5G: 5G, also known as the fifth generation of cellular networks, is the new global wireless standard in telecommunication after its predecessors 1G, 2G, 3G and 4G. It ensures greater bandwidth, faster download speed and massive network capacity. It will dominate wide range of industry, professional sectors and economy by providing better user experiences and internet connectivity. The availability of faster uniform data rates and lower latency will lower the cost-per-bit, companies can cut extra expenses and still ensure a better wireless network. 5G is also designed for future compatibility, which has the ability to support new technology that are not even invented yet. It is expected that 5G will contribute in the next digital transformation where a wide range of industries and enterprises will change their technology and business model.

5G technology revolution started back in 2008. Since then several big telecom companies like Qualcomm, 3GPP, Samsung Electronics, Huawei etc. continued to contribute their roles in invention of the new reliable and fast mobile wireless network. In 2019, South Korea was the first country to introduce 5G networks on a large scale (Wikipedia, 2020). Although it became a new challenge for the leading telecom companies to implement this emerging technology, 5G is a blessing for telecom industry. It will disrupt previous technologies and largely change the business models for telecom operators.

5G will streamline economy growth for the telecom companies by increasing revenue and consumer satisfaction. Performance, speed and reliability of wireless network are the main concern of consumers in this modern era. They are willing to pay in order to acquire higher speed broadband services. 5G will improve the consumer services and user experience as it supports wider and reliable networks with faster connectivity. It will also create more diverse opportunity by collaborating with other industries like IT, Internet-of-things (IoT), cloud platforms, retailer etc. 5G is expected to create millions of economic output and new jobs that will translate into huge revenue in global economy. It will contribute to the economic growth of telecom companies in long term. But first telecom companies will have to unlock the potentials of 5G and invest a lot before it becomes a mature technology. Proper implementation plan, business strategy, risk assessment, consumer demand assessment and adoption are key things in order to make the best of this new technology.

In May 2019, Telstra first introduced its 5G services in Australia, especially in areas of Sydney and Melbourne. Other competitor Optus has also enabled 5G in limited areas (Wikipedia, 2020). As Vodafone is also planning to introduce Sydney as their first 5G enabled cite, in this section a recommendation for Vodafone to adopt 5G wireless technology is presented with an implementation plan based on the roadmap of digital transformation (Appendix A).

In order to adopt an implementation plan on a large scale, a commercially feasible business model needs to be set based on the consumer requirements and value chain. 5G may transform a number of sectors digitally including manufacturing, healthcare, automotive, energy, public (MCA, 2019) services etc. By identifying needs, requirements and actors of these sectors in order to facilitate them with mobile broadband network will be the first approach to establish a business model. Then a set of objectives and priority should be determined. For example, Industry 4.0 (Sriganesh K. Rao and Ramjee Prasad, 2018) refers to cost-efficient manufacturing techniques that connects machines and systems to share information and analyze them to make intelligent actions. Wireless communications infrastructures can allow the sharing of information of connected machinery, enable intelligent warehouse management system or facilitate maintenance of machinery remotely. Cloud computing is technology which provides remote and scalable resources, also can be benefited by mobile broadband connectivity. So there are numbers of possibilities as well for the future upgradation of the business model. It also should be considered along with the consumer services plan. And finally to deploy 5G networks, commercial zones needs to be selected where revenue stream are steep.

Though it has a few risks, whether it will be successful or not. But 5G enables thousands of possibilities for the next generation technologies and industries. And it is showing promises than any other technologies at the moment. Vodafone should explore the possibilities in order to be in the race of the next digital transformation.

Artificial Intelligence: Artificial Intelligence (AI) refers to the cognitive ability like making decisions, learning, understanding, reasoning and interacting like humans by machines or computers (Marcin Szczepański, 2019). In this digitalized world, every bit of information is transmitting through these computers. AI can help to provide a better user experience by analyzing this huge amount of data. That’s why industries have started to adopt and implement AI enabled services from the past decade. AI became popular by providing new dimensions to wide range of industries and accelerating the digital transformation. It is one of the drivers of Industry 4.0 (Marcin Szczepański, 2019).

There are many possibilities in the telecom industry to improve their services with AI. Global companies like Vodafone have millions of users where they need to ensure better quality services and cellular network all over the world. AI can help to optimize network quality by analyzing parameters like monitoring traffic, time and region. These networks also generate huge amount of data in every second. AI can provide better data-driven insights to monitor the consumer behavior, requirements, usage of the services, overall business scenario, unnatural behavior, as well as hardware and performance of the machines. Sophisticated AI algorithms can predict future outcomes based on the historical data which can provide future insights. In one word, these detailed insights can help improving the business model according to the consumer needs and business environment. To improve frequent customer services and support, virtual assistants can be introduced. Which are essentially AI based conversational platforms that can communicate with users and provide necessary information. Robotic Process Automation (RPA) is a form of business process automation technology based on AI which can be used in streamlining the execution of complex, labor-intensive, repetitive and time-consuming processes such as billing, data entry, order fulfillment and workforce management etc. (Liad Churchill, 2020)

AI can help telecom companies to manage, optimize and maintain infrastructures as well provide customer services. It can reduce production cost as well as the maintenance cost by providing better business insights, streamlining processes and eliminating human dependencies in a telecom company.

References:

5G. 2020. *Wikipedia*. Available at https://en.wikipedia.org/wiki/5G (Accessed: 14 May 2020).

MCA (Malta Communications Authority). 2019. 5G Demand and Future Business Models Towards a

Feasible 5G Deployment. Available at https://www.mca.org.mt/sites/default/files/5G%20discussion%20paper%20and%20survey.pdf

Sriganesh K. Rao and Ramjee Prasad. 2018. Impact of 5G Technologies on Industry 4.0. In *Wireless*

*Personal Communications* 100, 145–159 (2018).

Marcin Szczepański. 2019. Economic impacts of artificial intelligence (AI). In *European Parliamentary*

*Research Service (2019).*

Liad Churchill. 2020. 4 Areas where AI Is Transforming the Telecom Industry in 2019. Available at:

*https://techsee.me/blog/artificial-intelligence-in-telecommunications-industry/*

Appendices:

Appendix A:

