PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF COMMERCE

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

UTKRAANTI

BI ANNUAL NEWSLETTER

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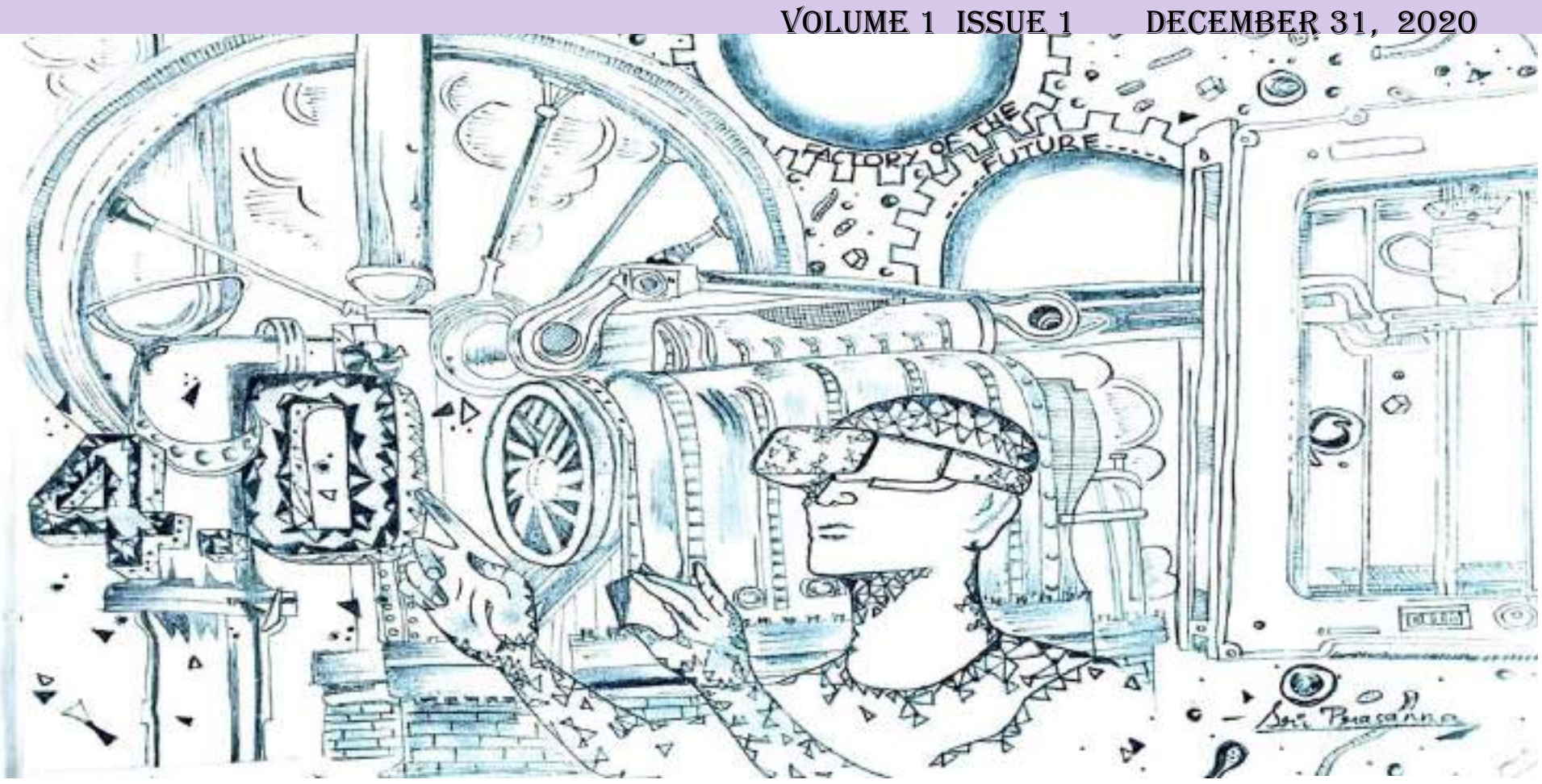
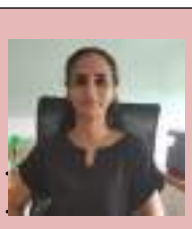


INDUSTRY 4.0

SRI PRASANNA, 1ST B.COM

DEAN'S MESSAGE



Industry 4.0 is an exciting stage of technological revolution as it brings with it many beneficial next level changes including interconnectivity, automation, machine learning, and real-time data. Its focus on these will allow the next level of connecting, productivity, communication, speed, and business models that are more profitable and lead to faster growth. This will include an upgradation of technology applications including Internet of Things (IoT), Big Data and data analytics, augmented reality, cybersecurity, collaborative robots, manufacturing, cloud computing, artificial intelligence, and 5G networls.

All industries will reap the reward of Industry 4.0 that is meant for enrichment of service industry especially medical and industrial contexts especially manufacturing and distribution. Its main contribution will be to increase the intelligence level ofprocess across industries by allowing them to be hyper-aligned for seamless connectivity increasing their efficiency and effectiveness.

This seamless integration will be of highest benefits to medical community, space researchers, and process oriented business with its augmented reality and collaborative robots. The definition of profits in the global market will change from multiple costs to lesser number of cost head as technology processes become more streamlined and integrated with collaborative robots, 5G networks, and cloud computing.

Covid'19 already has led to a quick adoption and implementation of advanced technological tools and applications by business and industries in both manufacturing and service sectors with effective results. It also has been a major support system for entrepreneurial ventures' rise with many individuals shifting from jobs to their entrepreneurial ventures and some leveraging their creativity through this shift from real-world to virtual world during Covid'19.

