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This article highlights the challenges and opportunities of various transformative technologies such as Artificial Intelligence (AI) and Blockchain, particularly in the context of Bhutan. There is no doubt that these technologies can transform operations, improve efficiency, and increase productivity. But no matter how these technologies are designed with the intended benefits for society, there will always be associated risks and unintentional consequences. I briefly share below some key challenges and opportunities policymakers face in embracing transformative technologies.

Due to the nature of transformative technology's complexity, policymakers struggle to gauge the implications and potential risks associated, and hence, handicaps them in crafting appropriate policies and regulations making it even more perplexing. This is further amplified by the traditional regulatory frameworks that do not synergize with emerging technologies that evolve at a much more rapid pace. The inability of the regulatory bodies in not being able to update the regulatory framework based on technological needs creates uncertainty for innovators and hinders growth in this field as it lacks assurance of returns on investment. Likewise, the limited understanding of transformative technologies and the need to protect customers' and citizens' rights and privacy exacerbates the ethical use and social impacts of such technologies.

Furthermore, the use of transformative technologies involves harmonizing and synergizing the technological frameworks beyond one's borders. However, as countries have their acts, laws, and regulations around data sharing and privacy, this impedes the cross-border or global harmonization of standards, the application of best practices from other countries, and the consistent application of transformative technology frameworks.

For Bhutan, one of the key targets in the next five years is to increase the GDP output from Digital Technology to \$200 million by the end of 2029. With the ease of regulatory frameworks and policies that are adaptive to technological change, Bhutan could embrace transformative technologies that can drive innovation and stimulate economic growth to realize this goal. One approach could be the adoption of a sandboxing framework with limited market access and limited application of regulations where both work together to find a suitable balance of innovation and customer safety. An open-arm approach to innovation would give assurance and much-needed confidence to innovators and investors alike.

Innovation gives new lenses to approach existing challenges thereby enabling policymakers to implement new solutions for the public. In Bhutan, the existing Government-to-Citizen (G2C) or Government-to-Business (G2B) services are mostly a replica of the paper-based method that is bureaucratic and bounded by traditional requirements that lack inclusive technological innovation. Re-engineering the business operations with the adoption of these transformative technologies will potentially improve public service delivery, making it more efficient, transparent, and accessible thereby promoting inclusivity and equity for the individuals as well as the society at large. The opportunities proliferate as the core of these technologies such as blockchain-based systems can address concerns on privacy, security, and immutability of the records. Furthermore, to maximize the benefits of these transformative technologies, international collaborations to foster a better understanding of use cases and best practices will be instrumental.

While there are challenges and opportunities in embracing transformative technologies, with proper adaptive regulatory frameworks and ethical usage principles, the opportunities outweigh the associated risks. One example is the National Digital Identity of Bhutan, which is a blockchain-based self-sovereign identity platform where the particular individual owns the data and is empowered to provide consent to share his/her personal information with others or not.