"LEADING WITH AI FOR A SUSTAINABLE FUTURE"

Research Paper

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"Abstract"

Humans have an innate desire to increase our capability. This has driven us to use technology to enhance our capability. We have not only enhanced our physical capabilities but our cognitive capabilities too and are continuing to expand it further through AI. This constant desire is driving changes in the way we experience the world around us, learn or even the jobs we do. This change can be disruptive, limited by inherent bias, or applied with limited visibility of its impact or the evaluation of the risks it can create. To ensure technological change is desired, designed, and developed with a sustainable outcome, Leadership is crucial. Leading with AI needs to be led by a moral compass of principles that will ensure sustainable change.

Keywords: AI, Artificial Intelligence, Leadership Principles, Ethics, Values, Inclusion, Sustainability.

1   Introduction

Humans have always found opportunities to enhance capabilities and push the boundaries. We discovered natural caves to live in, made sharp objects to hunt for food, and we even found ways to make fire to cook our food and keep us warm. Our desire, passion and survival instinct has taken us far from where we started, we are now exploring our galaxy, creating our own caves in outer space, and exploring other planets. One of the largest disrupters in recent times that has caught all our attention for great reasons and some not-so-great reasons is Artificial Intelligence (AI). We now even term our time as age of AI.

There are such major disruptions caused by AI in the market, that even those who are creating it are concerned about its potential and calling to hit the pause button, some others are calling for regulations to ensure it does not lead to unintended consequences (Hart, 2023). In The Guardian, Hern (2023), refers to a publication on Open AI's website, the developer of Chat GPT, where their leaders are calling for regulation equivalent to the International Atomic Energy Agency to reduce risk such systems can pose to humanity.

While technological advancements may or may not be curtailed, it is evident that leaders have a pivotal role to take an approach that benefits all and would enable others to follow in the pursuit of good for all. Every decision taken by leaders, every choice they make and every action they guide would create Behavioral Altering Moments (BAM) which could cause ripple effects that even they may not be fully aware of its impact. At this juncture, we are reminded of the proverb 'The road to hell is paved with good intention' (Bohn, 1855). The right road will be one that has the most sustainable outcomes. It is

imperative that, businesses need to have greater accountability on Sustainability, (Soans and Kostandinovic, 2022).

This paper highlights the need for leaders to learn from the past and make the right choices for the future to lead with AI for a sustainable future.

2   Literature Review

We, humans are driven by the innate desire to constantly evolve and push our boundaries. We have continuously changed the way we think, behave, act, eat, sleep, work etc. practically everything we do has changed over many moons. The objects we use have evolved over the centuries. There are significant changes right from the tools and technologies we use, right up to the way we interact and socialize with one another. All these changes have been fueled by our ever-changing needs and desires (Basalla, 1988).

As a race we seem to be in a constant flux to evolve both our physical and cognitive capability. Our innate need has driven us to explore and push beyond what is seemingly possible. Intrinsic nature of human and machines is fascinating. If we understand from the 'Knapping technique' of stone tool making by hominins, (Nowell and Davidson, 2010) share that early human development involved a combination of innate physical and cognitive characteristics that have evolved where the development of our hands and brains and the co-ordination of both have improved and provided us the capability to manipulate objects.

In the paper on technology and extension of human capability, the author sees the theory of technical objects as an extension of human organs (Kapp, 1877, cited in Clive Lawson, 2010). 'The intrinsic relationship that arises between tools and organs is that in the tool the human continually produces itself' (Kapp, 1877, cited in Clive Lawson, 2010). He further states that the appropriate form of a tool can be derived only from that organ. For instance, a hook which is an extremely useful tool has been derived from the finger and has been adapted to look like it and perform the same function that a finger would do. We use technology to enhance our capabilities of extending beyond our human form be it in thought or action and this will fuel further advances based on the challenges we encounter and will like to overcome diving a constant cycle of innovation.