I appreciate the School of Commerce for their initiative of this first newsletter and their choice of this very relevant topic of discussion. I wish them all the best!!

Dr. Gunjeet Kaur
Dean, SoM & SoC
Presidency University, Bengaluru

INDUSTRY 1.0

INDUSTRY 2.0

INDUSTRY 3.0

INDUSTRY 4.0

HOD'S MESSAGE

Over the years the corporate world is becoming more challenging. Even trivial entrepreneurs at the local and domestic market are creating global brands by creating World Class products, services and even by providing employment opportunities. The tech developments like AI, cloud technology and so on are impacting the business world to a larger extent. This is what we call today as Industry Four (I.4) Era.

There is a need for the future managers to align their skill set to keep pace with the rapid innovative world. School of Commerce and Management developed UG Programs after great interaction with industry professionals, entrepreneurs and academic experts. The curriculum and andragogy are in alignment with the vision and mission of Presidency University.

Graduate attributes of School addresses global needs spread across three years of the program. In the strategy process, an attempt has been made to connect theory to practice and equip UG students to meet the ever-changing needs of the industry. The curriculum provides hands-on learning through internships and dissertation projects and also developed to engage the students better and foster peer and self-learning.

The Undergraduate Program is designed to practice management by adopting various case studies, management games, personality development, and R&D. Students are introduced to specific functional areas with a basket of specializations to facilitate their career path. Ample of opportunities are provided for students through a culture of activities under the leadership of their Mentors. Mentors counterpart personal aspirations and professional objectives in the process of facilitating Protégés career growth and development.

Ultimate ambition of School of Commerce and Management is to be a recognized front-runner in providing value-based quality education, to create professionals with integrity and social conscience and become a centre for disseminating knowledge and wisdom for the student community at large. We go with the Mantra "Preparing students for tomorrow" i.e., "Preparing students for I.4 Era".

Dr. Balu. L
HOD
School of Commerce and Economics
Presidency University, Bengaluru

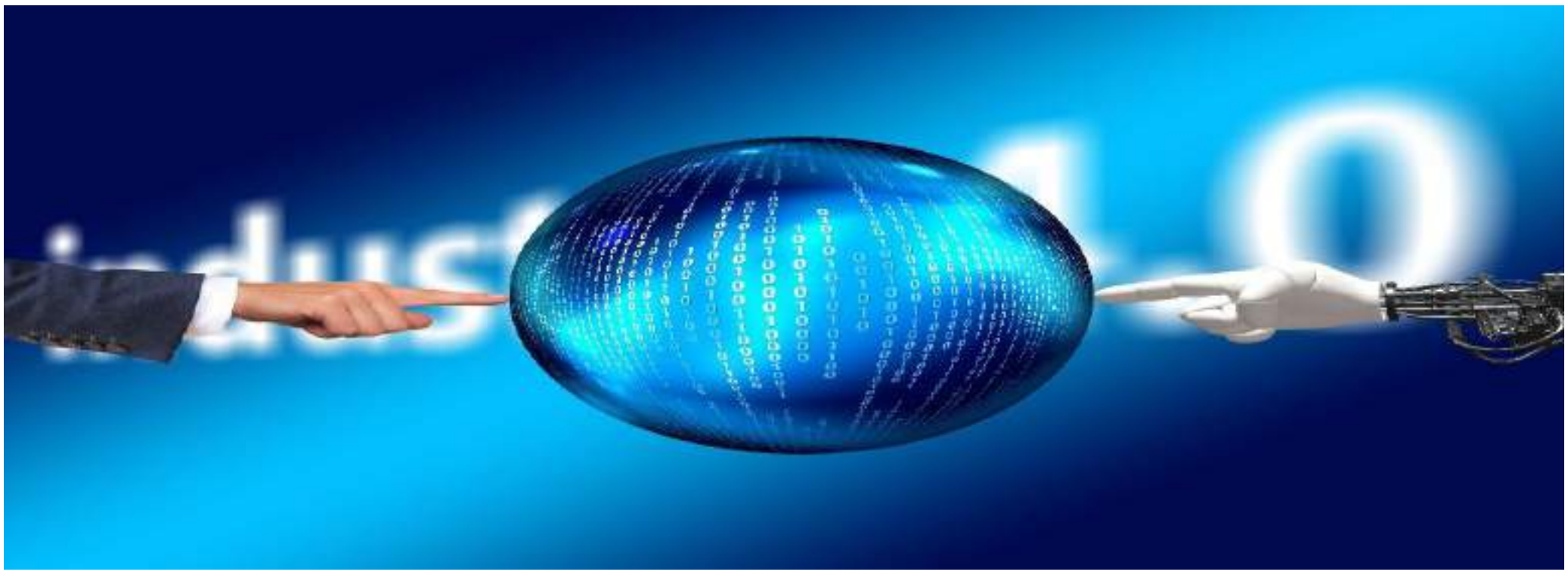
EDITOR'S MESSAGE

Dear Readers,

We take the immense pleasure to divulge the very first issue of our Bi-annual Newsletter, 'THE UTKRAANTI' which means 'THE EVOLUTION', a theme-based initiative by School of Commerce, Presidency University, Bengaluru. Each issue aims to upskill the knowledge of technological development in business processes with time. Change has been the only constant in the world of technology and businesses which upgrades its process will remain in the race. The chosen theme 'INDUSTRY 4.0 FOR THE FUTURE' is important in the current complex business world. We are delighted to share that we received articles from faculty and students. We would like to encourage academia and industry to join with us contributing articles and enrich our columns for next issue. We are extremely grateful to the contributors for sparing their valuable time. We hope that you will enjoy reading this issue.

