



Webinar review

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IR 4.0 Calls for paradigm shift in Science and Technology

The webinar was held on 12 January 2021 (Tuesday). FB Live was the medium that had been used. In two parts or session they tried to manage the webinar. One was in Malay language at: 9.00-11.15 am and other one was done by English with keynotes at 11.30am-12. 30pm. The speaker of this webinar was Mohammed Rafiq Abdul Kadir (Faculty of engineering), University Technology Malaysia.

In this webinar the speaker tried to explain 4.0 calls for paradigm. The webinar content was the industrial Revolution, a shift in paradigm and Interlude 1 and 2.

Paradigm shift: Thomas Kuhn defines it as “A fundamental change in the basic concepts and experimental practices of a scientific discipline”. Basically, it is a changing the way of thinking one to another. Examples can be given as silo mindset to teamwork on the other hand authoritarian leadership to servant leadership and lastly physical learning to digital learning. Basic fundamentals that is needed for a paradigm shift is building a good attitude my building strong principles, collaborating by removing silo mentalities, lifelong learning which is gaining knowledge, maintaining responsibilities and creating new innovative ideas.

The Industrial Revolutions: 1st revolution was in 1800 on steam and water powered production facilities. However, the 2nd revolution was in 1900 on electricity and mass production. 3rd one was in 2000 with was electronic and IT system, Computer and Automation and the 4th one is running with digital connected world. Mainly industry revolution 4.0 has many components such as cyber security, cloud computing, autonomous robots and others.

The main objectives of the Webinar:

- Giving a clear idea or proposal about the industrial revolution 4.0
- Showing the importance of paradigm shift which is very important.

- Showing the main thoughts or goals to reach as a revolution. Such as:
 - ❖ Increased unemployment
 - ❖ How the world problems can be solved
 - ❖ Zero hunger
 - ❖ The world will be a safer place
- The speaker tried to explain the problems related to the lost soul of institution of higher learning,
- The speaker tried to spread the importance of reading. Furthermore, it is important to be skilled and to have desire of gaining knowledge.
- The importance of ethics

“**Adaab**” is above knowledge. W.Buffet said that “Look for 3 things in a person-intelligence, energy and integrity, if they don’t have the last one, don’t even bother with the first two.”

Major components:

- ❖ **Additive Manufacturing:** This is also known as 3D Printing, is a transformative approach to industrial production that enables the creation of lighter, stronger parts and system.
- ❖ **Cloud Computing:** Cloud computing is the on-demand availability of computer system resources, especially data storage (cloud storage) and computing power, without direct active management by the user.
- ❖ **Cyber Security:** It's also known as information technology security or electronic information security.
- ❖ **Internet of things:** The Internet of Things is the concept of connecting any device (so long as it has an on/off switch) to the Internet and to other connected devices.

- ❖ **Big Data and Analysis:** Big data analytics is the use of advanced analytic techniques against very large, diverse big data sets that include structured, semi-structured and unstructured data, from different sources, and in different sizes from terabytes to zettabytes.
- ❖ **Fintech:** Fintech is a term used to describe financial technology, an industry encompassing any kind of technology in financial services.
- ❖ **E-Business:** Online Business or e-business is any kind of business or commercial transaction that includes sharing information across the internet.
- ❖ **Augmented Reality:** Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory.
- ❖ **Artificial Intelligence:** Artificial intelligence (AI), is intelligence demonstrated by machines, unlike the natural intelligence displayed by humans and animals, which involves consciousness and emotionality.
- ❖ **Autonomous Robots:** Autonomous robots, just like humans, also have the ability to make their own decisions and then perform an action accordingly.

Additive Manufacturing

It describes the technologies where 3D objects are built layer by layer. 3D modeling software is used (such as AutoCAD and Solid works) which is used to construct the object digitally. 3D printers, which are available commercially, are used to print the digitally designed object, using a variety of different materials, including plastic and metals. Its applications range from prototyping to parts manufacturing in both the industrial and private sector.

Cloud Computing

Cloud computing enables users to tap into computing power, and access computer system resources and data storage (usually called cloud storage) remotely and without direct active management. 'Clouds', depending on their size, can have different functionality spread across multiple locations. Cloud computing minimizes IT infrastructure costs, speed up launching up applications, decreases maintenance costs and improves manageability.

Cyber Security

Also known as IT security, it is the practice of defending devices (personal computers, servers, smart phones, or any other electronic devices connected to a network or otherwise) from malicious attacks. It involves defense in several subcategories. Protection is necessary from intruders accessing computer networks (network security), hackers compromising applications (application security) that have encrypted data (information security), among other things. In a world that is relying more on being digital every day, it is rising in importance.

Internet of Things

IoT describes a connection of physical objects (referred to as 'things') that exchange data through using sensors and software with other systems over the Internet. This creates a possibility of many things, and has been used to assist many technologies, such as machine learning, real-time analytics, smart homes, etc... The scale of applications is only restricted by the imagination, from state-level to individuals and families.

Autonomous Robots

These are robots capable of executing an array of functions largely without human direction. They are used to carry out operations that are redundant and/or dangerous in many fields. They have an ability to read the immediate environment, work for longer periods of time (meaning without the need for 'breaks') and navigate designated environments, all without the need for human intervention. Some of their applications include factory manufacturing and spaceflight deployment.

