). Data driven social partnerships: Exploring an emergent trend in search of research challenges and questions. Government Information Quarterly, 36(1), 112–128. https://doi.org/10.1016/j.giq.2018.11.002

Susha, I., Janssen, M., & Verhulst, S. (2017). Data Collaboratives as a New Frontier of Cross-Sector Partnerships in the Age of Open Data: Taxonomy Development. Hawaii International Conference on System Sciences 2017 (HICSS-50). https://aisel.aisnet.org/hicss-50/eg/open_data_in_government/4

Taddeo, M. (2016a). Data philanthropy and the design of the infraethics for information societies. Philosophical Transactions of the Royal Society A, 374(2083), 20160113. https://doi.org/10.1098/rsta.2016.0113

Taddeo, M. (2016b). Data philanthropy and the design of the infraethics for information societies. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 374(2083), 20160113. https://doi.org/10.1098/rsta.2016.0113

Vaast, E., & Levina, N. (2015). Speaking as one, but not speaking up: Dealing with new moral taint in an occupational online community. Information and Organization, 25(2), 73–98. https://doi.org/10.1016/j.infoandorg.2015.02.001

Verhulst, S. G. (2015, January 30). Mapping the Next Frontier of Open Data: Corporate Data Sharing. Medium. https://medium.com/internet-monitor-2014-data-and-privacy/mapping-the-next-frontier-of-open-data-corporate-data-sharing-73b2143878d2

Verhulst, S. G., & Young, A. (2018, January 23). How the Data That Internet Companies Collect Can Be Used for the Public Good. Harvard Business Review. https://hbr.org/2018/01/how-the-data-that-internet-companies-collect-can-be-used-for-the-public-good

Western Digital, E. (2017, August 15). Data Philanthropy: Bridging Technology and Social Good Solutions - PRODUCTIVE. Data Makes Possible. https://datamakespossible.westerndigital.com/data-philanthropy-bridging-technology-social-good-solutions/