

EXPLORING THE OPPORTUNITIES FOR FUTURE WORK: IMPERATIVES FOR INNOVATION- RESPONSE TO FOURTH INDUSTRIAL REVOLUTION: A STUDY

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Abstract: *The fourth Industrial Revolution is shaping the way we learn and think. Learning has a significant role in the future work place looking closely at the future of work, it has been found that, things are changing quickly and many people do not see or understand these changes. There is a need to clearly explain the changes ahead while offering guidelines to prepare for the future. The changes in the spatial organization of work, particularly when taken in conjunction with the temporal dispersal, seem likely to have major implications for the role of work for the individual and society. As with the temporal organization of work, our individual lives are made and lived through the spatial organization of work. The robust organizations and the individuals who are in high demand understand that the future work is learning-more specifically, the future work is learning faster than the competitions. We are moving from the third towards the fourth Industrial Revolution. The first Industrial revolution was powered by the steam engine, the second was powered by electrification and marked by mass production and the third was enabled by computerization. It is remarkable for the automation and physical labor and notable for the loss of many manufacturing jobs. The fourth Industrial revolution is extraordinary for the automation of cognitive work along with the merging of digital, Physical and biological systems like Artificial Intelligence, Internet of things. Although each industrial revolution is often considered a separate event, together they can be better understood as a series of events building upon innovations of the previous revolution and leading to more advanced forms of production. This article discusses the major features of the four industrial revolutions, the opportunities of the fourth industrial revolution and the challenges of Industrial Revolution.*

Key Words: *Fourth Industrial Revolution, computerization, manufacturing jobs.*

1. INTRODUCTION:

Education in ancient ages was limited to few privileged people, largely influenced by religion and governed by informal methods of teaching. In the Renaissance age and after the Industrial Revolution, the concept of education changed, focusing more on development of the people and proving them with basic learning and useful skills. With education becoming the primary responsibility of the state and government, enrollments across all ages and sections of the society grew rapidly.

In the next stage with the advent of printing presses and the establishment of the universities, the process of teaching evolved and the concept of formal higher education focused on both academics and research developed. Some of the major universities such as Yale, Harvard, Columbia University and Princeton were set up in the US during this time. Many new age scholars developed practical learning to prepare students to manage their social, economic, and political affairs efficiently rather than focus on religious aspects of the Greek and Latin classics.

In the new millennium, technology has impacted almost every aspect of life today, and education is no exception. Technology has provided a platform that has greatly expanded access to education and changed the ways of learning. The traditional setting of a lecture hall has been transformed with the integration of new tools and Technologies in teaching that help students learn virtually and deliver targeted information to them effectively. There have been continuous changes in the education system all over the world, especially at the Higher education level. These changes are reflected in the curriculum reforms, adoption of innovative teaching and learning methods, the development transformation which is caused by the Industrial Revolutions. The landscape for education has changed across ages.

1.1 EDUCATION 4.0:

Evolution is taking place at an accelerated pace as change is now measured in years and not centuries. Today, we are again at the cusp of a change where the learner will be at the center of the future eco-system. Education 4.0 empowers learners to structure their learning points. It is characterized by personalization of the learning experience, where the learner has complete flexibility to be the architect of his or her future and has the freedom to aspire, approach,

and achieve personal goals by choice. Increased innovation in teaching methods, demand for an improved higher education system and availability of better learning opportunities supported by technology have been the major impetus for this shift towards personalization. Technology has made personalized learning both approachable and dynamic. Without educational technology ranging from digital content difficult and resource intensive to implement personalized learning.

1.2 LEAP FROGGING TO EDUCATION 4.0:

Education 4.0 empowers learners structure their learning Paths characterized by personalization of the learning experience. There will be increased innovation in teaching methods, and availability of better learning opportunities supported by technology. The higher education system in Education 4.0 will focus on the learner, supported by technology, in person guidance and Industry relevant content to meet the learners individual learning methods. This transition from one paradigm to the other is uneven, and how fast universities have critical decision to make in capturing new opportunities. It is crucial for universities to focus on enriching student experience, aligning to individual needs across the student life cycle, focusing on student employability and acting as hub for research.

1.3 IMPACT OF THE INDUSTRIAL REOLUTION 4.0:

Over the last two decades, technological developments have led to a blurring of the line between working time and private time. Interestingly, spatial concerns continue to actively configurative labor relations from the local to the Global. Reconfiguration of work is accompanied by changing communications practices. This virtual connectivity can have important effects on the logic of collective action and help overcome requirements to meet physically. It can enhance the associated opportunities of those who might otherwise struggle to connect, including micro enterprises, women, and those on Non- standard contacts.

1.4 INFORMATION AND COMMUNICATION TECHNOLOGIES:

Information and communication technologies it have changed the work in the organizations. With this, there is less clarity about when one is at work and when not. There are disadvantages, such as being evaluated against performance rather than mere presence at work, but these may be offset by the requirement to be available to work at all hours. In this way, the frontier between work and non work is now more porous, compromising the capacity of the Individual to protect genuinely non work time. Technology can better achieve 30-75% of existing work tasks done by human beings. More importantly, it means 100 % of work will change. The change requires to think differently about these both, how work done and how to prepare for that work education.

2. STATEMENT OF THE PROBLEM:

In 21st century it is mentioned that the focus on educational workforce preparation was myopically on learning the right skills and to master the tools to secure a good job. What is most striking about the fourth Industrial Revolution is the ability of technology to address mentally routine or predictable tasks.

3. REVIEW OF LITERATURE:

Given the speed of change driven by exponentially growing technological capabilities, codify and transfer model of workforce preparation no longer works. While technology is creating faster change styles, advancement in health and medicine means we are living longer and, thus, through many more change cycles. As a result, we must focus on preparing people to learn and adapt for their entire, much longer, lives. Thus is why, it is said that future of work is learning. In today's hyper collaborative organizations, the often overlooked but significant sources of insight are the myriad of relationship networks that employees foster to acquire knowledge, share information, innovate and creative value at work. Thus, in organization's cost of capital, these collaborative networks are central to how work actually gets done, business grow and people succeed.

A couple of decades ago, when a person was hired for a job, he /she was likely to be hired based on past skills and experience, and the person probably settled in to that job adapting his/ her experience to the new Industries, a person is hired to tackle problems not yet known or even fully understood. Amazon Web services reassess their jobs and skills in 24 months increments. It famously hires for cultural fit and learning agility because the company knows the performance of the employees in handling change, uncertainty, failure, and problem framing and solving.

If the work is not carried out by groups of people at the same time or in the same place, if it is performed remotely or virtually, if it is not the subject of any enduring employment relationship, then it is not likely to play the social role it once had, or not to do so in the same manner (Dud wick 2013).

With the temporal organization of work, our individual lives are made and lived through the spatial organization of work (Helford, 2008).

The Technological advancements to expand choice, to balance work and care responsibilities, and advance equality between men and women (Ryder, 2017)

The application of network dimension to different groups of employees within an organization, corporate social responsibility, talent practices and organizational effectiveness can be enhanced. (Ebelle-Ebanda & Newman, 2018).

4. ANALYSIS & DISCUSSION:

The Organizations culture and capacity makes it to force the focus from the outputs to inputs. In accelerated change, an organization must continuously reinvent itself. To do so, it must have a stabilizing and guiding operating system. In other words, culture must also have ever expanding capabilities. By focusing the capacity on the workforce they are more prepared to adapt and thrive. Products and services are just evidence of capacity and outcome of learning.

4.1 INNOVATION BEGINS WITH LEARNING:

In the interdependent and competitive global economy, one must find competitive advantage based on the features and capability rather than quality alone. Delivering a solution that is unique to each customer is becoming more important than delivering a standard solution with virtually perfect quality, instead of managing the growth by offering Innovative solutions to customers. The quality of innovation becomes a differentiating factor, which implies that how well each business is equipped to innovate and offer high- volume customized solutions. Thus, the Businesses will be moving away from quality improvement to Innovation Improvement.