Ms. Monica. S
Adjunct Faculty-SOC
Presidency University, Bengaluru

5th Generation Networks (5G), the Internet of Things (IoT) and Edge Computing are essential infrastructure enablers for Industry 4.0, that cover areas like autonomous vehicles, smart city grids, e-health, automated factories, mobile content streaming and data analytics. This marks a significant step on the journey to genuine digital transformation. Edge and 5G also help boost business apps by taking advantage of edge computing's strengths, such as low latency and bandwidth scalability.



INDUSTRY 4.0 IN AVIATION

Industry 4.0 is a concept based on the fusion between the digital and physical worlds, offering potential advantages in terms of flexibility, productivity, decreased expenses and improvement in quality.

Over the past 30 years, the airline industry has seen a number of changes, such as the increasing market share of low-cost carriers (LCCs). As the new wave of technological change and innovation emerges, the next 30 years will be more turbulent. Aviation sectors will optimize their customer experience by collecting, exchanging data and constantly acquiring knowledge. The greatest influence of these conveniences is that the world is moving towards digital transformation. And this digital transformation is called the industry 4.0

Aircraft manufacturing has been traditionally reluctant to the leaps in introduction of technology in the production process, even those considered game changers in other sectors. This is mainly due to the complexity and the strict safety assurance requirements involving the aeronautical sector but also there's a tremendous bias against taking any sort of risks, and innovation is seen as a risk in the industry.

In Aviation 4.0 cyber-physical systems are designed to assist humans' unkind or hazardous work, to take decisions and to complete tasks autonomously. Aviation industry is an industry where safety levels are so high and the margins for improvement are extremely tight, this upcoming Industry 4.0 era might imply more in safety improvements. This new era has the potential to improve key performance areas in air transport.

Cyber Components: Aircraft digital communications, weather/traffic forecast, flight planning/optimization algorithms, situation awareness, decision support software, and so on.

Physical components: Mobile aircraft; dynamic airspace traffic, weather, pollution, noise; pilots, air traffic controllers, airlines crew, and so on.

How it works in the Aviation Industry

1. Enhancing customer engagement: Aviation companies should use Industry 4.0 technologies as leverage to create a different customer experience and foster a customer-centric culture through service excellence and customer engagement.
2. Creating new products/services and platforms: Digital technologies can open new opportunities for innovation in the Aviation industry by not only reducing the time to design, develop, and commercialize new products, but also by providing insights and ideas from different stakeholders that feed back into the development cycle.
3. Making assets intelligent: Using Industry 4.0 technologies to make assets smarter and more self-aware can help Aviation companies improve utilization and efficiency.

Advantages of Aviation 4.0

The greater use of digital technologies and optimizing the customer experience by collecting, exchanging data and constantly acquiring knowledge, the passenger will increase close to 6 billion annual passengers by 2030, up from 3.7 billion today.

The digital revolution presents opportunities not only to increase productivity, but also to increase the safety of air transportation. Aeronautical maintenance outfits are increasingly using digital technologies, such as the Internet of Things. Connecting sensors to different parts of the plane creates a network to keep teams informed about each part's condition.

Augmented Reality makes the design process better and faster. It provides valuable assistance to engineers and designers who are working to increase the capacity of the aircraft while making it lighter and safer. Virtual Reality makes it possible to perfect the design of new production plants by anticipating the future difficulties and defects.

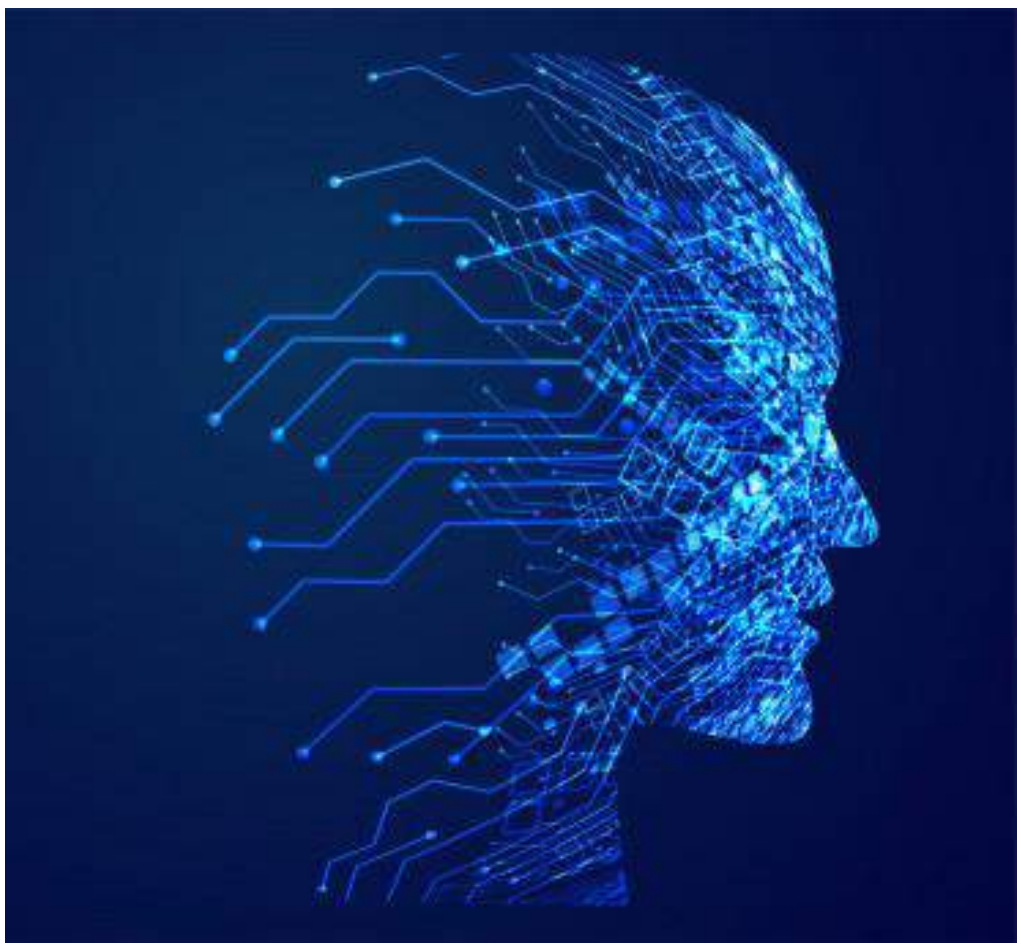
Digitization will accelerate in the coming years in order to adapt to the increasing demands of the aviation market. The aeronautical industry is ready to respond to this challenge by building on its culture of innovation, as well as responding to new competitors and start-ups who are up-setting traditional methods and reshaping the industry.

Dr. Lizy Kalaga
Managing Director
IIAAM FOUNDATION

"From income inequality to climate change, technology will play a critical role in finding solutions to many of the challenges our world faces today. This year's emerging technologies demonstrate the rapid pace of human innovation and offer a glimpse into what a sustainable, inclusive future will look like."

- Jeremy Jurgens, Chief Technology Officer, World Economic Forum

Divya Bharathi, 1 BBA 'E'



INDUSTRY 4.0 THE NEED FOR A DYNAMIC SHIFT IN ENGLISH COMMUNICATION

The fourth industrial revolution drives the automation system. in processes of economic activities. In this context, many employers are concerned about the gap that exists between youth skills and industry requirements. This necessitates the need for "essential human skills" often referred to as "soft skills". Nowadays, more multinational companies use English language as the main communication tool in conducting business in order to build strong interpersonal relations among teams in various countries.

With huge transformation taking place in various sectors throughout the world, a dynamic shift is observed in the way we communicate with others. The conventional ways of speaking, negotiating and influencing people are relevant only partially in a digital world of videoconference, teleconference etc.,

Around the world, companies are focusing on various enumerations and personalities with content that is suitable to what they expect and demand. They have also realized that direct outreach, focused social group conversations work effectively compared to standardized messages. Therefore, we find that individuals are required to be proficient in English communication. People have to equip themselves with the new-age technology which discloses fake news, and acquire the skill to ascertain the implications of social media, possess the ability to develop a concept and much more. The future workforce requires innovation in their communication.

However, we need to remember that though the Fourth Industrial Revolution is technology-driven, it doesn't demand machines over humans. Its objective is to govern an environment that flourishes with humans and machines. Indeed, machines will not replace humans in their emotional intelligence and empathetic behavior.

Therefore, people need to update with the current trends and acquire skills related to the present job requirements. Finally, it is important to note that effective communication plays a crucial role and is in high demand in the past, present and future too.

Dr. Venkata Ramani. Challa
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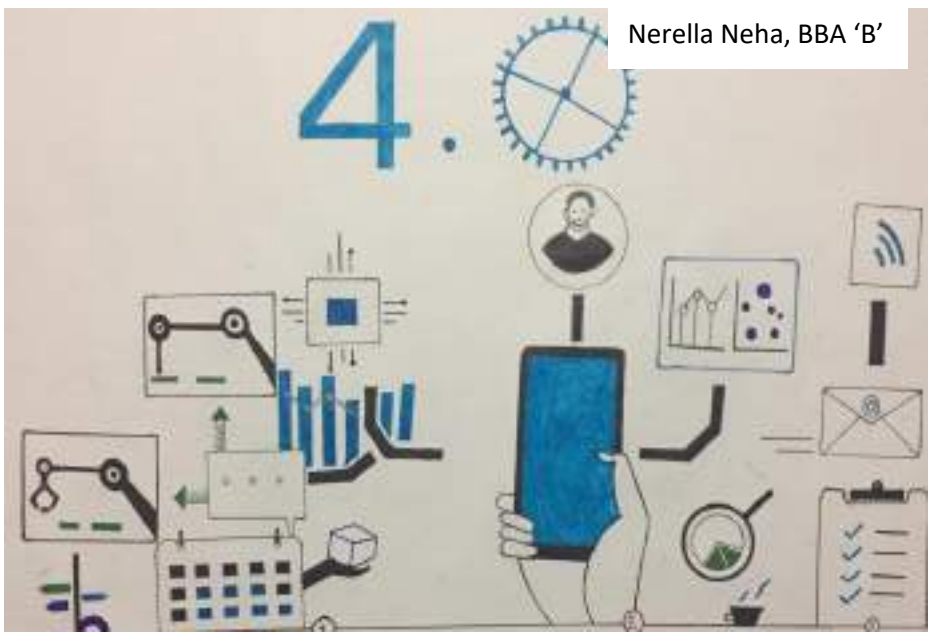
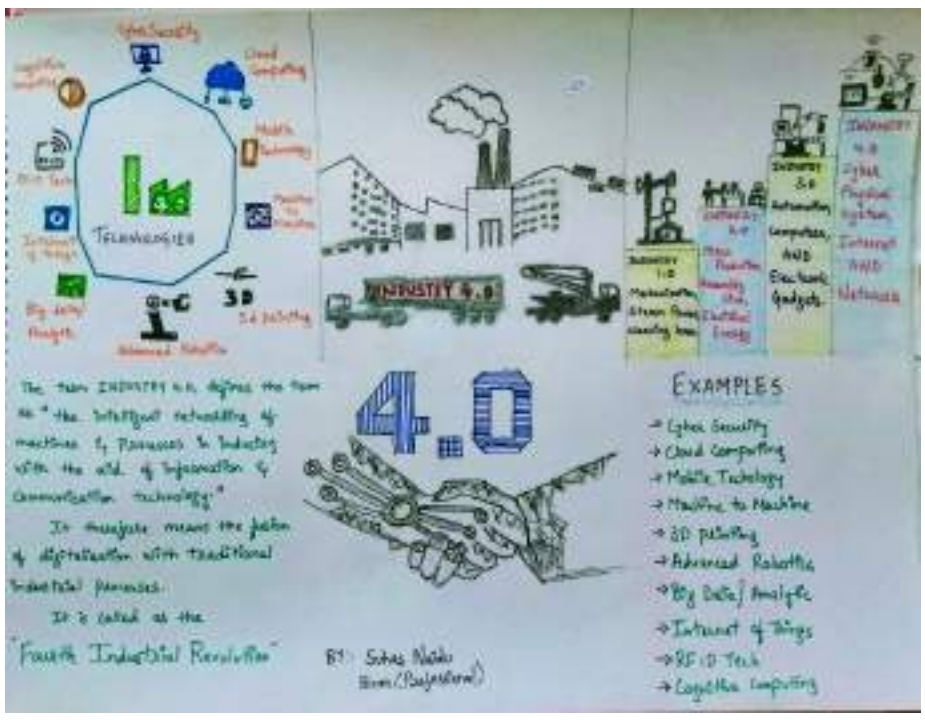


