

Industrial Revolution 4.0: Challenges and Opportunities for Generation Z



INDUSTRIAL 1.0

**1784 Introduction of
mechanical
production facilities
with the help of water
and steam power**

Steam engine

INDUSTRIAL 2.0

**1870
Manufacturing
with the help of
electricity
SERVICES**

**Mass Production
Standard
products in
limited variety
First Assembly
Line**

INDUSTRIAL 3.0

**1969 Use of
electronic and IT
systems that
further automate
production
LIENTS**

**Tendency for
product
customization
JIT, ERP, OPT,
Six Sigma Lean
/Agile Continuous
Improvement**

INDUSTRIAL 4.0

**Use of cyber
physical systems
AM**

**Co-creation, Co-
development,
Co-production,
CODP Internet of
Things, Big Data,
Robots Smart
Factories Smart
Cities**

Industrial Revolution 4.0



Industry 4.0 is used interchangeably with the fourth industrial revolution and represents a new stage in the organization and control of the industrial value chain

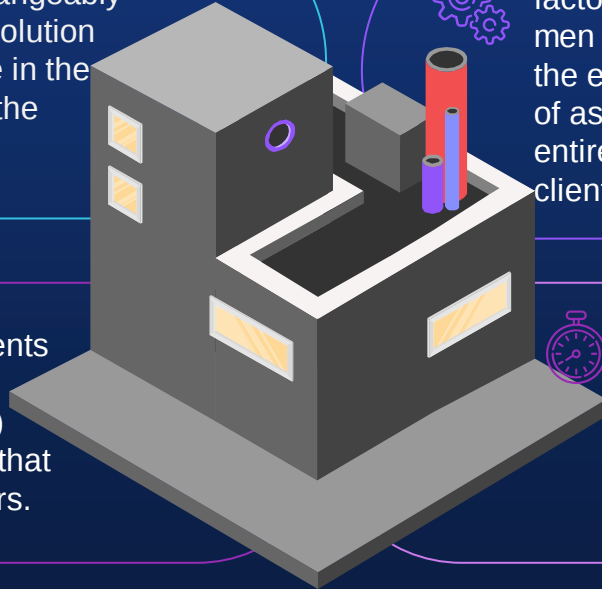


The Industry 4.0 depends on the idea of smart factory, where the machines are coordinated with men through cyber-physical system (CPS). At the end of the day, Industry 4.0 is another degree of association that oversees and controls the entire value chain of customized items to fulfill client needs.

The Industrial Revolution 4.0 represents the combination of cyber-physical systems, the Internet of Things (IOT) & a system that will create new jobs that may not be relevant to current careers.



Digitalization is the main component in Industry 4.0 in light of the fact that it permits to interface man and innovation





The Main Challenges Of 4.0

Security

—● The interconnection of systems is a key feature in industrial digitalization, which also, however, represents a security challenge in terms of data protection.

Testability

—● Each new system or an adjustment in a system should be tried in an industry setting before arrangement with the goal that its security and dependable reaction in different circumstances can be confirmed.

Using elements of artificial intelligence

—● A theme that is highly talked about corresponding to Industry 4.0 is the use of artificial intelligence for self-ruling control, just as for motivations behind insightful and prescient up keep, control optimization and dynamic cycles and, at last, for increasing security.

