**LIBRARY RESEARCH**

* **Impact of Industrial Revolution 4.0-**

What is Industrial Revolution 4.0?

“Industry 4.0 is in the way it is introduced, evolutionarily. We cannot demolish the factories and do everything quite differently. But the impact will be enormous, which is revolutionary.” (Kagermann 2013)

The term Industry 4.0 was first publicly introduced in 2011 as “Industrie 4.0” by a group of representatives from different fields (such as business, politics, and academia). The major idea of Industry 4.0 is introduction of technologies based on the internet. Industry 4.0 is the subset of the fourth industrial revolution[1] that concerns industry. The fourth industrial revolution encompasses areas which are not normally classified as an industry, such as smart cities, for instance. In essence, industry 4.0 is the trend towards automation and data exchange in manufacturing technologies and processes which include cyber-physical systems (CPS), the internet of things (IoT), industrial internet of things (IIOT), cloud computing, cognitive computing and artificial intelligence.

“Industry 4.0 describes the integration of modern Information and Communication Technologies (ICT) with traditional physical products and processes, which will create new business models and new markets.” (Sihn 2015)

Environmental Issues due to Industrial Revolution 4.0-

Along with amazing technological advances, the Industrial Revolution of the mid-19th century introduced new sources of air and water pollution. By the middle of the 20th century, the effects of these changes were beginning to be felt in countries around the world. In the 1960s, an environmental movement began to emerge that sought to stem the tide of pollutants flowing into the planet’s ecosystems. Out of this movement came events like Earth Day, and legislative victories like the Clean Air Act (1970) and the Clean Water Act (1972).

By the late 18th century and first part of the 19th century, coal came into large-scale use during the Industrial Revolution. The resulting smog and soot had serious health impacts on the residents of growing urban centers. In the Great Smog of 1952, pollutants from factories and home fireplaces mixed with air condensation killed at least 4,000 people in London over the course of several days. A few years earlier, in 1948, severe industrial air pollution created a deadly smog that asphyxiated 20 people in Donora, Pennsylvania, and made 7,000 more sick. Acid rain, first discovered in the 1850s, was another problem resulting from coal-powered plants.`

If this industrial revolution is not wisely handled then we have to pay for our own deeds. Recycling is the key for successfully implementing Industry 4.0 in production. If companies are able to set up their production in circles in the future, a large amount of materials and energy can be recovered.

“Well-functioning recycling networks are the key to unlocking such potential.” (Fraunhofer Institute Umsicht 2015).

* **Digital Revolution-**

What is Digital Revolution?

In the era of industrial digitalization, companies are increasingly investing in tools and solutions that allow their processes, machines, employees, and even the products themselves, to be integrated into a single integrated network for data collection, data analysis, the evaluation of

company development, and performance improvement. Leading organizations have started on the path to digital revolution, and investments of this type have already begun.

Advantages of digital revolution-

1. Digital revolution is allowing humans and robots to work together for bringing emotional intelligence as well as ability to handle the unknown together for instance, oncologists will be using IBM’s Watson to fight cancer.
2. Human performances will be improved using wearable augmentation devices such as sophisticated wearable will capture what a person feels through biorhythmic responses.
3. 3D printing will largely spread thus lessening the cost and produce improved streamlined design.
4. Virtual assistance will help customers make decision.
5. Driverless cars will arrive as a result we no longer have to worry about driving safely.

Disadvantages of digital revolution-

1. As mentioned regarding 3D printing; this will ease the use of prototyping for surgical purposes but on the other hand cause loss in intellectual property, which might cause increased economic conflicts and foster political debates.
2. With increasing days machine will start to replace humans from job sectors; destroying established companies
3. Arising lack of jobs causing structural changes and sudden adjustments in the company.

References from the following articles were taken –

* The Digital Revolution: What’s on the horizon? – Irena Bojanova(University of Maryland University college)

|  |
| --- |
| * ANALYSIS OF ENVIRONMENTAL POTENTIAL BY IMPLEMENTING INDUSTRY 4.0 - DI (FH) Gabriel M. , DI (FH) Pessl E. (FH JOANNEUM University of Applied Sciences, Faculty of Industrial Management Austria) * The Role and Impact of Industry 4.0 and the Internet of Things on the Business Strategy of the Value – Chain Judit Nagy, Judit Oláh , Edina Erdei , Domicián Máté , and József Popp |