Practices and Challenges of Modern Leadership in the Era of Technological Advancement

Hossain KA, PhD

Abstract: In the modern era, there is a growing awareness regarding the importance and need for leadership. A wide recognition of the critical need for leadership is so prevalent that almost all universities and renowned organizations now offer course or programs in their curriculum. Today's rapidly evolving world, the effective use of technology and modern style has become crucial aspect of leadership. Technology profoundly influences every aspect of human life and transforming the way modern leader interact, manage daily affairs, and conduct their business. The ability to leverage technological advancements not only enhances efficiency and productivity but also allows modern leaders to make informed decisions, drive innovation, and stay ahead of the competition. Globally, the most successful leaders recognize the extent to which technology can support them in managing people. It can also support building teams, and monitoring work across all channels and locations worldwide. However, incorporating technology into leadership requires careful consideration of its feasibility, viability, and legality. With advances in technology and globalization, the traditional workplace is no longer as conventional as it once was. In order to be successful, today's modern leaders need to adopt a more modern approach to management. This includes embracing new concepts and strategies, while also remaining flexible and open to change. However, there is an argument that traditional leadership is still not obsolete, and that the two approaches can actually be applied simultaneously. Modern leadership may be better suited in a scenario where an organization deals with creativity and needs change, as well as times of rapid growth. In this exclusive study, author endeavors to explore how technology has evolved over time, development and challenges, the core values of a modern leaders, their personal assets, along with develop and practice of modern leadership concept.

Key Words: Technology, leadership, Toxic, digital, smart, IoT, AI, blockchain

Introduction

Leadership is the ability to articulate a vision, to embrace the values of that vision, and nurture an environment where everyone can reach the organizations goals and their own personal needs. Leaders are usually consider as people with command, control, position, power and govern working at the top levels of an organization. However this is totally different from the reality. They are the people who inspire and influence others by his/her style, behavior and motivating skill. Modern leaders have people around them who believe and act in their desire, passion and thinking. They have true followers and lovers; but are not driven by popularity or fame. Their vision and goals is seen clearly and which followed without the need of having special rights, privileges and ranks. Status and positions do not make anyone a modern leader. They usually stay as an executive senior to whom the subordinates are enforced to follow and obey even if they have a clear contradiction with their ideas and vision. Modern leader does not need any specific affiliation or relationship to a position or social status to influence and convince people to believe in himself.[1] Modern leaders need not to be essentially a high position, titles, chief, manager or any senior executive to proof him/her as successful leaders. Nowadays, IoT, AI, Ml, decisions based on algorithms, cloud computing, offers of platform economy and big data are changing the world of the brain workers. Situation is so complicated that, even auditors, lawyers, engineer, doctors and computer scientists are affected. In fact, a few decades ago, leadership focused on outstanding expertise. This focus is increasingly diminishing. The vital task of the future leaders will be to manage relationships. Future leaders need to create a healthy creative tension so that collaboration in teams and departments becomes possible. So, a modern leader with the adequate strength to convey, convince, relate, motivate and influence is the precise and appropriate candidate to run the human resource management effectively with a positive edge to both the organization and the employees.[2] Modern leadership is possible when people are ready to take their influence, concept, vision and impact.

Before implementing any technology-driven initiative, a leader must ensure that their plan meets three critical criteria: technical feasibility, financial viability, and legal acceptability. While considering technical feasibility, a leader must assess whether the proposed technology aligns with the organization's infrastructure and capabilities. Conducting a thorough technical evaluation will help determine if the plan can be successfully executed. Next is assessing whether it is financially viable. Leaders must consider the costs associated with implementing technology. They should evaluate the Return on Investment (ROI) and determine if the benefits outweigh the expenses. Such steps require analyzing factors such as upfront costs, maintenance expenses, and potential revenue

generation. Afterwards, it is essential to judge whether the considered reformation is legally acceptable. It is crucial for leaders to navigate legal and regulatory frameworks to ensure compliance.[3] They must be aware of data privacy laws, intellectual property rights, and other relevant regulations to avoid any legal repercussions. The history of technology is a testament to human ingenuity and its impact on society. Understanding this evolution helps leaders in implementing the transformative power of technology in their decision-making processes. Invention of the wheel has revolutionized transportation and trade, enabling the growth of civilizations. Leaders of that era recognized the potential of this simple yet powerful technological invention and utilized it to expand their empires. Invention of the Steam Engine marked the beginning of the industrial revolution, transforming manufacturing and transportation. Leaders like James Watt harnessed this technology to drive progress and revolutionize entire industries. The advent of computers and the digital age accelerated the pace of innovation.[4]

Embracing digitalization provides leaders a competitive edge, streamlining processes, improving communication, and expanding market reach. Today, smart and modern leaders have access to Artificial Intelligence (AI), the Internet of Things (IoT), Machine Learning (ML), big data, enabling automation, data-driven decision making and predictive analysis. Those progressive technologies have numerous benefits for various industries, business, service sectors and different aspect of life. All industries are getting the momentum about how advantageous using the technology can be. Technology is bringing a digital and smart transformation to the world. Modern and smart leaders need to develop themselves in line of advance technologies. Otherwise they will fail to connect up and exercise his leadership in line of global pace. AI and robot are poised to revolutionize the workplace over the next decade due to their transformative capabilities in automating tasks, improving decision-making and streamlining processes. AI-powered tools can analyze vast quantities of data, identify patterns and trends, and make predictions with remarkable accuracy. This allows any leaders to make data-driven decisions, resulting in improved efficiency, reduced costs, improve accuracy, data-support concept and increased competitiveness. Furthermore, AI can automate repetitive tasks, freeing up valuable time for subordinates and men to focus on more strategic and creative initiatives. This shift in focus fosters innovation and cultivates a more engaged and satisfied workforce. Finally, AI enables more personalized team experiences, from tailored learning and development programs to customized career paths. By harnessing the power of AI and other advanced technologies, leaders can create a more adaptable, agile, purpose oriented, sustainable and future-proof organization that thrives in the rapidly evolving military domain as well as future battle-space. In the education process, students can personalize their training with the help of AI. And for teaching professionals, the technology provided by AI can improve the quality of the educational process and teaching skills. Large financial institutions use AI to assist their investment practices. BlackRock's AI engine, Aladdin, is used both within the company and by clients to help with investment decisions.

In this modern era of 21st century, a super-intelligence or hyper-intelligence or superhuman intelligence, is a hypothetical agent that would possess intelligence far surpassing that of the brightest and most gifted human mind. Super-intelligence may also refer to the form or degree of intelligence possessed by such an agent. If research into artificial general intelligence produced sufficiently intelligent software, it might be able to reprogram and improve itself. The improved software would be even better at improving itself, leading to recursive self-improvement. Its intelligence would increase exponentially in an intelligence explosion and could dramatically surpass humans. Science fiction writer Vernor Vinge named this scenario the 'singularity'. Because it is difficult or impossible to know the limits of intelligence or the capabilities of super-intelligent machines, the technological singularity is an occurrence beyond which events are unpredictable or even unfathomable. ML or AI is also able to design tens of thousands of toxic molecules in a matter of hours. So, such complicated technical advancement or Super-intelligence robots may arise/develop in near future. So, future leaders need to equip them. Leadership in the technology-driven era requires a strong foundation of core values. While technological competence is essential, leaders must also embody a set of principles like honesty, flexibility, balance etc. Transparent communication fosters trust and collaboration. Leaders must be honest with their teams, stakeholders, and themselves, cultivating an environment where ideas and feedback can thrive. Being flexible is important. Technology is constantly evolving, and leaders must adapt to change.[5] It allows leaders to navigate challenges, embrace new ideas, and seize emerging opportunities in a rapidly shifting landscape. Effective leaders strike a balance between technology and human elements. While leveraging technology is crucial, it is equally important to prioritize empathy, emotional intelligence, and interpersonal relationships. There is no question that the world of work has changed dramatically in recent years in the era of advanced technologies. However, yet there are multiple circumstances where traditional leadership provides better outcome- such as during a time of crisis or when stability and order are key. Bottom line is that, leader need to be adaptable to situation and use the right theory, tools, techniques and method for the job and accomplished the task.

Modern leadership is a way an individual lives to convince, influence, motivate and inspire others and it has huge difference with the title or position or rank based classical or conventional leadership. Again, command is limiting which can also result in people conflicting and objecting as they are not convinced or motivated or influenced by the vision, goals, ideas and views. A modern leader who is able to inspire people by providing the pros and cons of the actions, strategies, plans in practically or on ground is more accepted and followed as followers or team-mates can relate to it and get convinced. As a result, modern leadership must derive its existence through communication, relationship, consideration and care in opposition to influence, control, command and order. It is

true that, modern leadership does not come from any status or position or title; rather it is a complete behavior, attitude, outlook and lifestyle. Actually, modern leadership is not about title, command and control, it involves relation, commitment and coordination from the leader while fine trust, following and acceptance of the views and thinking of the team members. This comes in when the leader has the right qualities and attitudes to impact and impress. Modern leader looks to not only the task accomplishment or output from the employees but also their professional approach as well as personal development. The leaders must build a relationship of care and consideration with their team. So, it is a complete lifestyle how an individual trains and polishes his actions and behavioral skills which can influence and motivate the team members to follow him/her. Command, control, authority and rank/title do gives one an opportunity to lead; but it is very far from becoming a correct modern leader. In this paper, author has tried to present a comprehensive survey and study on leadership in this modern era, where advanced technology playing pivoting role. To evaluate the real picture and aspect of our life, this paper will focus on the advanced technologies and their impact, 4th industrial revolution and its consequences, impact of IoT, AI and robots, modern leadership concept and other contemporary leadership development issues. The challenges of modern leadership, toxic leadership characteristics along with modern leadership practice will be discussed precisely in this paper.

History of Technological Revolution

The main difference between human beings and animals is our capacity for abstract thinking paired with the ability to communicate and accumulate information. In essence, our superior intelligence propelled us to the top. Technology is improving at the snail's pace of a few hundred thousand years ago, human technology would have needed one million years to become economically productive enough to sustain the lives of an additional million people. This number dropped to two centuries during the Agricultural Revolution in 5,000 BC. And in our post-Industrial Revolution era it shrunk to a mere 90 minutes. A technological advancement like the advent of superintelligent (SI) machines would mean radical change for the world as we know it. Superintelligence in 2014 investigates how creating a machine more intelligent than a human would change humanity. These blinks are full of facts, figures and studies from a variety of disciplines, resulting in a complex picture of the superintelligent future and how we might arrive there. However, now the question is, where does technology stand at present? We have already been able to create machines that have the capacity to learn and reason using information that's been plugged in by humans. Consider, for example, the automated spam filters that keep our inboxes free from annoying mass emails and save important messages. Again, this is far from the kind of "general intelligence" humans possess, and which has been the goal of AI research for decades. And when it comes to building a superintelligent machine that can learn and act without the guiding hand of a human, it may still be decades away. But advancements in the field are happening quickly, so it could be upon us faster than we think. Such a machine would have a lot of power over our lives. Its intelligence could even be dangerous, since it would be too smart for us to disable in the event of an emergency.[6]

It's clear that imitating human intelligence is an effective way to build technology, but imitation comes in many forms. So, while some scientists are in favor of synthetically designing a machine that simulates humans through AI, for instance, others stand by an exact imitation of human biology, a strategy that could be accomplished with techniques like Whole Brain Emulation (or WBE). Most of the great discoveries of humanity were achieved either by a single scientist who reached a goal before others got there or through huge international collaborations. If a single group of scientists were to rapidly find solutions to the issues preventing AI and WBE, it's most likely their results would produce a single superintelligent machine. That's because the field's competitive nature might force such a group to work in secrecy. Before panicking about the impending machine-led apocalypse, let's take a look at how general intelligence technology can be developed and put to productive use. It's likely that the increasing availability and decreasing cost of technology will lead to the cheap mass production of machines capable of doing jobs that currently require the hands and mind of a human.[7] This means that machines will not only replace the entire human workforce but will also be easily replaceable. It's clear that an entirely robotic workforce would completely transform the economy, as well as our lifestyles and desires; as machine labor becomes the new, cheaper norm, the pay of workers will drop so low that no human will be able to live off a paycheck. Also, the few employers of the mechanical workforce would accrue *a lot* of money. But this brings us back to an earlier point, because where that money ends up also depends on whether SI is designed by a single exclusive group or is the result of a slow collaborative process. If the former turns out to be true, most people would be left with few options for income generation, likely renting housing to other humans or relying on their life-savings and pensions.[8]So, the development of SI comes with a variety of safety issues and, in the worst case scenario, could lead to the destruction of humankind. While we can take some precautions by considering the motivation for the SI we build, that alone won't suffice.

➢ **Industrial Revolution and Consequence of world**

Industrial revolution is a global phenomenon and continuous process. AI is going to lead to a redefinition and a disruption of service models and products. Although the technical development leads primarily to an efficiency enhancement in the production sectors, new creative and disruptive service models will revolutionize the service sector. These are adapted with the support of big data analyses at the individual requirements of the client and not at the needs of a company. Chronological development of industrialization has been discussed below.

INDUSTRY 1.0: INDUSTRIALIZATION or Industry 1.0 is known as the beginning of the industrial age, in 18th century. For the first time, goods and services were produced by machines. Besides the first railways, coal mining and heavy industry, the steam engine was the essential invention of the first industrial revolution; steam engines replaced many employees, which led to social unrest. At the end of the 18th century, steam engine wasinvented and introduced for the first time in factories in the Great Britain andit was a great driving force for industrialization, since they provided energy at any location for any purpose.[9]

INDUSTRY 2.0: ELECTRIFICATION The second industrial revolution began at the beginning of electrification at the end of the 19th century. The equivalent of the steam engine in the first industrial revolution was the assembly line, which was first used in the automotive industry. It helped accelerate and automate production processes. The term Industry 2.0 is characterized by separate steps being executed by workers specialized in respective areas. Serial production was born. At the same time, automatically manufactured goods were transported to different continents for the first time. This was aided by the beginning of aviation.[10]

INDUSTRY 3.0: DIGITALISATION The third industrial revolution began in the 1970s and was distinguished by IT and further automation through electronics. When personal computers and the internet took hold in working life. So, from this age, global access to information and automation of working has taken placed. Moreover, human labour was replaced by machines in serial production. A process that was intensified in the context of Industry 4.0 was already in the offing at that time.[11]

INDUSTRY 4.0: AUTOMATIZATION The term Industry 4.0 means in essence the technical integration of cyber physical systems (CPS) into production and logistics and the use of the 'internet of things (IoT)' or connection between everyday objects[12]and services in (industrial) processes including the consequences for a new creation of value, business models as well as downstream services and work organization.[13] CPS refers to the network connections between humans, machines, products, objects and ICT (information and communication technology) systems.[14]Within the next few years, it is expected that over hundred billion connected machines will exist throughout the world. The introduction of AI in the service sector distinguishes the fourth industrial revolution from the third.

In the field of industrial production, the term 'automatization' is characterized essentially by four elements: 1) The production is controlled by machines. Owing to the use of intelligent machines, production processes will be fully automated in the future, and humans will be used as a production factor only in individual cases. The so called 'smart factory', a production facility with few or without humans, is representative of this. 2) The real-time production is a core feature of Industry 4.0. An intelligent machine calculates the optimal utilization capacity of the production facility. Lead times are short in the production process, and standstills, except those caused by technical defects, can be avoided. Within the value creation chain, the coordination of materials, information and goods is tailored exactly to demand. Stocks are kept to a minimum, but if materials needed for production fall below a certain level, the machine orders more. The same applies to finished products; the machine produces depending on incoming orders and general demand, thus reducing storage costs. 3) The decentralization of production. The machine is essentially self-organized. This includes a network of the manufacturing units. In addition to material planning, the handling of orders is also fully automated. 4) The individualization of production even down to a batch of one unit. The machine of the future will be able to respond, within certain limits, to individual customer requests. No adjustments to the machines by humans are required. As a result, changeover times are eliminated. The smart factory adds certain components or, in a context of optimum distribution throughout the entire process, adapts individual stages of production to correspond with customer requests.[15]

The term Industry 4.0 thus stands for the optimization of components involved in the production process (machines, operating resources, software, etc) owing to their independent communication with one another via sensors and networks.[16] This is supposed to reduce production costs, particularly in the area of staff planning, giving the company a better position in international competition.[17] Well-known examples from the field of robotics and AI are the so-called 'smart factories', driverless cars, delivery drones or 3D printers, which, based on an individual template, can produce highly complex things without changes in the production process or human action in any form being necessary. Well-known service models are, for example, networking platforms like Facebook or Amazon Mechanical Turk, the economy-on-demand providers Uber and Airbnb, or sharing services, such as car sharing, Spotify and Netflix. Studies show that merely due to sharing services the turnover of the sector will grow twentyfold within the next ten years. Old industry made progress by using economies of scale in an environment of mass production, but the new information economy lives on networking effects, leading to more monopolies.[18]

➤ Impact of AI in the Era of 4IR

Now, AI has been around everywhere for a great deal of time. The benefit of AI is steadily improving our everyday life. The technology is being used for robots that welcome at shopping centers or online search engines for offering suggestions.[19]Today, AI simulates human analysis in AI systems. It is the ability of the computer program to think and learn. Everything can be taken to be AI, if it involves a program that does something and that we usually think depends on human intelligence. Innovations in the AI space have led to several benefits across multiple industries.[20]Today, processes are effective and efficient, convenient technologies are extensively available, and forecasts are more accurate.AI and other technology experts are saying today, the rise of AI will make most people better off over the next decade, but many have concerns about how advances in AI will affect and what it means to be human, to be productive and to exercise free will. The automation revolution will have a tremendous impact on the fundamentals of business and society, as well as on the innovation and productivity potential. Blockchain technology has the potential to impact most industries

across the globe in the near future[21]; heralding in a new age of consumer trust and optimization. AI can improve data backup and disaster recovery planning and policy from an IT standpoint to ensure smooth company continuity. The elements for successful technology and IT leadership continue to evolve, but the requirement for strong business strategy, vision, and IT management, as well as a knowledgeable approach to risk, compliance, outsourcing, and AI, remains as important as ever. [22]

Digital existence is enhancing human potential while upending long-standing human activity. More than half of the world's population now uses code-driven systems, which present both extraordinary potential and challenges that have never been seen before.[23]Will people be better off than they are now as algorithm-driven AI continues to spread? AI will have an impact on the entire agricultural and food value chain, from farm to fork, both now and in the future. Next-generation automotive technologies will be influenced by AI, and this will change how cars, trucks, and powertrains are designed and produced.[24] AI will influence the tech developments of the global aviation and aerospace sectors. It will also influence space travel and communications, airport operations and management, air traffic control systems, and future trends in flight and aviation transport related industries. AI will influence the technology innovation transforming all parts of the construction and civil engineering sectors leading to improvements in cost, safety, efficiency and quality of construction.[25]AI will have an impact on smart phones, tablets, and wearable tech gadgets, as well as how people live, work, and consume services, prompting businesses to establish their own methods for dealing with such use at the back end and capitalizing on it at the front end.[26]

The experts predicted networked AI will amplify human effectiveness but also threaten human autonomy, agency and capabilities.[27]Computers might be as smart as or smarter than humans when it comes to things like making complicated decisions, learning, reasoning, pattern recognition, visual acuity, speech recognition, and language translation. Smart systems in neighborhoods, cars, buildings, utilities, farms, and business processes will save time, money, and lives and give people the chance to enjoy a more personalized future.[28]The use of AI in healthcare is hopeful, with applications such as diagnosing and treating patients and assisting senior citizens in living fuller and better lives. They were particularly enthused about AI's involvement in broad public-health program based on vast amounts of data that may be collected in the future years on everything from personal genomes to nutrition.[29] AI would abet long-anticipated changes in formal and informal education systems.
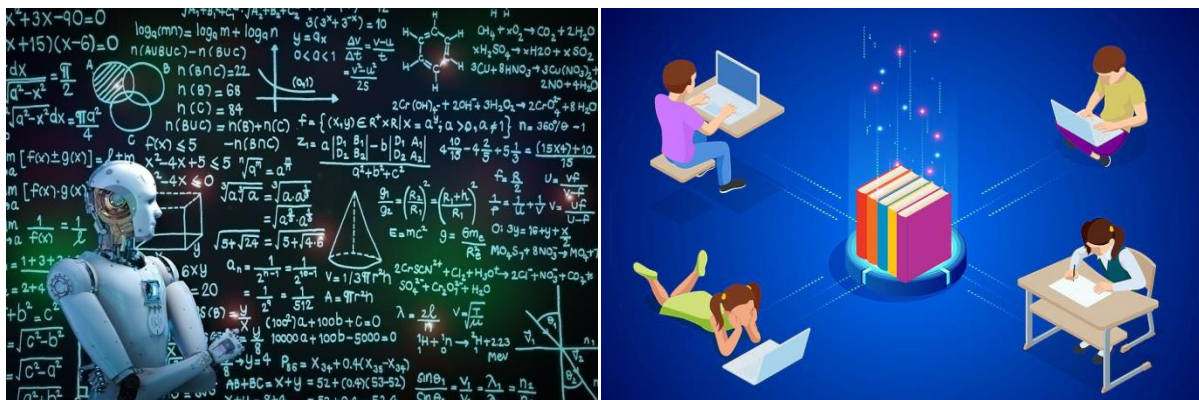

Figure 1: Role of AI in education system[30] and revolution of future education system[31]

Looking around now, we can see that our society is changing as a result of the use of AI and IoT in daily operations. If we go to a healthcare facility, an AI-powered machine will check our pulse, and if we go to an internet store, we will see a recommended list customized by an AI tool. Actually, these are only a few examples of the benefits of AI in our daily lives. AI will provide a lot more in the future. With time, more industries, service sectors, and organizations will embrace this transformative technology to improve every human activity working process.[32]AI can help simplify and speed up processes in the community, society, country, and world by making the workplace more efficient, helping us make better decisions, or giving us direct help. AI can help by finding and fixing problems that people might not be able to see or fix on their own. But some people don't see the benefits of AI because they think it will cause people to lose their jobs and become less smart. In fact, speed, precision, efficiency, and scalability are the most important benefits of AI.

The 4IR will transform industries, service and other sectors so significantly that much of the work that exists today will not exist in next 25 years. It is crucial for us to understand the impact of these changes on all areas of our lives, including academic and learning institutions.**[33]**Currently, all graduates are confronted with a technologically transformed world in which AI, IoT, ML, Big Data, Cloud and Edge Computing, and social media create diverse opportunities and challenges for conventional education systems. As students consider their post-diploma or post-graduation lives, formal academic and learning institutions are pondering their fate, particularly in regards to employment. Nearly all contemporary technologies propelled by AI are transforming the world to such an extent that social

concepts such as 'post-work' are increasingly defining the present era. This period requires skills that are not identical to those required during the Third IR, when information technology (IT) was the primary driver. It is estimated that artificial intelligence will be a US$ 15 trillion industry within the next seven years. Millions of unskilled and traditionally trained individuals will be laid off.[34] On the other hand, millions of jobs related to modern and hi-tech skilled will be created in the next few years.[35]

Advancement Technologies in the Era of 21st Century

Today, advanced technology like IoT is revolutionizing computing by introducing networked devices into our daily lives that acquire and analyze information to serve an ever-increasing number of services and human life. IoT makes other technologies smarter by enabling automation, personalization, and remote control via networks of Internet-connected sensors.[36] At the same time, IoT technologies raise significant privacy concerns, which may hinder their wider adoption. IoT applications range from smart homes and wearable gadgets to industrial automation, agriculture, healthcare, transportation, ecosystem, warfare, business, education, so on. The IoT has the potential to completely transform our lives by enabling smarter, more connected, flexible, more relax, and more efficient systems. IoT has the potential to develop industries efficiency, increase productivity, and improve our daily lives. IoT will influence more in technology, and more things will become internet-connected in future. It is an analytical paper to depict the influence of IoT on technologies and devices in our usual life, business, industry and other sectors along with challenges and suggestions for best harvest in this modern era.[37] Throughout the world, billions of embedded internet-enabled sensors provide an enormous amount of data that businesses can utilize to improve operational safety, track assets, and reduce human operations.[38] Machine data can be used to predict whether equipment will break, giving manufacturers a heads-up and avoiding lengthy periods of downtime.[39] IoT devices can also be used by researchers to collect data, information, and other intelligence about client preferences and behavior, market demand, future requirements, potential risk, and so on. However, those may be serious implications for privacy and security.[40] IoT has the potential to develop industries efficiency, increase productivity, and improve our daily lives. At the same time, IoT will influence seriously to other technologies, and in future more things will be internet-connected. Today globally, there are around 17 billion active IoT devices, and more than 85% of firms have boosted their technical efficiency by implementing IoT technology into their products. The Internet of Things has been named 'the next wave of innovation' as its impact on people's day to day lives evolves.[41] In fact, IoT is critical for operating large-scale businesses and the service industry in the twenty-first century. Furthermore, it was shown that IoT has a considerable impact on decision-making and corporate operation management.[42]

The explosion of technology in the modern era has coincided with an equally seismic shift in how we think and talk about it. AI is so advanced technology that can replicate the human brain or intelligence. It allows computer programs to learn from experience through iterative processing and algorithmic training. Every day, AI has become more practical and innovative in almost all aspects of life. AI has become a crucial issue in the modern era, as it might affect the job market and general employment. Most individuals wish to claim that the widespread usage of AI would result in employment losses for people.[43] However, People are gradually realizing that AI can improve the creative, lucrative, constructive, adaptable, and accessible nature of professions. AI could lead to a more innovative, diversified, and skilled economy.[44] We must need to change the education system, including the curriculum, teaching methods, and many things that need to be done for schooling. Our mass or general education system needs to be aligned with modern and advanced technology, which will change the whole school system and must be purposeful and sustainable for the long term. It is an analytical study in which the researcher has tried to evaluate the diversified use of AI and robots and the consequences for the human future, emphasizing the global education system. Robotics, AI, and machine learning have advanced significantly in recent years. Automation and extensive use of AI can help organizations, companies, or industries do better in production or service by reducing errors, improving quality and speed, accuracy and integrity, and, in most cases, achieving results that are impossible for humans.[45] Again, advances in AI and related automation technologies have led to growing fears about job losses and increasing inequality in society. This concern is widespread in high-income countries. Developing countries and emerging market economies should be even more concerned than high-income countries, as their comparative advantage in the world economy relies on abundant labour and natural resources.[46] Additionally, declining labour and natural resource returns, as well as the winner-take-all dynamics brought on by new information technologies, may lead to a further loss of control in the developing and labour-intensive world. This has the potential to slow the rapid progress made over the last fifty years. It may also jeopardize progress toward reducing poverty and inequality in societies around the world.