The need to enhance our capabilities has led us to drive technological changes. This has further enabled to evolve and enhance our physical and cognitive capabilities. The evolving changes in our physical and cognitive capabilities has evolved our systems of learning and changed the jobs we do. This constant evolution are motivators for us to move further on in developing these technologies to enhance our capabilities further creating a constant cycle of change.
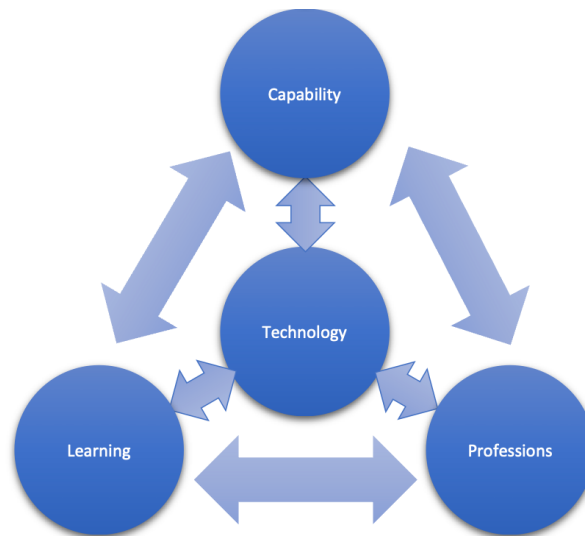
Figure 1.   Authors' own representation of 'Cycle of change'

2.1   Transforming technologies

No other facet has probably helped us evolve and change as much as technology has. This reason by itself warrants it to be at center of our discussion. Technology is an extension of human intentions and we thrust our intentions upon the world. Intensions or desires are normally contained within our own organism, but as we create technologies, these technologies become carriers of our intentions, and hence extensions of them (Rothenberg, 1993, cited in Clive Lawson, 2010).

Since the 1st industrial revolution that started in the 18th century till today, technology change has been gaining pace (Paul et al., 2021). Many paradigms have since been created and broken to make way for something new. Today we are in the cusp between the era of Digital, Industry 4.0 and that of Sustainability, Industry 5.0.

Technology will continue to evolve and enable the change that we so desire. We need to ensure this desire is applied for the benefit of all to be sustainable in the future.

2.2   Evolving education

Humans are also constantly learning even if we don't realize or recognize it. With Globalization, the internet and information readily available, our awareness of the world around us is in real time. According to the University of California, San Diego research done by the San Diego Supercomputer Center (SDSC) found that in 2008 the average American consumes 33GB of data every day, In 2012, it increased to about 63GB. At the time of the study, they expected media consumption to be around 15.5 hours of consumption (Zverina, 2013).

Literacy rate too across the world has increased significantly. According to Our World in Data, literacy rate has increased from around 12% in 1820 to around 87% in 2020s (Roser and Ortiz-Ospina, 2018).
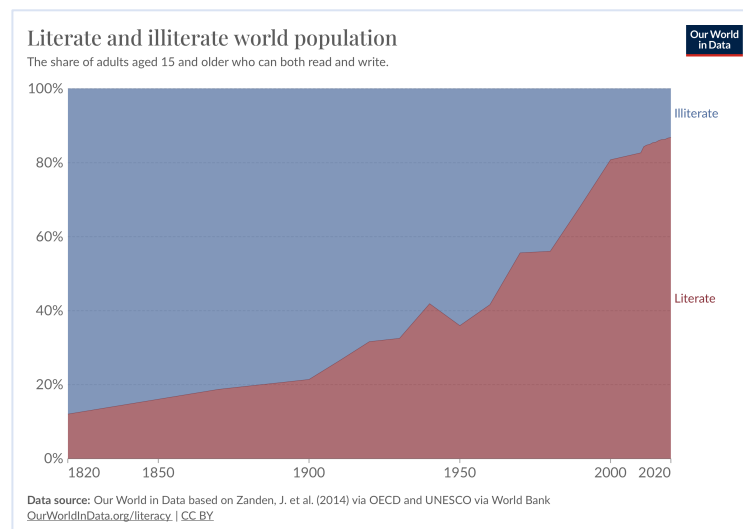
Literate and illiterate world population
The share of adults aged 15 and older who can both read and write.

Figure 2.   Change in literacy rate over the last 200 years (Roser and Ortiz-Ospina, 2018)

The world literacy is progressively increasing, which will enhance the reach of knowing and understanding digital. It will be for our education to evolve to meet the needs of future generation. In an article, 'Education and jobs in the digital world', Dyson (1997) stated that in the digital world, education will bear the burden to operate in this new digital world and the individual will bear the burden of continuing their education throughout their lifetimes. Further talking about digital media, she predicts that it will also supplement teaching efforts where children will learn from other people and creating training opportunities (Dyson, 1997).

Today with Chat GPT and Gen AI, the conversation has gone further in incorporating technology into the educational system rather than trying to exclude it. Gordon (2023) in an article on how educators are reacting to Chat GPT, shares views around embracing technological changes and exploring how we can integrate these tools, even modifying curriculum and methods to suit the changes.