Innovation has become a global issue and is being addressed by national governments. In the European countries there must have a national policy on Innovation, create an infrastructure for innovation, and establish measures for Innovation to grow the economy and maintain the improved standard of living. India also formed the knowledge commission to establish its Innovation national policy. The US passed an Innovation Act in 2005 to promote innovation in manufacturing. In other words, we are in the Innovation age, and this offers a great opportunity for quality professionals to migrate from improvement to Innovation. One way to understand the difference is that improvement may be a one dimensional change, while Innovation is a multi- dimensional change. Innovation is for everyone, and can be adopted in everything.

4.2 HUMAN CAPABILITIES-UNTAPPED OPPORTUNITY:

As machines can do things that are mentally routine or predictable better than humans, we should refocus humans on doing unique things that are uniquely human. We are in an inflection point right now where we need to rebalance our relationship with tools. Humans are better at things like social and emotional intelligence, empathy, creativity, communication and collaboration. A number of years ago, the institute for the future of work identified the ten skills for 2020 and none of them were technology skills as we speak of them today. Similarly, the world Economic Forum regularly posts the future skills list. It also identifies uniquely human skills.

Companies can benefit from optimizing collaboration between humans and artificial intelligence. Five principles can help them to do so. Reimagining business processes, embrace experimentation/ employee involvement: actively direct AI strategy: responsibility collect data: and redesign work to incorporate AI and cultivate related employee skills. A survey of 1075 companies in 12 countries found that more of these principles companies adopted, the better their AI initiatives performed in terms of speed, cost savings, revenues, or other operational measures.

Traditionally, HR data has focused on human capital aspects, such as employee demographics, qualifications, experience, and skills and was always measured at just an individual level. Social capital is made up of the informal relationships that employees develop within their Team, across the organization and with external parties, during the course of their work activities. In fact, it is through these relationships and networks that much of their work actually gets done. In today's, networked team organizations, social capital matters more than ever before. In addition to being measured at an individual level, it can also be examined for Teams and departments. Ebelle & Newman (2018) argued that organizations manifest themselves in six different types of relationship networks.

- Work Network: with whom employees exchange information as part of their daily work routines.
- Innovative network: with whom employees collaborate or kick around new ideas.
- Social Network: with whom employees' "check in inside" and outside the office to find out what is going on.
- Learning Network: with whom employees work to improve existing or advice on work related problems.
- Expertise Network: To whom employees turn for expertise or advice on work related problems.
- The strategic network: To whom employees go for advice about their future.

Universities could focus on building unrivalled student experience through flexible program structures that enable lifelong learning and provide learners with multiple entry and exit options. They should have to provide learners with predictable schedules and opportunities for collaborative learning. Universities will have to address employability challenges by providing the required employability skills and integrating with industry to provide greater exposure to students right through their university experience. They need to enable development of thinkers, complex problem solvers and decision makers who are prepared for a broad range of jobs across sectors.

Global Integration and technological advancement have had a transformational effect on research. Universities need to build project management capabilities around research to ensure quick turn rounds, reduce cost and schedule overruns and better collaborations across industry and academia. Universities with weak financial resources could pass the financial burden to the student in form of risen tuition fees, but the price sensitive student is now turning to alternative affordable education sources such as Massive Open Online Courses (MOOCs).

4.3 THE INDUSTRIAL REVOLUTION:

After the Industrial Revolutions, the concept of education changed, focusing more on the development of people and providing them with basic learning and skills. Enrollments across all ages and sections of society grew rapidly. In the next stage with the advent of printing presses and establishment of universities, the concept of formal higher education focused on both academics and research. Many new age scholars developed practical learning to prepare students to manage their social, economic, and political affairs efficiently. Technology has provided a platform that has greatly expanded access to education and changed the ways of learning. The traditional setting of a lecture hall has been transformed with the integration of new tools and technologies in teaching that help students learn virtually and deliver targeted information to them effectively.