Future dangers from AI may be very significant. AI, IoT, ML, and automation will reduce the need for human workers and the size of the global economy. AI in education is not about humanoid robots as a teacher to replace human teachers. However, it is about using computer intelligence to help teachers and students and improving and effective the education system. In the future, the education system will have many AI tools that will shape the educational experience. Again, who knows, maybe even robot-human emotional relations will be possible in the future. There were already several movies playing with that idea. However, there is a high degree of uncertainty regarding the conceivable technological development scenarios and their effects.[47] So, substantial potential weaknesses and risks cannot be ignored. Economic analysis based on models suited to this new era has the potential to aid in the development of policies at both the global and national levels that can mitigate these negative effects. The big threat of AI is 'Singularity' in which AI machines take over and fundamentally alter human existence by making us dependent on them or eliminating us. This is another major threat to humanity on a global scale. Today many people believe that the end of humanity is possible if super-intelligent robots gain access to nuclear weapons or develop biological or chemical agents. Those devastating/horrifying tasks could be carried out at any time, either by super clever robots themselves or by some ignorant human acting out of anger, malice, or dictated by a stupid person. So, there should be appropriate procedures, rules and regulations for using advanced AI and robots. And such procedures and regulations should include ethical, privacy, and security concerns. Therefore, global coordination should guide AI development in a positive, gentle path.[48] On the other hand, AI technology has the potential to give benefits to different income choices and bring significant gains to both developed and developing countries. [49] AI also has the potential to create new and innovative job opportunities, leading to a more productive and efficient economy.[50] Any technology usually eliminates employment that creates. It is the reality that, with the advancement of AI, the world will become more complex and self-centred in the future, as well as there will not be enough jobs for all, or it will not ensure employment for everyone. So, the new generation needs to be educated with advanced technology and valuable skills. Therefore, the current education system must be transformed with a pragmatic solution.[51]

IoT as Advance Technologies and its Impact

IoT in Other Advance Technologies. The Internet of Things (IoT) has enormous promise in sophisticated technology and is predicted to alter several sectors and parts of our life. Here are some important upcoming IoT trends and opportunities:

Increased Connectivity. With the introduction of 5G networks and beyond, IoT devices will see quicker and more dependable connectivity.[52] This will enable real-time data transfer, low-latency connectivity, and seamless integration of IoT devices into diverse ecosystems.

Edge Computing. Edge computing, in which data processing and analysis take place closer to the source or device, will become increasingly common. By processing data locally, this method minimizes latency, conserves bandwidth, and improves security and privacy.[53]IoT devices will have higher computational capability, allowing them to do advanced analytics and decision-making on the edge.

Integration of AI. AI and machine learning will play an important role in IoT systems, enabling intelligent data analysis, predictive maintenance, and autonomous decision-making.[54] The large volume of data produced by IoT devices will be used by AI algorithms to draw insights, enhance operations, and improve overall efficiency.[55]

Smart Cities and Infrastructure. By integrating numerous elements such as transportation systems, energy grids, public services, and infrastructure, IoT will convert cities into smart ecosystems.[56] Smart city efforts will improve traffic management, energy consumption, trash management, and public safety, making cities more sustainable and efficient.[57]

Industrial IoT (IIoT). The Internet of Things (IoT) will continue to transform industries such as manufacturing, logistics, agriculture, and healthcare. IoT devices installed in industrial equipment will allow for real-time monitoring, remote control, predictive maintenance, and other benefits.[58]

IoT Security and Its features. The precautions and protections for cloud-connected devices such as home automation, SCADA equipment, security cameras, and any other technology that links directly to the cloud are referred to as IoT security. The automatic cloud connectivity in gadgets distinguishes IoT technology from mobile devices (such as smartphones and tablets).[59]IoT security entails safeguarding devices that were previously poorly designed for data protection and cyber-security. Recent data breaches have demonstrated that IoT security should be a top focus for the majority of manufacturers and developers.[60]Only an integrated solution that provides visibility, segmentation, and protection across the whole network infrastructure, such as a holistic security fabric approach, can meet IoT and security needs.[61]

- ▪ Learn. Security solutions with total network visibility may authenticate and classify IoT devices to create a risk profile and assign them to IoT device groups.[62]
- ▪ Segment. IoT devices can be classified into policy-driven groups based on their risk profiles after the organization understands its IoT attack surface.[63]
- ▪ Protect. Policy-driven IoT groups and internal network segmentation enable monitoring, inspection, and policy enforcement based on activity across the infrastructure.[64]

IoT in Modern Devices. The Internet of Things (IoT) is a physical object that connects to the Internet. It may be anything from a fitness tracker to a thermostat, a lock or appliance, or even a light bulb. Consider shoes that monitor our heartbeat and can alert us to

potential health issues. We don't have to imagine because smart shoes already exist! The following are some of the most key drives and innovations in the field of IoT in the near future:[65]

➤ **IoT in healthcare.** The Internet of Things (IoT) is an appealing topic in medicine because it has significant potential for increasing care. [66]However, the application of IoT in healthcare is fraught with a slew of challenges, as well as numerous vulnerabilities that translate to larger attack surfaces and deeper degrees of damage to both consumers and their trust in health systems as a result of patient-specific data being accessible. Furthermore, when IoT health devices (IoTHDs) are created, a wide variety of assaults are feasible.[67]Understanding the hazards in this new ecosystem requires an understanding of the architecture of IoTHDs, operations, and the social dynamics that may regulate their interactions.[68]It's no wonder that healthcare has been one of the most active areas of IoT development in the previous two years, given all that has happened in the world during the last two years. Of course, it's a broad use case that includes anything from the deployment of cameras in public places to monitor social disengagement to the use of fitness bands and trackers to monitor lifestyles, as well as the development in telemedicine and remote healthcare use.[69]Blood pressure and heart rate monitors, insulin pumps, wheelchairs, defibrillators, and oxygen pumps are all often connected now, allowing them to collect data to assist doctors in better understanding illnesses and patient lifestyles, as well as act autonomously to improve user quality of life.[70]Healthcare IoT devices allow medical workers to obtain data on patients' conditions without exposing themselves to the risks of bringing large groups of potentially contagious people together in close quarters.[71]However, they also allow clinicians to possibly examine, diagnose, and treat a larger number of patients, as well as spread healthcare to locations where actual access to doctors or hospitals is difficult due to remoteness or difficulty of access.[72]

➤ **Security.** The massive increase in the number of internet-connected devices necessarily means that there are an increasing number of methods for individuals with malicious intent to exploit our technology. The quantity and size of cyber-attacks are increasing year after year - security researchers at Kaspersky estimate 1.5 billion attacks on IoT devices in the first half of 2021 - and this trend is expected to accelerate in 2022. Because IoT devices are not always as secure as traditional devices used to hold sensitive data, such as PCs or smartphones, They act as gateways to our personal networks. Another threat vector derives from the fact that the IoT is made up of "things" - sometimes very little, light objects - that might be lost or stolen, needing an additional layer of protection to prevent unauthorized users from physically possessing your equipment.[73]However, there are hints that manufacturers are cleaning up their act when it comes to shipping gadgets with default passwords, and users are becoming more aware of the risks. Common attacks include denial-of-service (DDOS) attacks, which include overloading systems with connection requests, causing them to malfunction and potentially disclose data, or hijacking computing power from devices, which can then be used to construct botnets that attack other systems or just to mine crypto currencies.[74]IoT is more than simply a security risk; by collecting data on network traffic and usage, linked devices supply fuel for algorithms that forecast and prevent cyber attacks.

➤ **Edge IoT.** Edge computing and the Internet of Things go hand in hand. Simply expressed, it means designing devices with on-board analytics capabilities so that computation occurs as close to the source of the data being analyzed as possible. This is particularly relevant in the context of cloud computing, when data is collected by essentially "dumb" sensors such as simple cameras or microphones and sent to the cloud for processing.In edge devices, smart sensors such as cameras with computer vision capabilities or microphones with natural language processing functionalities are used.[75]The apparent benefit is that computing may take place considerably faster, and another benefit is that lowering the amount of data transported to and from the cloud lowers network congestion. Another benefit becomes evident when we consider the privacy issues of pervasive IoT; if a gadget is gathering personal data, users can have piece of mind knowing that they can access the insights it provides without it ever leaving their individual custody.[76]The increasing amount of computer power being available in ever smaller and more power-efficient devices, thanks to more efficient battery and user interface designs, is a primary driver here. Edge computing will become an increasingly significant element of the solution when it comes to delivering rapid, secure insights in 2022, as more enterprises continue to seek to hybrid cloud ecosystems to supply IoT services to their consumers.[77]

➤ **IoT in Business and Industry.** The industrial internet of things (IIoT) is the extension and application of the Internet of Things (IoT) in industrial sectors and applications. The IIoT, with a heavy emphasis on machine-to-machine (M2M) communication, big data, and machine learning, enables industries and companies to improve operational efficiency and dependability. The IIoT includes industrial applications such as robotics, medical devices, and software-defined manufacturing processes.[78]The Internet of Things, sometimes known as the industrial internet, has enormous ramifications for how we create items, deliver services, sell to customers, and give support.[79]Smart factories and logistics facilities are becoming increasingly automated, and the availability of "as-a-service" robots and IoT infrastructure means that more and smaller enterprises will begin to benefit on the opportunities in 2022.[80]By incorporating IoT automation into business models, firms can enjoy enhanced efficiency while acquiring a data-driven insight of their operations and processes. Wearable gadgets, such as augmented reality (AR)[81] and virtual reality (VR)[82] headsets, will be increasingly employed for a variety of applications, including training, equipment maintenance, and process simulation[83] using digital twin approaches. [84]In manufacturing processes, IoT technology

comprises sensors installed on machinery to assess performance and enable predictive maintenance - forecasting where faults and breakdowns will occur in order to replace and repair problematic equipment more efficiently.[85]IoT technologies also include the rapidly expanding field of additive manufacturing methods, such as 3D printing, which will provide increasingly new ways to manufacture and create goods, allow for greater levels of customisation and personalisation, and reduce waste.[86]

➢ **IoT for Resilient Organizations.** Following the extraordinary upheaval of the last two years, resilience is high on the agenda, and IoT technology offers significant opportunity to construct more resilient and disaster-resistant enterprises. This contains measures such as ensuring a company has the proper abilities to deal with widespread change, such as the transition to home and remote working that occurred in 2020 and 2021, as well as ensuring the company does not lose out owing to the activities of competitors or markets. IoT can improve supply chain resilience by tracking inventory movement between a company, its suppliers, and its consumers, for example, to forecast where delays may occur and give contingencies in the event of global challenges. Monitoring systems that track staff movements around facilities and worker efficiency can be used to assess workplace turnover and predict where shortages, or skills shortages, may indicate a business is headed for issues.[87]IoT solutions meant to help businesses forecast and respond to disruption from a variety of sources will definitely continue to be a source of significant innovation in 2022 and beyond.

➢ **A fog-based IoT platform.** Using an open Jackson network with feedback, a fog-based IoT platform paradigm with three layers, namely IoT devices, fog nodes, and the cloud, was presented. Individual subsystem performance was examined, and the whole system was evaluated using various input parameters.[88]Analytical results yielded some intriguing performance data. The Internet of Things (IoT) is a network of physical items embedded with sensors, microcontrollers, software, and other technologies that connect to and exchange data with other devices and systems via the Internet.[89]In a typical IoT platform, data is continuously sent, received, and processed in a feedback loop. IoT devices are nonstandard computing devices that can connect wirelessly to a network and transfer data, such as smart TVs, smart sensors, smartphones, and smart security robots. The data is gathered and processed at fog devices.[90]

Fog computing, also known as edge computing, is an architecture that employs fog nodes to receive tasks from IoT devices and execute a considerable amount of computation, storage, and communication locally, before routing processed data to the cloud for additional processing. Fog computing aims to increase the efficiency of local and cloud data storage. Fog computing can handle huge amounts of data initiated by IoT devices at network edges. Fog computing, also known as a fog-based IoT platform, is often regarded as the finest platform for IoT applications because to properties such as low latency, mobility, and heterogeneity. For example, fog computing decreases the quantity of data that must be transferred to the cloud while also minimizing latency, which is critical for time-sensitive applications such as IoT-based healthcare services.[91]In a fog-based IoT platform for smart buildings, for example, information about the indoor ambience is collected in real-time by IoT devices and transferred to the fog for aggregation and preprocessing before being forwarded to the cloud for storage and analysis. Proper decisions are made and relayed back to the appropriate actuators to establish the ambience or fire an alarm.[92]More research on the main components of fog-based architecture for IoT systems, as well as their implementation methodologies, is covered in.[93] The concepts of fog and cloud are fairly similar, however there are some variances. Let's see the comparison of fog computing and cloud computing:

▪ Cloud architecture is centralized, with giant data centers placed all over the world; fog architecture is dispersed, with numerous small nodes located as close to client devices as possible.
▪ In cloud computing, data is processed in remote data centers. Fog processing and storage occur at the network's edge, close to the source of information, which is critical for real-time control. In terms of processing power and storage capacity, cloud outperforms fog, but fog is more secure owing to its dispersed architecture.
▪ Because of its slower reaction, cloud focuses on long-term deep analysis, whereas fog focuses on short-term edge analysis.
▪ Without an Internet connection, a cloud system fails. Because to the use of numerous protocols and standards, fog computing has a substantially lower failure rate. Overall, while both cloud and fog computing offer advantages it is crucial to highlight that fog computing supplements cloud computing rather than replacing it. Choosing between these two systems is mostly determined by the user's or developer's individual demands and aims.

Fog computing is especially significant in IoT deployment because it frees resource-constrained IoT devices from having to visit the resource-rich cloud on a regular basis.[94]Because IoT tasks such as demanding fog computing resources and service kinds are changing, dynamically supplying fog computing resources to ensure maximum resource usage while meeting a certain constraint will be a difficult challenge. The system modeling and performance analysis for a fog-based IoT platform is a crucial development phase for commercial IoT network deployment in order to maximize the fog computing resources and ensure the required system performance.

In 2025, there will be more than 25 billion IoT devices, producing 2.2 zettabytes of data. (A zettabyte is equal to one trillion gigabytes.) In comparison, IoT devices created only 100 billion gigabytes in 2013. The amount of money to be generated in the IoT sector is similarly astounding, with estimations putting the market's value in 2025 at roughly US$ 1.6 trillion. It may have seemed

unthinkable a decade ago that our refrigerators could notify us when we were running low on milk, our doorbells could record our visitors, and our audio speaker system might mistakenly order toys online. Nonetheless, we live in the Internet of Things era, where these types of devices have surged in popularity and are literally everywhere. The Internet of Things has grown dramatically in terms of the number of devices, income earned, and data created, but most forecasts suggest that growth will increase. The number of connected devices is predicted to reach 25 billion by 2025 (up from 8.7 billion in 2012), and yearly income from IoT sales is expected to reach US$ 1.6 trillion by 2025 (up from US$ 200 billion in 2012). Perhaps most importantly, the volume of data generated by IoT is predicted to reach 2.2 zettabytes by 2025, up from 0.1 zettabytes in 2013.

Before delving into the data, it's necessary delineating what we consider an Internet of Things device and what isn't. In this research, we define IoT devices as those that were previously not linked to the internet ("dumb" devices), but are now network connected, allowing for a new set of applications. For example, while smartphones and computers are Internet-enabled, we do not classify them as IoT devices because they have "traditionally" been so. In this article, an internet-enabled toaster oven would be deemed an Internet of Things device because the equipment hasn't generally been connected to a network. With that concept in mind, how quickly is the IoT market expanding?There are a number of competing figures and projections with any market forecast, but all of them imply that growth has been blazing fast and may potentially increase. According to the NCTA, a trade organisation for internet and television providers, the installed base of connected devices is predicted to exceed 50 billion by 2020, representing a nearly 500% growth over 2012.[95]Almost every market prediction predicts that the industry will be worth a trillion dollars or more during the next decade. According to one of the more conservative forecasts from market research firm IoT Analytics, the business would be worth $1.6 trillion by 2025..[96] Growth of IoT market and revenue has been shown in figure 4 and 5 below.
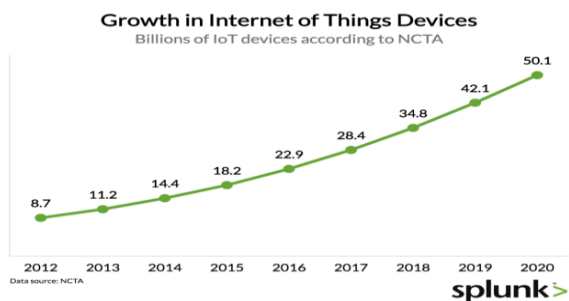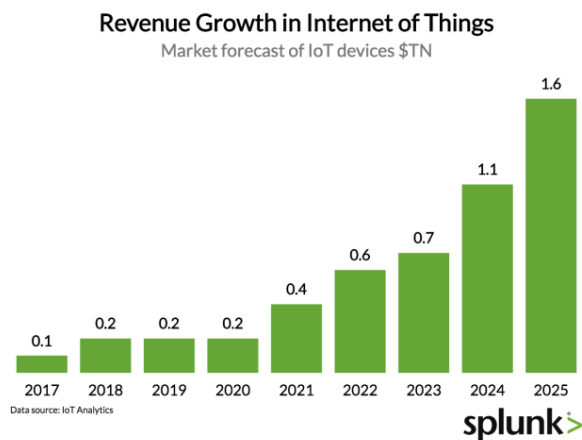

Fig 2: Growth of IoT Market [97]

Fig 3: Revenue Growth of IoT[98]

Large-Scale Uses of Internet of Things
Global share of IoT projects by category

Category	Percentage
Smart City	23%
Connected Industry	17%
Connected Building	12%
Connected Car	11%
Smart Energy	10%
Other	8%
Connected Health	6%
Smart Supply Chain	5%
Smart Agriculture	4%
Smart Retail	4%

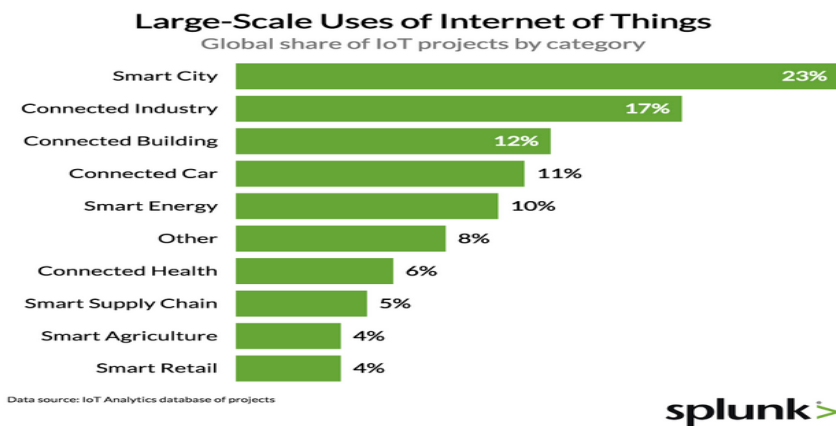Data source: IoT Analytics database of projects

splunk>

Fig 4: Use of IoT in percentage in different sectors[99]

Again, in another analysis it found that, The number of connected devices in use globally now exceeds 16 billion, with IoT devices accounting for 7 billion (this figure does not include smartphones, tablets, laptops, or fixed line phones). Global connection growth is mostly driven by IoT devices, both on the consumer (e.g., Smart Home) and enterprise/B2B (e.g., connected machinery) sides.[100]The number of active IoT devices is estimated to reach 10 billion by 2020 and 22 billion by 2025. This figure includes all current connections but excludes devices that were purchased in the past but are no longer in use.

Blockchain as Advanced Technology and its Impact

A distributed database or ledger shared by the nodes of a computer network is known as a blockchain. Blockchain can be defined as the Chain of Blocks that contain some specific Information.[101]This process takes place in a secure, chronological and absolute way. Each time when a block is completed in storing information, a new block is generated.[102] In 1991, researcher scientists Stuart Haber and W. Scott Stornetta introduce Blockchain Technology. These scientists have wanted some computational practical solution for time-stamping the digital documents so that they couldn't be tempered or misdated. So both scientists together developed a system with the help of cryptography. In thatsystem, the time-stamped documents are stored in a Chain of Blocks.[103]In 2000, Stefan Konst published his theory of cryptographic secured chains, plus ideas for implementation. Blockchain was proposed for Bitcoin by Satoshi Nakamoto in his quest to solve the Europe's economic crisis in 2008. The technology underpins cryptocurrencies like the Bitcoin and many other applications. Satoshi proposed Bitcoin as a new payment method that dispenses with central authorities like central banks, using a cryptographically protected chain of data blocks later called as blockchain. This technology was first used in cryptocurrencies where its success was first seen from Bitcoin. [104] In fact, in 2014 is marked as the turning point for blockchain technology, and which is separated from the currency and Blockchain 2.0 is born.[105]Financial institutions and other industries started shifting their focus from digital currency to the development of blockchain technologies.[106] Nowadays, there are many applications of blockchain has found and that discussed in this paper. Blockchain underpins Bitcoin and many other cryptocurrencies like, Ether.[107]Today, the total cryptocurrency market cap is $2.79 trillion, equivalent to the 8th largest economy globally. There are 30,000 social media posts on Bitcoin posted online daily which is, about 1500 posts are made every hour, about 30 posts per minute.**[108]** Motivated by the recent advancement of multi-access edge computing (MEC) and artificial intelligence (AI), blockchain-enabled edge intelligence has become an emerging technology for the Internet of Things (IoT).[109] Europe would like to see blockchain funding of $500 billion by 2030.Today, sometime blockchain technology has been foreseen by industry and research community as a difficult technology that is poised to play a major role in managing, controlling, and most importantly securing IoT devices. Blockchain can be a key enabling technology for providing viable security solutions to present challenging IoT security problems.[110] Today, IoT devices are insecure and incapable of defending themselves. This is due to mainly the constrained resources in IoT devices, immature standards, and the absence of secure hardware and software design, development, and deployment. The efforts of defining a robust global mechanism for securing the IoT layers are also being hampered due to diversity of resources in IoT. This can be solved by blockchaintechnology.The lack of intrinsic security technologies in the current IoT systems brings forth numerous security vulnerabilities and privacy risks. To this end, a distributed and decentralized technology like blockchain comes out as a viable solution.[111]

Blockchain can help to completely change how healthcare is managed by enabling decentralized record holding with data becoming accessible as and when required. This technology can also help to enable health practitioners in learning about patient cases more comprehensively and swiftly - ensuring that they can be treated faster with less waiting time in between gathering and interpreting the information. Furthermore, blockchain can also combat the circulation of fraudulent drugs and treatments, due to its immutable qualities.[112]Researchers found many applications of blockchain in many aspect of business, industry, services, technology and innovative sectors like; finance, management, defense, automotive, stock-exchange, IoT, voting, public and social services, reputation system, healthcare, education, energy, agriculture, law-enforcement, asset tracking, insurance, cyber-security, advertising, security and

privacy, digital record, etc. However,the integration of blockchain with services computing mainly exhibits merits in two aspects like blockchain can potentially address key challenges of services computing and services computing can also promote blockchain development. Today the growth of services computing has brought a lot of challenges along with other challenges. Despite its strength,blockchain has some challenges in security, privacy, scalability, and other few areas.[113] Blockchain has numerous benefits such as decentralization, persistency, anonymity and auditability. There is a wide spectrum of blockchain applications ranging from cryptocurrency, financial services, risk management, IoT to public and social services, AI, healthcare, industry, etc. Although a number of studies focus on using the blockchain technology in various application aspects, there is very comprehensive review and study on the blockchain technology in both technological and application perspectives.

Blockchain can work in a decentralized environment, which is enabled by integrating several core technologies such as cryptographic hash, digital signature and distributed consensus mechanism. With blockchain technology, a transaction can take place in a decentralized fashion. As a result, blockchain can greatly save the cost and improve the efficiency. Blockchain technology gets more attention and adoptions in various countries and companies all over the world. Blockchain is currently bringing a revolution in many enterprises like finance, healthcare, supply chain, insurance, registry, IoT and AI. Many enterprises integrate blockchain with their systems for the benefits of the blockchain. Blockchain technology will be useful and purposeful in both technological and application perspectives. Apart from cryptocurrency, blockchain technology can be used in financial and social services, risk management, healthcare facilities, and so on. A number of research studies focus on the opportunity that blockchain provides in various application domains. The possibilities of blockchain technology are endless. It has a huge potential to drive major changes across global businesses. Blockchain helps in saving costs, improving efficiency, and bringing transparency. It has solutions to the challenges faced by different industries. It is improving global businesses by making companies more efficient and profitable. Blockchain is advancing fast and its future looks bright in the coming years. From a business perspective, it's helpful to think of blockchain technology as a type of next-generation business process improvement software. Collaborative technology, such as blockchain, promises the ability to improve the business processes that occur between companies, radically lowering the 'cost of trust.' For this reason, it may offer significantly higher returns for each investment dollar spent than most traditional internal investments. Financial institutions and service sectors are exploring how they could also use blockchain technology to overturn everything from clearing and settlement to insurance. For an overview of cryptocurrency, start with money is no object. But, it has some limitations such as scalability and data privacy. Thus, the full adoption of blockchain by various sectors will need a market-wide understanding of its application against the current infrastructure.

Blockchain is highly appraised and endorsed for its decentralized infrastructure and peerto-peer nature. However, many researches about the blockchain are shielded by Bitcoin. But blockchain can be applied to a variety of fields far beyond Bitcoin. Blockchain has shown its potential for transforming traditional industry with its key characteristics: decentralization, persistency, anonymity, transparency, safety, smart contract, auditability and make transactions more secure and tamper proof.Everything in the blockchain is fully organized, and as it doesn't depend on human calculations it's highly fault-tolerant. So, accidental failures of this system are not a usual output. Blockchain ensure transference, and users have control over their properties. They don't have to rely on any third party to maintain their assets. All of them can do it simultaneously by themselves. As the system runs on algorithms there is no chance for people to scam us out of anything. No one can utilize blockchain for their personal gains. It creates a transparent profile of every participant. Every change on the blockchain is viewable and makes it more concrete. Blockchain is so secure and safer technology that it makes a unique kind of system for every kind of person. And hackers will have a hard time cracking it. However, as there are still many defects and limits in smart contract languages, many innovative applications are hard to implement currently, need more in-depth investigation on smart contract and other problem solving study in the future. There should be study and needs to look at how market participants, such as investors, technology providers, engineers, universities, and financial institutions, will be affected as the market matures with more technological innovation. Blockchain isn't a cure for all business and service related problem, but there are many problems for which this wonderful technology is the ideal solution.

AI as Advanced Technology and its Impact

AI technology has becomes an important component day by day, it will become fundamental part of people's life in future. It is a multi-subject area of computer science that creates intelligent machines. AI is the replication of human brain or intelligent by machines, like computers, to accomplished any tasks which require human aptitude or talent, such as seeing, hearing, decisions-making, translating between languages, driving vehicle or boat, operating equipment and many more. Few common and popular use and example of AI are: Siri by Apple,[114,115]Alexa by Amazon,[116,117] Maps by Google,[118,119] and ChatGPT by OpenAI. AI systems is getting smarter with each successful round of data processing; because each communication and interface gives the system a chance to test and measure solutions and get better at the job as it has designed to do.[120] Since this can be done quickly and that is far quicker than a human could.[121] AI systems are tremendously effective alternatives for any process involving intelligent decision-making and repeated task since they can become experts and do it much more quickly and perfectly than human.[122] This makes AI as an exceptionally authoritative and extremely priceless technology since it essentially allows computers to think and behave just like humans and that should be much faster and much more processing power than the human brain can produce.[123]Again Machine learning (ML) is the science of accomplishment machines to interpret process and analyze data in order to solve real-world and real-

time problems instantly.[124]Deep Learning is an advanced field of ML that can be used to solve more advanced problems.[125] Robotics is a branch of AI which focuses on different branches/sectors and application of robots.[126] AI is going to dominated car industry by creating self-driving car in very near future. [127] Today's AI programs are applied to practices such as diagnostics, treatment protocol development, drug development, personalized medicine, patient monitoring and any physical or mental care.[128,129] Today, Robotics, AI, and ML have made a lot of progress.