Nerella Neha, BBA 'B'



4.0 IN THE POST COVID-19 PARADIGM

The COVID-19 emergency has set off another conversation about globalization versus confinement. During the emergency it has been clear that organizations that have had the option to take choices nation by nation had a preferred position regarding creation adaptability just as from interest point of view. Additionally, the new heightening in China-US exchange strains has featured again the weakness of supply chains. This and the pandemic experience have returned the focus on store network changes, given the number of nations had to report lockdowns with restricted opportunity to obtain supply of basic products. Subsequently, we accept organizations and governments will progressively consider drawing some creation nearer to home or to their clients after the emergency. This speaks to a change in perspective in assembling from the cost centre throughout the most recent couple of many years which supported concentrated assembling centre points.

Another key end is that the assembling area will turn out to be more advanced in the following not many years. We anticipate an expanding centre around associated gadgets and their utilization of the Industrial Internet of Things (IIoT). Some key assembling centres in Asian business sectors, including China, South Korea and Japan, have kept up continuous creation regardless of restricted worker accessibility because of utilization of sensors and IIoT to screen creation. With interest in 5G leftover on target, IIoT appropriation should keep on rising. As of now, the criticism from mechanical organizations is that their clients are indicating solid interest in "far off everything." Ultimately social removing in industrial facilities implies more robotization hardware.

We additionally foresee a few different patterns, for example, localisation, arising advancements and savvy fabricating which are all talked about in the full form of the report.

INDUSTRY 4.0 AND ITS SUSTAINABILITY - A BIRDS-EYE VIEW.

The fourth industrial revolution known as Industry 4.0 is mainly based on Cyber-Physical Systems (CPS), Internet of Things (IoT) and Internet of Services (IoS) and other aspects that enhance the overall performances of industries especially the fully digital connectivity between machine to machine, machine to people, across industries and beyond. Nevertheless, any activity, development, or evolution on this planet should be made without affecting the environment including the normal life of humans, others, and their future generations. This article briefly highlights the views enlightened by experts on certain major consequences of sustainability due to the implementation of Industry 4.0. Many years back sustainable industrial policy made it very clear that the sustainability of the planet and future of industries are in the hands of governments and the leaders' well-balanced global approach focused on the environment, equity, and economy with integrity.

To adopt Industry 4.0, the need for upgraded state-of-the-art smart manufacturing facilities is vital though environmental sustainability and global warming are a major concern. Intergovernmental Panel on Climate Change (IPCC) urges the global community to limit global warming to 1.5 °C above pre-industrial levels with transformative systemic change integrated with sustainable development. This exhibits the need for Industries' commitment to green energy potentials and their concern towards climate change actions from the industrial sector. The use of innovative Industrial Internet of Things (IIoT) reduces energy requirements and the whole manufacturing unit shall be more effective. Industrial cyber-physical systems support the sustainable industrial system and eco-friendly business as well. The well-outlined Sensing, Smart and Sustainable product development (S3 - Product) based on the Integrated Product, Process, and Manufacturing System Development (IPPMD) reference model can be utilized to develop Cyber-Physical Production Systems (CPPSs) that helps to achieve better sustainability in certain functions of automotive industries.

Practicing Industry 4.0 with reactive novel manufacturing technology and industrial processes will lessen the burden on the environment and support to thrive in the healthy competition of the Indian industry. So, emphasis should be on revolutionary technologies that care the environment at its best, and hence the investments are vital and high for the development of innovative green technology though payback is assured. Experts believe that environmental sustainability and Industry 4.0 shall be achieved concurrently in India. But, as per the reports of the World Economic Forum, India is far behind among developed nations to adopt the requirements of Industry 4.0. Sustainability for Industry 4.0 can be achieved through rapid technology transfer from academia, optimizing the utilization of resources or reduction of resource consumption, reduce the generation of waste, best recycle, and reuse methods.

Sustainable Development Goals (SDG) of the United Nations (UN) defined the challenges required for the changeover from conventional technology into smart machines that help the industry in a long run. A blend of artificial intelligence, robotics, supply chain, distribution channels, a manufacturing process in industries affords a major environmental impact by reducing pollution, lessening the greenhouse gas effects, renewable energy consumption with growth in returns, instantaneously. Hence, Sustainable Development Goals may be accomplished through Industry 4.0 that reduces the ecological footprint of a product, process, or service.