With increasing digitization and learning through digital and in a world which is more literate, we will need to see how to ensure education for future generations are equipped with the skills to be capable to handle the future of work in a world of Gen AI and beyond.

2.3   Progressive professions

One of the main drivers of change is the emergence of progressively evolving professions. Humans are always in a constant race for self-fulfillment. Basalla (1988) mentions that humans are different from animals in that while nature directly sustains life, for humans' nature has been more a source of resources. Instead of relying on nature for sustenance, we devised techniques like agriculture and cooking more to define our wellbeing.

Applying this to the corporate world, Managers need to work on intrinsic motivators to make the job more challenging and intrinsically rewarding (Tossi, Rizzo, Carroll, 1996 cited in Pardee, 1990). Job enrichment also increases employee motivation (Herzberg, 1976, cited in Pardee, 1990).

We also demonstrate that we can constantly learn and evolve., Leonardi (2011) shares that people are driven by goals that technology made possible, but difficult to achieve, and will exercise variations to achieve their goals despite the constraints. Further sharing that human capabilities are realized by using the capabilities provided by technology and resisting the limitations those capabilities impose.

We humans are constantly looking for greater challenges and the growth in technology is only enabling it. Rather than worry about the challenge this technology will create to our jobs today, which we may or may not continue to do, it would be prudent to understand what our focus should be for tomorrow.

3 Discussion

Change is constant and human desire has been driving change to increase our capability. We will drive this change through technologies that can transform our ability. While we started out to try and extend our physical attributes, today, we are also extending it in cognitive space. With new technology, we gain new capabilities and skills. This drives changes in our learning and the way we work and will continue to disrupt the world around us.

3.1 Digital disrupts

With Digital, technology has been moving rapidly. Therefore, it is necessary to keep up with this rapid evolution. However, history is full of examples of organizations failing to see changes on the horizon and losing their leadership position. Kotter (2012) in his assessment of Kodak's failure assigns this to the organization becoming complacent. According to Christensen (1997) Sears missed the advent of discount retailing and home centers. IBM missed out on the Minicomputer, Hewlett Packard which benefited on the minicomputer missed out to Apple and others on the personal computer.

Even the disruptors will be disrupted. Technological transformations will continue because we as humans desire it. Those who don't embrace it or delay in doing so will find it challenging in keeping pace with the rest.

Technological advancement is also ubiquitous and all around. There are multiple advancements in the space of technology which cannot operate in a siloed fashion. The Actor-Network theory's central postulation is that technical objects cannot be understood in isolation. Technical objects take on their properties, characteristics, powers in relation to the networks of relations to which they stand. (Clive Lawson, 2010). When Chat GPT was announced in November 2022, it took the world by storm. Given it was open access, where anyone with an email ID could use it, many were not prepared for what it could offer. Some were excited by it while others were concerned, some found new innovative uses for it. While brining such technology to all, it would be prudent to evaluate the risks and challenges it may create and ensure others are prepared for this disruption. According to a Forbes survey conducted among students, more than half considered using such AI tools to complete their assignments and exams. This has brought in the need for educational institutions to ban Chat GPT. Some countries too have started to ban Chat GPT (Gordon, 2023).

Technology has its benefits but also creates new challenges and limitations. According to Jaber (2022) in an article in the National cancer institute, AI can see cancer in better and new ways, automating tasks

and augmenting a doctor's capability in identifying cancer early. However, AI also depends a lot on the algorithms built into it which has datasets that have inherent bias of its users. One major concern that AI bubbled up to the surface was the issue of bias. Be it facial recognition, profiling for hiring or even social profiling. Further with Synthetic media came the issue of deep fakes. Now with Gen AI, the challenge is around plagiarism and incorrect information.

We need to address these challenges while pursuing the development of AI. A study by Harvard Business Review shares how ProPublica found the criminal justice algorithm used in Broward County mislabeled African American defendants as high-risk at twice the rate of white defendants. In other instances, Natural Language processing models in news articles had gender stereotypes. Amazon stopped using a hiring algorithm which was found to be biased (Manyika et al., 2019). According to an article published in the World Economic Forum, a study found that dataset of pulse oximeter sensors had inherent bias against persons of color (Seneor and Mezzanitte Matteo, 2022). In a study by McKinsey the average share of employees developing AI, only 27% identify as women, and 25% identify as racial or ethnic minority (Chui and Mayhew, 2022).