Automation and extensive use of AI can help any organizations, companies or industries to do better in production or service by reducing mistakes, improving quality and speed, accuracy, integrity, and in the most cases getting better results that are impossible for humans to do. Peter Norvig, Google's director of research and a pioneer of ML, the data-driven AI method behind many of the company's recent successes, says that the most important thing is to figure out how to make sure that these new systems related to AI, help society as a whole and not just those who control them. He also added, 'AI has shown that it can do a lot of useful things.' From an extensive study, it has been shown that automation or introduction of AI could boost global productivity growth by 0.8% to 1.4% per year, which is equivalent to more than 2,000 work tasks in 800 occupations. When proven technologies can only automate less than 5% of all jobs, about 60% of all jobs have at least 30% of their tasks that could be done by a machine. So, there will be changes in several professions.[130] As a result, advances in AI and related forms of automation technologies have led to growing fears about job losses and increasing inequality in the society. This concern is widespread in high-income countries. Developing countries and emerging market economies should be even more concerned than high-income countries, as their comparative advantage in the world economy relies on abundant labor and natural resources.[131] Again, declining returns to labor and natural resources as well as the winner takes all dynamics brought on by new information technologies could lead to further lack of control in the developing and labour intensive world. This could slow down the fast progress that has been happen over the past fifty years. It could also threaten the progress made in reducing poverty and inequality in the society around the globe. The great thinker of AI, Professor YannLeCun, said a fear of AI being a threat to humanity and that is preposterously ridiculous.

According to Mr. LeCun, the entire concept of AI taking over the globe is a 'projection of human nature on machines.' In fact, he wants to say that 'keeping AI research 'under lock and key' would be a 'huge mistake.'[132]According to the Meta scientist, when people express concerns about future robots working at or beyond human-level capabilities, 'they are referring to artificial general intelligence (AGI) systems capable of handling a wide range of problems, similar to humans.' He emphasized that AGI development would be slow, with the goal of eventually achieving a level of intelligence similar to that of a rat's brain. AI technology is becoming an increasingly important component for many products and that will be continued in the future; and that will become a fundamental part of many people's life. At the same time, the amount of effort AI puts into the economy is likely to vary from region to region. This may depend more on the type of economic activity that is most common in a region than on the economic status of the region. AI technology has the potential to give benefits to different income chooses and to bring significant gains to both developed and developing countries.[133] AI has also the potential to create new and innovative job opportunities, and that leading to a more productive and efficient economy.[134] Actually any technology usually eliminates employment than that creates. It is the reality that, with the advancement of AI, the world will become more complex and self-centered in the future, as well as there will not be enough jobs for all or it will not ensure employment of everyone. So, new generation should be educated with the advancement technology and useful skilled. Therefore, the current education system must be transformed with a pragmatic solution.[135]Today, AI is everywhere and it will soon be in every corner of the world.

Now AI affects almost every aspect of our lives, from choosing what books, chocolates, mobile sets, cars, houses, goods, electronic household items, or flights to buy online to deciding if our job applications are accepted, if we get a bank loan, and even what care we get for any diseases and many more. Complex and advanced AI and related software systems can now find out and help to decide us to all of these things and something more on their own. Today, all big hi-tech companies, like Amazon, Facebook, Google, or Microsoft, have opened new study labs and own R&D cell for AI.[136] So, AI is revolutionizing modern life, but some experts are concerned that it will one day take over the world or threaten human jobs. Millions of general people, mainly industrial workers fears that, AI will take over the globe or result in irreversible job losses. As we know that, economic theory warns the civilization beforehand as the growth in technology is likely to make both winners and losers.[137] Again, both the winners and losers from technological progress are located within the same society or country; so suitable domestic policy measures can compensate the losers. However, if the winners remain within one country compensate the losers, who are in other countries; that create complicacy and that is politically very difficult.[138] In this exploratory paper, I shall try to ascertain the benefit of AI in different sectors, relationship between AI and job creation, impact of AI, future worry of AI along with the most contemporary issues like global future education. It is an analytical study in which the researcher has taken effort to evaluate the diversified use of AI and the consequence of human future special emphasis on global education system.
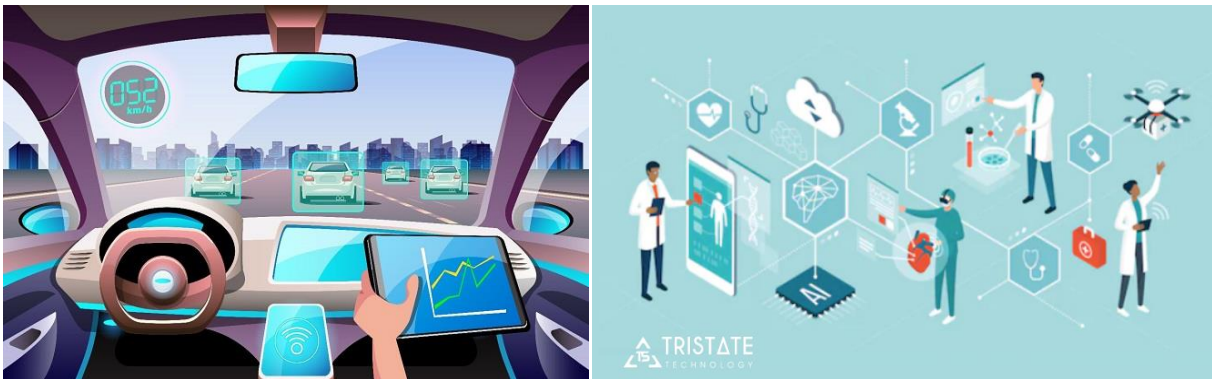
Figure 5: Benefit of AI in automobiles[139] and benefit of AI in healthcare[140]

There is almost no significant business that modern AI or 'narrow AI', that performs objective functions by using data-trained models and frequently falls into the categories of deep learning or ML, and that hasn't already impacted. This has been especially true in recent years, as data gathering and analysis have increased significantly as a result of robust IoT connectivity, the proliferation of linked devices, and ever-faster computer processing. Big things are bound to happen with companies or concerns spending billions of dollars on AI products and services in each year. It has been found that, tech giants like Google, Apple, Microsoft, and Amazon spending billions to create those products and services, universities making AI a more prominent part of their curricula, syllabus, and developed countries military forces upping their tactical AI game. According to Andrew Ng, former Google Brain leader and Baidu top scientist, 'a lot of industries go through this pattern of winter, winter, and then an eternal spring.' He also stated that 'we may be in the endless spring of AI'.[141]Today, some sectors are at the start of their AI journey; whereas others are expert travelers. However, both have a long way to go. Whatever the impact AI is having on our present day lives is hard to overlook. Nobody can stop or slow the very fast journey of AI. Today, AI enabled machines are capable of performing some of the specific jobs better and faster than humans and imitate human actions nicely. There are four types of AI. Such as: Reactive machines AI is the most superficial level of AI. Reactive machines can do basic operations. They cannot form memories or use past experiences to make decisions like the IBM's Deep Blue. Whereas, limited memory AI can store existing data and create better output by using the data like Tesla's self-driving cars. Again, theory of mind AI can connect with human thoughts and interpret them better but these are still work in improvement or progress. On the other hand, self-aware AI will have an independent intelligence, and it will make its own decisions. These machines will be smarter than the human minds and it is coming soon and going to make new history of civilization.

AI has been helpful to manufacturing for a long time. Since the 1960s and 1970s, AI has been used in robotic arms and other industrial bots. This shows how well the industry has adapted to AI's abilities. Most of the time, these industrial robots have worked with humans and to do limited task/jobs like, putting things together and stacking. Predictive analysis sensors keep equipment running smoothly. Transportation is one industry that is certainly teed up to be drastically changed by AI. AI will affect how we get from one place to another in many ways, including self-driving cars, AI trip planners, and AI traffic systems. Even though self-driving cars aren't perfect yet, one day we'll be able to get from one place to another without any stress or worry. Even though it might not seem possible, the AI healthcare drug system is already changing how people talk to doctors. It can easily analyze large amounts of data. Today, AI helps find diseases faster and more correctly, find new drugs faster and more efficiently and even keep an eye on patients through virtual nursing assistants. And, it is fact.

Figure 6: AI is game changer in manufacturing industry[142] and AI will boost agriculture sector[143]

Today, AI in education is going to transform the way people of all ages can learn. Currently, AI is using machine learning (ML), natural language processing, and facial recognition aids in digitizing textbooks, detecting plagiarism, and gauging student emotions to

determine who is struggling or bored. AI tailors the learning experience to the particular needs of students now and in the future. Journalism is also utilizing AI and will continue to profit from it. The Associated Press, for example, uses Automated Insights to generate thousands of earnings reports stories per year. However, as generative AI writing tools like ChatGPT enter the market, concerns regarding its application in journalism arise. Most people fear receiving a robo-call, but artificial intelligence in customer service may give the industry with data-driven solutions that deliver important insights to both the customer and the supplier. Chatbots and virtual assistants are AI systems that enable the customer service business. Even though Amazon has more than 100,000 robots buzzing around in its warehouses, picking and packing are still done by people. This will soon change, though. The New York Times quoted an expert named Mr. Lee as saying, "People want to get very big numbers. In the past, they had plans of reducing their workforce by 5 to 10% at a time. Now they are asking, "Why can't 1% of the people we have do it?" More interestingly, the AI we have today is useless in two important ways: it can't be creative and it can't feel love or kindness. It's sort of a "tool to boost human creativity." Those jobs that involve repetitive or regular tasks must learn new skills so as not to be left by the wayside. Amazon will even pay its workers to get training for jobs at other companies.

Professor of computer science at the University of Illinois, KlaraNahrstedt has stated, "We must invest heavily in education to retrain people for new jobs if we want AI to be effective in many domains. Today's AI is considerably more focused and intentional. People will soon need to study programming the same way they learn a new language. If we don't know programming or coding in the future, things will just get more challenging. While many people who are made unemployed by technology will eventually find new jobs, it won't happen immediately. People gradually recovered, much as they did when America switched from an agrarian to an industrial economy during the Industrial Revolution, which was a major factor in the "great depression." The immediate impact was enormous. As we consider, it's not always as painless as people would like to believe when jobs disappear and new ones come around.[144] If we understand what the technology is capable of and we understand the domain very well, we may start to make connections and say, 'May be this is an AI problem, maybe that's an AI problem. It's wise to say 'I have a specific problem I want to solve'.

Some of the most intriguing AI research and investigation are taking place in many areas around the globe, including reinforcement learning, and which deals with rewards and punishment rather than labelled data, and generative adversarial networks (GAN), and that allow computer algorithms to create rather than simply assess by pitting two nets against each other. The former is demonstrated by the prowess of Google DeepMind's AlphaGo Zero,[145] the latter by original image or audio generation that's based on learning about a certain subject like celebrities or a particular type of music. On a far grander scale, AI has the potential to have a significant impact on sustainability, climate change, and environmental challenges. Cities will ideally become less congested, less polluted, and more livable, thanks in part to the employment of smart sensors. We all know that once we foresee anything, we may impose policies and norms. Sensors on automobiles that convey data about traffic conditions, for example, could identify possible difficulties and optimize car flow. However, in the future, the road will play a significant role.
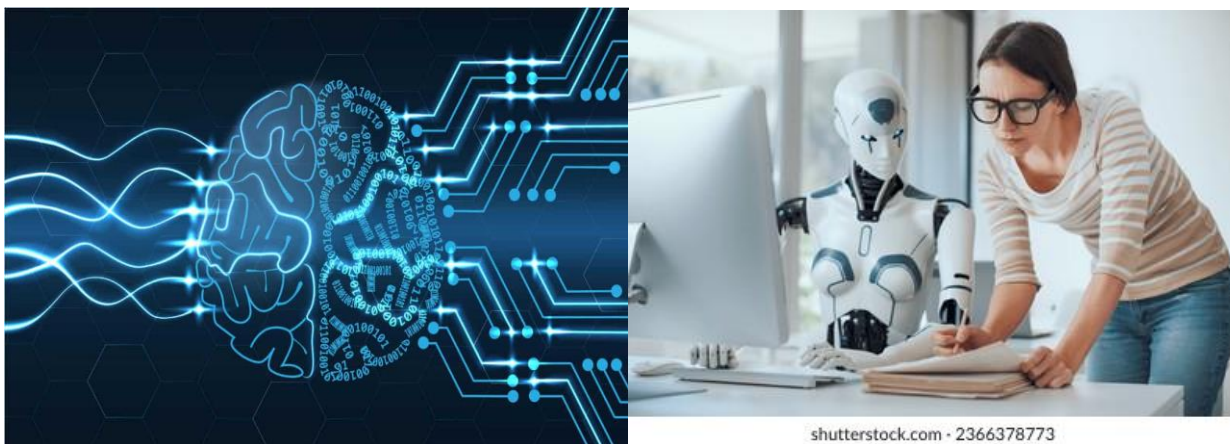

Figure 7: AI and future of life[146]and working relationship between human and robots[147]

Today, it is a truth that AI's reliance on large data is already having a significant impact on privacy. Cambridge Analytica's Facebook antics and Amazon's Alexa spying are two examples of technology gone wild. Critics believe that without proper rules and self-imposed constraints, the situation would worsen. In 2015, Apple CEO Tim Cook derided competitors Google and Meta for greed-driven data mining.[148] He stated that advancing AI through amassing massive human profiles is a sign of laziness rather than efficiency. To be truly intelligent, AI must respect human values, including privacy. If we do this wrong, the consequences will be severe.' Actually, AI is reserved for routine tasks rather than a cataclysmic transformation such as the arrival of robot overlords. AI can benefit society if used wisely. However, as with most developing technologies, there is a significant risk that commercial and governmental use will have a negative influence on human rights. As a result, enormous volumes of data can be collected and used in

benign ways, such as spam filters and recommendation engines, to try to forecast future behavior. However, there is a significant risk that it will have a negative influence on personal privacy and the right to be free from discrimination.

Figure 8: In future robots will work with human[149] and Technological revolution relate technology and human[150]

'There are still big breakthroughs that have to happen before we reach something that resembles human-level AI,' said internationally renowned AI scientist Stuart Russell in 2018. Russel also stated that AI is not yet capable of fully comprehending English. This demonstrates the current distinction between humans and AI. Humans can interpret and translate machine language, but AI cannot do the same for human language. However, if we reach a point where AI is able to understand our languages, the AI systems would be able to read and understand everything ever written. He also added, 'Once we have that capability, you could then query all of human knowledge and it would be able to synthesize and integrate and answer questions that no human being has ever been able to answer. Because, they haven't read and been able to put together and join the dots between things and that have remained separate throughout history.'[151] John Laird, a longtime professor of engineering and computer science at the University of Michigan, stated that the objective of his study has always been to create what is known as cognitive architecture, which he believes to be inherent to an intelligence system. For instance, we are aware that the human brain is more complex than a collection of uniform neurons. There is a true structure in terms of several elements, some of which are connected to knowledge, of how things are done in the outside world. It's referred to as procedural memory. Then there's knowledge based on general facts, a.k.a. semantic memory,[152] as well as knowledge about previous experiences or personal facts; which is called episodic memory.

Figure 9: Cybersecurityvs information and network security[153] AI will change the finance sector[154]

Impact of Robot and Consequences of World
An algorithm is 'a step-by-step procedure for solving a problem or accomplishing some end.' In the field of AI, algorithms are automated instructions that tell a computer what to do. The instructions are mathematically driven and can be as simple as 'if X, then Y' actions or encompass complex mathematical layers of instructions to execute a task or find an answer to a problem.[155] The algorithm manipulates data in a variety of ways, such as sorting, inserting, replacing, or searching for a data attribute. It solves problems when it carries out the instructions. ML can be supervised, unsupervised, semi-supervised, or reinforcement learning depending on the kind of data being input into the program and the type of outputs that can be expected.[156] When we hear someone talk about a machine that learns, the machine is executing a structured set of mathematical procedures. The machine learns how to correct itself based on data used to train the application or by iterating on data used by the application once deployed. How the machine learns to correct itself depends on the mathematical models selected for the task.[157] Data scientists and ML programmers are the team members who select and adjust the mathematical models used in applications.[158]In deep learning, a set of mathematical instructions such as an algorithm, which is called a *node*, works like a neuron to fire the algorithm, process it as instructed, and pass its information to another node in the computer. That algorithm is then used as input by another node in the neural network. Data move

through the nodes in a direction specified by the algorithm. A deep learning model can contain billions of nodes embedded in many layers.
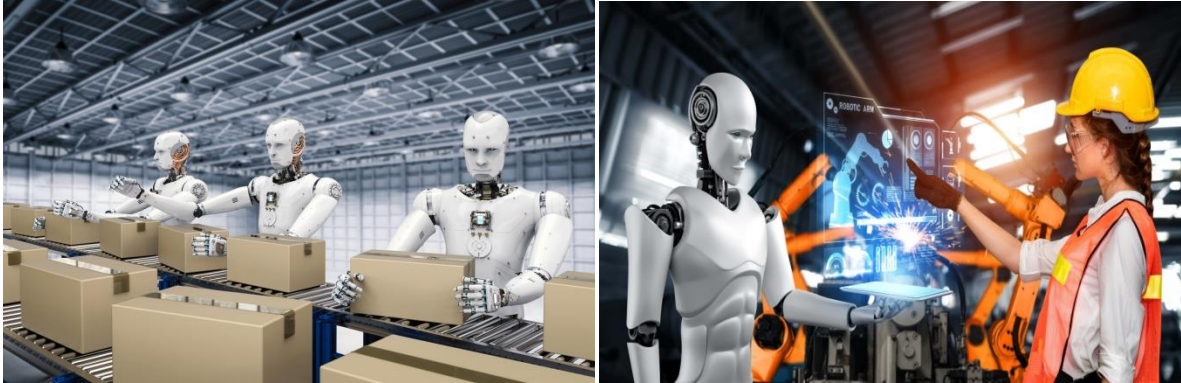

Figure 10: Robots working in industry[159] and digital revolution relate technology and human[160]

Future robotics and automation will be going to serve as assistants, workmates, teachers, surgeons, drivers, operators, and explorers. As engineers, technologist, and scientists continue to develop and advance robotics, the capabilities of this technology will only increase further. Today, in many ways, robots are already an integral part of daily life. They might even assist us in expanding our horizons on our planet and beyond, helping billions of people live better lives.[161] Today, robots become human friend and have been among us for quite some time and are used to separate humans from dull, automated, dangerous or dirty jobs or tasks in warehouses and factories at the work place. When we are talking about replacing humans with robots, then safety is perhaps one of the most important factors. Robots injuring or even worse, killing their human colleagues, is become even bigger issue as use of advanced AI increases or automation rises and many more factories are adapting automation. Forbes published the interesting story about the incident where a semi-autonomous driving Tesla car[162] collided with a tractor-trailer in Florida, and subsequently killing its driver in 2016.[163] Again in 2015, when an industrial robot killed a German factory employee and in 2017 another killed a Michigan worker. However, in the Future of Jobs Report, more than 80% of business executives said that, they are accelerating plans to digitize work processes and deploy new technologies.[164] And, 50% of employers are expecting to increase speed the automation of some roles in their companies. So, in the age of AI, the McKinsey Global Institute declared that, workforce transitions in a time of automation, estimates that as many as 375 million workers or roughly 14% of the global labor force may need to re-skill in digitization, automation and AI by 2030,[165] in their report, 'Jobs lost, jobs gained.'[166]

Figure 11: Robots working with human[167] and digital revolution relate technology and human[168]

An up-skilling worker seems to be the most popular course in all advanced company. For example Amazon's 'Up-skilling 2025'[169] initiative, has announced that it plans to spend US$ 700million to retrain a third of its workforce with skills for automation or in AI training. Again, 52% of industrial workers interviewed in the Digital Factories 2020 and 'Shaping the future of manufacturing'[170] report by PricewaterhouseCoopers (PwC)[171] believed their company lacks a true digital culture. They decided, getting workers involved, and trained, with technologies at the earliest stages can double-up with effective risk assessment and understanding potential safety hazards. Actually, safety and training can go hand-in-hand by ensuring each worker is trained to follow the safety protocol and avoid risks of on-site accidents and injuries; whatever their skill level. Training of the safe use of robots also goes beyond the technologies' installation. As the national safety guidelines for the manufacturing industry are always changing and periodic training must be delivered to workers to ensure they can operate the machinery safely. The safety of robots must also be guaranteed over the long-term for the betterment of human safety. One way to achieve this is being explored by MIT[172] in

collaboration with the automobile manufacturer BMW[173]. By using simulations to develop algorithms that help robots predict and respond to humans in close proximity, like, on a car production line. In addition, effective maintenance is absolutely crucial to the safe operation of robots.[174] So, the future of AI and robotics will provide several fascinating opportunities with high pay and promising career advancement. The chances for new generation of having a rewarding job in the production and service industry can be increased further by formal education, certification, practical training, work experience, and skill development.
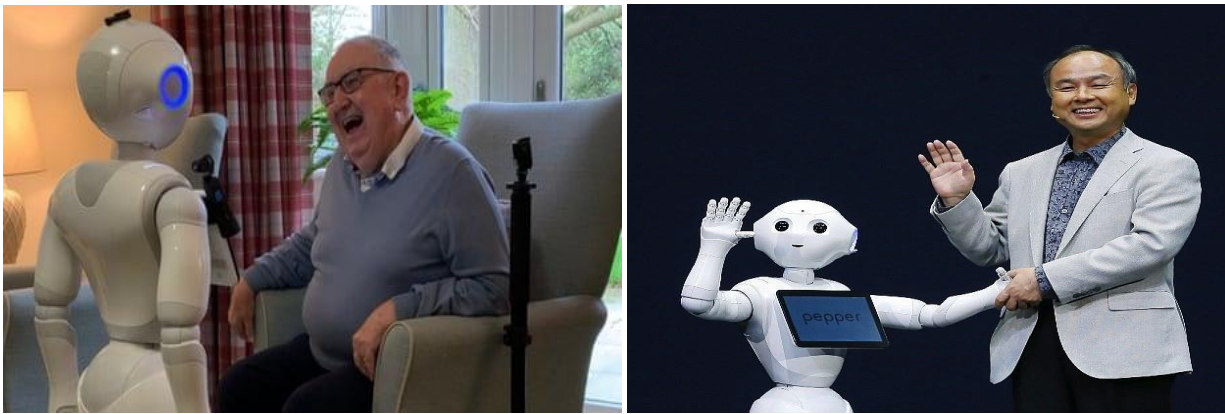

Figure 12: Example of few modern robots (Home care robot, Emotional robot)[175,176]

Currently social robots are designed to interact in ways that make them human by responding to human interactions.[177] Sophia is an example of a social robot conceived as a companion for older adults that demonstrates the potential of technologic advancements to improve how robots function.[178] In 2018, Sophia was redesigned with mobility capabilities and is now the first robot to be given citizenship in a country (Saudi Arabia).[179] Miko is kind of robot that understand human emotion. Miko's got dozens of emotions (and a few tricks up its sleeve). Not just recognizing you and calling you by name, but responding to your mood and getting to know you a little better each day. Need a joke when you're down? A dance when you're bored? Miko's on it. Because it's not just the smartest little robot you'll ever meet. It's also your friend.Miko's constantly exploring for fun, prompting you to play, and encouraging you to challenge your brain. As comfortable initiating a conversation as starting a dance party, the only thing Miko's missing is a partner-in-crime.[180] PARO is an advanced interactive robot developed by AIST, a leading Japanese industrial automation pioneer. It allows the documented benefits of animal therapy to be administered to patients in environments such as hospitals and extended care facilities where live animals present treatment or logistical difficulties.[181] Professor Einstein is a robot that teaches science and general information.[182] ROBEAR is a nursing care robot.[183] Vortex is a programmable robot that teaches kids STEM.[184]Pillo is an AI-powered health companion.[185] Buddy is a home robot.[186]
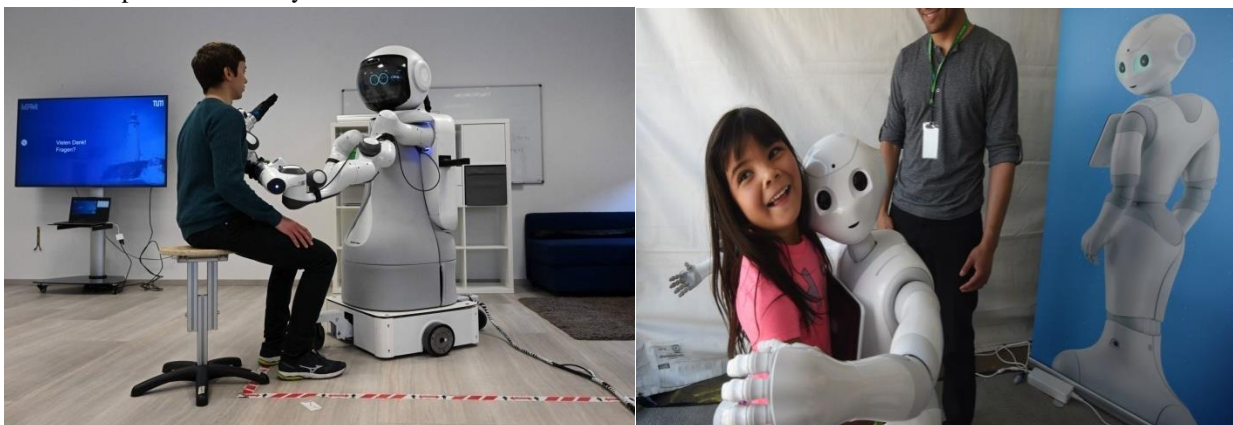

Figure 13: Example of few modern robots (Healthcare robot, Emotional robot)[187,188]