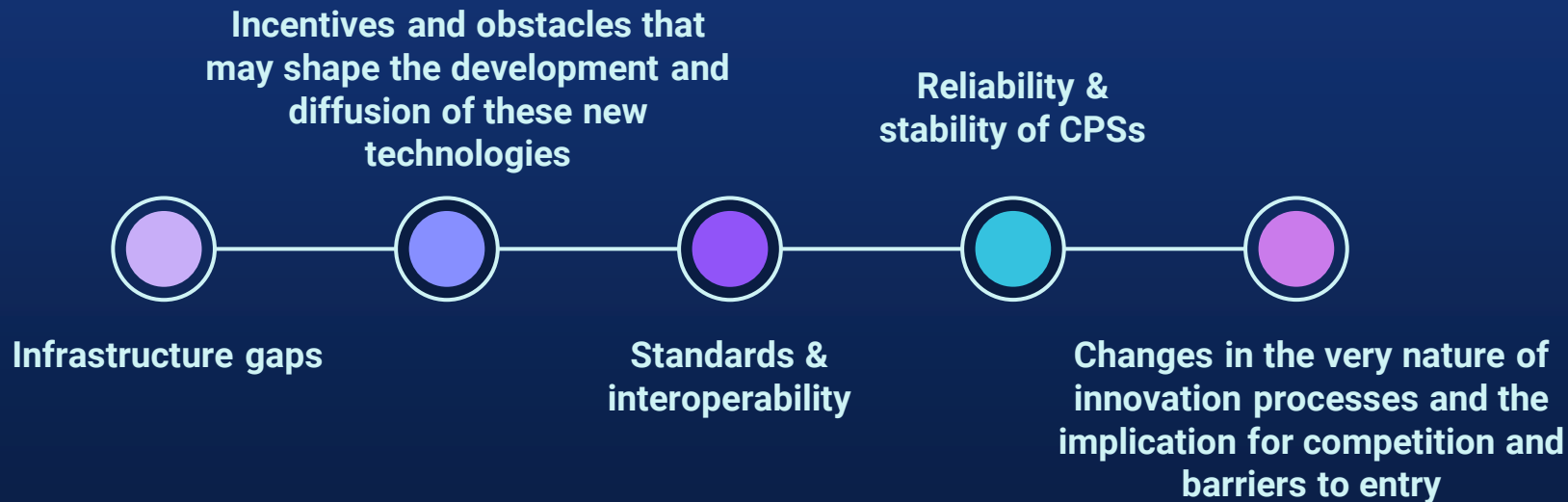
Legislation

—● The industrial automation sector faces stricter and stricter legal regulations relating to the protection of human health and the environment.





The Others Challenges Of 4.0



The Opportunities Of 4.0



Big Data

This digital revolution is marked by technology that takes advantage of Big Data to nurture automatic learning systems.



Autonomous Robots

A collaborative robot works in direct cooperation with humans inside a defined workspace, in both industrial & non-industrial environments



Cloud Computing

Cloud-based platforms can be easily adapted and changed quickly as business needs and technology offerings evolve.



Cyber Security

Cyber security is the practice of protecting systems, networks, and programs from digital attacks



Augmented Reality

Augmented reality (AR) is technology that takes a user's view of the real world, and superimposes it with computer generated sound, video, graphics, or location data, providing a composite view

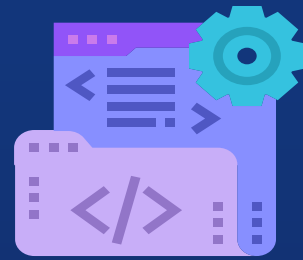


Additive Manufacturing

Additive manufacturing allows for the direct conversion of design construction files into fully functional objects.



Opportunities Of 4.0



01

Economic gains, such as increased revenues because of lower transaction and transportation costs

02

More reliable and consistent productivity and output and better quality products

03

Energy-efficient and environmentally sustainable production and systems

04

Energy-efficient and environmentally sustainable production and systems

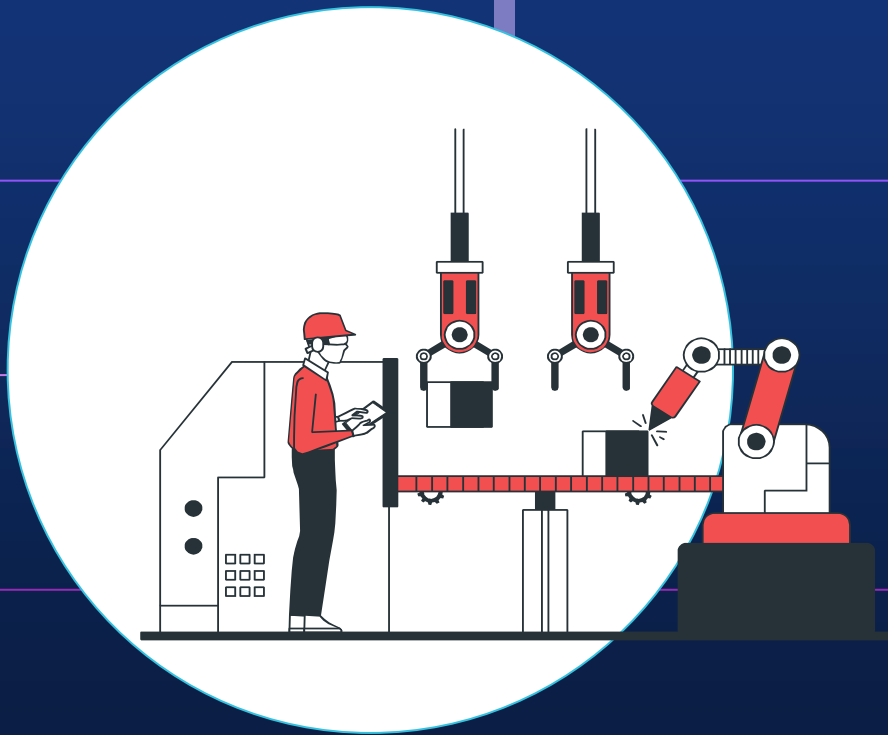
05

Changes in the organization of work, with more remote, flexible and on-demand work becoming a standard

