

Digital Transformation of Lower Middle-Income Countries: What are the Odds?

Dr. Shahid Yusuf | March 2022 | PI-08-22

Hope springs eternal. The end of the Covid 19 pandemic is not yet in sight. Some fear that the second globalization is unravelling... 2021 was the sixth warmest year on record with the planet on track to exceed the 2°C limit by 2050 if not earlier...

learned enough, it will be wiser than we people because we... are narrow thinkers, noisy thinkers, and it is very easy to improve upon us. I do not think that there is very much that we can do that computer will not eventually be programmed to do.

With the industrial revolution seemingly having run its course, a lot appears to ride on the success of digital technologies. Almost every country and many businesses are pinning their hopes on digitization to stage a speedy recovery from the Covid doldrums and to sustain growth thereafter.

- (i) Whether digitization can deliver the economic performance and income distribution that breakthrough technologies such as electricity, once did;
(ii) What are the risks and constraints associated with rapid technological change; and
(iii) How could middle-income countries extract the maximum economic mileage from digitization.

Question 1: There can be no doubt that the industrial revolution caused by technologies such as electricity and the internal combustion engine was truly transformative. It added a vast amount of value; it created an abundance of jobs; it generated a wealth of new products that dramatically improved living standards; it contributed to trade

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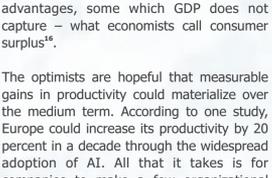
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globalization; and countries that successfully industrialized, grew steadily, and achieved high levels of per capita income. Essentially, they established a benchmark for technologies to follow.

cloud computing, Big Data, algorithm development, and blockchain. Unlike earlier technologies, digitization has diffused at remarkable speed. Internet use has exploded with half the world's population relying on it for communication, news, and information of every kind.

For close to two centuries, productivity augmenting industrialization was the well-trodden path to development. More recently, East Asian economies such as Korea, China, Taiwan, and Singapore demonstrated that the recipe worked. It was possible to prosper by building deep manufacturing capabilities and by exporting increasingly complex products.

Figure 1: Manufacturing value added in lower middle-income countries (% of GDP) 1985-2020



It is because digitization is accelerating the shift away from industry and agriculture towards services and because the cross-border flows of data and information are rising fast, that the outcome of the transformation has taken on such significance.

Amazon is one example of a digital highflier. It began life as an on-line seller of books. Now it is not just an e-commerce giant offering a vast

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array of products and services, with Amazon Web Services it has morphed into a technology company. It is asserted that financial innovation (Fintech) could 'change the landscape of financial services' and give rise to more inclusive financial systems.

academic papers, many leading firms are doing just that - the share of investment in intangibles has risen by almost 30 percent and American and British firms are already putting more of their money into intangible capital than tangible capital.

The process of digitization broadly encompasses the use of computerization, robotics, automation, AI/machine learning,

Question 2: As we leave the Covid pandemic years behind can we then look forward to decades of sustainable growth fueled by productivity, with ample employment opportunities for the workforce? The evidence suggests that thus far digitization is not moving key economic indicators and the medium-term outlook is cloudy.

Clearly, digital technologies have considerable potential. Few of us would want to wind the clock back to a time when we did not have the smartphones or an abundance of apps, Uber and Airbnb.

Robert Solow a Nobel prize winning economist remarked that "you can see the computer age everywhere except in the productivity statistics".

The optimists are hopeful that measurable gains in productivity could materialize over the medium term. According to one study, Europe could increase its productivity by 20 percent in a decade through the widespread adoption of AI.

Past technological epochs, after a lag, generated numerous new occupations, job opportunities, and ladders offering income mobility. Attention to forecasts the likely impact of digitization point towards a substantial winning of jobs in all sectors.

There are several risks that come with digitization. Let me mention four: long-term structural unemployment of those who cannot be absorbed into jobs that do materialize; rising income inequality; an increase in the market share of a few powerful businesses - the so-called superstar firms; and the vulnerability of digital infrastructure.

Undoubtedly, continuing digitization will also create new jobs - in data analysis, machine learning, process automation, cyber security, software development, to service green

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infrastructures, and others still to be identified - many requiring specialized tertiary level technical skills and soft skills. But labor absorption into digital occupations and associated gains in productivity could be slowed by persistent labor supply bottlenecks.

A third risk is the increase in market power of a few large firms that utilize digital platforms to dominate key industries. This is a development that can stifle competition, new entry, and innovation - and by concentrating wealth and political power, can be difficult to reverse.

In 2002, 40 percent of jobs in the US required medium level digital skills and only 5 percent called for high digital skills. By 2016, as the composition of industry and services changed, 48 percent of jobs required mid-level skills and 23 percent required advanced skills.

A fourth concern is the increasing vulnerability of a digitized and networked economy and society to cyber-attacks, to weaponization of key networks, to severe weather events and misinformation. A smart city could be brought to its knees if key infrastructures were damaged or disabled.

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Question 3: What are the messages for Pakistan and other lower middle-income countries? Five are uppermost. First it may be wise to make haste slowly - investing in resilient digital infrastructure and skills but balancing these with other priorities.

Rapid technological change could make it harder for new entrants with high school education or less to find jobs. Displaced workers, especially ones who are older, less skilled, less mobile would also be at a disadvantage. The latter comprise most of the workforce in developed and developing economies.

Second, a few medium-run economic benefits. Second, and a selective adoption of 'human friendly' digital offerings is in order, tailored to the evolving capabilities of the workforce. A rush to embrace labor displacing, skill-intensive technologies, and the Internet of things (IoT) will be capital intensive, squeeze employment opportunities, depress the share of wages, and leave growth unchanged.

Skill biased digital technologies can also widen income disparities. Already the so-called great divergence in incomes is a troubling development in several advanced economies and in South Asia as well. The share of income accruing to the top 10 percent of earners and the top 1 percent has been rising and could be exacerbated by the pandemic.

Third, a message that is frequently repeated, raising the quality of human capital through education and training will be necessary to capitalize on useful, productivity enhancing

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technologies. To get good jobs, people will need higher order skills. But accumulating relevant skills will take years and retraining current labor cohorts with weak or non-existent foundational skills, will be difficult. Improving and implementing post-secondary school education with targeted vocational training may be the way forward.

productive capital, the accumulation of intangible capital even if it were to occur, will generate meager returns. No country has demonstrated that a services centric economy focused on intangibles has achieved or sustained rapid growth of the kind Pakistan needs.

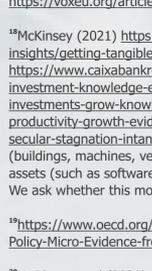
Fourth, a competitive market environment with ease of entry and churning at the top is more likely to boost productivity and innovativeness than one that is dominated by a few oligopolies whether they are in private hands or owned by the state.

The pattern of demand during 2020-2021 showed that demand for manufactures is as strong as ever. A mix of servitized manufacturing and digitized tradable services may be the path to longer term growth - but this will take investment in physical, human and knowledge capital. An inclusive digital transformation will take work. It is not around the corner.

Fifth, I tend to discount the scope for services led growth irrespective of how it is jangled up with digital technologies and intangibles. Tangible and intangible capital must coexist and complement each other. Absent tangible

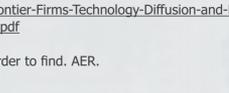
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About the Author

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