As robots learn to perform nursing functions, such as ambulation support, vital signs measurement, medication administration, and infectious disease protocols, the role of nurses in care delivery will change.[189] Research suggests that between 8% and 16% of nursing time is spent on nonnursing activities and tasks that should be delegated to others.[190] Again from an example of a robot collaboration is found at Duke University Pratt School of Engineering and School of Nursing. Interdisciplinary teams are working on developing the Tele-Robotic Intelligent Nursing Assistant (TRINA), a remote-controlled robot, to address healthcare workers who are at "high risk for infection due to routine interaction with patients, handling of contaminated materials, and challenges associated with safely

removing protective gear."[191] TRINA is tested in the nursing simulation lab and currently performs about 60% of predefined nursing tasks; however, it's 20 times slower than a nurse.The nurse will become the information integrator, health coach, and deliverer of human caring, supported by AI technologies, not replaced by them.
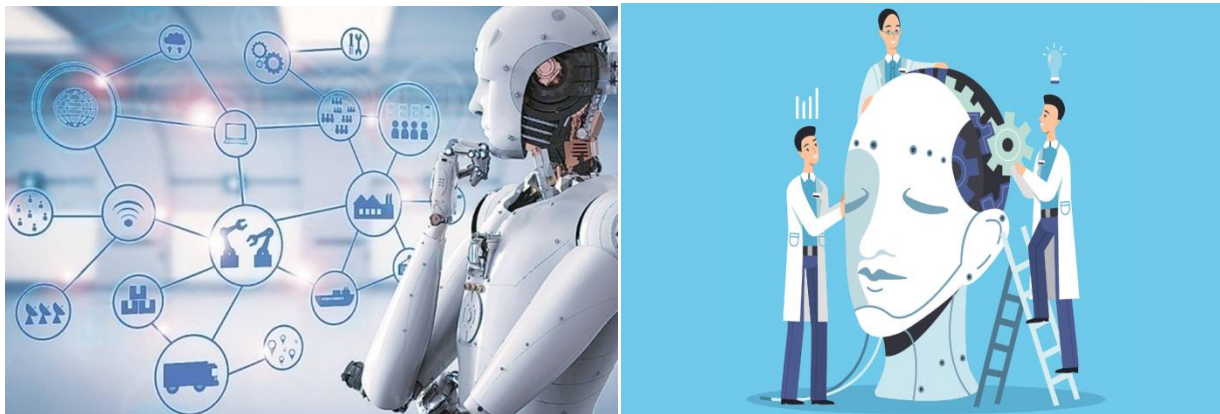

Figure 14: AI define humanity's future[192] and AI is going to shape the future of humanity[193]

In 2017, the McKinsey Global Institute (MGI) published the report "Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation."[194] Although discussions of AI replacing human workers have taken place since the beginnings of the technology, this report stirred great debate about the global impact of AI. MGI models predict that by 2030, nearly 75 million to 375 million workers worldwide will need to switch occupations due to AI technologies. However, the report also emphasizes that new roles and jobs will be created. American Economic Association researchers agree with the MGI predictions, finding that some tasks will be favorable for automation, but few jobs can be fully automated. They also predict that workers will train into new roles.[195]In 2011, computer scientist Andrew Ng proved that computers can learn what an object is without being told what it represents. His research used 10 million online videos of cats; over time, the computer learned what a cat was. This breakthrough technology is used today in speech recognition systems. Recent research predicts that global AI healthcare spending will equal US$ 36.1 billion by 2025.[196] China announced in 2017 its goal to become a global leader in AI by 2030. The U.S. issued the executive order 'Maintaining American Leadership in AI' on February 11, 2019, directing all federal government agencies to implement strategic objectives aimed at accelerating AI research and development.[197]
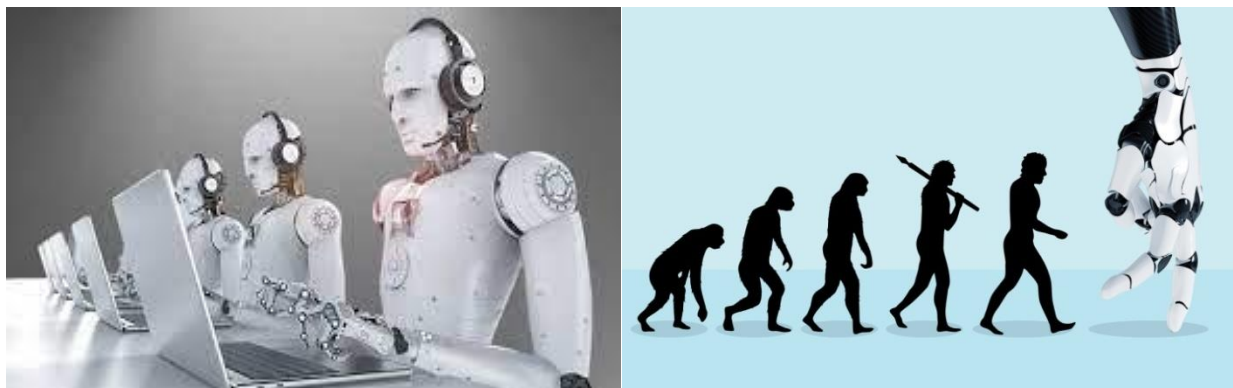

Figure15: Machines may rule over humans in future[198]both certainty and uncertainty of life[199]

With every new use of AI comes the scary question of whether or not robots will put people out of work. The judges haven't made up their minds yet. Some experts strongly disagree with the idea that AI will automate so many jobs that millions of people will be out of work. Other experts, on the other hand, see this as a serious issue. Social experts and people who think about AI thought that the organization of the workforce was changing, and that AI was basically taking over jobs. It lets us really build a market based on knowledge and use that to make better automation for a better way of life. It might be a bit abstract, but we should be worried about AI and robots taking our jobs.[200]Some expert, however, has speculated that algorithms are to blame for the loss of white-collar jobs like business analysts, hedge fund managers, and lawyers. Again, there is some disagreement on how the rise of AI will affect the workforce, but experts agree on several themes to look for. Some experts, on the other hand, feel that when AI is integrated into the working, it will actually create more jobs; at least in the medium term. Wilson believes that the change to AI-based systems will cause the economy to add occupations that will help with the transition. Some additional specialists AI will generate more riches than it

consumes. However, it may not be dispersed equitably at first. The changes will be felt subliminally and will not be visible. A tax accountant will not get a pink slip and meet the robot who will now sit at her desk. It is possible that the next time the tax accountant searches for a position, it will be more difficult to locate the same one. Few optimistic analysts predict that AI in the workplace will fragment long-standing processes, resulting in the creation of many new human occupations to combine those workflows and offer satisfaction and progress.

The age of AI and 4IR is a transition, and it could take years or even decades for different parts of the workforce and almost every part of life to get used to it. So, these predictions are harder to make, but few gloomy experts worry that once AI is everywhere, these new jobs and the ones that were already there may start to go away. So, they wonder what will happen to those people in the long run. As we've seen in the past, there were ways to move from farming to making things to providing services. Now, that isn't true. What will happen to most people who work if all jobs are taken over by robots? As we've seen, technology makes more sense from a business point of view. For example, self-driving cars and AI concierges like Siri and Cortana could take away up to 8 million jobs in the US alone as these technologies get better. What about the rest of the world? When all these jobs start to go away, we'll have to ask ourselves, 'What makes us useful?'[201] How do we define productivity? We must face the ever-evolving reality and rethink the foundations upon which our civilization is built. What is it that we do that contributes to society and makes us valuable as individuals? Since the technology won't wait for us, we need to have this discussion ASAP. It's time for us to develop a moonshot mindset.[202] To build inclusive, decentralized intelligent digital networks 'imbued with empathy'[203] that help humans aggressively and ensure that technology meets social and ethical responsibilities.[204] We need some effective and new level of regulatory and certification process to ensure the best use of AI for entire human race.[205]
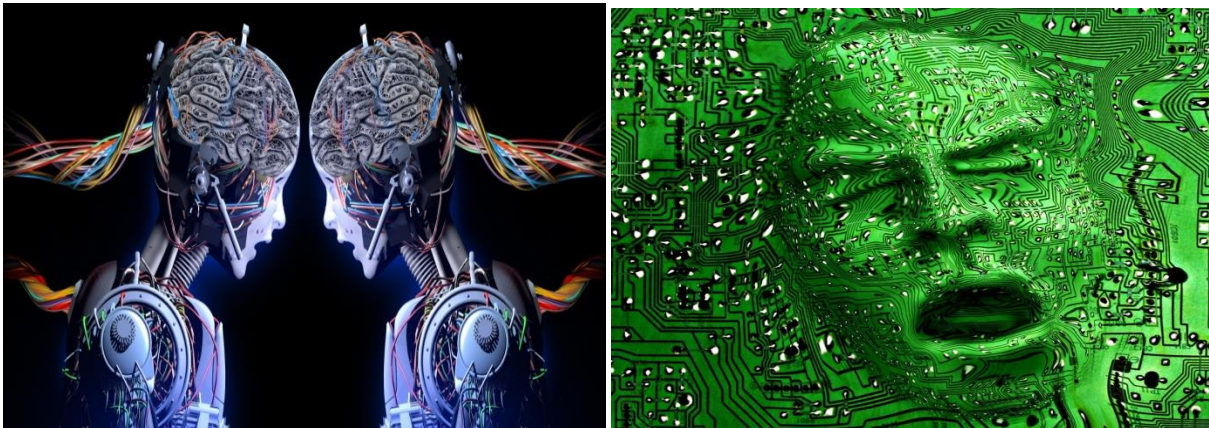

Figure 16: AI and the Singularity[206] and that may collapse the earth[207]

AI could be data-driven as well as knowledge-driven. The next-generation AI breakthrough is knowledge inference and its application to all contexts. Several significant concerns with machine learning in 5G and future networks may give rise to new areas of research and extensions of present standards to support future networks.[208] So, if AI is going to be used by a lot of people and get better, there needs to be a strong guarantee of security. Since AI will be used in transportation and health care in the coming years, it must be presented in a way that builds trust and understanding and protects human and civil rights.[209] Policies and protocols, on the other hand, should handle ethical, privacy, and security concerns. As a result, multinational communities should work together to push AI to progress in a way that benefits humanity. As AI becomes more incorporated into the workforce, it seems doubtful that all human employment will be eliminated. Instead, many experts believe that the workforce will become increasingly specialized in the future. These professions will necessitate more of what automation cannot currently deliver, such as creativity, problem-solving, and qualitative skills. Essentially, there will always be a need for people in the industry, but their responsibilities may change as technology advances. Specific skill sets will be in higher demand, and many of these professions will require a more advanced, technical skill set.
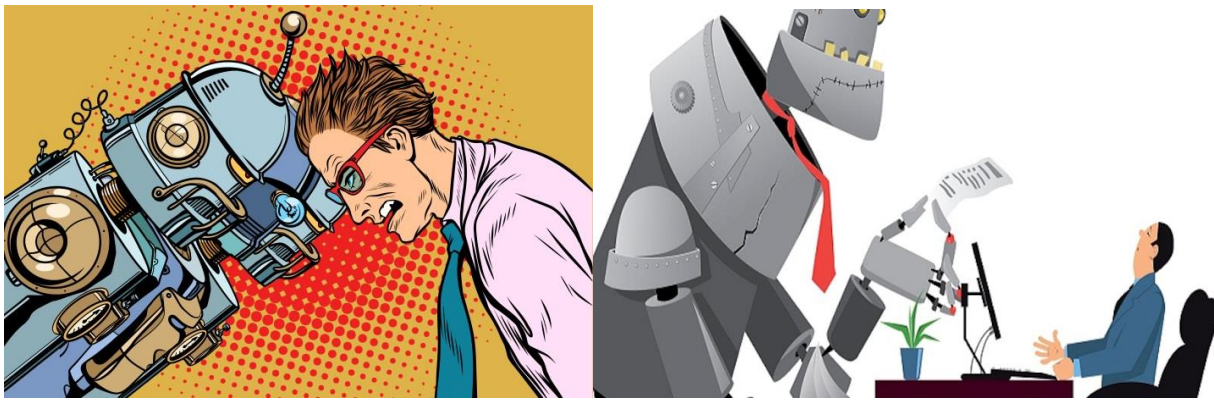
Figure 17: Machine vs human- who is wining?[210] Robot will outsmart human in near future[211]

AI and Future Education

AI has the potential to be tremendously beneficial in the education industry. Many learning programs benefit from using technology in their conception and implementation. It can also be used to create games and software. It is possible to revamp and overhaul the entire educational system and teaching methodologies using Artificial Intelligence. It starts with the issuance of certificates and degrees in schools and institutions. AI-based apps can help both institutions and students. It can influence the teaching and learning process by incorporating them into the educational field.[212]As a result, the procedure as a whole is benefits. It changes and adapts learning tasks to help all students become better students. AI makes sure that the needs of children with special needs are met. AI is used in education in many ways, from chatbots that help students 24/7 to personalized learning algorithms that change each student's needs. AI-powered tools are also used to do things like grade assignments and automatically give comments. AI is also being used to look at many data to find patterns and insights that can be used to help make new strategies and plans for education.[213]

AI works in the backdrop whenever we open our Facebook, YouTube, and newsfeed, do Google searches, get help from chatgpt, even get a product recommendation from Amazon, or book a trip online. AI has penetrated the business, service sector, automobile, healthcare, and social media, and now it will be the next big thing in the field of education. As we know, education is the catalytic tool that has the strength to transform the future of a nation. The relationship and connection between education and society are frequently ambiguous and one-way, with education and skill expected to fit in with social, economic, political, and global trends. It should not be antagonistic to them and should not represent anything different.[214] As a result, the relationship between education and socioeconomic structures, human resource development, and education position assist us in forming a forecast of future mid-level and higher education related to the 4IR. In this 4IR era, the aim and goal of mid-level and higher education are to ensure the quality of learning through teaching and practice, enable learners to gain useful and sustainable knowledge and skills through on-the-ground practice and exploratory research and sustain societies' development through service. In the 4IR era, mid-level and higher learning institutions should prioritize innovation, both evolutionary and revolutionary and deepen technology system restructuring by breaking down all barriers to innovation and modernization.[215]

The condition of education and training in the Fourth Industrial Revolution (4IR) is multifaceted and complex but also offers exciting opportunities that can revolutionize society and whole nations for better health and a superior state. AI powers the 4IR, changing the workplace from being unique based on jobs to unique based on people. 4IR is making sure that people and machines can work together again. This will close the gap between the arts and social sciences and between science and technology. We need a quick response from a middle-level or higher education school because 4IR technologies can help people or damage the environment.[216] This will necessarily require much more interdisciplinary teaching, on-ground practice, research and innovation.So along with 4IR, education 4.0 is a focused, purposeful and viable approach to learning and is transforming the future of education using advanced technology and automation.[217]To stay up with the times, traditional formal educational approaches must be revisited with a future perspective. Teachers and students/learners must be familiar with the abilities required by today's rapidly evolving technology and global society. As a result, students/learners should now be led rather than directed, and material should be made available rather than given to them. However, there should be ethical internet usage and optimal use of technical advantage for humanity. The purpose and goal of both general and vocational education should be to guarantee that students/learners have the knowledge and skills necessary to compete in the global workforce.[218]
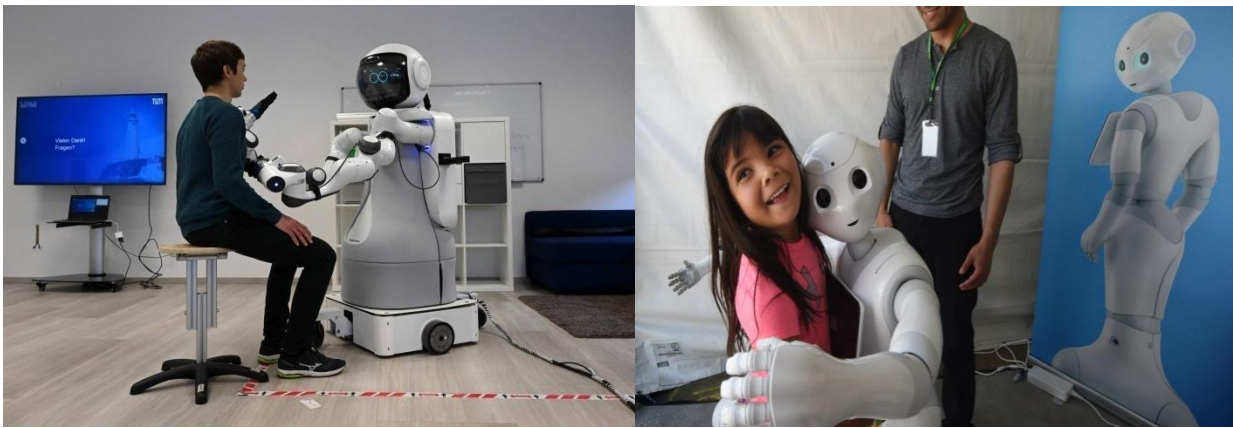
Figure 18: Example of few modern robots (Healthcare robot, Emotional robot)[219,220]

Our education should have a long-term goal, and be based on what we learn. So, we need to develop outcome-based education modules to meet the accreditation needs of students and competency-based education modules to help students learn information and skills effectively. We need to build and improve the system to cut costs, be easy to use, and automate all middle- and higher-level schooling processes. Every education system and institute should have project management, reporting, and analytics tools so that we can make sure that future and modern education processes and procedures take care of things like scheduling, virtual classrooms, accreditation, strategic planning, modern learning, skill development, etc.[221]We should adopt a strategy and formulate such a useful plan that can ensure a preferable future for today's students/learners.[222] In keeping with the changing situation of today's competitive world and the induction of super technology in every aspect of life, education curriculum formulation and development has to be prepared with supreme care and giving intense importance to technology, IT, AI, IoT, ML, big data, cloud and edge computing, social media and other knowledge and skill.

By equipping today's workforce with the proper tools, we can contribute to the development of a society and nation that is more adaptable, multifaceted, and purposeful, in which everyone plays a significant role, thereby enhancing a model of education that is self-sustaining. We must recognize the transformative power of digital technology in education and be conscious of end-to-end mid-level and higher education digitization and automation to make our education smart and future-ready.[223] Our educational institutions and curriculum should be designed with smart tools so that they can ensure 24/7 virtual learning, 'made to order' learning and connect with department/faculty with interpersonal connection facilities easily. Because today students/learners should have all facility to prefer, admit, enrol, discuss, conduct assessments, and even examine online easily and spontaneously. Education 4.0 encompasses and ensures a few important aspects of learning and skill-developing issues. We can ensure those with some specific ways and means.[224] Those important learning and skill-developing aspects and means and ways have been described below in brief:

Ensure more individual/personalized learning: The individuality of every single student/learner and their own pace of learning are important at the age of 4IR and Education 4.0. Having a personalized way of teaching will have a greater impact on students to achieve their outcomes easily and effectively.[225]There are several tools accessible with AI, IoT, and Cloud computing that squeeze the entire teaching and skill development process as per the individual learner's demands with a unique learning pace. At the same time, the Department/Faculty will be able to readily identify and correct individual students' strengths and weaknesses, as well as opportunities and threats, and will be able to provide individualized feedback in real time.[226]

 Ensure more remote learning opportunities: Nowadays, with the growing use of technologies in educational interventions, approaches to learning and teaching have evolved to take place in different environments with a variety of strategies and techniques.[227]The core of Education 4.0 is to make learning and skill development programs available anywhere, at any time, by using a set of e-learning tools and ensuring remote and self-paced learning for all learners. As we all know, blended learning is often (though perhaps overly simplistically) defined as a combination of face-to-face and online components. On the other hand, active learning is frequently described as an educational strategy involving students in higher-order thinking tasks that typically need collaboration with others. So, the Active Blended Learning (ABL) concept is a blend of both and is particularly effective in the present age of 4IR. The ABL concept, in which learners are actively involved in learning outside of classrooms, is gaining traction.[228]This way, learners end up mastering both practical and experiential learning and nowadays, it become popular.

Ensure optimum active learning system: Comparative studies often try to find ways to teach the same way in online, mixed, and face-to-face settings. However, the real benefits come from how educational materials, pedagogy, and learning time work together. The best-blended studies let students learn in ways impossible in other classes. Active learning is one of the best ways to have a good and satisfying school experience. It can lead to fewer students failing, better test scores, better problem-solving and critical thinking

skills, more students coming to school, and happier students. [229] it can also reduce the accomplishment gap between disadvantaged and non-disadvantaged students. The move towards active learning makes classrooms look like real-world work and social settings that foster cross-disciplinary connections. As we have seen, students perceive that active classrooms promote creativity and innovation.[230] When learners participate in active learning environments, they tend to break their peers in more traditional classroom settings.[231]

Ensure availability of education tools: We know that Education 4.0 offers a clear route to students/learners by making tools and techniques available and handy in their learning environment. Students/learners will be able to choose the tools and techniques through which they want to acquire knowledge. For example, collaborative and engagement tools, flipped or blended learning, etc.[232] However, appropriate collaborative learning support is necessary for group learning in a flipped classroom setting, especially in the out-of-class learning phase. The flipped classroom can be a pathway into the disciplines that can be used in overcoming the disadvantages of the one-shot and other barriers to collaboration.[233]

Ensure project-based learning: In project-based learning (PBL), students work in groups to solve challenging problems that are authentic, curriculum-based, and often interdisciplinary.[234]Learners make decisions about how to approach a topic and which activities to pursue. They collect data from various sources and synthesize, analyze, and generate knowledge. PBL is made possible by technology. Students use word processors, spreadsheets, and databases to complete tasks such as outlining, composing essays, evaluating numerical data, and keeping track of material gathered. E-mail, electronic mailing lists, forums, and other online applications make it easier to communicate and collaborate with people beyond the classroom.[235]The Internet allows researchers to conduct studies in museums, libraries, and other remote physical sites. Students study in a fun and exciting way, thanks to Education 4.0's project-driven approach. It rejects theoretical knowledge and encourages students to gain time management skills, organizational skills, collaboration skills, and time management skills, all of which are essential for their future work.[236]

Ensure easy and accurate assessment: Predicting student performance is currently one of the most particular concerns for learning environments such as universities and schools, as it leads to the development of effective mechanisms that can improve academic outcomes while avoiding destruction. AI can play a crucial part in education 4.0 by discovering new determinants in student performance and applying personalized learning, answering routine student inquiries, leveraging learning analytics, and predictive modelling. [237] A more practical way of assessment comes into place with Education 4.0.[238] There are both online and offline assessments and students get assessed on projects, assignments, and fieldwork. Again, to find the available vulnerabilities in any system, it is mandatory to conduct vulnerability assessments as scheduled tasks in a regular manner.

Ensure information/Data at the fingertips: There are greater insights into the students' learning journey with data analytics and reporting in Education 4.0.[239]Statistical research lets teachers discover where each student stands and help them improve. A balanced scorecard is the basis for the organization's or institution's social ties causal graph. The structure unit of a university or school is used as an example. Getting numeric measurement data has been hard in middle school, high school, and college, especially in technical education, because the devices and tools needed are often too old, prone to mistakes, hard to use, or just too expensive.[240]It creates hindrance to those educations.

Figure 19: AI in Education[241]and AI may replace academics in future[242]

Remodeling of education curriculum: We must develop adequate techniques and procedures for our educational institutes to prepare our students following Education 4.0 to face future challenges. This must be in line with industry standards. Future-oriented issues should be given extra attention and emphasis. A skill-based curriculum is the rule of the day in this age of digitization and automation. Employers require competent workers and rely on colleges and educational institutions to train current employees.[243] In addition to information technology skills, Engineers should have expanded design skills that include interoperability, virtualization,

decentralization, Real-time capability, service orientation, modularity, etc. for effective implementation of Industry 4.0. Therefore, Engineering Education 4.0 (EE 4.0), which produces engineers for Industry 4.0, must be modified to satisfy the demands of Industry 4.0, which emphasizes the integration of all engineering disciplines.[244]

Building digital skills: One of the primary goals of Education 4.0 is to give students an understanding of disruptive technologies such as machine learning and the ability to apply this knowledge to real-world situations. As a result, both students and professors demand teaching and learning aids that make such issues more accessible. Educational institutions should focus on training their faculty to develop digital skills to develop fully capable pupils for their workplace. Soft skills, including problem-solving, social, and process skills, should be made indispensable.

Opt for digital tools for virtual learning environments (VLEs): This is becoming more popular worldwide as students and staff receive remote access for instruction via LMS. Learning and teaching, course content access, online chat, discussions, collaborations, peer teaching and blended learning occur during flexible hours. Artificial intelligence (AI), robotics, cloud computing, the Internet of Things (IoT), cyber-physical systems, big data, and other innovations are driving the 4IR. Thus, industries have leveraged these technologies to deliver solutions to humanity's expanding requirements; yet, for them to continue adapting their ecosystems to the digital world, competent personnel with knowledge and abilities in those areas are required.[245]

Fine-tuning of course delivery: Coordination between the faculty and the curriculum taught should exist. Faculty should be willing to use technological apps to help students improve their cognitive learning capacities. They should adopt individualized adaptive learning approaches for a wiser learning approach to make the entire process enjoyable and exciting. A solid professional framework with cross-disciplinary career planning should be incorporated. This component will help Indian education prepare a workforce for Company 4.0. However, Education 4.0 is being proposed as a new framework to train professionals capable of creating knowledge through scientific research and experience, as well as sharing this knowledge with society and using it to face technological, social, political, and economic challenges.[246]

Figure 20: In future robot will replace teacher[247] and Modern classroom[248]

Prepare technology-built classrooms: University, college, and higher education institutions have begun implementing technology to produce graduates who will be successful in the cyber-physical systems used in all sectors of the economy. This entails revamping the learning process and creating a curriculum that makes extensive use of technology for the benefit of the students. This fourth industrial revolution in education is centred on cutting-edge, intelligent technology, robotics, and AI, impacting our daily lives. To recognize the creative, imaginative, and bright students, it is a new challenge to redefine education 4.0, and it is challenging to determine students' outcomes.[249] Once, Einstein said, 'Everybody is a genius but if you judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid.' AI is a reality; without appropriate knowledge, education and skill, we cannot continue with the present world. AI systems use traditional syllabi to create customized textbooks for certain subjects. As a result, textbooks are digitized and new learning interfaces are being created to help students and teachers of all academic grades and ages. One example of a useful AI interface is Netex Learning, which enables professors to create electronic curriculums and educational information across various devices. Netex includes online assistance programs, audio, and illustrative videos.[250] Now, AI is helping students with independent study through more customizable teaching and studying support applications. The software can now go beyond simply reciting facts that need to be memorized for consistent tests by providing a catered experience that matches the students' level, console, and emotional state. Different learning styles and mindsets can be considered in real-time, improving results drastically and helping students succeed. As we know, education has no limits, and AI can help to eliminate boundaries. Technology brings drastic transitions by facilitating the learning of any course from anywhere worldwide and at any time. AI-powered education also equips students with fundamental IT skills. With more inventions, a wider range of courses will be available online. Moreover, with the help of AI, students

will be learning from wherever they are.[251] As a recent example, the Chinese have been working on creating intelligent education. The Chinese government's ambitious plan would require huge amounts of research in AI to support by professionals trained in technology and engineering know-how. The Chinese government has set 2030 the deadline for integrating AI with Chinese infrastructure and development. In this regard, huge paces are already being made when educating the general mass using AI.[252]According to an estimate, China led the way, with over US$ 1 billion invested globally in 2022 in AI education.[253]

IoT, AI, ML and other smart technologies becomes part and Purcell of many technologies and affects almost every aspect of life. Actually those technologies are the backbone of innovation in modern computing and unlocking value for individuals, organization, company or businesses in 21st century. IoT, AI, ML will be use every sectors, service, businesses and organizations like, automotive, healthcare, financial, automobile, manufacturing, production, energy, agriculture, military, telecommunication, cyber-security, hotel, tourism, etc. Recent studies say that by 2040, there will be about 33 million cars that can drive themselves. Moreover, AI in healthcare is a broad and very popular term for the use of ML algorithms and software, to imitate human cognition in the analysis, evaluation, calculation, presentation, and understanding of complex physical, mental, medical and healthcare data, and ready to go beyond human capabilities by giving new ways to pathology test analysis, diagnose, choose drugs, treat, surgery, or prevent any complicated disease. On the other hand, future dangers from AI are also significance. AI, IoT, ML, and automation will reduce the need for human workers and the size of the global economy. There is a high degree of uncertainty regarding the conceivable technological development scenarios and their effects. The big threat of AI is 'Singularity' in which AI machines take over and fundamentally alter human existence either by making us dependent on them or eliminating us altogether is another major threat to humanity on a global scale. Today many people believe that, the end of humanity is possible if super-intelligent robots gain access to nuclear weapons or develop biological or chemical agents. Those horrifying tasks could be carried out at any time, either by super clever robots themselves or by some ignorant human acting out of anger or malice or dictate by stupid person. So, there should be appropriate procedures, rules and regulation to use advanced AI, ML, robot and other advanced technology. And such procedures and regulations should include ethical, privacy, and security concerns. Therefore, there should be global coordination to guide AI development in a positive gentle path.