Dr. Mani Ramakrishnan
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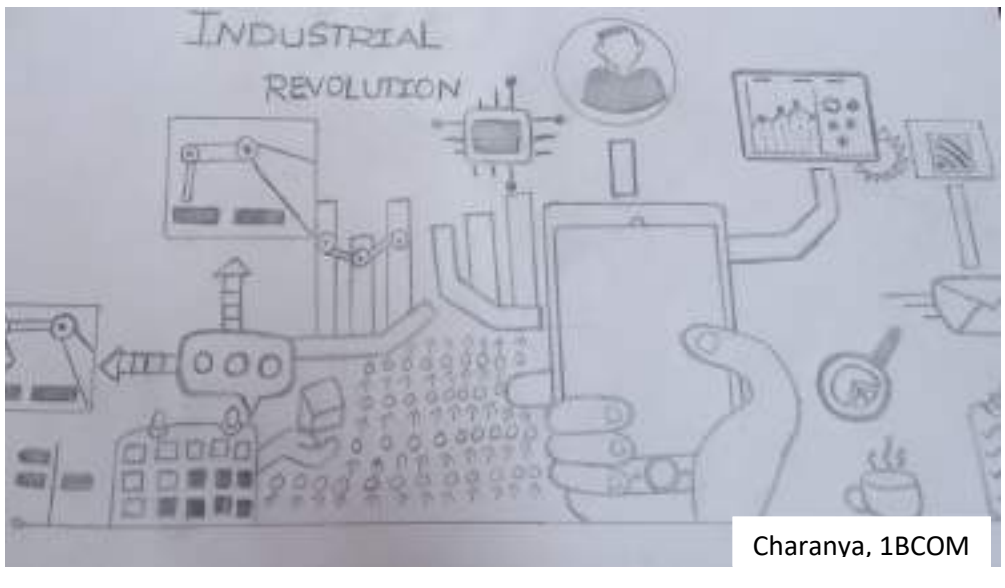


Charanya, 1BCOM

6 TRENDS FOR INDUSTRY 4.0

1. AI Projects Becoming Economically Successful
2. Machine Functionality Being Validated in the Digital World
3. Further Fusion of Shop Floor and Office Floor
4. Robots and Autonomous Systems Automating Production and Material Handling
5. More Opportunities for Engineers with "Domain+" Skills
6. Human Augmentation and Extended Reality is to be Initiated Widely.

WHY INDUSTRY 4.0?

Over the past years, there has been a necessity to change the normal devices to self-learning to enhance performance. Through industry 4.0, the interaction between humans, devices, and the environment is improved by constructing a smart manufacturing platform.

Key drivers of Industry 4.0

1.The Industrial Internet of things (IIOT)

The IIOT advocates for a uniform interconnection of objects which communicate through standard protocols. The IIOT has three main features; context, optimization, and omnipresence. Features in the IIOT components include smart sensors, intelligent planning, and machine control.

2. Cloud Based Manufacturing

The concept of cloud-based IT provides for a secure data storage and handling platform for industries. In Industry 4.0, there's a huge need for data sharing across companies in a faster and more convenient manner. Cloud systems intelligently link the cyber-physical systems for the interchanging of data by various stakeholders.

3. Smart Manufacturing

Smart manufacturing component employs computer integrated manufacturing systems with digital information technology. One aspect of this component includes the use of autonomous robots in manufacturing. additive manufacturing methods are essential to produce customized products using cheaper and faster means.

4. Internet of things and Data Management

The IoT calls for networking and the digitalization of manufacturing. Analysis, control, communication and networking of manufacturing systems should be digitalized to reduce the human effort and more effective. Data recording and analysis allows for a firm to determine the threats and opportunities depending on the performance of the firm.

Dr. Vishal Shukla
Associate Professor-SOC
Presidency University, Bengaluru

INDUSTRIAL GROWTH PATTERN IN INDIA - 4 PHASES

First Phase (1951-65): Strong Industrial Base

The First phase of industrial growth consists of the three plan periods which had built a strong industrial base in India.

Second Phase (1965-80): Deceleration and Retrogression

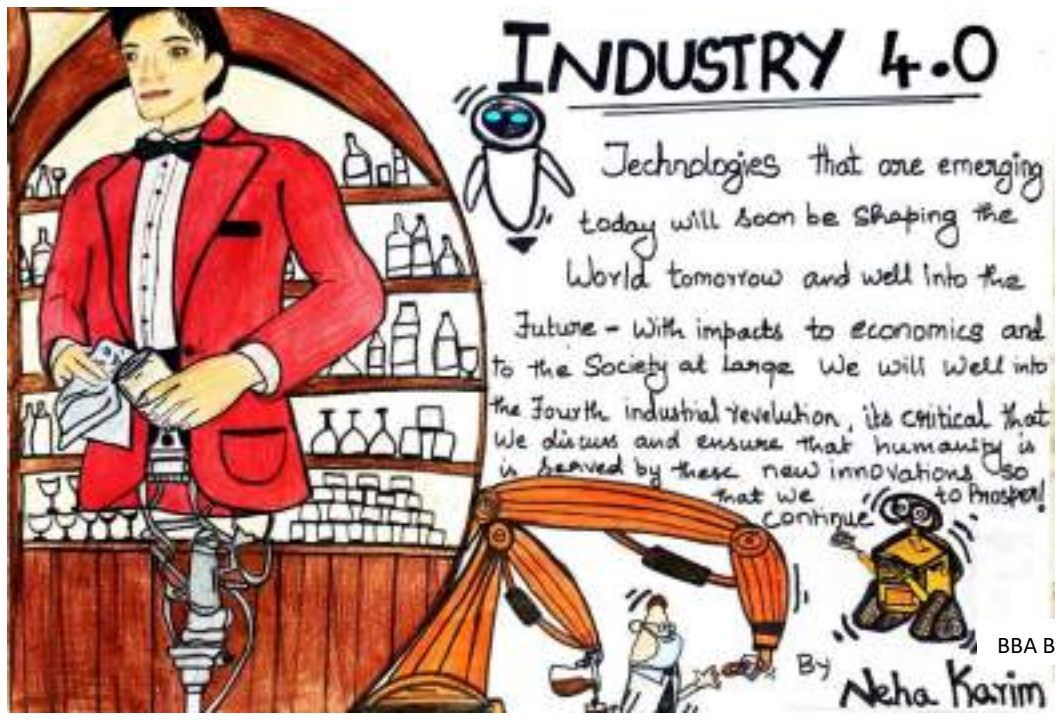
The second phase of industrial growth covers the period of three Ad-hoc Annual plans, Fourth Plan and Fifth Plan.