06

Shift to mass customization with an increased role for SMEs

Opportunities for Manufacturing in terms of Industry 4.0



Industry 4.0 will benefit as much as possible from programming assets in the field of asset arranging. This means improving projects, better prescient calculations that will create increasingly more quality dissects. This will permit the creation cycle to be much more upgraded, cost-effective and simple to oversee, control and maintain

For example 3D printing technology largely displaces conventional production. This will lead to the need for a new design and a complete new organization of the production performance. The digital transformation to Industry 4.0 brings new opportunities for more flexible customer integration



Opportunities Of 4.0

In the future, technological innovation will also lead to a supply-side miracle, with long-term gains in efficiency and productivity. Transportation and communication costs will drop, logistics and global supply chains will become more effective, and the cost of trade will diminish, all of which will open new markets and drive economic growth.



Opportunities Of The 4IR For Education



Any education plan for the 4IR requires building on the 3IR's development of in-person instruction and various asynchronous educational resources. Education in the 4IR (HE 4.0) is a complex, dialectical, and exciting opportunity that can potentially transform society for the better. The 4IR has different implications for many other sectors of life. As such, it holds both opportunities and challenges for education. Through the use of different components of the 4IR, such as IOT, 3D printing, quantum computing, and AI, the education sector could be transformed completely to offer solutions to new challenges.



The 4IR and the development of biotechnology and AI fundamentally challenge assumptions about humans and their relationship with the natural world. 4IR liberal arts program should be developed to account for the social dislocations from the 4IR. The 4IR curriculum, in general, should respond to political and social tensions resulting from the rapid pace of technological advancement.



Advantages of Implementing Industry 4.0

Optimization

Optimization will play a major role in keeping high end equipment maintained efficiently by having the right resources in the right place at the right time.

Customization

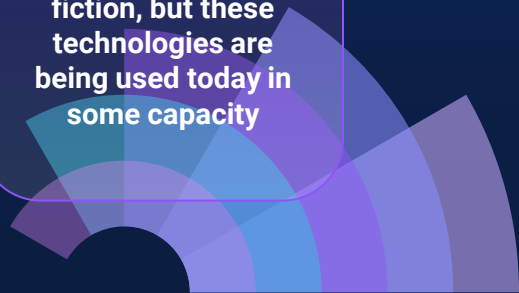
Communication between the customer and manufacturer will take place directly cutting out the need for manufacturers to communicate between departments internally or external providers

Reduce Costs

Implementing smart manufacturing may have a large initial up-front cost, but if setup correctly can have a positive impact on your line with the implementation of automation, , data management.

Technology

Self-driving cars and augmented reality seem like science fiction, but these technologies are being used today in some capacity



Opportunities Of 4.0 impact on people



The Fourth Industrial Revolution, finally, will change not only what we do but also who we are. It will affect our identity and all the issues associated with it: our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, and how we develop our careers, cultivate our skills, meet people, and nurture relationships. It is already changing our health and leading to a “quantified” self, and sooner than we think it may lead to human augmentation. The list is endless because it is bound only by our imagination.



Gen Z: The Workforce of the Future



The significant effect of past industrial revolutions on our societies is undeniable, but none have had such a dramatic impact as the Fourth Industrial Revolution (Industry 4.0/the 4IR). The rapid pace at which the 4IR is coming about has resulted in a huge difference in skill sets between professionals in different generations. Considering the generational crossover in many workplaces, this must be effectively addressed through education, recruitment, learning and development in order to sustain a strong economy.



Generation Z, or Gen Z, is the demographic cohort after the 'millennials' (Generation Y), who have been in the limelight in recent decades. According to Bloomberg, 2019 will see Gen-Z surpass millennials as the largest generation. Expected to comprise more than a third of the global population, Gen Z will also become the most populous generation this year, and while Gen Zers and millennials enjoy many similarities, there are also some fair differences between them and their predecessors.



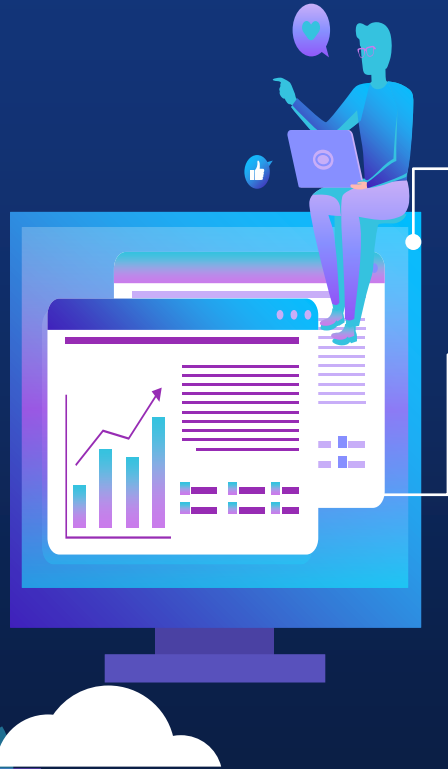
Clearly, there is a need to understand Gen Z's way of thinking, expectations, and ambitions for the future. Various research has indicated that for Gen Z, an education is often seen as an end to a long-term career and ultimately, financial stability. In fact, more than 80% of 2017 graduates, the first Gen Z graduating class, chose their university major with job availability in mind, with the most common careers being medicine/healthcare (39%), science (20%), biology/biotechnology (18%), and business/corporate (17%). This also a hard-working group of individuals; a majority are willing to relocate to another state for a job offer, and more than half are willing to work evenings and weekends.

CONCLUSION

The industrial Revolution 4.0(4IR) is the latest industrial revolution, with an increased focus on ICT, technological advancement, innovation, and creativity. The characteristics of the 4IR were identified in this, namely big data, AI, robotics, ICT, 3D printing, and quantum computing. The implications of the 4IR for education were considered in this article; in essence, a new digital approach to teaching and learning, R&D, and skills development is required. A number of challenges were identified in adapting to the 4IR, including pedagogical adaptation, teacher development, and increased funding for and investment in resources and infrastructure for technological advancement. The 4IR offers, among others, a greater opportunity for participation in the digital economy and collaborative partnerships.



REFLECTION



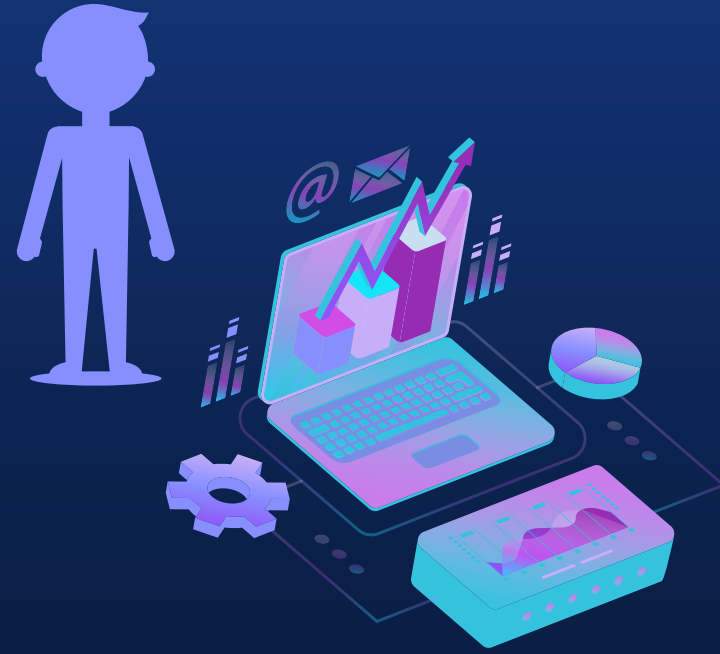
Far from being an abstract and useless field, Science and technology thinking subject is among the most practical courses of study. Taking this course imparts skills that will be useful not only in any career but also in my personal life. From this subject, I figure out how to recognize great thinking from endeavors to control assessments, to develop sound complex contentions, and to assess others' thinking.

Achieving my goal is a long journey since I am as yet an undergraduate student however every long journey starts with a step. Like How to make an animation video, how to find a problem, how to collaborate with the team member and communication with user and how to research to do something.

And also I grow great interpretive, near, factious, scientific, and engaging composing abilities that will permit me to convey my thoughts in an unmistakable and incredible manner. Careers and occupations are just a single piece of the remainder of our life. The study of Science and technology not only influences how I think but also my improvement as a good human being

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Thank you



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