Leadership Challenges in 21st Century

The 21st century has been characterized by technological advancement, constant change, and interruption. During this period the world has reached milestones never achieved before in history, which have greatly influenced the way people work and live. The dotcom boom, technological innovations, invention of the smartphone, emergence of digital as a platform, the advent of social media, smart technology like IoT, 5G/6G, AI, robots, ML, blockchain, etc. are some of the epoch making events that have taken place in a short span of time. They have significantly impacted how organizations work and how operation and business are conducted globally. An overarching consequence of these events has been the explosion and democratization of information. Combined with the accelerated pace of technology-driven globalization, information has led to the creation of an easier, seamless and fluid global economy. The world has also witnessed the rapid rise of emerging economies like China, India, Brazil, Indonesia, Middle East, etc. and resulting in a shift in global economic power. All of these changes have significantly impacted the role of leadership in modern organizations. Modern leaders now have the challenging task of guiding their organizations through a complex and continually shifting global economic landscape. The impact of these strategic forces are felt not only at a country level, but filtered down to industries, markets, segments and individual products and brands. Effective leadership in these modern times requires a proactive approach towards managing change and its impact on long-term organizational growth.[254]

Kodak can be marked as example of companies which was eliminated from the market due to its leadership's inability to cope up with the rising competition and failure to adapt with changes. Kodak was at one time the world's biggest film company. However, its leadership team failed to fully embrace the revolutionary transition from film to digital as it was afraid that digital may cannibalize its film business, which was its core business. Kodak was eventually put out of business and had to exit the market in many of its product streams due to the dramatic drop in demand for film printing during and after the digital revolution. Blockbuster, Pets.com and Nokia are other examples whose demise was linked to their intransigency to continue with the older product line while their market segment was on verge of evolution. Many more examples are waiting to come in near future. Leadership is a trait in an individual that enables him or her to influence the behaviour of others to achieve a goal or to get them to do things they would not otherwise have the skills or motivation to do. As individuals our needs, motivations and definitions of satisfaction have gone through a significant change in recent times. Aforesaid business evolution has brought about massive change in our thinking pattern and strategic approach. In such uncertain times, leadership matters even more. There are numerous important challenges faced by leaders in the 21st century have been discussed below.

Geopolitical volatility: Geopolitical factors can cause sudden but destructive damage to organizations. Unstable geopolitical environments can chase away capital investments and drain financial assets. High geopolitical volatility could also lead to stricter government regulations in local markets, which makes it more costly for organizations to conduct business in certain geographies. Geopolitical risks have increasingly become a significant challenge for leadership teams as most of the components remain out of their hands like, governments, regulations, environment, trade, labour markets, etc.

Technological disruptions: The 21st century has been characterized by technological disruption, with futurologists and trend experts saying, disruption is a norm today. Technological disruption has impacted organizations in all industries and sectors, starting from healthcare to manufacturing to computing. Data mining firms are building databases of human DNA to evolve the science of personal identification, 3D printers are being used to print building equipment, everyday products, entire houses and artificial human organs, and the combination of cloud computing and artificial intelligence has magnified the scope of data-driven decision making. These are only a few examples of how technology has disrupted the norm in the 21st century. Linked to these technological disruptions is the emergence of entrepreneurship and startups. Startups are nimble, agile and have the ability to significantly disrupt business models through new ways of creating and selling products. All these changes have significant impact on the business and operating models of organizations and the way consumers need to be served in today's and tomorrow's markets.

Economic and political uncertainty: after filtering down geopolitical risks at an individual country level, organizations have to deal with economic and political uncertainty. Any organization (regardless of size) prefers to operate in stable economic and political environments. National environments characterized by frequent labour strikes, social unrest and chaos can have severe detrimental impact on revenues, profits and investments. In the 21st century, managing economic and political uncertainty has become a critical leadership challenge. As organizations increasingly look at expanding quicker and startups look at scaling up faster, economic and political uncertainty needs to be accounted for in any form of growth strategy.

Shifting demographics: There have been major demographic changes occurring on a global scale, which include changing family structures (increase of dual-income and single-parent families), ageing population (requiring more health and welfare services) and increase in labour diversity. These shifts in demographic makeup mean that the demand for a company's products and services is subjected to continuous fluctuations. It also means that there is a constant pressure on a company's portfolio of products to remain relevant. It is a challenge for organizational leaders to find a sustainable way for profitability by forecasting the upcoming demographic changes and modifications.

Those challenges warrant next generation leadership to take a different approach in the 21st century when it comes to managing and growing their organizations. Leadership has always been challenging, but the future of work will bring fresh challenges to future leaders. Over the next decade, leaders will have to face obstacles and challenges not faced by current or past leaders. Future leaders can't afford to lead their organizations only depending upon traditional patterns. They need to futurist or bring their organizations into the future. But of course, it isn't that simple. There are numerous challenges that fall into this category. New technology is coming incredibly quickly, and it often seems like once something is well-understood, it's becoming obsolete and a better technology has emerged. Leaders need to pay attention to technology and be able to change their perspective to understand what new developments are most important and what else is coming down the pipeline.[255] Here are some implications for boardrooms to consider while creating their leadership strategies in the 21st century.

Having a balanced short-term and long-term lens. Organizations are always under constant pressure to showcase short-term business wins over long-term strategies. The need to report quarterly earnings and profits to appease shareholders and financial analysts require organizations to adopt a short-term lens. But long-term strategies, which require commitment of organizational resources and deep thinking, are critical for success in today's times. This constant tug-of-war between short-term and long-term objectives creates uncertainty and increases risk when it comes to capital expenditure and resource allocation decisions. Leadership in the 21st century requires achieving a strategic balance between short-term and long-term business objectives. Achieving this balance is critical to counteract forces that have mid and long-term impact (e.g. geopolitical factors) and those with short-term ones like, labour strike, civic unrest, competitor copycat behaviour etc. Leaders in the 21st century will need to maintain a balance between satisfying stakeholders' expectations via short-term gains and long-term priorities that would grow and strengthen the company's brand.

Resilience: Resilience is going to be a cornerstone of leadership success in boardrooms in the 21st century. The characteristic of today's time requires resilience on all fronts. Rapidly changing consumer demand patterns, ever increasing pace of technology-induced disruption, increasing fragmentation of markets, rapid shift of economic growth potential, increasingly fluid labour markets and low cost of entry into any market are factors that require resilience to manage. On the top of it there are continuous distractions in the form of fads, trends, proliferation of digital platforms and selling channels. To be able to deliver on both short-term and long-term organizational objectives, leadership teams need to be focused on core components of strategy and relentlessly deliver against them. This requires them to be resilient in the face of negative forces, which in all likelihood will be present in some form or the other.

Having a horizontal and vertical outlook: Horizontal leadership is refers to rallying teams and generating motivation to support and achieve a common goal. Whereas vertical leadership is the direct opposite to command teams under one's control in a top-down, military-style fashion. Effective leadership lies somewhere in between these two opposite leadership styles. In today's world, leadership styles are defined by organizational structures, cultural diversity of work forces, global presence, command-and-control structures and the role-played by local entities. As the world becomes flatter and more connected, effective leadership styles now tend

to gravitate towards giving more ownership and responsibilities to teams. In a world of collaboration, communities and networks, leadership teams need to listen deeply, encourage sharing of information and viewpoints and foster an environment of trust. The vertical leadership style also has a role to play but in a different form and having the ability to take decisions in ambiguous environments, helping teams manage conflicts, acting as a guide in uncertain times or leading with conviction, courage and empathy.

Global perspectives and local insights: At present the world is increasingly globalized but nationalistic pride still remains a crucial issue for organizational leaders. A top-level assessment of company operating models will reveal the fact that local country entities have a stronger role to play when it comes to global organizations. Startups with highly disruptive ideas also start at a country level before they scale up globally. Not only is this true for the workforce but also for consumers as whom at the end of the day are two sides of the same coin. Consequently, when it comes to leadership, it is imperative to balance global perspectives with local nuances. The impact of effective leadership can only be sustained when it influences at an individual level. It is now common practice for incoming CEOs to travel around the world and meet teams in all the local market entities. This is just one of the many elements of balancing a global perspective with local insights. As organizations become flatter and the role of local entities becomes stronger, it is important for boardrooms to appoint leaders who can influence and lead across multiple geographies and cultures. Having a visible face is not enough. The ability to connect with employees across the organization, both globally and locally is going to be a defining factor of successful leadership in the 21st century.

Strong strategic compass: The 21st century requires leaders and executive teams to have a strong strategic compass. Great leaders need to have strong self-awareness, need to be passionate visionaries, should have great clarity of purpose and should have a clear sense of direction while leading their teams. Last but not the least their personal vision should be in complete alignment with that of the organizations. However, a leader's operational strategy should remain fluid in today's uncertain times. Although it is critical to progress towards achieving long-term organizational goals, a leader should be open to considering and adopting multiple paths towards these goals. Like a compass that always points towards the North, leaders should be relentless even in the face of extreme disruption and chaos.

Globalization: There is an increasing global consciousness in all sectors and societies of the world. This shift in thought and action has affected all sectors of society. Instead of focusing merely on the United States, the marketing of U.S. consumer goods, manufacturing, and even entertainment has drastically expanded to worldwide status. This globalization of manufacturing, marketing, and competition has created multi-national organizations designed to compete in the broader economic playing field. The economy itself has become global. The economic challenges of Mexico, Great Britain or any country affect the global economy. The stock markets are interdependent.

Increasing Stress on the Environment: Issues related to the environment and its ability to support the world's populations in the future are becoming increasingly challenging. For one country it might be possible to handle own pollution control, but environmental problems do not stay within the boundaries of any one nation. Struggles between economic interests and environmental interests continue all over the world. This debate is seen over the use of old growth forests, wetland preservation, fishing rights, and legislation on chemicals that affect the atmosphere. Concerns about our fresh water table will probably increase as industrial runoff and other such violations challenge us. Landfills continue to be overloaded with waste, triggering increased pressure for recycling. Toxic waste, land development, and complex environmental phenomena all contribute to issues of health education and human and animal welfare.

Increasing Speed and Dissemination of Information Technology: Mass communication has connected the world in ways that were unheard of fifty years ago. While the Pentium chip may be the latest addition to computers this year, just around the corner is the advent of nanotechnology. Nanotechnology will allow the application of techniques in every discipline from microbiology to political science that will drastically decrease the size of equipment and increase the capacity of processing and disseminating information. Today, electronic bits of information are transferred almost instantaneously. Information is rapidly disseminated throughout the world via the Internet, social media, and major news networks. The result is that people can know what has happened halfway around the world almost instantaneously. It is nearly impossible to keep information private. Information technology is made up of "bits", and "bits" do not behave like consumer goods. Consumer goods can be stopped at country borders and their worth can be declared. "Bits" travel electronically across borders with little possibility of control. This may explain why there exists a permeable boundary within the organizations, communities, and individuals. For example, when the Chinese students were protesting in Tiananmen Square, they were also communicating by fax and other media to the rest of the world. The immediate information was very difficult for the Chinese government to control. There are numerous similar examples.

Scientific and Social Change: The recent announcement of the cloning of a sheep heralds the shape of things to come from genetic engineering. Genetic engineering is just one of the scientific changes that will reshape our lives. Bio-medical technology will not just continue to reveal the secrets of the gene code, but it will radically change the way of treatment, and produce and grow our food. Social changes will require new political, social, educational, and organizational structures. The perceptions of gender roles will also be reshaped and communicated widely. All of these changes will mingle with one another with little time delay. These four trends are

mutually shaped by, and interact with the ethical and spiritual dimension of human beings. The challenge and questions for leadership then becomes more related to the capabilities of human being to control, understand and improving the nature and the way we interact with it

The renowned professor Peter Drucker once said, "Wherever you see a successful business, someone once made a courageous decision". Leadership in the 21st century will be a combination of multiple courageous decisions. Although it is more challenging, the impact of positive leadership will also be very high during these times. Some of the headwinds that global business is facing currently are the strongest ever in the history of the world economy (followed closely by the two Wars). To effectively navigate an organization through such headwinds, it needs leaders with courage, conviction, strong mental resolve, unwavering focus and a strong sense of purpose. A leader cannot achieve anything alone. This is more relevant now than it was before. To achieve critical organizational objectives, a leader needs to have an open mind, should be open to collaboration, have the ability to align differing viewpoints and should have the charisma to lead teams with differing motivations and needs. The traditional viewpoint of corporate leaders being viewed as figureheads, chiefs and commanders is rapidly losing its importance. The traits commonly associated with these positions, charisma and vision, are still important in leadership positions, but they are in itself not enough. To be successful in today's dynamic business landscape, leaders need to be able to shift between their multiple roles with ease. At one point they might need to act as commander-in-chief of their organizations, while at another point they might need to act as mentors to a high performance team or an individual. It is all about leadership versatility and being able to lead effectively across generations, cultures, mindsets and differing sets of motivations. The 21st century requires numerous essential traits of leadership as discussed below.

Purpose: Having a purpose is important but it is critical to have an inspirational one. Leaders need to have a personal purpose ("what I want this organization to achieve") but it should be aligned with that of the organizations' ("what this organization stands for"). Both companies and its leadership teams should have a clear purpose that goes beyond annual revenue and profitability targets. An unwavering focus, a clear vision and true belief in the purpose means that leaders need to walk-the-walk, not just talk-the-talk. Leaders who do not practice what they preach are abandoned very quickly. The same happens to leaders who do not lead with clarity and focus.

Networks: Many leaders underestimate the power of networks both inside and outside their organizations. Some benefits of tapping into and leveraging networks include:
➢ Getting to know key stakeholders in the organization better
➢ Identifying challenges that are inhibiting teamwork and innovation
➢ Effective cascade of critical communication to the most influential stakeholders
➢ Finding and recruiting top talent in the marketplace
➢ Identifying potential new suppliers, new technologies, consultants or other leaders in the same industry that could help accelerate business performance
➢ Creating, shaping and implementing effective career paths

Long-term lens: Leaders in the 21st century will need to focus more on long-term strategy than short-term tactics and also have the ability to think and plan ahead instead of getting bogged down by details. They will need to have a futuristic vision in order to lead the way towards strategic execution. One way that leaders can do this is to identify internal stakeholders, investors and shareholders that share similar long-term values, and then work relentlessly in partnership with them.In 2016, S&P Dow Jones Indices launched its Long-Term Value Creation Global Index, which helps investors in bench-marking companies that have potential for long-term value creation. Another way to focus on the long-term is to clearly communicate the objectives; road map and implementation plan internally and externally.

Adaptability and Agility: Great leaders are said to possess a heightened ability to think outside the box. Instead of continually reinventing the wheel, they learn to do new and unexpected things with the tools already at hand, while encouraging others to do the same. Leaders in the 21st century need to be able to continuously innovate and manage disruptions effectively. To do this, they need to remember that everyone has something to offer and cultivate a culture where every employee feels comfortable to suggest ideas and propose solutions. This will go a long way in creating an adaptive and agile organization that is well equipped to face disruption.

Culture orientation: Last but definitely not the least leaders should never take their people for granted. Employees across all levels of the organization need to be constantly invested in through skills training, coaching and welfare. Studies have shown that millennials are forming an increasingly larger pie of the workforce today (about one-third of the global workforce) and they want more flexibility and control over their lives and careers, while still be on track for career progression. Leaders need to understand these large-scale shifts in attitudes towards work and the workplace, but still remain driven by a set of consistent values to strengthen the brand equity and organizational culture. If leaders do not prioritize people, their organizations will suffer from constant churn, stymied progress and a dilution of the organization's vision.[256]

Every day people experience changes in how they live and work, how they lead and manage and communicate. Nevertheless, a leader in the 21st century must be able to ensure that the subordinate is being treated as member of the organization, not a mere worker that is ordered and instructed around. In this sense, a leader must be able to create a sustain climate of trust and a sense of community within the organization. Parallel to this perspective, leaders not to understand that strategic communication plays a key part for leaders in ensuring that their people to do the right thing instead of only doing things in the right way by carefully managing the internal and external relationship in supporting organizational growth Zerfass and Huck, in their study, leadership was discussed as the medium of communicating the vision of the organizations, in both transactional and transformational leadership's model.[257] Member in the organization wants a leader that could motivate them and the skills to attain something that they cannot do. A leader is regarded as a person who not only exemplifies but most importantly possesses the ability to communicate the action loud and clear. In this sense, a leader must walk the talk. A superior-subordinate relationship is significant in ensuring that the decision made is accepted by everybody in the organization. In fact, in the 21st century, leadership has embraced a different dimension, which includes collaborative efforts among group members.[258] Therefore, the essence of leadership is not solely the responsibility of the leader, but the relationship between the leader and the subordinates.

In the organization, communication among colleagues and fellow employees are carried out to disseminate and retrieve information timely and efficiently, coordinate and complete job tasks, for decision making and finally to minimize or solve conflicts in the organization. Communication in organizational life provides a basis for understanding virtually every human process which occurs in an organization such as conflict, cooperation, decision making, the use of power and authority, compliance gaining, resistance, morale and cohesion, and the creation and maintenance of relationships. Organization; according to Littlejohn and Foss consists of at least two or more people with interdependence, input, throughput and output.[259] They work cooperatively to produce, to sell or to serve other party better known as client, customer or public.[260] Meanwhile Beebe and Masterson stated that communication is the process of acting on information.[261] It is also a process where messages are sent and received simultaneously – by which people make sense out of the world and share that sense with others. In most cases, in-person communication affords the best opportunity to clarify meaning and resolve uncertainty and misunderstanding.[262] Several researchers have found that the way group members communicate with each other is crucial in determining what happens when people collaborate.

The roles of communication within the workplace are to control what goes in between the employer and employee, for motivation purposes, to balance the needs and goals of the organization and for decision making process. Then there are also the typical communication roles which include gatekeeper, liaison, as a bridge, isolate, cosmopolite and opinion leader. Today, it has become a requirement for any leader to master the communication skills. It has not become an option anymore instead a requirement to achieve greatness. Leader must communicate. The performance of the members in the organization relies on the direction made by the leader. To decide on something is crucial but the implementation is another story. Therefore, it is empirical for leader to harness the communication skills. After all, leadership communication is about building relationship. Kouzes and Posner outlined six highest characteristics namely honesty, forward looking, inspiring, competent, fair minded, supportive of admired leader.[263] These are especially important in the superior-subordinate relationship because such traits allow people to close ranks regardless the status quo. In addressing the issue of relationships between a leader and the members, the leader must be able to understand what communication is and how it contributes in ensuring the action is communicated. Eisenberg argued that the communication processes that operate in organizations, the most important include those that regulate interaction between superiors and subordinates.[264] The exercise of leadership in this sense tie with the superiority of the authority thus led to the responsibility not only to plan but most importantly leading and making sure that the subordinates abide to it. This later will translate into good rapport between leader and members. According to Gibb, a supportive climate leads to subordinate satisfaction and accuracy in communication, while a defensive climate leads to dissatisfaction and distortion in communication.[265] Hence, the leader needs to know the communication structure in the organization so that the information can be communicated effectively. Daniel et al., explained, formal communication refers to communication through officially designated channels of message flow between organizational positions.[266] Knowing the direction to which the communication flow and end is paramount as it determines the result of the message being communicated. It is a waste of time and effort should the members fail to comprehend the message; what more if it cost the organization its profit. When discussing formal communication flow, the hierarchy structure of the organization is the important element. To this, Daniel et al., stated, the concept of hierarchy is so ingrained in organizational life that formal communication usually is described in terms of the three directions of message flow within a hierarchical system: downward, upward and horizontal.[267] Leader must communicate to ensure that business transactions are carried out. These practices range from solving simple problems among stakeholders to highly important decisions that may cost millions on enterprise level. Again, at any levels of organization which crosses functions and actions, communication remains as key indicator for effective service, deliveries and development. To that extent, the ways leader communicate to the members consist of many different types of delivery methods during the information flow. When a leader is able to manage communication effectively work relationships will become strong, well informed, and purposeful. The purpose of leadership in the 21st century may be as follows.

➢   To create a supportive environment where people can thrive, grow, and live in peace with one another;

- ➢ To promote harmony with nature and thereby provide sustainability for future generations,
- ➢ To create communities of reciprocal care and shared responsibility; one where every person matters and each person's welfare and dignity is respected and supported.

Communication is the very important function to ensuring effective leadership in the 21st century organization. So modern leader must know how to use and utilize advanced technologies. Again setting right direction and aligning people to desired direction. Significantly, future leaders must be able to ensure that the subordinates are treated as members of the organization, whereby consistency in providing sound leadership would determine employee motivation and performance. In relation to this, Mai and Akerson also provide a useful tactics for setting clear direction to the subordinates.[268]

- ➢ Focus on a single objective whenever possible but make sure it is shown clearly how it fits in with everything else.
- ➢ Limit the discussion to two or three key points.
- ➢ Prioritize the key points.
- ➢ Translate strategy to operating terminology.
- ➢ Repeat again.
- ➢ Expose the reasoning behind any actions or decisions.
- ➢ Invite questions – and wait for them.
- ➢ Summarize

21st century leaders inspire others to alter their thoughts and actions, in alignment with an empowering vision.[269] Factors such as vision, articulation, rational intelligence, emotional intelligence, and spiritual intelligence impact leadership effectiveness.[270] So, principles of 21st century leadership may be summarized as below.

- ➢ Today everybody can lead; because everyone is serving. James M Strock said, if leadership is, fundamentally, about serving others, then any one person should be able to move between being a leader and a follower.
- ➢ The most valuable resource of any enterprise is its people. Mark Zuckerberg said, actually I think this is one of the most profound changes that more openness and transparency brings: It puts more weight and importance on building better social relationships and being more trustworthy.
- ➢ We are in transition from a transaction-based world to a relationship-based world.
- ➢ Leadership is a relationship between empowered, consenting adults.
- ➢ Leadership is a dynamic relationship.[271] Currently leadership is the solution, regardless of the problem. Today, managers are called on to provide leadership which is 'visionary', 'charismatic', 'transformational' and 'authentic' in nature. This is what 'followers' are said to need to perform to their potential.[209]
- ➢ Communication is the vital part in 21st leadership.[272] Dwight Eisenhower has been underestimated, which may relate to his advanced age in office, his somewhat uneven communications skills, and his failure to present a forward-looking vision on the rising issue of civil rights.
- ➢ There is no universal leadership style. Mahatma Gandhi said, all action is expresses priorities. The brain is a wonderful organ; it starts working the moment we get up in the morning and does not stop until we get into the office. [273]
- ➢ Leadership roles are converging. Theodore Roosevelt said, words with me are instruments. I wish to impress upon the people to whom I talk that I am sincere, that I mean exactly what I say, and that I stand for the things that are elemental in civilization.
- ➢ A leader's unique task is to imagine and advance a vision.[274] Some critics have suggested that Ronald Reagan succeeded in a series of careers, ultimately as a two-term president of the United States, by a series of fortunate accidents. Such a criticism is not backed by the evidence. It is true, though, that Reagan's approach to work and life was not conventional.[275]
- ➢ Love is the highest level of leadership relationship. Martin Luther King, Jr. said, everybody can be great, because everybody can serve. An employee doesn't have to have a college degree to serve. People don't have to make their subject and verb agree to serve….they only need a heart full of grace, a soul generated by love.[276]
- ➢ Character is a competitive advantage.[277] William Shakespeare said, Love all, trust a few, do wrong to none. Winston Churchill said, when you have to kill a man, it costs nothing to be polite.

Collaborative is the new leadership paradigm has been called by a number of different names – shared, participatory, collective, collaborative, cooperative, democratic, fluid, inclusive, roving, distributed, relational, and post heroic. While consensus on the name of this "new leadership" has not been reached, there is a growing understanding that the patterns of hierarchical leadership that served us in the past, are not well suited to the global complexity, rapid change, interdependency and multifaceted challenges described above.[278] In the information age, the primary challenge will be to encourage the new, better-educated work force to be committed, self-managing and life-long learners. This "people-focused" leadership has its roots in democratic traditions. It is founded on the belief that in the complex future 'answers are to be found in community" in group-centered organizations where 'everyone can learn continually'. Followers are being transformed into partners, co-leaders, life-long learners and collaborators. As the demand for this new leadership grows, the command and control leaders at the top of the pyramid are being challenged to change. They are expected

to become leaders who are facilitators, stewards, coaches, designers, and teachers. They are being challenged to become leaders who 'walk their talk' and model the way, inspiring others, delegating and serving. Effective leaders are recognizing that every person has leadership qualities that can and must be recognized and used. The new leadership paradigm, therefore, is restructuring our conceptual framework of what the practice of leadership is and our understanding of what effective leaders do. It is transforming the role of followers and revolutionizing the design of organizations for the 21st Century. A recent brochure from the Robert Greenleaf Center on Servant-Leadership captures this spirit, 'The old organizational pyramids of the nineteenth century are crumbling, being replaced by upside-down pyramids and circles and connections.' The term collaborative and reciprocal leadership is used here to describe the process that is at the heart of this change.[279] Since collaborative leadership is more adaptable and fluid, focusing on relationships and the needs of people, so too, our intention is not to fixate on a definition or a set concept that describes the new leadership. What is more important is to assist people to acquire the understanding and skills of the purpose of the new leadership and to describe for them how collaborative leadership principles can work for them in the context in which they choose to lead. Evolution or progress requires the integration of past, present and future. In the midst of unceasing change in an interdependent world, this recognition provides the solid ground from which to move into the uncertainty of tomorrow with an assurance that collaborative structures have served people well in the past and can show the way to collectively shape the future.[280]

A basic premise of collaborative leadership is recognition that no one person has the solutions to the multifaceted problems that a group or organization must address. Leadership in this context requires a set of principles that empower all members to act, and employ a process that allows the collective wisdom to surface. These principles must be based on an understanding that people have the knowledge and creativity to respond to the problems they face.[281] They encourage the development of organizations that support collective action based on shared vision, ownership, and mutual values.[282] The evolution of collaborative leadership has been deeply influenced by the natural sciences, as well as history. The Newtonian concept of a mechanistic world where people followed directions and where repetitive, learned responses were sufficient, has given way to an organic, systems-oriented and dynamic understanding of how people, groups, and organizations operate. This systems perspective requires nonlinear, holistic and multifaceted approaches to leadership that stress interactive participation open communication, continuous learning and attention to relationships. The function of leadership then becomes the creation of systems, structures and environment where this interaction and learning can occur. Leadership is making sure they have the right patterns in place. Here, everyone takes on the responsibility for learning. While change and adaptability are key aspects of a systems approach, there are core principles that nurture the interaction and learning that are essential to collaborative leadership. Leaders are following few principles as describe below.