4.4 EFFECT OF TECHNOLOGY:

Technology has made personalized learning both approachable and dynamic. Learning can take place anytime anywhere. E-learning, self paced learning, flipped classroom etc., facilitate interactive learning. Learning will be personalized to individual students. Students should have choice in determining how they want to learn, choosing the learning tools or techniques that they prefer students. Students will be exposed to data interpretation to apply their theoretical knowledge to numbers and to make inferences based on logic and trends from given sets of data. Computers will perform the statistical analysis and predict the future trends. Students will be assessed differently and the conventional platforms to assess students may become insufficient. Student's opinion will be considered in designing and updating the curriculum. Students will become more independent. In their own learning, thus forcing teachers to assume a new role as facilitators and guides.

5. CONCLUSION:

Work will remain central to our lives, and our societies as has been in the near past too. Changes in the organizations of work will involve the reconfiguration of when, how, and where we work. Changes underway also present new opportunities with challenges to forge a future, to connect workers across the globe in virtual communities, and to value and measure all work profitable outcomes. The future of work will depend upon the decisions we take, as policy makers, as workers, as enterprises, and as workers and employees organizations.

The biggest challenges are the mindset shifts necessary for the new reality. On the business side, we need to stop hiring and firing based on past demonstrated skills and experience. All entities must shift to acquiring emerging skill sets and instead develop methods of internal building capacity. In this shift, culture becomes the guiding star and the internal capacity building becomes the handrail to the future. Business organizations have long defined themselves by their products and services they produce and the brands through which they promise that value. A brand is just an expression of culture, and products and services are merely evidence of capacity. AT&T made a bold bet by offering continuous employment to all who will commit to life long learning and skill development.

REFERENCES:

1. Deming, D.J. (2017) The growing importance of social skills in the Labor Market- Quarterly Journal of Economics, 132(4), 1593-1640.
2. Dud wick, Nora (2013) The relationship between jobs and social cohesion : some Examples from Ethnography Background paper for world Development Report 2013: Jobs, The World Bank Group, Washington DC.
3. Ebelle-Ebanda, Antony and Newman, Greg (2018) Organizational Network Analytics and future of work. Workforce solutions Review.
4. Halford, Susan (2008) Sociologies of space, work and organization: From Fragments to spatial Theory, sociology Compass 2. 925-943.

5. Johnston, Hannah and Land –Kazlauskas, Chris (2018) Organizing on Demand : Representation, voice, and collective Bargaining in the Gig “Economy” conditions of work and employment series working paper no.94, ILO, Geneva.
6. Savage, Lydia (2006) Justice for janitors: scales of organizing and Representing workers, Luis. M. Augier and Andrew Herod, eds., *The Dirty work of Neo Liberalism: Cleanerts in the Global Economy*. Oxford: Black well, 214-234.
7. Wilson, H James and Daugherty, Paul R. (2018) Collaborative Intelligence Humans and AI are joining forces. *Harvard Business Review*, July- August.
8. Broadberry, Stephen N and Gupta, Bishnupriya (2005) Cotton Textiles and the Great Divergence: Lancashire, India and shifting competitive advantage, 1600-1850 (august) CEPR Discussion Paper No. 5183.
9. Satio, William H. (1991) *The fourth Industrial Revolution*, Paris, OECD.
10. Schwab, Klaus (2016) *The fourth Industrial Revolution*, Geneva, World Economic Forum.
11. World Economic Forum (2017) *Realizing Human potential in the Fourth Industrial Revolution*, Geneva, WEF.
12. Penprose, Bryan Edwards (2018) *The Fourth Industrial Revolution and Higher Education*, California, Soka University.
13. Lucas, Robert E (2004) *The Industrial Revolution; past and future*, USA. Federal Reserve bank of Manneapolis.