**Taking the technology route**

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In several billion years of human history, the last few centuries have been dramatic in terms of technological development. The divide between countries in this context initiated with the first industrial revolution.

Western Europe, Australia, Canada, USA and Japan moved ahead with technological change, leaving most other countries at the periphery of the technological frontier. This left widening inequalities in access to opportunities, goods and service. More recently, China has subsequently been able to grow faster and catch up through technological knowledge, replication and innovation.

Economic leadership is all about technology, and the evolution of technology is a function of creating the right circumstances. Technological progress has defined the economic strength of nations. Some time ago while talking about technology, we all pictured humans dashed behind computer screens, programming languages beyond the realm of mere mortals. We live in a dramatically different world today – one in which we cannot imagine any business or employment that is not in some way influenced by technology.

Today’s technologists might be found drawing an industrial building on auto-cad, medical practitioners diagnosing people’s illnesses through tele-medicine thousands of miles away, farmers on a tractor carving new digital farming strategies, engineers in a warehouse building an e-commerce platform or a student in a university designing new software for sharing education resources in remote areas of the country.

We are now all technologists, and our businesses all involve technology. The importance of technology in our lives cannot be overlooked in Pakistan. It should be a serious wake-up call for the business community, farm community and service industry to embrace this new identity.

Policymakers would be better off understanding the technology lesson rather than trying to rely on repeating tried recipes which have gotten us where we are today. It’s trendy to throw more money in the system, which will always result in more inflation and make people dependent on state help. If Pakistan has to prosper, it is going to have to be a technological adaptor, if not a leader, in all key sectors.

Benefits of technology adoption can help lift and grow all sectors of our economy. The only way to drive sustained, real economic growth is through productivity gains. That by its very definition means applying technology. The only way to be globally competitive and increase our exports across all sectors, while at the same time improving the standard of living for everyone, is through technology.

Pakistan has become known for punching much below its weight, for a country of 230 million people. Let us consider agriculture as an example. Pakistan has truly lost its advantage – abysmally low productivity, colossal wastage of perishables from farm to market and untenable loss of water, are astonishing facts.

Taking advantage of new technologies in agriculture is the only way forward: agricultural robots selecting and picking fruits and vegetables, artificial intelligence analysing crop data, assessing plant disease and soil health, and machines that improve spraying, seeding and transportation are all evolving technologies. Robots which continuously monitor and remove weeds will significantly reduce the use of pesticides and herbicides. Self-driving weeding machines connected to AI systems are being developed to identify and destroy weeds using lasers.

This is all incredibly exciting, driven by precision agriculture. Countries that develop and adopt these technologies will be the ones that will lead the world in agriculture. Unless we embrace these changes, Pakistan’s advantages in agriculture would further erode and fall behind countries that have developed more sophisticated technologies. This is quite important.

Certainly, the advent of the Covid-19 pandemic, climate change and the more recent geo-political uncertainties are all factors accelerating technological change. Changes in workplaces and reliance away from fossil fuels are happening around the world. Lockdowns have led to a working from home culture, improving labour productivity by eliminating commuting time. Development of robotics has been dramatic and accelerated as a result of the restrictions imposed by the pandemic. Implementation of e-commerce and the digitisation of the workplace is also estimated to add up to seven percent to productivity above trend according to research by a global investment bank. This is quite striking.

When it comes to technology, intellectual property rights and most importantly their enforcement cannot be overemphasized. While Pakistan has the framework in place, enforcement continues to remain a challenge. National innovation systems, science and mathematics education are all important factors that contribute to a country’s ability to move up the technology ladder. International comparative analysis puts Pakistan at a rank of 123 out of 158 countries on the Readiness for Frontier Technologies Index (Technology & Innovation Report 2021), categorised as ‘low’. Even Bangladesh ranks 112, in the lower middle category. On different pillars of the same index, we stand at 146 on ICT ranking, skills at 146 and finance at 132. Not very encouraging numbers, to say the least.

It’s worth mentioning all these things as we approach budget season. Pakistan’s federal budget has to move beyond giving handouts. Great drivers of the future, and in particular the people who will lift our living standards, are entrepreneurial investors adapting, embracing and introducing new technologies. Growing living standards ultimately depend on rising productivity, which is a function of technological change. If we approach technology as a low ranking issue, then expect our high living standards to stagnate further in the years ahead. Budgets need to be substantively devoted to technological change.

Pakistan can become a quick adaptor of technology. First, the country must focus on areas where it already enjoys a comparative advantage, such as agriculture, textiles and IT. Second, invention, research and development, and new industries thrive in an environment supportive of such entrepreneurial activity – the regulatory and tax environment is critically important.

Third, we must debate the technology issues. Throughout the budget-making period there is a focus on whether the government is providing enough funding for subsidies, markup payments, creating hard infrastructure or whether benefits are sufficiently generous for remote areas. We must realise, if it wasn’t for the improvements in productivity generated by technological change, there would be limited resources for other activities. The challenge for the political leadership is to debate how to make Pakistan an innovative and entrepreneurial society. Allow entrepreneurs and innovators to make their own way, to accumulate wealth if they are successful, and to continue to reinvest.

Fourth, we need to create an appetite for risk-taking. Create effective national innovations systems aligned with industrial, trade, fiscal, monetary and education policies. The state must cheerlead for creating a market for innovation and visionary thinking. Fifth, businesses have to dream big, endeavour to solve complex problems, challenge the status quo, take risks, and grow. They have to reimagine the way they do business and not shy away from creating disruptive technologies which have the potential to define the next era of Pakistan’s economic prosperity.

Great societies move forward because they are innovative, entrepreneurial and creative, and they can think beyond investment in primary goods and brick and mortar. Government spending is necessary, but it won’t make Pakistanis rich; innovation and entrepreneurship will. In the 75th year of the passing of the Pakistan Resolution one must make a pledge to a new resolution: ‘We will embrace the technology route to make Pakistan a prosperous nation”.

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