Manyika et al. (2019) calls for understanding and measuring fairness and stay up to date with the research into it, establish responsible processes to mitigate bias. Engage in fact-based conversation around human bias and probe for it in machines. Consider how humans and machines can work together in eliminating bias, provide more data, and finally diversify the AI filed.

AI and its latest evolution of Gen AI is like a growing child, you give it a book to read, it will know its contents, you show it experiences, it will learn from it, you provide it with an encyclopedia of information, it will use it. For AI to be welcomed by all it needs to be inclusive. There should be systems to ensure any inherent bias in data sets are nullified by ensuring fairness in the evaluation of AI models. All this cannot be solved by one actor alone. It calls for a creative hyperconnected solution in this world to drive change and lead sustainably.

To limit risk and ensure a balanced and fair approach, we also need to collaborate. A lesson we can learn from our experiences in the growth of cloud computing. Cloud computing, according to Kaufman (2009) comes from the world of telecommunications. In the 1990s where virtual computing environment was dynamically allocated to user needs. As cloud computing gained momentum, there were many who were apprehensive about it, about data leaks, about inadvertent loss or unauthorized access to data, and about data being shared across borders.

According to Sangroya et al (2010) security, availability, and reliability were the major quality concerns of a cloud service. Further referring to other security challenges on data location, limitation for investigation, encryption challenges, long-term viability, compromised servers, and limits for regulatory compliance and ability to recover data. Sangroya et al (2010) calls out that non-private clouds using common infrastructure has increased risks of inadvertent and unauthorized access to data and the inability to point out the location of the data. This will increase the issue to jurisdictional issues around data privacy.

However, what changed in the world of Cloud computing was collaboration. Almorsy et al (2011) in their paper collaboration-based cloud computing security management framework talk about collaboration between cloud providers, service providers, and service consumers in managing the security of the cloud platform and the other hosted services.

This collaboration between cloud providers, service providers and consumers has enabled in making cloud services more secure. It has also offered more options like Private clouds, Hybrid clouds and redundant clouds to make it more attractive. This has also spun off different business models such as IaaS, PaaS and SaaS models operating out of the cloud.

Today, cloud is an enabler of Gen AI and is being promoted as a savior for a more sustainable way of sharing resources, increasing data safety and brining collective data security. According to the Newstack, Generative AI needs massive amounts of computing power which is best served by cloud computing (MSV, 2023) . According to IDC, the cloud serves as a catalyst for rapid development and scalability of Generative AI (Zborowska, 2023).

3.2 Data diamonds

Technology especially digital and its power to use data is turning into a very powerful tool coupled with its global reach. One can use it to create what may seem like magic, but one can also use it to create havoc. If not used appropriately and once the damage is done, it is mostly the technological advancement that is blamed and not the human intentions. Because human intentions are continuously stretched and powered by the capability of technology.

Let's take the case of data - in the world of AI, data are like diamonds. One can mine them, polish them, and create art with them. One can wow the world with them. The famous ad slogan by DeBeers, (Bergenstock and Maskulka, 2021) 'Diamonds are forever' maybe so true for data too. Today, data can be forever in the realm of the internet. How we use the data to create good in the world is of paramount importance. What are our final intensions while using the data needs to be well defined. Used wrongly, the result can be catastrophic.

According to the Guardian, Cambridge Analytica's intent was to transform surveys and Facebook data into a political messaging weapon. Where a survey app created by Dr. Alexander Kogan, a Cambridge academic for personality profiling using Facebook likes were used by Cambridge Analytica to access Facebook user data (Hern, 2018). The incident with Cambridge Analytica, highlighted the need for those who handle data to be more responsible in their actions. In an article in the New Your times, Confessore (2018), shares that law makers in the US and UK called for action on Facebook which allowed user data being used for political manipulation.

In many cases this precious commodity of data has also been the cause of geopolitical tensions leading to the need for Governments to intervene. On August 16, 2023 the New York times published an article related to TikTok and how law makers in the US, Europe and Canada have increased efforts to restrict access to Tik Tok with concerns that sensitive data is transmitted (Maheshwari and Holpuch, 2023).

To ensure human advancement is sustainable, as we constantly push the boundaries of our intensions, the moral compass that guide us must be correct. It is with this compass can we guide the use of data and more importantly technology for the good and sustainability of us and all that surrounds us.

4   Problem Statement

Technology is disruptive and it would be prudent to lead technological change rather than be led by it. With Digital and the power to control data, it calls for underpinning the development of such powerful

technologies with responsibility and ethics. We also need to be fair in our understanding of how these tools are built to ensure we avoid bias in our solutions. In an hyperconnected world, we need to be collaborative, inclusive and understand that one cannot innovate in silos.