➢ Promoting. A Collective Leadership Process "Post heroic" leadership moves away from the theory that the "great man" has the answers to a shared, distributed and fluid concept of leadership. This is based on the belief that depending on the need, situation and requirements, different people assume the leadership role and that everyone has leadership potential. Collaborative leaders create supportive and open environments that encourage initiation, facilitate the sharing of information and value each person's contribution. At the same time, individuals are encouraged to learn and stretch their leadership potential. Leadership, therefore, is assisting people to grow and learn. Leaders are building community, for example, the "leader" is a facilitator whose role is to create and hold the "safe space" where people can discover themselves and learn to relate to one another authentically.[283] The focus is shifted from the individual leader to the group, community or organization. In fact, at times, the nominal leader may not even be visible.

➢ Structuring. A Learning Environment An organization or group that is learner focused supports continuous self-development and reflection. Practices, such as: listening, promoting open-mindedness, seeking constructive feedback, sharing ideas and viewing conflict as an opportunity for growth, are embedded in the culture. People closest to the problem or opportunity are encouraged to interact and find solutions or innovative approaches. To do this, the group must function "in a mode of inquiry, knowing that nobody knows and everybody can learn continually." As the group or organization practices learning together, open communication, mutual trust, shared meaning and a sense of collective ownership emerge. It refers to this as "communities of commitment where people are continually learning how to learn together."[284] Thus, people can venture out of their comfort zones and take the risks inherent in managing change.

➢ Supporting. Relationships and Interconnectedness in collaborative leadership, the relationships and interconnectedness of people become a primary dynamic. Values, such as respect, honesty, expecting the best from others, and the ability to exercise personal choice lay the foundation for covenant relationships to emerge.[285] These relationships are based on trust and mutual responsibility. Collaborative leadership focuses attention on building the individual's and group's capacity to live these values; to benefit from their interdependence; and to recognize that conflict and differences can foster growth and creativity. Relationships are also strengthened through the development of a shared vision that allows people to set common directions, have mutual goals and rise about self-interest. Shared vision and values function as a governing force where people can organize and manage themselves, thereby, getting the job done without the need for control or rigid policies and procedures.

➢ Fostering Shared Power. For leadership to be collaborative or shared, power and ownership must be distributed throughout the organization. Shared power implies that everyone has responsibility for leading, decision making and learning. Groups and teams are often used to make decisions sometimes with a consensus format. Accountability and responsibility are based on individual integrity and peer agreements. As people collaborate around common goals, partnerships and coalitions evolve resulting in lateral networks of mutual influence. This process can be described as multiple relationships acting in a flexible, flattened structure based on partnerships, self-regulation and interdependence. In Re-inventing the Corporation, we may refer this as a lattice or grid where power is found in the center not at the top.[286] Hierarchical structures are thus replaced by crisscrossing networks, overlapping, changing and fluid boundaries. This web-like structure supports optimum participation, interaction, and empowerment.

➢ Practicing Stewardship and Service. Stewardship is the cornerstone of reciprocal or shared leadership because it turns hierarchical leadership up-side down. Stewardship focuses on ensuring that other people's needs are being served and not on exercising privilege, power, and control. Now, stewardship chooses partnership over patriarchy or hierarchy; empowerment over dependency and service over self-interest. Thus, the leader is 'in service, rather than in control.' In his landmark work on The Servant as Leader, this commitment can be also marked as 'wanting to serve first'. Then conscious choice brings one to aspire to lead.' The litmus test of collaborative leadership is based on whether people's needs are being served. As people feel respected and valued as partners, they can create a community of shared responsibility.

➢ Valuing Diversity and Inclusiveness. For people to respect each other, build trust and communicate openly, leaders must learn to accept and value individual differences. Valuing diversity is the rich soil that nurtures relationship, partnerships, and collaborative networks. However, the most necessary key to the achievement of community is the appreciation of differences. Respecting each person's perspective and personal style frees them to contribute their ideas and talents so that people can learn together.[287] Furthermore, this inclusiveness is a key aspect of transforming followers into stakeholders and nurturing collective ownership. It is an understanding that creativity and excellence are enhanced through diversity. Fostering authentic diversity can be accomplished by respecting different perspectives, fostering open-mindedness, practicing dialogue, and listening with attention and empathy.

➢ Committing to Self-Development. The movement to collaborative or shared leadership is at its heart a personal transformation that is fueled by "A commitment to work on themselves first." The motivation to serve has based on the desire for one's "own healing."[288] The understanding that one's inner life reflects positively or negatively on one's leadership can serve to bring authenticity and humility to the leadership process. By working on personal learning and growth, leaders model the way for others to focus on their own personal mastery and proficiency.

This authenticity and the ability to actually "live" the principles of collaborative leadership are reflected as this statement, "We must be what we want to become, we must, in every step of the way, embody the future toward which we are aiming." This resonates with the words of Mahatma Ghandi who recognized that personal transformation was the heartbeat of leadership as he said, "We must be the change we wish to see in the world." With the proper understanding, education, and training, every individual can begin to use the leadership gifts that they possess. So, if these are the principles of collaborative leadership, then what are the practices or functions that collaborative leaders must practice? In fact, functions of collaborative leaderships are: giving focus on the purpose rather than the definition of leadership; the new leadership paradigm is collective and reciprocal; and there are powerful trends moving us in this direction.

Creating an environment where collective leadership is practiced starts with a shared vision supported by a set of specific values or beliefs which are integrated into the person' behavior.[289] Some "inner work" is required for a person who wants to practice this form of leadership. Without this inner work, the practice of authentic collective or shared leadership does not occur.[290] This inner work starts with values and beliefs. People who practice shared leadership believe that all people have the capacity to lead themselves. Further, they believe that the gifts and resources needed to accomplish a task can be found in the members of the group, not in a single leader. Therefore, the goal of positional leaders is not to direct or tell, but to provide a structure that allows people to lead themselves. This means that positional leaders distribute or share the "power" of their position. In this way, they enable the group to assume the responsibility and discover their own capacity to work together, decide, plan, and act. They are willing and able to share the power of their position to the maximum degree possible under the given circumstances. Their personal power remains evident, but they share their positional power.[291] They may substitute or transmute the need for positional power into the joy of seeing the group evolve as a learning organization or community. Another major element, after weaving the shared vision, is modeling. There is integrity in their vision of shared leadership that is reflected in the way they structure and respond to the development of the group. This integration of practice, vision, and modeling gives group members confidence that leaders "walk their talk" as reflected in their belief in each individual and their collective action. Collective/reciprocal leaders spend time structuring the environment as a learning environment. This may include: First, they set the expectation of success. Second, the group is encouraged to take risks and challenge the way

things have always been done. They are even encouraged to challenge their own beliefs about what they can or cannot accomplish without specific direction from a positional authority.

Risk taking is supported by the creation of a safety net. The safety net creates an environment where group members believe that it is safe to challenge and exercise personal choice in achieving the mutually stated goals. People trade sovereignty or freedom of choice for safety. A step in the critical passage to the new paradigm of shared leadership requires the members of the group to practice the freedom of choice that comes with being responsible and accountable to themselves and each other. Information is shared with all group members so that they have adequate knowledge and understanding about the task to make an enlightened decision. Positional leaders need not be the primary source of the information. In most cases, the members need to rely on each other and on their ability to gather accurate information rather than on a positional authority. This shift in the source of information triggers greater self-sufficiency and greater interdependence. By receiving power, choice, and information, members begin to believe that they can influence the situation and the outcome. This belief is reinforced by the subsequent accumulation of actual successes. The interdependent structures and relationships help to insure an understanding of the distribution of different talents among group members. This facilitates the acceptance by the group of different points of readiness to practice this combination of individual responsibility and shared leadership and accountability.[292] It also helps members discover that they can both learn with, and depend upon each other. These interdependent structures support group members as they work together to successfully accomplish the specified task. As groups learn this new behavior, they need the assurance that the ambiguity or the anxiety they may be experiencing due to this different way of operating is normal and that their feelings are a part of group transformation. A group often experiences ambiguity, frustration, disorientation, fear, insecurity, and a frantic desire for the positional leaders to rescue them. All this shifts the role of leaders to that of facilitators, supporters, consultants, and sometimes teachers. For group members, the result of this experience is excitement, ownership of the process and product, confidence and competence, and better ideas and learning.

Leaders of the 21st century need to adopt a modern mindset to cope with these unique challenges. The key is agility. Being flexible, open to change, and proactive is essential. As a leader, they need to connect with his/her team members on a deeper level, fostering an environment where innovation thrives and change is not feared but welcomed. Therefore, effective leadership in the 21st century could be distilled into few fundamental actions. Such as; instead of focusing solely on the output, shift to a more people-centric management approach; develop innovative ways of working and strategies that fit the current scenario; and proactively implement new processes and inspire teams to embrace change. This modern leadership approach draws from a diverse range of skills and attributes, such as: fostering innovation, collaboration and a sense of purpose while building resilient teams; tapping into the potential of each team member; leveraging the power of data to boost team performance and drive business growth; Ensuring consistent productivity while managing remote teams; focusing on self-development to continually adapt and grow in an ever-changing world. The role of effective communication and, more importantly, active listening can't be overstated in this new era of leadership. Modern leaders should be in tune with their teams' sentiments, concerns, and suggestions for this, employee listening tools have become an indispensable asset.[293] Leaders in government, non-profit, and education organizations face unique challenges when it comes to making strategic, business-oriented decisions. If not thoroughly planned and executed, these decisions have real consequences with high-stakes outcomes. [294]

Figure 21: Leadership challenges around the world[295]and respond to those challenges[296]

Conflicts and violence, repression and oppression have always been part of the world, resulting in situations where no one really wins and leading to stalemates that cause the degradation of economic order and of the human condition. Whether conflicts can be won or not, the human cost must be addressed when building a lasting peace and this role falls now to our future leaders and followers. In Peace, Reconciliation and Social Justice Leadership in the 21st Century, expert contributors explore the ways in which leaders and followers can bring forth pacifism, peace building, nonviolence, forgiveness and social cooperation.[297] Again, the complexity leaders are facing in the 21st Century requires the development of three fundamental pillars like, value based leadership, network leadership and systemic resilience.[298]Regardless of leaders' location, industry, or service or organizational culture, leaders universally face both internal and external challenges. These challenges may impact their careers, as well as their day-to-day experiences. Today, there are few most common challenges for modern leaders face regardless of where they are located.

Honing Effectiveness. This leadership challenge is about developing the relevant skills like, time management, prioritization, strategic thinking, decision-making, and getting up to speed with the job to be more effective at work.[299] Modern leaders must remember that, good leadership comes from understanding what makes people tick, how individuals react in certain circumstances, and then having the confidence in us to make a difference. Good leadership means demonstrating accountability when things go wrong, not blaming our team and accept full responsibility and use it as a learning experience.

Inspiring Others. This is the challenge of inspiring or motivating team members to ensure they're satisfied with their jobs and working smarter. Both extrinsic and intrinsic rewards can attract talent and motivate employees. Compensation and benefits are important for motivating employees, but they're not the only things that matter when it comes to keeping employees productive and engaged. These benefits are a part of a much larger motivation equation. Intrinsic rewards, such as psychological wellbeing, joy, learning, and personal fulfillment, matter too.[300] Lack of engagement isn't about lack of motivation. The difference between an engaged and disengaged person is not a lack of motivation, rather the quality of their motivation. The key to long-term engagement is the day-to-day shift to optimal motivation, when employees' work is aligned, integrated or inherent.

Developing Employees. This is the challenge of developing others, including coaching and mentoring effectively. Coaching and mentoring are related and sometimes overlap. However, while both may be performed by the same leader, coaches and mentors serve different roles. It's important for the coach and the mentor, as well as the people they're helping develop, to know the difference. Coaching typically focuses on enhancing current job performance by helping someone resolve a here-and-now issue or blockage for them.[301] Studies have repeatedly shown that organizations with high employee engagement and motivation, with high satisfaction and retention rates, demonstrated consistently different talent management practices than those with low engagement. Talent development processes were key differentiators.

Leading a Team. Another key challenge is that of team-building, team development, and team management. Specific leadership challenges related to this include how to instill pride, how to provide support, how to effectively engage in collaboration, how to lead a big team, how to establish team norms, and what to do when taking over a new team.[302] Team norms are a set of rules or operating principles that shape team members' interactions. Team norms establish clear, agreed-upon behavior, how the work will get done, and what team members can expect of each other. This is a key way to build trust, which is critical for team success. In a team, when multiple people work together to solve problems and make decisions, it's important to discuss and agree on team norms.[303] A team leader or project manager needs to consider the team norms that matter to him and to the work. Understanding a leader's own perspective will help him think about his own behavior and effective ways to guide the team.

Guiding Change. The challenge of managing, mobilizing, understanding, and leading change means that being a successful change leader isn't easy. It requires knowing how to mitigate consequences, overcome resistance to change, and deal with team members' reactions to change. Successful change is one of the biggest problems that modern organizations face. In our fast-changing world, the strategic imperative to change is often clear: Without doing things differently, our company is unlikely to succeed, or last.[304]

Managing Stakeholders. The last leadership challenge is managing relationships, politics, and image in the work environment. This includes gaining managerial support, managing up, influencing others, and getting buy-in from other departments, groups, or individuals. Influence is the ability to affect the behavior of others in a particular direction, leveraging key tactics that involve, connect, and inspire them.[305] Influencing others is essential, but it's more than just giving commands. [306] Effective modern leaders don't just command; they inspire, persuade, and encourage. Leaders tap the knowledge and skills of a group, point individuals toward a common goal and consensus, and draw out a commitment to achieve results.

Toxic Leadership and its Characteristics

A toxic leader is a person who has responsibility for a group of people or an organization, and who abuses the leader–follower relationship by leaving the group or organization in a worse condition than it was in. Good and bad leadership styles can propagate downwards in an organization and there may therefore be little support to be gained by reporting toxic leadership upwards in the hierarchy.[307] It's been fairly well established that toxic people can be very damaging to a business. But having toxic leaders can be particularly devastating, and it can also be hard to spot them. Many toxic managers initially improve sales figures and appear to be increasing the company's profits because that's their focus. But the boost is often short-term and can have devastating consequences for worker morale, often leading to a high turnover of staff and demoralized employees who lack any commitment to their roles. It's important for a leader to identify bad management before it has too much impact on the staff.[308] The absence of morality in leadership is contagious. This means that the leader and fellow members can and might resort to harassment and bullying, making the workplace unsafe and unhealthy, physically, emotionally, and mentally.[309] A good leader must know the values that make them who they are and where to draw the line. They respect their people and know how to earn it. Respect harbors love and admiration instead of fear, which

is a great way to lead and be led. A leader acts as the foundation that keeps everything intact and stable in an organization. Leadership compass is a leader's own foundation that prevents him from going astray in challenging times. If a leader notices any of the above signs in him, then it might be time to do a self-evaluation. A leader must remember, negative energies can only create a negative workspace, which ultimately hinders his employees from reaching their maximum potential and the team from performing well. Toxic leadership refers to a process in which leaders, by dint of their destructive behaviour and/or dysfunctional personal characteristics inflict serious and enduring harm on their followers, their organizations and non-followers alike.[310]

Toxic leadership is a dysfunctional style of leadership that uses autocratic and overbearing management tactics, creating a negative work environment. Due to this hostile work culture, toxic leadership often results in long- and short-term consequences for a business. High turnover rates, employee burnout, low productivity and innovation, team dissatisfaction, and workplace bullying are common effects of toxic, destructive leaders. Stemming from a lack of confidence and need for control, leaders who exhibit toxic behavior use micromanagement techniques to diminish employee self-worth and independence. Instead of displaying good leadership by fostering a collaborative and positive work culture, toxic leaders create an unhealthy company culture to assert dominance.[311]Prioritizing personal interests leads to further corruption, as examples of the recent Volkswagen emissions scandal show. Such leaders will also repeatedly reward incompetence and even condone bad behavior. Their arrogance is also laced with biases and prejudices that will often slip out in the form of racism, sexism, and other forms of discrimination.[312]There are few sign of toxic leaders and some distinct characteristics; which has been given below.[313]

Arrogance. Toxic leaders often possess arrogant and narcissistic attitudes. They are boastful and are used to thinking that they are always right. They tend to force others into accepting their opinions as gospel and truth. This kind of person has no allowance for feedback, especially if it comes from a subordinate. They also have a lack of respect for their team and will offer no help to anyone. They tend to see their employees as pawns lesser than them, thus expecting others to obey their commands quietly.[314]Usually, arrogance is just a pretense that one has confidence, and it can be tricky when leaders act like they can handle everything that is lobbed at them but really cannot. It makes everyone around them shut down, and that keeps the important issues hidden beneath the surface.[315] Toxic leaders are very boastful and arrogant. They think that they are always right, and expect others to accept their word as gospel truth. They extend no help to others, and they hate it when someone else dares to correct them, especially if that someone is a subordinate.

Self-Servitude. A toxic head is a self-serving one. They often let their team feel the pressure of corporate power by controlling and manipulating them. This person is adept at pulling strings for their own interest and pleasure by using seniority or their higher ranking within the company. Often, they provide false guidance or advice only to advance them.[316]A leadership characterized by serving instead of being served creates a harmonious flow and increases performance levels. If a leader knows how to advocate for a positive workplace, then a relationship of trust that maximizes engagement and productivity can be created.

Lack of Faith and Confidence. If everyone could reach a consensus about what they hate the most, it would be a manager or supervisor who micromanages every move in every project they do.[317] Having a pair of eyes over shoulders and a mouth by ear judging everything not only makes a leader feel uncomfortable but also gives him a feeling of incompetence.[318]Toxic leaders tend to have a lack of trust in the abilities of their employees. They make judgments based only on what they see, effectively limiting the employee's ability to be versatile and creative. Such an attitude can hinder the growth of members as a team and as individuals.[319]

Incompetence. Employees can sense when their boss is unable to make sound decisions, leading them to question authority. Toxic leaders frequently boost their egos by criticizing others' work and making them feel less than they are really worth.[320] But behind their guise, they are incompetent and could even struggle to make even the smallest decisions.[321]Such a leadership style results in an inability to communicate well. And if one has poor decision-making and communication skills, leadership could easily crumble. This is why such leaders have their own professional "YES" group of people surrounding them. This "yes" group usually mimics the leader's attitude and makes them less vulnerable to forward-thinking employees.

Unmotivated and Lacking Support. Another thing that discourages people is a leader's lack of support. An indifferent boss hinders not only the maturity of employees but also their capacity to achieve the organization's goal.[322]Bosses like this tend to focus on their own advancement, and they struggle to acknowledge others' hard work and even take credit for themselves. This behavior stems from ego and fear. Furthermore, lack of motivation can cause employees' enthusiasm towards the goal to fade, leading to overall delaying of projects and, eventually, the organization itself.[323]

Lack of Moral Compass. Leaders should have a moral compass to serve as their lighthouse in uncertain times. They should be fair, humane, and have empathy, especially in tough times. But these values tend to be overshadowed by profit-building or popularity-seeking.[324]

Autocratic.   A toxic boss does not want any opinion other than their own to be heard. They expect others to quietly follow their every direction, without ever questioning the direction. A toxic boss often fancies themselves as the top dog or a self-styled king, and their behavior is often reflective of that. Employees are minions, lesser beings who exist only to do the leader's bidding.

Irritable.   Perhaps not surprisingly, toxic leaders also come across as highly irritable. They do want to be bothered for anything. Since they are not open to other ideas from anyone else, they despise being asked questions and avoid it as much as possible. Under a toxic leader, the organization becomes stunted because of the lack of innovative and free-flowing ideas.

Maladjusted.   Beneath the tough and arrogant veneer of a toxic boss is an ill-tempered child who is mortified of change. They are highly inflexible, and take changes very hard. The toxic boss is likely to be the most vehement opponent of any changes in the organization.

Lack of confidence.   Though they act supremely confident, a toxic leader has no confidence in them. Consequently, they also find it extremely difficult to trust team members. Because of this lack of confidence, tough problems are often ignored or swept under the carpet.

Incompetent.   A toxic leader may think that they are the best, but they are incompetent and may often struggle to make even the most commonsensical decisions, or do the simplest of tasks. Their sense of importance and usefulness only comes from criticizing others, and making them out to be less than they really are.

Hierarchical.   Without the rigid structure of hierarchy, toxic leadership will wither and die. A toxic leader will often feel the pressure of the corporate power structure above his head. A toxic leader is adept at controlling team members using hierarchy and seniority.

Unrealistic expectations. Toxic leaders are notorious for setting objectives that are unfair and unrealistic. Team members struggle with unachievable goals, and get demoralized. Workload piles up, and the company becomes set up to fail.

Symbols of personal authority.   These symbols include first right to common parking spaces, complete access to everything, and perhaps even studding the entire workplace with their own portraits and stories of accomplishments.

Discriminatory. Not surprisingly, toxic leaders are often discriminatory. Their biases and prejudices often appear in the guise of sexism, racism, ageism, and other discriminatory behavior.[325]

Lack of Empathy.   When leaders fail to show empathy towards their team members, it creates a negative and hostile work environment.[326]Lack of empathy can manifest in various ways, such as dismissing employee concerns or disregarding their personal lives outside of work. Toxic leaders often prioritize their agenda over the well-being of their team, leading to increased stress, frustration, and burnout. To combat toxic leadership, leaders must develop and practice empathy. By understanding and valuing the emotions and experiences of their team members, leaders can foster a positive and productive work environment.

Excessive Micromanagement.   When leaders constantly scrutinize and control every aspect of their team's work, it stifles creativity, hampers autonomy, and erodes trust.[327]Micromanagers tend to second-guess their team members, resulting in a lack of confidence and motivation. This toxic behavior not only hinders individual growth but also impedes the team's ability to collaborate and innovate.

To address toxic leadership, leaders must foster a culture of trust and delegation. Bad bosses are a sad reality of working life. This situation can only be assessed by those who have faced such leaders. Reading this article can, however, depict an image of such leadership. It seems like toxic leaders are far too common in organizations of all sizes.[328] And there's some evidence to explain why that is. Researchers at Ohio State University recently experimented with leaderless groups assigned to work together on a set task. As the researchers watched the groups interact, they noticed a disturbing trend. Most of the groups had a tendency to elect self-centered, overconfident members to leadership roles. Lacking any evidence of competence, groups tend to mistake blind confidence for leadership ability. And toxic narcissists are more likely to display that confidence. Empowering employees with autonomy and allowing them to take ownership of their work leads to higher productivity and a healthier work environment.

Defensiveness and Ego Centricity.   When leaders are defensive, they refuse to accept feedback or admit their mistakes, creating a culture of fear and silence. Ego-centric leaders always prioritize their interests over the collective success of the team, leading to a lack of collaboration and innovation. [329] This toxic behavior undermines trust and diminishes morale within the organization. To address toxic leadership, leaders must prioritize self-reflection and humility. By being open to feedback,

acknowledging mistakes, and placing the needs of the team above their own, leaders can foster a supportive and growth-oriented work environment.

Inconsistent Communication. When leaders fail to provide clear and regular communication, it creates confusion and breeds misalignment within the team.[330]This lack of transparency can lead to rumors, mistrust, and productivity issues. Without consistent communication, team members are left in the dark, unable to fully understand their roles or expectations. Toxic leaders may withhold information, engage in selective reporting, or change their stance without explanation. To combat toxic leadership, leaders must prioritize effective and transparent communication. Regular updates, clear expectations, and an open-door policy can help foster trust, collaboration, and a healthy working environment.

Favoritism and Unfair Treatment. When leaders show favoritism towards certain individuals or groups, it creates a divisive and toxic work environment. This behavior undermines fairness, equality, and impartiality, eroding morale and team unity.[331]When some employees are consistently given preferential treatment while others are ignored or mistreated, it breeds resentment and disengagement. To address toxic leadership, leaders must prioritize fairness and equity. They should ensure that everyone is given equal opportunities, recognition, and resources. By treating all team members fairly and impartially, leaders can foster a positive and inclusive work culture that nurtures growth and productivity.

High Employee Turnover Rate. When leaders create a toxic work environment, employees become frustrated, dissatisfied, and disengaged. This toxic culture drives talented individuals to seek opportunities elsewhere, resulting in a revolving door of talent. High turnover impacts the stability and productivity of the organization, as well as its reputation.[332]Toxic leaders often fail to recognize their role in this turnover or dismiss it as irrelevant. To address toxic leadership, leaders must prioritize employee well-being, satisfaction, and professional growth. By creating a positive and supportive work environment, leaders can reduce turnover and retain valuable talent.

Resistance to Change. When leaders resist or hinder necessary changes within the organization, it stifles growth, innovation, and adaptability. Toxic leaders often hold onto old ways of doing things, fearing that change will disrupt their power or authority. This resistance creates a stagnant and outdated work environment.[333]It hampers progress, inhibits creativity, and frustrates employees who are eager for positive change. To combat toxic leadership, leaders must embrace change and encourage a culture of continuous improvement. By promoting flexibility and adaptability, leaders can drive innovation, increase productivity, and foster a positive and forward-thinking work culture.

Lack of Vision or Clear Direction. When leaders fail to effectively communicate the organization's goals and objectives, it creates confusion and uncertainty among employees. Employees are left feeling lost and de-motivated, as they don't understand the purpose and direction of their work. Toxic leaders may focus on short-term gains or personal agendas, neglecting to establish a long-term vision and strategic plan. To address toxic leadership, leaders must establish a clear vision and communicate it effectively to their team. By providing a sense of purpose and direction, leaders can inspire and align their employees toward achieving shared goals and driving success.

Not leading by example. When leaders fail to practice what they preach, it undermines their credibility and erodes trust within the team. Toxic leaders may set unrealistic expectations for their employees while exhibiting a lack of integrity, accountability, or professionalism themselves.[334]This hypocritical behavior breeds resentment, disrespect, and a lack of motivation among team members. To address toxic leadership, leaders must lead by example. By demonstrating the values, behaviors, and work ethic they expect from their team, leaders can inspire trust, build a positive work culture, and foster a sense of commitment and dedication among employees.

