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The Nitty-gritty of Fourth Industrial Revolution

ANY economy needs enough individuals with appropriate education, skills, and training to support and enhance its knowledge base. The same thing is happening with education and skills in the Fourth Industrial Revolution (4IR). In 4IR, the world is witnessing the transformation of routine occupations into non-routine occupations and the changing role of universities. Recently, Bangladesh government officials, policymakers, academics and economists have been talking about 4IR and the application of Artificial Intelligence (AI) and advanced technology in occupations and industrial automation. We need to know firsthand how the 4IR will polarise the labour market in Bangladesh. There should be a survey of how much inequality will be created and how many people will lose their jobs. Are universities producing graduates who acquire the knowledge, skills, and expertise needed to apply the advanced technology required for 4IR? It is also important to know whether businesses are willing to invest heavily in machine automation and the application of AI. Without a highly skilled workforce, the application of AI and automation in business and the workplace will not bring benefits.

Non-routine and routine jobs are two main types of occupations. Routine-intensive occupations are broadly defined as jobs entailing the performance of tasks that are mainly accomplished by following a set of well-defined rules or patterns. And non-routine tasks entail performing more complex activities, such as creative problem solving and decision making. The nature of work is changing due to technological progress, globalisation, and the rapidly expanding supply of educated workers. Interestingly, the workforce change rate in different occupations is different, and it has happened differently in different countries. Differences in the growth and fall rates of routine and non-routine tasks in different countries suggest that factors such as the industrial structure and level of development of the countries are important.

In the USA, non-routine cognitive (managers, computer scientists, architects, artists, etc.) and non-routine manual (food preparation, personal care, retail, etc.) occupations have increased while non-routine manual (construction, manufacturing, production, etc.) jobs have decreased. The more developed nations have better access to technology, which is a major factor in explaining why workers in those nations perform fewer routine-intensive tasks. In India, the intensity of non-routine cognitive and analytical tasks has grown while the intensity of manual tasks has decreased. However,

even if dishwashing machines are good at washing dishes, since they cannot load or unload themselves, humans are still necessary for some tasks. Therefore, low-skill jobs are still in demand and always will be. Complex cognitive skills (such as analysis, problem-solving, and decision-making) are needed in high-skill employment, but these skills are far less easily codified. Because of this, it is challenging to replace professionals and knowledgeable workers like engineers, doctors, programmers, marketing executives, and sales managers. Therefore, even though recent breakthroughs in au-

where the dress will be produced without any human intervention. If we really automate the garments, then a huge number of cheap labourers will lose their jobs. But if we can utilise this labour more efficiently that will certainly improve productivity. We can go for a hybrid approach. Find out what are the sections of the dressmaking work by automating which we can gain higher speed in production. Then we can try to automate those sections using the Artificial Intelligence-powered Internet of Things. In the rest of the section where human is doing great, we can keep the human workers. It is possible to upskill workers to retain their jobs. Reskilling them is an option if upskilling is not viable. Retraining them, for instance, in nursing or other professions where they can be incorporated after retraining.

It is important for us to study how technology will change the labour market and the economy for the better for some jobs, and worse for other jobs. We should obviously focus on finding solutions to the issues that will arise and expect to arise while taking advantage of new opportunities and remaining flexible as the times change. In many cases, upskilling/reskilling of low-skilled and unskilled manpower will be required.

Manual skills such as dexterity and flexibility will still be valuable, and further developing innate human qualities (i.e., abstract skills that machines are not good at—such as creativity, persuasion, empathy, pattern recognition, and complex communication) would certainly be beneficial.

Universities can play a vital role in developing innate human qualities. Universities may include courses such as machine learning and AI, not only in computer science programs but also in all engineering and science programs, including business and economics programs. Instead of teaching our students to prepare for past jobs, universities should prepare the youth to be agile and adaptable and focus more on the skills for 4IR.

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tomation have focused on high-skill labour; this side of the spectrum is still growing. Middle-income occupations see a fall in employment and earnings (office manager, social media specialist, sales manager, project manager, etc.). The likelihood of middle talents being codified is higher. They have been disappearing as a result.

In Bangladesh, textiles, garments, pharmaceuticals, shipbuilding, leather, and footwear are the main industries. If these industries become stuck in traditional, linear thinking that assumes the future will be an extension of the past, then the 4IR may be less of an opportunity and more of a threat. For an example of the garment industry, the western world is trying to develop an automated garment factory

the content of the common cognitive tasks has not changed in India, unlike in the USA and Europe. When ICT intensity increases, routine intensity jobs get displaced. Depending on the sector being evaluated (i.e., manufacturing or services) and the level of development of the country, the extent of such displacement varies (i.e., mature service-based economies or catching-up countries). In low- and middle-income nations, the share of workers in routine task-intensive occupations, including clerks, plant and machine operators, and craft-related occupations has not declined. Both low- and high-skill employment have increased globally. This is because while some tasks may be automated, whole jobs cannot be replaced by robots. For in-