AI possesses numerous possibilities, that cut across geographies, industry segments, domains, applications, and the list goes on. Saying it is ubiquitous and versatile would be stating the obvious. Given the attractiveness, high usability, and pervasive nature of AI, it is possible that we get addicted to it easily. Once you start using it, we will get more and more immersed into it making it second nature, where we start using it subconsciously. Soon, it will become something we cannot live without.

AI is born out of our desire to enhance our capability and we will continue to drive its improvement. However, we also need to be cautious of the impact it can create, and we need to build it with systems to ensure its proper usage. With this powerful tool at our disposal, we need to create responsible outcomes that is sustainable for all. It is therefore imperative to have the right leadership to guide AI for a sustainable outcome.

When we focus on leadership, we focus on skills, competencies, and functional expertise. We may not give adequate focus on the principles of leadership or the cultural tenets that leaders need to exemplify in their day-to-day life. Research states that these Leadership principles are the set of actions or guiding beliefs that leaders can implement to move them toward success (Al-Wirr, 2021). One can say that leadership principles are the foundational blocks on which the entire capability of a leader is built on.

Given the rapid development of AI, it would be important to understand what principles would be essential when dealing with AI. Whittlestone et al., (2019) in a study to provide a broad framework for ethical and societal implications of algorithms, data, and AI share that it is important in resolving tensions between principles and values if technologies such as AI are to be developed for the benefit of society. From their research they observe lack of clarity or consensus around ethical concepts and how they apply in specific situations. Some instances they highlight is the use of Algorithms to make decisions and predictions accurately while ensuring fair and ethical treatment. They also highlight the use of data to improve quality and efficiency while respecting the privacy and autonomy of individuals.

Whittlestone et al., (2019) studied academic publications to review existing research and derived a word cloud around key concerns emerging around AI.

Figure 3.   Word cloud of Concerns emerging around AI (Whittlestone et al., 2019)

Further in their study Whittlestone et al. (2019) share findings around principles listed by prominent bodies such as the Lords Select Committee on Artificial Intelligence, the IEEE Standards Association's set of general principles and Google's Ethics Principles. They observe that many of these principles widely overlap and have drawn out a word cloud of the same.

Figure 4.   Word cloud of Principles and codes related to AI (Whittlestone et al., 2019)

To test what AI considers ethically important in the development of AI, three of the prominent Generative AI tools were prompted as to what are the ethical considerations of AI. Microsoft's Bing referred to Open Data Science Conference (ODSC's) ethical considerations and listed:

- Data sources need to be unbiased.
- Outputs are accurate and truthful.
- User data is collected and used in an ethical manner.
- Care to ensure Generative AI models are not biased and do not discriminate.
- Human judgement when dealing with AI needs to be done appropriately.

Chat GPT listed out the following but unlike Bing, did not refer to its sources:

- Bias and Fairness
- Transparency and Explain-ability
- Privacy
- Accountability
- Safety and Harm prevention
- Data usage and ownership
- Consent
- Economic and Social impact
- Regulation and compliance
- Oversight and Review
- Education and awareness
- Responsible AI development

Google's Bard too responded without any references and listed the following concerns and ethical considerations:

Concerns
- Misinformation and disinformation
- Copyright and intellectual property
- Bias and discrimination
- Privacy and Security
- Safety and Security

Ethical considerations
- Transparency and accountability
- Human control
- Beneficial use

It further recommended, developing guidelines for Gen AI, Educating the public on Gen AI, Regulating Gen AI.

Given that many of these tools use information that has been shared by humans into is large library of information, we see similar but also slightly different outcomes. Therefore, it is important that we humans continue to ensure the ethical and moral use of these technologies through leadership.

5   Leading with AI

Our desire to increase capabilities will continue to drive change. However, change can also be an unsettling process. Ganz et al. (2010) share that leadership is about accepting responsibility and creating conditions that enable others in achieving a shared purpose during uncertainty. Further where the need for leadership is evident is when there is change from past practices, new threats, new opportunities, social and technological change (Ronald Heifetz, 1998, cited in Ganz et al., 2010).

Ganz et al. (2010) share about leadership as having the ability to manage the feelings of the heart on criticality of dealing with the pain and hope in creating possibility. Creating structures through which growth, creativity and action can flourish without slipping into chaos.