Suppressing Feedback and Avoiding Accountability. When leaders discourage or dismiss constructive feedback from their team members, it stifles growth, creativity, and collaboration.[335] The right workplace environment brings with it overall success. Not only will employees be more productive and creative, but they will also be more likely to share ideas that elevate the business and take it to the next level. On the other hand, a toxic work environment can lead to critical issues that inevitably contribute to a business's downfall. There is interesting to say that, in day-to-day work, it can be difficult to see the forest for the trees. Similarly leaders aren't always able to see the warning signs that something is going wrong. Forbes Business Council members' share some symptom of leaders should continuously watch for to ensure a healthy workplace is being created and maintained.[336] Those are good example and lesson for modern leaders to remain safe distance from toxic leaders.

Poor Communication. Poor communication between management and employees often leads to a toxic environment. Leaders may have set meetings each quarter where everyone sits down and takes a turn to openly share their thoughts or concerns regarding how things are going. It took some time to get going and to build confidence, but it has proved to be a real success.

Fear of Speaking Up.   Fear of speaking up and recriminations is a sign of a toxic environment. Leaders need to remember that they're not perfect and problems are normal. The earlier they identify issues, the easier it is to prevent toxicity. Leaders should also invite specific input.

Selfish Goals.   Leaders need to first take a good look at them. A toxic work environment is often created or enabled by management itself, marking the main difference between a boss and a leader. If management's goals are selfish with little to no consideration of the team's mental health and motivation and that's a good place to start looking for symptoms.

Mental Health Decline.   One symptom that leaders must watch out for is 'a decline in the mental health of their people'. A recent survey has conducted in business organization revealed that more than 50% of workers say their focus at work has changed within a year. This survey revealed that many global employees' number one priority in life is their mental well-being. As such, leaders must consider implementing new strategies and programs that prioritize their employees' mental health.

Disengagement. The definition of disengagement is the action or process of withdrawing from involvement in a particular activity, situation or group. When a decline in interest or passion for job duties occurs, there is usually an underlying issue that becomes the drive or park of workflow and productivity within the team as a whole. Identify the toxicity and deal with it head-on.[337]

High Turnover Rate.   One symptom of a toxic work environment that leaders should watch for is 'a high employee turnover rate'. When employees often leave, it may indicate underlying issues like poor management, lack of support or a hostile atmosphere. To address this, leaders should encourage open dialogue, offer anonymous feedback channels and proactively seek to understand and resolve the root causes of the problem.[338]

Constant Team Conflict. One clear sign that leaders are dealing with a toxic workplace is constant conflict in the team. Conflict in the workplace arises when employees on the team can longer communicate honestly and openly about the things that are bugging them. This allows resentment to fester under the surface, leading to passive aggression. Then it creates the perfect conditions for toxicity to thrive.[339]

Hyper-Competitiveness. Over-competitiveness in the workplace is one symptom of a toxic work environment because it often shows a lack of teamwork and tension between employees. If employees feel like they are constantly in competition with one another and it is a sign that leadership is not properly creating a collaborative and cohesive work environment.[340]

Lack of Collaboration and Communication.   One symptom of a toxic work environment is a lack of collaboration and open communication. When employees don't feel safe expressing their ideas or concerns, they become disengaged and unwilling to take risks or speak up. Therefore, leaders must watch for signs of low morale and decreased productivity as a result of closed mindsets and fear-based decision making.[341]

Chronic Complainers.   Leaders must take notice of chronic complainers in the workplace. They can damage the business by spreading negativity, lowering morale and reducing productivity. These employees create a toxic work environment, harm the business's reputation and hinder progress by rejecting solutions and contributions.[342]

Quiet Quitting. Leaders must be aware of one symptom in a toxic work environment is quiet quitting. This results in employees doing the bare minimum, disengaging from the company's values, refraining from sharing their opinions and not being passionate about what they do. If employees aren't striving for excellence, providing solutions to problems and taking initiative, it shows that a team's culture is destructive.[343]

Low Morale.   Leaders must watch for low employee morale as a sign of toxic work culture. To ignoring such is risks, reduce productivity, lost talent and the loss of team morale even more. Leaders must encourage open communication and engage employees to identify and fix the root of the problem. A healthy workplace culture investment leads to long-term success and employee satisfaction.[344]

Lack of Zeal.   Lack of zeal in employees is a symptom of a toxic work environment. This can happen when employees feel that they are moving without a proper direction or a clear roadmap. When they do not know what to achieve or when they know that they are not going to achieve what they aspire for, employees show least interest in work and will quit when they get something better to work on.[345]

No Desire to Take Risks. A toxic culture can emerge when there is no incentive to take calculated risks. This often happens when the founder has left the company or if corporate bullies are not reprimanded. Taking risks must be encouraged and commended, even if

the outcome is unsuccessful. A 360-degree review process can ensure that all employees' ideas are heard and bullying is kept in check.[346]

Contempt.   If a subordinate or fellow employee is being treated with contempt that is different from simply calling out someone for not following company rules and regulations. One sign of contempt is the ratio of reprimands to praises. If interactions are mostly on the reprimand side, something is wrong.[347]

Gossip. Gossip in the break room can be tremendously toxic. It's often the result of someone who's unhappy with someone else within the team. They prefer to whisper behind their back and don't want to confront the issue that they have with the other person directly.[348]

No Workplace Boundaries.   Toxic environments often normalize and even reward the lacking of healthy boundaries in the workplace. Whether it's an in-office or remote environment, the end result often comes back to prioritizing work over everything else.[349] Look out for Friday afternoon emails with tasks that have Monday deadlines as an example. Training all levels of management on this is the key to avoiding perpetuating toxicity.[350]

Leaders should be Transparent and Open.   Transparency is key so a leader should be open about the business, the team and what keeps him awake at night. Articulate the expectations they have in terms of how they believe they can help their company, but also seek input on other areas they believe are important that could be in their blind spot. This will lead to authentic conversations that allow them to evolve as a leader while also growing a profitable business.[351]

Leaders should Share Organizational Goals.   Making a one-year plan with goals and focuses is a useful guide to set in place. Have these goals outlined and make sure the new members understand it fully and will work hard to help the company hit these goals.[352]

Leaders should commit to Consistent Engagement.   A company board offers organizations access to individuals with a wide array of experiences and diverse perspectives. Whether a company has an established board or is setting one up for the first time, hiring a new board member and on-boarding them is a process that must be undertaken with care and consideration for the needs of all involved. Neglecting ongoing engagement is a common on-boarding misstep. Failing to maintain consistent interactions after the initial on-boarding can lead to disconnect and limited contributions. It's crucial to establish channels for regular updates provide avenues for questions and concerns and involve them in relevant discussions. Doing this ensures their expertise remains aligned with the company's evolving goals.[353] Leaders should organize a mentorship program. Pair the new board member with a seasoned member for guidance. This facilitates a smooth integration, offers a deeper understanding of board dynamics and fosters interpersonal relationships, ensuring the newcomer quickly becomes an active, contributing member.[354]

Provide Accurate and Complete Information.   Business owners and CEOs must provide all board members with the accurate and complete information necessary for optimal input. It is also essential that board members convey a complete understanding of all the information provided, and it is the leader's responsibility to confirm that they do.[355] One crucial step is organizing an intensive orientation session. This session should dive deeply into the company's strategic plan, finances, culture and key challenges. Pairing the new member with a seasoned board mentor can also be effective.[356]

Maintain and Ensure Organization Values.   Business leaders play a pivotal role in ensuring these values aren't just words, but actions that define the company's ethos. When team members consistently model these values, it builds trust and brand loyalty and sets the organization apart in the marketplace. Leading by example is one of the best ways to ensure and encourage the propagation and projections of company values in any situation, internal or external. Rewarding the execution of these values by team members is one way to establish commitment. It is important to frequently talk about it in formal and informal forums to reinforce the values and the embodiment of them.[357] Consistency in modeling company values starts with leadership. It's crucial to embed these values in all training and communication. Regularly spotlighting and rewarding employees who exemplify these values in client interactions reinforces their importance, making them second nature for the entire team.[358] Leaders need to make sure their values relate closely to their mission and the service or product they're providing.

Integrate Performance Reviews. One method is to integrate company values into performance reviews and rewards. Employees who understand that embodying these values impacts their evaluations and promotions are more motivated to act accordingly. Publicly recognizing those who exemplify these values with clients sets a clear standard and inspires others to follow suit.[359] Recognize that modeling company values is not just a matter of following guidelines but a reflection of overall company culture. It would help to foster a positive work environment where these values are celebrated and reinforced by creating opportunities for open communication and feedback, recognizing employees who exemplify company values and providing ongoing training and development.[360]

Give their Team Freedom. Leaders need to trust their team's judgment and let their authentic selves shine through. It's about giving them the freedom to naturally embody their values. There are no scripts and no rehearsed lines; just genuine, unfiltered interactions.[361] It's not enough to just showcase an image to the outside world or to the clients; this image should mirror reality in terms of the work atmosphere, professionalism and positive attitude in the office as well.[362]

Be Reference for their Team. Leaders should be feeling that, it is critical to set a good example and regularly demonstrate business values in all of their contacts. They can set the norm for their teams and give them a practical reference for how to connect with clients and customers in accordance with their values by showing the behaviors and attitudes they value.[363] Increasingly, companies are creating daily or regular programs to reinforce cultural values. This is done by dedicating time for people to share examples with one another of how they actually applied one of the values to service customers.[364]

Prioritize Recognition and Accountability. Leaders should recognize and reward team members who consistently uphold company values during client interactions. Conversely, hold individuals accountable when their behavior deviates from these values. This ensures a culture of integrity and alignment.[365] Leading a team is not just about stating values and it's about embodying them. Values become more than words by consistently highlighting such moments and they become the company's heartbeat.[366]

Demonstrate Organization Values in Daily Work. Leaders should keep the values of the company front and center provides a consistent reminder for the team to incorporate these in their interactions. It also helps to instill these values repeatedly during company-wide meetings and events. It's important to give recognition to those who effectively demonstrate those values.[367] Business leaders can foster consistent modeling of company values in client interactions by leading by example. Demonstrating these values in their own actions sets a standard for the team. This showcases how company values apply in real-world interactions, which will motivate team members to follow suit. This also cultivates a culture where upholding values is integral, enhancing trust and credibility with clients.[368]

Modern Leadership Concept, Practice and Way Forward

A valuable purpose of leadership in our modern age is to provide vision, commitment, direction and motivation for a team of individuals to accomplish a task or mission that otherwise could not be accomplished by a single individual. Other members of the group, team or organization are called followers. Followers are those who subscribe to the vision and guidance of the leader. The study of followership is also of growing interest. However, don't be confused by the term followers or followership. This term should never be used in a derogatory or negative setting. Followers may also exhibit leadership qualities in order to achieve their own tasks and individual roles. Followership is such an important responsibility that a great many of today's most effective leaders first learned to be good followers before they acquired the skills, opportunity and experience to lead others. In other words, learning and appreciating the skills of followership are often the reason an individual has gained the experience and necessary knowledge to become a leader.

Vision: This is the meaningful articulation of the mission of the organization in such an appealing and intuitive picture that it vividly conveys what the organization can be in the future. Vision instills a common purpose, self-esteem and a sense of membership within the organization. Traditionally, vision has come from the top management of the organization. Modern leaders are now also beginning to see the value of creating the vision with those who are closer to the work environment and the customer.

Mission or Mission Statement: This typically describes the purpose of the organization and outlines the types of activities to be performed for constituents and customers. It should also mention what unique value or services the organization offers as a byproduct of its work. Mission statements typically contain at least three components. First, a statement of the overall purpose or mission of the company is declared. Secondly, a statement that indicates the values that employees are expected to maintain and commit to in the decision-making process. Third, a declaration of the major goals that management believes is essential to attain the mission. These goals should be consistent with the philosophical values that employees are expected to maintain. Modern leaders ensure that.

Values: These are the guiding principles that state how the employees, beginning with management, intend to conduct their business and their behavior. These values will determine what kind of an organization develops and they become the foundation of the organizations culture. Modern leaders never compromise with the values and moral courage.

Commitment: This is an employee's emotional investment to extend great effort toward the implementation of a decision, outcome or goal. Successful leaders need to be committed individuals and to solicit the commitment of others to achieve established goals, and the mission. Modern leaders never compromise with commitment and achieve good-will.

Motivation: This is the ability to provide an incentive or reason to compel others into action or a commitment. Since all individuals are different, successful leaders know that diverse people respond to different motivators. A wise leader also knows that money is not the strongest long-term motivator and cultivating an environment of fear is the least effective long-term motivator. Modern leaders can successfully motivate their followers.

Figure 22: Proper guidance[369]and develop relation is prime task of future leaders[370]

Consensus Building: This is the ability of a leader to build an agreement among differing individuals within a group. A consensus usually occurs when various members of a group agree that a particular alternative is acceptable though it may not be the first choice of each member. Consensus building can create a greater degree of commitment among group members than a decision made by a simple majority. However, consensus building requires additional discussion time and sometimes may not be possible. Eventually the modern leaders usually need to take require initiative and affirm that the group decision has been made to begin implementation.

There is very little evidence that the so-called naturally born leader really exists. Continuing and ongoing studies are showing that the concept of a natural born leader has little merit. One reason for this error may be that people often mistake charisma for leadership. It is true that some leaders possess a great amount of charisma. However, many leaders do not. In reality leaders are not born, they are forged by many factors. Some factors that often forge effective leadership traits are honesty, education, preparation, experience, opportunity, balanced, etc. Wise leaders are beginning to understand that it is their responsibility to develop followership by encouraging the followers' participation in goal setting and objectives. Modern leaders are viewing followers as partners in the enterprise who should be encouraged to pursue innovation and given the ability to do their job. Leadership is important because the development of positive leadership skills can have a beneficial and powerful impact in virtually every area of our life. Acquiring, understanding and exhibiting leadership skills can have a constructive influence within our workplace environment, within our community and in our personal relationships with others. Effective modern leadership is a skill comprised of many different traits or qualities. Some of these qualities include vision, a mission, values, commitment, motivation, and consensus building. The lack of any of these important traits or qualities may greatly reduce the effectiveness of a leader. The key qualities of a modern leader are as follows.

Humility. Displaying humility makes a leader 'more human' and is about sharing authority and inviting feedback rather than imposing change and leading by decree.

Trust. Leaders must earn the trust of their teams through their actions and they must trust employees to make decisions and work autonomously.[371]

Transparency. Transparency must work hand-in-hand with trust. Without honesty and openness, trust can never be achieved. When leaders are transparent with their team about how they can collectively work together to achieve the company's purpose, there's a 103% increase in the perception of employee experience and an 87% increase in the amount of great work happening.

Empowerment. When leaders empower their people to take ownership, make decisions, lead and innovate, there's a 78% increase in engagement, a 255% increase in the incidence of great work and how leaders are perceived by their employees is improved by 184%.

Enablement. Employees need to be enabled to make a difference. It's the responsibility of leaders to develop and grow their employees, giving them the necessary skills and experiences for performing great work.[372]

Prioritizing wellbeing. Nowadays 40 to 50% of employees are experiencing moderate-to-severe burnout and so the wellbeing of staff must be a priority for leaders. This means getting to know employees on a personal level – understanding what makes them 'tick', how they like to work and what support they may appreciate. By having a 'people first' culture in which leaders focus on people as individuals, the likelihood of burnout is significantly reduced.

Mentorship. When a leader is an active mentor, employees feel a 102% increase in motivation levels and perceive their leader 320% more favourably.

Empathy. It's important to understand and recognize other peoples' feelings, needs and challenges. By displaying empathy, leaders become far more relatable and develop stronger connections with their teams. An unprecedented situation is going on at present where every single person on earth is dealing with the same thing, differently. While the impact of Covid-19 was global, its impact on a personal level is different for every one of us. Someone once said that all of us are carrying rocks in our backpacks, and some days those rocks are heavier than others. Just acknowledging this is a great start.[373]

Recognition. Appreciating others and giving regular praise is key to nurturing a happy and healthy team who are more willing to go 'the extra mile'. Recognizing people regularly, and not just when an accomplishment has been made, leads to an 83% increase in employee engagement.

A modern leader embodies the necessary skills and characteristics required to successfully lead a workforce or team now and the future. While setting a vision and executing a strategy is expected from a leader today, achieving these company goals also relies on the ability to motivate, communicate, and inspire a workforce. As the future inevitably remains uncertain, a vital characteristic for modern leaders is their ability to adapt, innovate, and thrive in conditions of modernity within business and society.[374] But as the successful teams, professionals, and organizations of near future require leaders who can adapt to innovation and adjust to any significant transformations in society, modern leaders must also be a step ahead in terms of their strategies and operational functionality in future. 75% of the workforce will be millennials requiring most leaders to manage a different generation with distinct value by 2025.[375] Gen X leaders hold the most elite leadership roles globally, so a future leader in this bracket should be reading the significance of this generational shift by understanding the motivations required to lead their millennial workforce. [376] Alongside shifts in generations, the business world is rapidly changing as technology and working conditions continue to develop. Regardless of era, future leaders are expected to navigate their trajectory while embracing innovative developments or intricate issues as and when they appear.[377]

There are a few key differences between traditional leadership and modern leadership. Traditional leaders typically have an authoritarian style, meaning they make decisions without involving others or taking input from others.[378] Modern leaders, on the other hand, tend to have a more collaborative style, involving others in decision-making and working together to achieve common goals. Traditional leadership relies on authority and control, while modern leadership emphasizes collaboration and teamwork. Traditional leaders may also be more focused on task-oriented goals, while modern leaders may be more focused on people-oriented goals. Traditional leaders typically use a top-down approach, where they make decisions without input from others. Modern leaders, on the other hand, are more likely to use a participatory or democratic approach, involving others in the decision-making process. Traditional leaders may also be more autocratic, using punitive measures to enforce their will, while modern leaders are more likely to use motivational techniques. Traditional leaders may be more likely to use formal power to influence others, while modern leaders may be more likely to use informal power. There few definite pros of using a traditional leadership model over a modern leadership model. Since traditional leadership models have been around for longer, they are often more well-understood and accepted by employees. There is more stability and structure in a traditional leadership model, which can be beneficial in organizations that are large or have complex hierarchies. Traditional leadership models tend to be more formal and have clear lines of authority, which can make communication and decision-making easier.[379]

Again, there are some of the cons of modern leadership over traditional leadership. There may be a disconnection between leaders and followers. Modern leaders may not have the same level of authority or respect. Followers may feel less motivated under a modern leader. Modern leadership styles may be less effective in certain situations. There may be a greater emphasis on individual achievement over team success. On the other hand, there are some advantages of using a modern leadership model over traditional leadership models. Modern leaders are typically more focused on achieving results than traditional leaders. This means that they are more likely to take actions that are in the best interests of their organizations, rather than simply maintaining the status quo. Modern leaders tend to emphasize collaboration and teamwork over individual achievement.[380] This can lead to a more cohesive and effective team, as well as increased creativity and innovation. Modern leaders are often committed to continuous learning, both for themselves and for their teams. This allows them to stay up-to-date with the latest trends and developments in their industries, and to develop new skills and knowledge. Modern leaders typically strive to empower their employees, rather than simply controlling them. This can lead to greater job satisfaction and motivation, as well as improved productivity. Modern leaders are usually open to change, both in the way they do things and in the goals they set for their organizations. This allows them to adapt quickly to new situations and opportunities, and to make the most of rapidly changing environments.
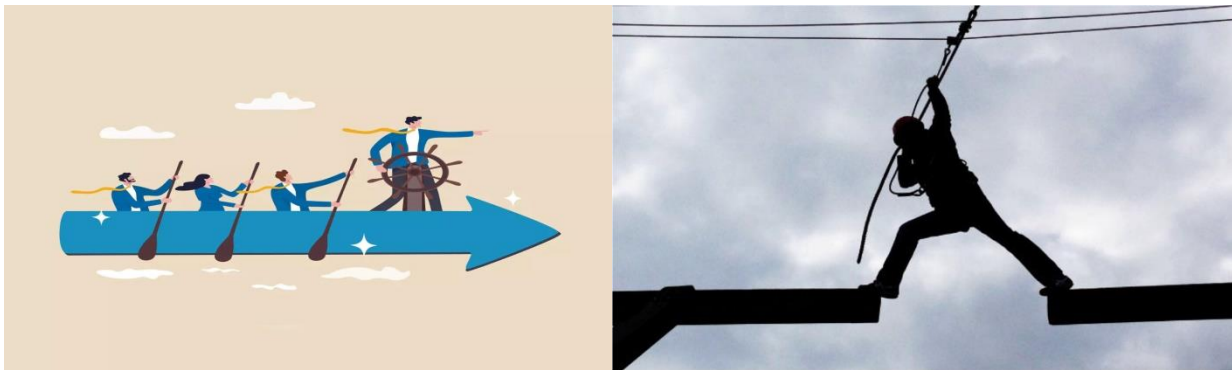
Figure 23: Coaching and mentoring of leadership[381] to face future challenges[382]

Modern leadership is about taking charge of our own life and responsibilities. To grow as a modern leader, it is important to be always ready to expand own capacities and strengths.[383] It is also about having the courage to speak up even when one is not sure of himself. Modern leaders need to take the courage to push them forward and to argue for their point of view.[384] Effective modern leaders also take the courage to ask for support and make the effort to be well-prepared when facing big challenges. Help-seeking is an act of courage and it provides others with the joy of knowing that they have contributed. Responsibility, determination, persistence and strategy are part of modern leadership. An easy way to take responsibility for one's own life is by setting goals as he wishes to attain. Those goals are things someone really wants to do, either big, long-term goals like graduate from university or start a family or become a welder, carpenter or mechanics or electrician or be an artist, etc. as well as short-term goals like, learn how to draw, weld, paint, etc. Learning how to set goals, then working towards them, can help us feel better about ourselves by giving us a sense of pride and accomplishment. Working towards own goals to achieve modern leadership may be achieved by following under mentioned ways.

- ➢ Taking some time to clearly define what one wants and if it can be pursued realistically.
- ➢ Thinking about the long-term goals and short-term goals. Many people spend their lives drifting from one job to another or rushing around trying to get more done while actually accomplishing very little.
- ➢ Setting SMART goals and those are specific, measurable, achievable, relevant, and Time-bound. Those goals are clear, attainable and meaningful.[385] Setting SMART goals means helps to clarify the ideas, focus the efforts, use time and resources productively, and increase the chances of achieving what one want in life.
- ➢ Having milestones along the way to show that the track towards the goal is followed, for example, if someone wants to be an artist in the long-term, some short-term milestones would be as learn to weld; enroll in technical school/institute; doing an exhibition of own work for friends and family, etc.

Contemporary leadership theories as discuss above offer valuable insights into how leaders can inspire, motivate, and guide their employees to achieve organizational success. By understanding the principles and components of popular contemporary leadership theories, modern leaders can adapt their leadership style to match the situation at hand, build positive relationships based on trust and respect, and prioritize the needs of their followers. Real-world examples of these theories in action illustrate the benefits of applying contemporary leadership theories, including increased employee engagement and satisfaction, better organizational performance, and greater success for the organization as a whole. In today's fast-paced and constantly changing business world, it's essential for modern leaders to understand and apply contemporary leadership theories to stay competitive and achieve long-term success. By adopting a contemporary leadership approach, modern leaders can inspire and motivate their employees to achieve their full potential, build a positive and productive work environment, and ultimately drive organizational success. Leaders are not always in control of what happens to them. They need to be able to think on their feet to respond. Leaders need to be able to respond to rapidly changing situations by staying alert to what is happening around them, so that they can give an appropriate response. To achieve the goals leaders should develop an action plan. There are four critical steps need to develops an action plan as a modern leaders.

- ➢ Identifying a goal for own life.
- ➢ Preparing some activities to reach the goal and commit to tackling obstacles with the purpose of reaching the goal.
- ➢ Implementing the action plan, need to be aware that the best laid plans can sometimes go wrong so one should be flexible and creative.
- ➢ Monitor the milestones to track progress and make changes as one goes along; sometimes the goals or action plans or targets may require changes.

The leadership quality must be earning by learning both theoretical and practical knowledge. Practical learning is acquired through real-life experience. Practical and theoretical teaching remains the two main methods for learning and training across schools, colleges, and advanced adult education. In fact, on-job learning are more effective than reading, listening, or watching. Today,

vocational or practice-based, practical learning is ultimately learning through action.[386] Practical learning often allows us to retain information efficiently and for prolonged periods. Depending on the person, remembering and applying actions are easier to memories than words. Practical learning can generate a deeper understanding of a specific skill or subject. Learning from experience is often seen as a more powerful way to ingrain knowledge and develop abilities.[387] Compared to theoretical learning, practice-based incorporates teamwork and human interaction. Rather than just learning inside head, people are likely to be learning with other people. As a result, practical learning can improve their social and communication skills. Social input can be necessary for practical teaching and learning, developing our abilities to work with people in understanding and communication. In practicing relevant skills through action, a human gains experience and knowledge to complete tasks and proves himself capable in his role. Just like the old saying goes, 'practice makes perfect.'[388] In the workplace, practical learning is the key to understanding and proving that we can do the job in question. However, forgetting the importance of theoretical learning will hinder the progression in the long run. Modern leaders need to develop the following skills to become successful in their working place or theater.

Emotional Intelligence. Emotional intelligence is the idea that our own emotions and the emotions of others influence our behavior. High emotional intelligence is the indication of ability to recognize own emotions and understand how they affect behavior. It also reflects the ability to assess the emotions of other people. Where a strict, regimented leadership style may have worked in past positions, today's employee landscape paints a different picture. Emotional intelligence allows leaders to understand the complex emotions of themselves and others, so they can help manage chaotic or stressful situations.[389] An emotionally intelligent leader will successfully handle critical client and workplace relationships, inspiring others and avoiding hostility. Leaders who inhabit empathy perform over 40% higher in employee engagement, decision-making, and coaching.[390]

Listening Skills. Everyone knows all good leaders have effective (if not exceptional) communication skills. But a common misconception is only considering how well a leader speaks and not acknowledging how well they listen. Rather than finishing employees' sentences or even interpreting because, as a leader, we believe our views are more important, future leaders will take a position to 'actively listen'.[391] For centuries, the greatest minds have pondered the true definition of intelligence. Sternberg's theory identifies intelligence as having three categories; practical, creative and analytical, while Einstein claimed, 'The true sign of intelligence is not knowledge but imagination.'[392] Whatever way we try and deem intelligence, it's a cause for debate. Even the most "book smart" people may lack "common sense". Traditionally, intelligence is measured through IQ tests, but IQ doesn't factor in certain aspects of intelligence that are key to leadership and coaching, such as emotional and social intelligence.[393] Some problems are solved by listening intently to clients and employees so we can help remove obstacles and give them the motivation to succeed. A leader must tune his ability to respond to signals in the marketplace. There will be times requiring to pivot quickly, but often the precursor signals have been there for a while. That sensibility will foster stronger customer relationships. As the world continues to change, a leader should be the "constant" that his customers need and rely on equipping them with the knowledge they need to succeed.