Big Data & Analytics

It is using an incredibly large amount of diverse data sets in advanced analytic tools and techniques to assist in making better decisions. They help in healthcare by providing personalized medicine and prescriptive analytics, as well as exploratory biomedical research. They have also seen controversial applications in online businesses, that use large sums of user data to provide customized advertisement, raising concerns about data privacy. Big data remains to show promising analytical opportunities, regardless of the application.

Augmented Reality

AR allows the presentation of a digital augmentation over the real world in front of us. The augmentation happens through electronic devices (most commonly smart phones today). Many examples are already present in real life, such as the IKEA Place app that allows users to see how certain furniture fits in one's own apartment, or football matches where broadcasters provide analytics of matches using AR-drawn lines. Another mention-worthy example is Singapore's airport ground crew, equipped with AR glasses to see information about cargo containers. The applications are plentiful and present exciting opportunities.

E-Business

With the introduction of E-Business, many businesses can now be found online. However, more notably, many businesses now only operate online, rather through a physical store. This has saved a great deal of costs, for businesses where such a move makes sense. It has provided individual sellers and merchants with a great and broad platform. E-business is not only about the

purchasing however, but also includes supply chain and customer relationship management as well as enterprise resource planning.

Fintech

Fintech refers to the use of technology to automate and enhance provided financial services. It includes mobile banking that is prominently present in most stores today. It also includes cryptocurrency, which is digital currency with strong cryptography to secure online transactions. Cryptocurrencies are independent of countries and are stored in online ledgers.

Artificial Intelligence

AI refers to machines that simulate human intelligence. Their ability to take actions on their own to achieve a specific goal makes them a powerful tool. They use techniques like machine learning and deep learning to learn how to better take actions from data provided to them. They are an exciting field, which can be applied to robotics, medicine, finance, etc... For example, one AI algorithm, has gained the ability to predict protein folding in 2020, which unlocks many

General Webinar Review

Prof. Dr. Mohammed Rafiq Abdul Kadir opened the webinar by providing an overview on Paradigm Shift and Industrial Revolutions as the topic of the webinar conducted was 'IR 4.0 calls for a Paradigm Shift in Science and Technology'. He discussed about all four industrial revolutions then talked about jumps of the levels of complexity and productivity from one Industrial revolution to the next. Next, he walked through the ten key components that are related to IR 4.0. Then, he explained about the problems with IR 4.0 such as Potential Jobs that are at risk of getting eliminated. He had mentioned that if Artificial Intelligence become more intelligent, then the low-risk professions can have high risk for elimination.

Some other issues or questions related to IR 4.0 were mentioned such as increase in unemployment, whether it will solve world problems or not, whether the world will be a safer place and whether it will be a fair playing field or not.

Next, Dr. Rafiq talked about some of the things that are related to Paradigm shift. Then he talked about the things that are related to principle-centred paradigm that can't be taught to robots and said that paradigms are inseparable from Character. The things mentioned are trust, justice, integrity, honesty, quality, perseverance, encouragement, individuality, positivity, progress, priorities, respect, responsibility and truth. Two types of principle-centred characters were mentioned, one is related to our own selves and the other one is related to other people. He stated that there are certain things robots won't be able to do that is only unique to human being.

As explained by him through verses of Holy Quran, components like skills, knowledge and desire are required for something to become a habit and all these components as well as ethics are present in every human being. He, later on, stated that all we need to do now is revive out DNA to the DNA of the scholars of the past because they had DNA of mind and intellectual, social and emotional, and soul and spiritual. According to him, these abilities need to be present in life, otherwise, IR 4.0 will not bring peace and prosperity as what human being had experienced during the Islamic Golden ages.

He had concluded the webinar by mentioning some reflections on IR 4.0 paradigm shift and talked about some challenges and closed the webinar by stating his final thoughts. His final thoughts were that all human being need to adapt with the new industrial revolution fast, need to embrace lifelong learning, learn from the great scholars of the past, and make life easy for others, treating people with respect.

Conclusion

Industry 4.0 is the aftereffect of a tipping point in innovation advancement. The preparation for the transformation was laid many years prior. The IoT, cloud, large information, and more is pushing industry 4.0 forward. Industry 4.0, additionally in some cases alluded to as IoT or smart manufacturing, weds actual creation and tasks with shrewd advanced innovation, AI, and more information to make a more holistic and better associated environment for organizations that attention on assembling and production network the executives. The 4 Industrial Revolutions shape the world. Overall economies depend on them. It is clear that using Industry 4.0 advances carry a scope of advantages to organizations and companies. During the time spent turn of

events, both countries and companies ought to be in communication with each other.

This industry vows to change the manner in which business is finished. Plans of action will be reclassified, more cycles will get mechanized, and association will improve their worth chain considerably further. In spite of the fact that Industry 4.0 revaluation is related with the technological changes in the assembling business, it effetely affects society. Although there are worries that the technologies used in production will bring about problems that will negatively affect the society, for example, joblessness, it is additionally critical to consider that new plans of action will arise; developments must be applied in the field of instruction to furnish the labor force with the abilities needed by this idea.

So remain alive in this serious climate, associations will need to utilize the advantages of industry 4.0 to build up an upper hand, improve income and benefits, and offer better client encounters.