The actors that initiate changes can be for different reasons. Irrespective of the intentions of the initiator, it is with leadership that change will emerge in a good for all. Leadership has been defined in many ways in the past and many of those skills are required today and in the future. However, globalization, digital revolution and AI have made us more aware of certain attributes that may have been overlooked in the past.

From the review of literature, it is evident that certain attributes are critical when it comes to leadership in the age of AI.

5.1   Proactive

Leadership is about taking charge and leading the change or leading through change. Human desire fuels change and technological development. From the case of Xerox, or Sears or HP it was evident that the

failure to be proactive in leading change led these organizations falling back on the position they once held. Similarly, proactive leadership is required to ensure technology for good is constantly evolving to enable good for all and mitigate risks posed by bad actors in using this technology for questionable reasons like we had seen in the case of Cambridge Analytica.

5.2 Responsible

With the ease in availability of data, its transferability, and the potential to use data to create global impact, technology today not only poses risk to an individual's privacy and security but to human civilization. To ensure data is acquired, managed, and utilized appropriately leaders need to act responsibly. They need to ensure individual privacy and security is maintained and eliminate any risk this technology they develop or manage will create. This would avoid a situation as the one faced by Facebook where it was forced to take accountability for misuse of its user data by Cambridge Analytica, pay up for losses and subsequently act on Cambridge Analytica.

5.3 Ethical

While being responsible, leaders also need to have a strong moral compass to ensure data and technologies especially AI are applied ethically with the sole purpose of benefit of all. Human capability has driven us to create technology that can go beyond the physical boundaries and in the cognitive realm. However, the case where this very same technology was used for racial profiling or manipulation of voters, or the potential of plagiarism can distort the good these technologies can bring. It is only with a clear sense of ethics can these technologies be applied for sustainable development.

5.4 Collaborative

The Internet, Digital and AI has brought the world closer. It also means not all problems can be solved by one person or one organization. To ensure AI is built and applied for all it needs collaboration between all related actors to ensure diverse views, inputs and requirements are built into this technology. As with the case of cloud technology, this will help to create workable solutions for all that will further its growth sustainably.

5.5 Inclusive

Collaborating will require leaders to work with diverse teams and groups. This would need a mindset that is inclusive in thought, word, and deeds. Leaders need to be open to inputs from all, including the competition, customers, and their teams to ensure solutions are built with inclusion in the design and development of these technologies. Oximeters developed without considering data from people of color could have been avoided. Inclusion will ensure fairness in our approach, enable us to use diverse data and avoid the risk of bias and discrimination, leading to more inclusive outcomes.

5.6 Systems approach

In a global hyperconnected world while collaboration and inclusion are important, it may fall short if a larger visibility of technology and its impact is not visualized. Leaders will need an outlook that views the world not just in the periphery of their immediate vision but a 360 view and understanding of related consequences the solutions they enable or create have on the world. In November 2022, when Chat GPT was announced to the world it created a magical experience for many with its generative AI solutions. However, it also triggered unwanted consequences, reactions, and a cascade of actions to control its use. Leaders need the vision that everything and everybody has an impact on another. They will need to factor it in their approach and ensure they not only help build inclusive, collaborative, and ethical outcomes but one that has everyone and everything in mind.

5.7 Empathy

Even when leaders take an approach to be proactive, ethical, inclusive and collaborate for the best outcome and take a larger view of the impact technology creates, the change these technologies can bring can be disruptive, challenging and create difficulties that maybe difficult to factor for. This is when leadership needs to have the emotional intelligence and enable change to be adapted with an empathetic approach. According to (Rubini, 2017) empathy is critical for transformational leadership. Further, adding that empathic leadership is a critical component to behavioral change and can enable successful change. Sharing that an empathic approach results in individuals feeling understood and cared for which is beneficial to all during change.

Figure 5.   Authors' own representation of PRECISE model for Leading with AI

6   Conclusion

Human desires to enhance our capability will continue to drive change. This will fuel advances in technology in general and AI in particular. Rather than a reactive approach, Leaders need to be proactive, and ensure the change is ethical and sustainable. Leaders may acquire different skills or have diverse talents they would apply to achieve enabling change. However, they would need to direct their approach with use of specific principles that will guide then in creating outcomes that create benefit to all.

The above paper highlights few key principles that have evolved from a review of existing literature as critical to lead in the age of AI. This is an initial approach and needs to be validated through further study of these attributes, its ability to create sustainable impact and enhance on any limitations that maybe observed.

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