Establish Trust. The highest performing teams in the world all have one thing in common and that is trust. Future leaders will establish 'psychological safety' within the group dynamic, where all team members feel safe, so think freely, trusting each other to communicate directly and raise issues. Trust allows our workplace teams to produce faster results at lower costs. Future leaders will display trust in their workforce and are repaid with more direct communication and higher levels of efficiency and productivity. Nowadays, with much of the tech world operating in a hybrid remote setup, tech leaders need to master storytelling using powerful visuals and remote tools. Instead of giving boring presentations, a tech leader needs to learn to communicate their messages based on their team's persona, engaging the audience remotely using modern tools and leveraging the power of square box cameras to build trust with their team.[394]

Develop Others. Being a modern leader is not only executing strategy and inspiring results but developing a strong culture of leadership around us. Modern leaders go beyond themselves to invest in company growth by recognizing and encouraging any leadership talent emerging in the organization. Empowering others to achieve goals and unleash their potential is a characteristic that will belong to the successful leaders of our future. Because, to be a good leader for future, we need to enjoy lead others to fulfill their potential alongside us. A good coach and leader will ensure team members understand how their work fits into the broader company mission and encourage them to stay inspired and committed to that "North Star," ultimately leading by example.

Servant Leadership. A modern leader will embody the values of a servant leader who leads to serve the needs of others. Servant leadership focuses on the wellbeing of the workforce and their communities. Rather than prioritizing company or business goals as with traditional leadership, servant leadership's focus remains centered on the wellbeing of their people. Rather than thinking about people as resources or tools in a leader's toolbox, he needs to start thinking about them as people. In modern companies, people use the tools; they are not the tools themselves. This is the first lesson in becoming a people-first leader.

Global Citizen. As globalization continues to reign supreme across society with business and communication, the world has become an ever more interconnected, borderless landscape. Appreciating new cultures, navigating global markets, and cultivating diverse teams of high-performing individuals will be a challenge that modern leaders must face in future.

Leading Integrations. In anticipation of another year of record merger and acquisition activity, experience in leading integrations is an increasingly valuable skill set for tech leaders. Disjointed IT is a major hurdle after an M&A, especially in this dynamic work environment. Tech leaders who can streamline frankenstacks and create seamless tech environments will be critical in helping to quickly deliver value after a deal.[395] With the rise of remote work, tech leaders can't manage and connect with their teams by walking around the office, so short videos, frequently posted and are a great alternative to celebrate an achievement, share info or recognize an individual or team.[396]

Digital Leadership. To best leverage digital transformation, an organization has one or more leaders who manage the transformation of assets and map how to achieve its strategic goals. Normally the leaders work towards strategic goals by managing the continuing digital transformation organizations face when adapting to evolving technology, product delivery, and changing customer demands. There is no single approach or arrangement for digital leadership that guarantees success. With a single leader, there can be a danger of a digital silo evolving. Conversely, distributed leadership often lacks alignment. With distributed leadership, digital can sometimes be like the plague. If a leader picks it up, they can't get rid of it. To avoid the "infection" eating their time, no one touches it, leaving parts of digital unmanaged.[397]

Advanced Technology and Technology leadership. Being a technology leader now and in future is more than just technical knowledge or having a fancy title. Technology leadership is about having a balanced, well-rounded skill set that adapts to rapidly changing tech landscapes. By focusing on these essential skills, a leader be better equipped to navigate the complex world of tech. Technology leaders must keep sight of the strategic vision while diving deep into technological details. It's easy to become engrossed in tech details and lose sight of the strategic vision. A tech leader needs to strike a balance between hands-on tech skills and the big-picture strategy. Technology leaders must instill a culture of cybersecurity awareness across the organization, from the intern coding in a corner to the C-suite executives.[398] It's an all-hands-on-deck situation. Emotional intelligence is a cornerstone in technology leadership for building effective teams. Understanding the emotional and professional needs of the team is crucial for any leader's success. Technology leaders should tailor their management styles to suit individual team members. Everyone's not the same in a team. A leader should improvise management style for individual team members to bring out their best.

Adaptability and Continuous Learning. Change is constant, and adaptability is necessary for technology leadership. Furthermore, leaders should not just adapt to change—they should embrace it. Technology leaders should foster a culture of continuous learning to make their teams adaptable and resilient. Encourage courses, webinars, and workshops. A tech leader is more than just understanding code or chasing the next buzzword. It's a blend of technological proficiency, cyber security awareness, emotional intelligence, and so much more. If a leader wants to steer his team through the dynamic landscape of tech, he needs to balance hands-on skills with big-picture strategy, instill a culture of continuous learning, and champion ethical responsibility.[399]

Data Driven Decision Making. In technology leadership, being data-savvy is non-negotiable. If a leader is not involved with data, he will be playing a guessing game, and the stakes are too high for that. Technology leaders use data to generate actionable insights, making gut-feeling decisions a thing of the past.[400]

Strategic Vision and Foresight. Keeping an eye on emerging trends is vital for technology leaders. What trends are shaping the industry? How can a leader align his tech strategy with broader business goals? Technology leadership isn't just about dealing with the present but anticipating future trends. Having foresight can give a leader the first-mover advantage.

Stakeholder Communication. Tech jargon can be foreign to non-tech users. Influential technology leaders can translate tech jargon into simple terms for stakeholders. In technology leadership, bridging the gap between IT and other departments is critical. Technology shouldn't be an island within a business. Leaders must bridge the gap between IT and other departments for a cohesive strategy. As more people enter a strategic board-reporting role, a leader must understand how to communicate in a layperson's terms; the complexities of his job. A successful ten-minute board presentation is a skill that "equalizes" tech executives. It will set up and cement tech executives for long-term success that can be carried forward to the successors.[401]

Ethical Responsibility and Sustainability. With great power comes great ethical responsibility. Technology leaders face ethical dilemmas that require careful navigation. Whether it's data privacy or AI ethics, a leader must navigate the moral maze responsibly. Green tech is not a trend; it's a necessity. In technology leadership, advocating for sustainability is not just ethical but also makes business sense

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Innovation and Creativity. Technology leaders should foster an environment that encourages innovation. Creating an environment where the team feels safe to pitch the next big idea is vital for any leader. Sometimes innovation means breaking things. In technology leadership, being willing to disrupt the status quo can yield long-term benefits.

Project Planning, Management and Delegation. Project need to complete on time, within budget. A great idea is just an idea until it's executed. Project management is crucial for technology leaders to bring ideas to life. Effective delegation is a sign of mature technology leadership. A leader should know when to delegate and trust his team's expertise to get the job done. Effective project planning and delegation are must-have skills for leaders who want to achieve their goals and objectives. Project planning allows leaders to break down complex tasks into smaller, more manageable ones, while delegation allows them to assign specific tasks to team members and ensure that they are completed in a timely manner. Both of these skills help leaders to ensure that their goals and objectives are met. Moreover, help them keep their teams on track and ensure successful project completion.

Context Switching. Tech executives need to better understand context switching. For example, a tech exec needs to be able to shift their mindset from sales to product development at the drop of a hat. They must be able to add value and process new information and challenges efficiently, with an eye to prioritization, then immediately move on to the next area.[402]

Collaborating Across Organizations. A tech leader needs the ability to collaborate across the organization and bring the right set of folks to the table to come up with creative, end-to-end solutions that can deliver for the customer. This means bringing different groups together, especially those that are customer facing to get their view of the product, pain points and opportunities. It's important to look at the challenge holistically to build a successful product and/or service.[403]

Creating Automated Solutions. As technology continues to evolve, tech leaders must have complete insight into automation processes and solutions now and future. They must also have sound communication and collaboration practices with research and development teams to build and execute successful product releases for valuable customers.[404]

Adaptability. The tech industry and consumer behavior are rapidly changing, and so are the needs of businesses. The pandemic exposed major gaps in business continuity and security. Being able to understand these changing needs and developing and augmenting innovative solutions to fix those gaps and make businesses future-proof is where a tech executive can really shine now and in future.[405] Modern leaders need to show exactly why their top priority is important and detail what it accomplishes for the business and they need to back it all up with quality, market-based data for meaningful impact.

Comprehensive Digital and Smart Transformation. Tech leaders must have the ability to connect all the pillars of digital transformation (ABCD: AI, blockchain cloud and data) and build products that bring synergy to all aspects of digital strategy. In the modern world, we have to build products that are data-centric and cloud-based. We must leverage blockchain for data immutability, and we should help ensure more accurate analytics through AI engines.[406]

Bridging the Tech Knowledge Gap. Every tech executive needs to be able to speak tech in a way that non-technical people can understand. There is immense opportunity in bridging the knowledge gap between technical and non-technical persons. The more the team, the customers and anyone looking at the company can better understand what is really done, the better off they are.[407] With the release of ChatGPT, AI now promises to serve the common person rather than to perform as a technology that can only be accessed through deep technical expertise. In fact, ChatGPT is the fastest-growing consumer application in history, reaching 100 million users in the first two months since its launch. While the potential applications of democratizing AI are exciting, it also brings about fears about how it will impact society. Elon Musk, along with over 1,000 other technology leaders, called for a pause on the development of AI, citing concerns over how it could negatively influence the development of humanity.[408] The beauty of AI is that it allows us to automate tasks that would otherwise take an incredible amount of time and effort. The exciting part is that AI has the potential to increase an organization's efficiency by orders of magnitude. The scary part is having our team worry if AI will replace their jobs.\

Understanding of Quantum Technology. Businesses will be affected, and potentially disrupted, by accelerating breakthroughs in quantum technology. Now is the time to educate us about these game-changing developments from both a technology and a business impact perspective. While the full potential of quantum will be realized in the medium-term, the time to learn, analyze and pilot is now.[409] Anything with agile in it sounds like a buzzword these days. But cryptographic agility is more than that as it is a critical enabling capability for an efficient transition to post-quantum algorithms. In the coming age of quantum computing; where computers have several million times the power they do today and most legacy encryption technologies will be broken. In future, crypto-agility will be beyond a nice-to-have feature and become an essential component of post-quantum resilience.[410] China is investing more in quantum computing in comparison to the entire western world. In October 2021, it announced a quantum processor a million times faster than the world's best supercomputer.[411]

Innovation.   Leaders who prioritize innovation can help their organizations stay ahead of the competition, adapt to changes in the market, and create new opportunities for growth. In these discussions, leaders can explore strategies for fostering a culture of innovation, encouraging creativity and risk-taking, and implementing processes to support and embrace innovation and new ideas. By investing in these activities, leaders can ensure that their organizations can remain at the top of the market and capitalize on potential future successes.[412]

Diversity, equity, and inclusion.   Leaders who promote diversity, equity, and inclusion can help to create a more inclusive and equitable workplace where all employees feel valued, respected, and supported. By embracing diversity, leaders can foster an environment of understanding and appreciation for different perspectives and backgrounds. This will create a culture of inclusivity and respect that encourages collaboration and dialogue among employees, which can lead to greater productivity. Furthermore, leaders can explore strategies for building a diverse and inclusive workforce, addressing unconscious bias, promoting equity and fairness, and creating a culture of belonging.

Effective virtual leadership.   Since the remote or hybrid workplace comes with unique dynamics and challenges that differ from a typical office setting, leadership skills must be tailored to this specific work environment. Leaders should account for collaboration barriers, reliance on digital platforms, and minimal face-to-face supervision or interaction in their approach to managing their associates. With the rise of remote work and virtual teams, effective virtual leadership is more important than ever. Leaders who can effectively lead and manage remote teams can help to maintain consistency in performance, engagement, and collaboration across geographies and time zones.[413] They can explore best practices for virtual leadership, including communication, trust-building, and team-building strategies.[414] Leaders also need to think about how to reduce the feeling of isolation among remote workers, and how to create a sense of belonging in a virtual team. They should focus on creating a culture of open communication and trust, and consider strategies such as regular check-ins and online team activities.

Problem-solving.   Leaders who are great problem-solvers can help their organizations overcome challenges, adapt to changes, and identify new opportunities for growth. Such leaders know how to explore problem-solving frameworks, strategies for identifying and analyzing problems, and techniques for generating and evaluating solutions. These attributes make great leaders invaluable to their teams and organizations and lead their groups to success. In future, our knowledge of leadership, development, and leadership education change.[415]

Conflict resolution.   Leaders who are skilled in conflict resolution can help to facilitate conversations between parties in dispute, create a safe space for open dialogue, enhance team dynamics, and provide guidance on how to work collaboratively towards a resolution. They can also help to build mutual understanding and practice empathy between the parties, which is essential for a successful outcome.

Inspiring and influencing team.   Leaders who live by example can inspire and influence their teams which help to create a positive work culture and motivate employees to achieve big. Leaders must use their own lived experiences to show employees that it is possible to achieve big and drive meaningful change. This can help to build a sense of unity and collaboration in the workplace and create an environment that encourages employees to work harder and strive for excellence.[416]

Figure 24: Comprehensive overview of leadership[417] in global perspective[418]

Modern leaders around the globe should be worked on to address the common leadership challenges. Leaders must be proactive in setting goals and establishing the timelines and deadlines and necessary to keep themselves and their team members on track. The distractions leaders face can make it easy to lose sight of long-term and even short-term goals. Leaders can easily get sucked into dealing with urgent issues that arise unexpectedly, rather than staying focused on producing the outcomes that matter most to their organization. While no leader can completely avoid surprises, goal-setting provides a map they can return to time and again to refocus

on their top priorities while handling other leadership challenges. One time-honored approach is the SMART method. When modern leaders are setting their goals, it needs to make sure few points as follows.

➢ **Specific.** Write down a detailed description of what accomplishing the goal would involve.

➢ **Measurable.** Set targets according to ability by quantifying the progress.

➢ **Attainable.** Stretch goals are fine, but a leader also needs to make sure that achieving the goal is possible.

➢ **Realistic.** A leader must consider the things which are likely to be needed and possible to attain— in terms of time, resources, and talent — to achieve the goal.

➢ **Timed.** A leader has to create deadlines for hitting milestones on the way to his goal, as well as for achieving the goal itself.

➢ **Valued.** They need to set goals that align with their values.

Modern leaders should delegate more to others. They'll be more productive in tackling leadership challenges, and they'll empower their colleagues to take more ownership, if they delegate. Leaders will build more trust on their team if they delegate more.[419] They must be proactive in setting goals, as well as establishing the timelines and deadlines and necessary to keep themselves and their teams on track. The distractions that they face can make it easy to lose sight of long-term and even short-term goals. Leaders can easily get sucked into dealing with urgent issues that arise unexpectedly rather than staying focused on producing the outcomes that matter most to their organization. Effective delegation requires more than just getting a task off their desk and it involves a repeating cycle of few key steps as follows.

➢ **Understanding own preferences.** Effective delegators prioritize their workload and decide which tasks to keep and which to give to someone else. Leaders also understand how much feedback they want while the person they've delegated to works on the task.

➢ **Knowing their people.** To delegate effectively, leaders must assign tasks to people with the necessary knowledge and skills. That means that they have to understand their people. Use delegation to help direct reports develop, allowing them to learn as they take on new tasks.

➢ **Being clear about the purpose of the task.** A task's purpose gives it meaning. By aligning this purpose with team or individual beliefs and goals, delegation can become an opportunity for personal growth.

➢ **Assessing and rewarding.** Leaders should engage in collaboration and work with their direct reports to develop ways to help them, and leader, decide if a task has been completed properly, and to reward them appropriately.

Leaders maximize their unique value. There will always be more things competing for their attention than they have time and energy to do. Prioritize the most important tasks that only they can do, and delegate everything else to team members. Leaders overcome leadership challenges and create value for their organizations by focusing on the unique contributions only they can make. Understanding what those unique values are for them, and delegating everything else or as close to everything else as they can, allows leaders to maximize the value they create for the organization. It's important for a leader to recognize own characteristics, behaviors, and habits in order to know what may be triggering challenges for them in their career. This way, they can work toward strengthening specific skills and growing as an individual leader.[420] Some internal challenges that many leaders face include a lack of confidence, a fear of failure, maintaining authenticity during self-promotion, impatience, resistance in responding to new ideas, or overcoming impostor syndrome.[421] All of these can be potential roadblocks to leadership success. Understanding their own strengths and weaknesses and maximizing their unique value are part of increasing their self-awareness and understanding a leader's personal leadership brand.[422]

Modern leaders must strengthen team alignment and collaboration. What's preventing their team from being on the same page and collaborating effectively together? Maybe they're not being open and honest with each other, or maybe they're not carving out enough time to celebrate the small wins. Either way, strengthening their team's alignment is vital to organizational success and it allows leader and their team, to make difficult decisions with confidence and stay calm and positive in a crisis. During challenging times, building trust is crucial. In fact, it's one of the 3 keys for better team-building and collaboration.[423] Without trust, people operate out of fear, putting success in jeopardy. Additionally, operating on agreed-upon principles will help align a leader's team. Examples of this include focusing on values like accountability, mutual respect, and integrity. For effective and structured collaboration to take place, teams must follow a framework composed of main three parts or level as follows.

- ➢ **Structural level:** understand structures, roles, and responsibilities of team members.
- ➢ **Systemic level:** assess systems, processes, and policies that are currently in place.
- ➢ **Interactional level:** evaluate communication among team members.

Digitalization and smart technologies are likely to change the way that modern leaders interact with their teams and stakeholders. Leaders will need to adapt to new forms of communication and collaboration to be effective and successful in this context. Now, the growing importance of diversity, globalization and inclusion in the workplace is significant.[424] It will require modern leaders to develop new intelligent, skills and strategies for managing and motivating diverse teams. This will require leaders to be more aware of and sensitive to the needs of team members and followers from different backgrounds, culture and area around the world. Globalization will necessitate effective connections with friend and foe as well as colleagues and stakeholders from different cultures, attitudes and backgrounds. They will also need an understanding of international markets and regulations. Leaders who are able to incorporate sustainable practices into their task, action and operations will be better equipped to compete in a rapidly changing world. It is really interesting is that, the value of global trade increased to a record-breaking US$ 7.7 trillion in the first quarter of 2022, according to the United Nations Conference on Trade and Development. Today, global trade includes the trade of goods as well as services.[425] Global leadership requires developing a global mindset. Global leaders are next-generation leaders who expertly navigate the international landscape, create cross-culture connections, and foster growth for businesses and communities around the world. Developing a global mindset and versatile attitude starts with the ability to communicate a clear vision, modern leaders need to think strategically, develop relation and inspire cooperation. To be a global leader, we must be able to navigate the challenges and harness the opportunities that arise within a dynamic, diversified, international ecosystem.

Modern leadership aimed is improvement and at the self-management of the people entrusted to it. It has provided a definition of meaning. Leadership creates, develops and completes. Usually a status quo can be transferred into a better future, sometimes maintaining a good status quo is a leadership task. In fact, modern Leadership deals responsibly with resources. The goal is a circular economy and no longer unlimited growth. Leadership always considers the consequences of its actions for people and ecosystems. Again, modern Leadership restrains itself only as much leadership as necessary. In all leadership practice hierarchy is still needed, like, if the employee has little experience, if there is manager liability, if personal and organizational goals are contradictory. Now, leadership goes in both directions, employees also lead their managers.[426] Modern leadership is always as cooperative as possible. It does not see employees as subordinates, but as partners at eye level. It is based on agreements and tries to win over the commitment of employees for concerns and thus builds more on intrinsic than extrinsic motivation. Just as companies are paid for services by their customers, employees are paid more and more for agreed and achieved results and less on the basis of working hours. Modern leaders develop the potential of employees. They continue to learn on their own. The Leaders are more concerned with the collective good than with the individual good. They support learning. Modern leaders are disruption surfers and they are aware of the changes in their environment and choose the right disruption waves to ride. A responsible manager or leader strives to leave the world better than he found it. However, by exercising restraint, leadership creates an environment in which everyone is happy to contribute their own strengths and concerns. Modern leaders serve the system. They make themselves aware of the effects of their own actions and interactions in the system.[427] They ensure that decisions are made on the basis of short and long term considerations.

Today honesty, adaptability and balanced are three serious leadership trait. Mentoring and coaching are two powerful tools serve as a guiding light for aspiring modern leaders and helping them to navigate the complexities of the modern world. Coaches help future leaders to become more agile, flexible, acceptable and equipping them with the tools to navigate change, complex and uncertainty. In coaching, coaches identify critical areas where the coachee needs improvement and provide custom-made guidance to enhance those skills and know-how. Whether it's communication, analytic, decision-making, or conflict resolution, coaching helps future leaders become more effective and efficient in their roles. Coaches provide honest feedback and hold the coachee accountable for their actions and past decisions. This accountability fosters a culture of continuous improvement, self-development and personal responsibility. Leaders are often faced with complex challenges and critical situations. Coaching equips and prepares future leaders with problem-solving techniques, decision-making ways and strategies to address these issues effectively and purposefully. Coaching is a more structured and goal-oriented process to develop a leader. Coaching is usually hones specific skills and drives goal achievement a coach, naturally a professional with expertise in a specific area, helps the coachee set and achieve specific objectives. Coaching can be short-term or project-based, focusing on skill development, problem-solving, decision-making, performance enhancement, etc.

On the other hand, mentoring is a dynamic relationship between a seasoned, experienced individual (as the mentor) and a less experienced and new comer individual (the as mentee). The mentor offers guidance, and support, as well as intelligence and wisdom gained from their own journey, helping the mentee grow both personally and professionally. Mentoring often involves a long-term commitment, fostering a deep sense of trust, close-relationship and connection. Experienced mentors possess a wealth of knowledge, wisdom and skill and they can share these pearls of wisdom with their mentees helping them to avoid common pitfalls and navigate challenges more efficiently and successfully. As leadership is usually lonely and challenging, so mentors provide mentees required emotional support and they acting as a trusted confidant by listening, empathizing, and offering guidance during difficult times. Beyond professional development, mentoring can contribute to personal growth. Mentoring is a vital tool for succession planning for

any organization. It ensures a pipeline of well-prepared leaders ready to step into key roles when needed. Finally, in the journey to nurturing and preparing future leaders, mentoring and coaching are indispensable tools. Both are offer guidance, wisdom, and emotional support. In summaries, they create a powerful collaboration that helps aspiring and empower leaders to develop into confident, capable individuals ready to tackle the future challenges of leadership. However, it can be difficult to find the right mentor or coach in perfect time, and the relationships require commitment and effort from both parties. Modern leaders who sometimes feel overcome by their work can take heart in the fact that they're not alone. By focusing and adjusting few positive behavioral approaches leaders can beat back those feelings and challenges to provide more value of their organization as they take on the most pressing leadership challenges. There will always be more things competing for their attention than leaders have time and energy to do. [428] By understanding and following above discussed framework, leaders in any organization will gain better role clarity and strengthen their team's alignment both of which are necessary when responding to top leadership challenges.

Conclusion

Technological advancements are enabling substantial changes in leadership content, delivery, and accessibility. New technologies have aided the exponential rise of human knowledge throughout history. Presently, an increasing number of software applications are establishing environments in which leaders can guide the development of their own knowledge and intelligent with minimal guidance from mentors or coaches. A potential benefit of digital and smart technologies is the potential for expense reductions. In the present scenario, the significance of advanced technologies is heightened as they strive to support overwhelmed leaders in implementing the forthcoming wave of assistive technology in near future. In this modern era as characterized by frequent advancements in digital or smart technologies and the intensifying demand for more robust equipment and machine to accommodate software and application upgrades, placing exclusive reliance on the notion that technology is the sole remedy for organizational challenges appears too certain. It is imperative to generate purposeful, qualified, and competent human resources in the contemporary period characterized by advancements in science and technology. The technology in question has significant potential for both personal and professional advancement of modern leaders and playing a crucial role in the overall progress and maturation of human resources, organizatios, society and nations. Advanced technology, mainly digital and smart technologies, has both pros and cons in the field of development of leaders. However, it is important to acknowledge that these limits are inevitable and should not be overlooked.

In the pursuit of a leadership approach, where technology is utilized as an asset, it is crucial not to overlook personal well-being. Leaders must recognize the importance of the few core assets namely health, family, friends etc. A leader's physical and mental well-being directly impacts their decision-making ability and overall effectiveness. Prioritizing self-care, maintaining a healthy work-life balance, and promoting well-being within the organization are essential. A supportive and nurturing family environment provides leaders with the emotional stability and motivation needed to overcome challenges. Investing time and effort into maintaining strong familial relationships is vital for long-term success. Trusted friendships outside of the professional sphere, offer leaders diverse perspectives, emotional support, and opportunities for personal growth. Cultivating meaningful connections enriches their lives and enhances their leadership capabilities. The world has witnessed remarkable leaders who have harnessed technology to drive innovation and transform industry, organization, education and service sectors. Elon Musk is known for his ventures such as Tesla, SpaceX, and Neuralink. He has demonstrated leadership in sustainable energy, space exploration, and advanced technology. Bill Gates is Co-founder of Microsoft Bill Gates pioneered the personal computer revolution. Through the Bill & Melinda Gates Foundation, he has also focused on global health, education, and poverty eradication. Steve Jobs, as co-founder of Apple, has revolutionized the technology and entertainment industries with iconic products like the iPhone, iPad and many more. His emphasis on user experience and design set new industry standards. Jan Koum and Brian Acton, the developers of WhatsApp an instant messaging app, showcased technological leadership by revolutionizing communication globally through seamless connection of millions of people.

A person without having/achieving the capability/capacity to influence or motivate others is not a leader. Power, wealth, education, position, status or anything else is not required to be a modern leader. Influencing and convincing skills and charisma are some positive instincts which lead him/her in the right direction. Leadership is a state of mind than a specific status, designation or position. It relates to the behavior, attitude, style, outlook and personality of an individual more in comparison to his/her status, appointment, position or title. Modern leadership is completely a paradigm or standard of how an individual inspires, motivate and influences others. The notion or idea of command and control does not honestly come under the umbrella of modern leadership. It derives one's own inspiration or stimulus to reflect or imitate the same in others by influencing or motivating through personal passion to the colleagues, team-meets and work partners. Again, a modern manager becomes a human-connector, a relationship-fixer, a social bonder. A modern manager must develop the competence to recognize and use the strengths and resources of employees. Modern leaders increasingly need to become an enabler who takes a close look at where the strengths and talents of the employees lie. Now in complex business landscape and diversified organizational perspective in modern era, leaders or managers have the core task of facilitating relationships, supporting them and even fixing them. They have to listen to their employees like a good coach in order to give them direction, orientation, advice and familiarity. When things get complex and confusing on the outside, the focus automatically shifts to the inside in search of stability and security. In fact, the core task of management in future will be to create a social structure global in nature in which every employee can find this orientation and guidance. Modern leaders must prioritize the

most important tasks that only they can do, and delegate everything else. Understanding what those unique values are for them, and delegating everything else allows them to maximize the value they create for the organization. This is part of increasing a leader's self-awareness and understanding his/her personal leadership brand. The most effective leaders or managers understand that they will largely be judged based on how effective they are at their core responsibilities and how they can overcome leadership challenges.

About Author

Hossain KA, PhD is former Head at NAME, MIST and professor/researcher/Examiner at BUET, Dhaka, Bangladesh. email: kahossain756@gmail.com

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