Third Phase: Industrial Recovery in Eighties (1981 to 1991)

The third phase of industrial growth covers the period of eighties consisting of both sixth and seventh plan. This period of eighties experienced industrial recovery.

Fourth Phase: Industrial Retrogression followed by an Upturn and Downturn Nineties (1991-92 to 1997-98)

The Fourth phase of industrial growth covers the early part of nineties, i.e., from 1991-92 to 1997-98. This short period experienced a sharp industrial retrogression followed by an immediate upturn in the industrial growth of the country.



INDUSTRY 4.0

Technology is driving change across all areas of society. Not only increasingly use it , even rely on it in our personal lives. We also find our workplaces digitally evolving with more and more processes undertaken using technology. This change is named 4th industrial revolution.

Industry 4.0 indicates many tasks which were once performed by humans, now being automated. The growing trend towards automation and data exchange in technology and processes within the manufacturing industry, including; Internet of things (IoT), Industrial internet of things (IIoT), Cyber-physical systems (CPS), Smart manufacture, smart factories, cloud computing, cognitive computing, Artificial Intelligence.

It is a vision and concept in motion, with reference architectures, standardization and even definitions in flux.

DESIGN PRINCIPLES

There are four design principles identified;

1 INTERCONNECTION: The devices, sensors, machines and people are interconnected to communicate with each other via internet of things.

2 INFORMATION TRANSPARENCY: The transparency afforded by industry 4.0 technology provides operators with comprehensive information to inform decisions. Interconnectivity allows to collect more data and information from all points which leads to increase functionality.

3 TECHNICAL ASSISTANCE: Technology of systems assist humans in decision making and problem solving which helps people with difficult tasks.

4 DECENTRALISATION DECISIONS: The ability of cyber physical systems to make decisions on their own and to perform their tasks as autonomously as possible.

DATA AND OPTIMIZATION:

At the very core industry 4.0 includes the partial transfer of autonomy and autonomous decisions to cyber-physical systems and machines, leveraging information systems.

The cyber-physical systems are the basis and enable new capabilities in areas such as product design, remote control, services and diagnosis, proactive and productive maintenance, structural health, planning, innovation capability, real time applications and many more.

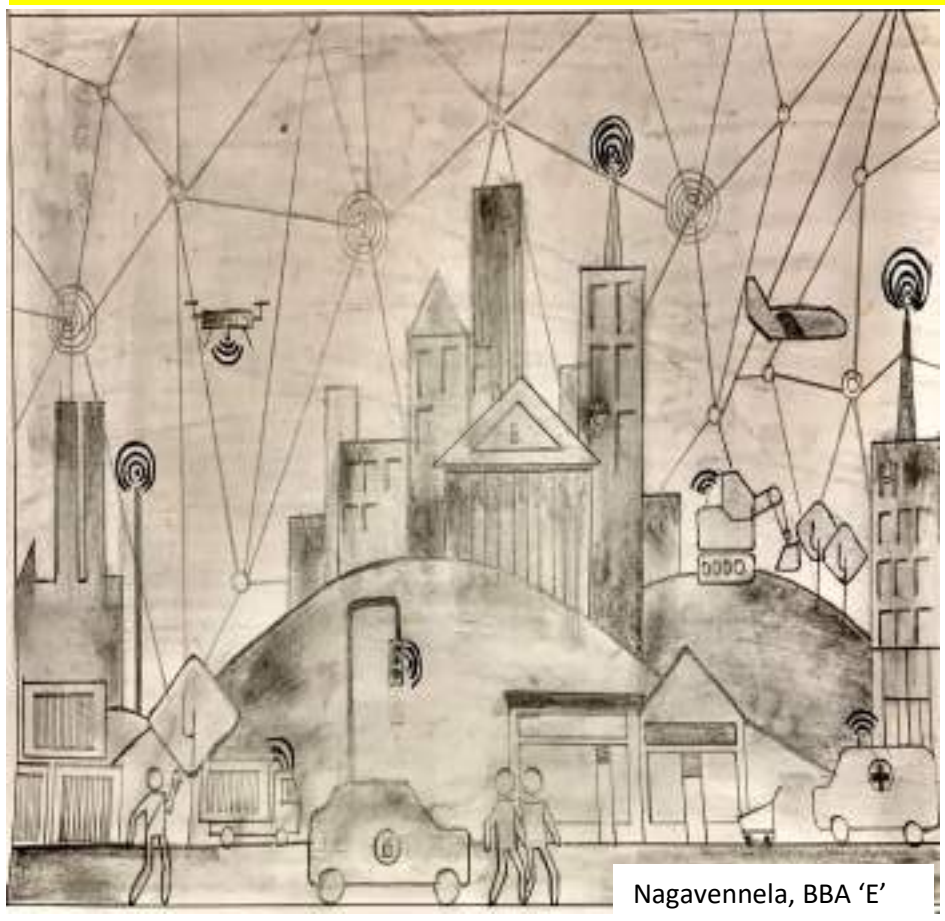
The new capabilities of industry 4.0 lead to 'smart anything' phenomena, from smart energy, smart logistics to smart facilities, smart buildings, smart plants, smart factories, smart cities and so on.

Industry 4.0 builds up on data models and data mapping. All the technologies in industry 4.0 need to be seen in that perspective where integration is key.

CONCLUSION

The realisation of highly flexible, complex, labour divided and geographically distributed production is one of the main topics in German initiative 'Industry 4.0'. In order to achieve this goal, new ways of interconnecting industrial facilities are needed, for instance by using innovative wireless technologies. In addition to this, the efficiency and flexibility of control systems can be increased significantly. Results the industry promises to change the way business is done.

Rishitha
BBA 'A'



Nagavennela, BBA 'E'

Industry 4.0 is more than a flamboyant buzzword. It is the current trend of automation and data exchange in manufacturing technology. It's the ultimate vector of development for the manufacturing industry. This new confluence of emerging technologies can completely reshape the manufacturing act — from product design and engineering to distribution and after-service. By 2025, Industry 4.0 could bring out manufacturers and suppliers an estimated $3.7 trillion in value creation potential. Today, however, a mere 30% of manufacturers are already realizing value from their expenditure. For most, the race to digitization has just begun. If an organization is currently at the evaluation stage, too, it is advice to take a close look at the fourth Industrial Revolution.

The fourth Industrial Revolution, powered by IoT, AI, ML, and Big Data Analytics, is full speed ahead because the changes is much needed since the manufacturing industry is undergoing great pressure on several fronts, such as growing need for higher yield with leaner processes, also consumers demand for hyper- personalised product and experiences, and an overall digital disturbed upending markets at a fast pace. Thus, Industry 4.0 solutions are emerging as responses to all these challenges. Unplanned equipment downtime and sudden losses are well-familiar opponent to lean manufacturing. The new generation of prognostic maintenance solutions, powered by state-of-the-art machine learning algorithms, can identify the early signs of failure and even anticipate malfunctions before those occur. Such solutions can be plugged to your central control panel and generate alerts whenever the slightest difference in performance are recorded. Furthermore, they can estimate the ideal maintenance schedule for critical equipment, so that you can order all the spare parts in beforehand, dispatch the on-site technician and minimize the downtime window to a bare minimum. For example, Rolls-Royce was one of the first companies to locate a complete servitization offering to cement their spot as a leading engine supplier. With the Total Care service package, the company rents its engines to airlines for a monthly fee that also covers all maintenance work. To magnify their profit margins, Rolls-Royce collects sensor data from engines and uses predictive algorithms to estimate the optimal maintenance schedule. This way, they bring added-value to the customer without stretching their operational costs.

Digital twinning is the central part of the fourth Industrial Revolution. In essence, a twin is a cloud-based representation of a product/asset (or one of its components) that can be leveraged to run highly accurate simulations. Powered by real-time data collected from sensors, predictive analytics and ML algorithms, digital twins are handy assets for conducting various pilots such as stress-test the performance of the systems critical elements or validate certain engineering assumptions — all without committing to costly physical prototypes. Also, digital twins can be created for all the equipment at your plant so that you could, virtually test, optimize and fine-tune the performance of every asset before applying any changes on the ground, identify production bottlenecks and potential failures before any operation begins, continuously collect new data for further process optimization.

Aishwarya Vedula
BBA C

INDUSTRY4.0

As the world is evolving around the technology and making immense progress, the technology is within itself wrapping around, making revolutionary noises. What better way than industries taking advantage in various fields like Cyber Physical System, Internet of Things, Artificial Intelligence, Virtualization, Big Data, Cloud Computing, and Blockchain.

It is a known fact that one doesn't just become an Entrepreneur overnight. It takes hard work, critical decision making and the task of choosing people to build a team. It is best in the interest for the firm to train the employees to have steady pace with the vigorous change that has already begun and continue to do so, amidst the Industry4.0 and also, observing the moves of their competitors and designing a good strategy that complements the current scenario, given the fact that it carries advantages as well as disadvantages.

Getting into the technical aspect, it should be known that the physical and cyber technologies including AI, IOT, Robotics, Automation, Big Data, Data Analytics, Quantum Computing, Cheap Battery operated high-end and Small Sensors integrate themselves into production and business operations to bring strength to the supply chain and improve productivity and efficiency. The growth in industry4.0 will increase the employment demand who are good at IT technologies and software development including supply chain coordinators, 3D designers, and modeling specialists, etc. On the other hand, there will be a decrease in the low-skilled employees responsible for repetitive simple duties. This would create changes in how low skilled employees work, making them get trained more to handle complex tasks.
It's not only about having an advanced technology. To make the firm sustainable and flow with growth and profits, the technology implemented should be moulded for human-centric orientation, for its told that "People don't buy what you do, but they buy why you do it." This would make more sense while it's at it, happening loud and proving again and again that no matter how advance a firm gets with respect to technology, having a good vision is important and in the long run, Industry4.0 would be able to make difference for the firm, it's people and vision that it holds, after all.

Vaishnavi MR
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Articles invited for next issue on the same theme at –
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