



SMART DIGITAL FARMING IN AGRICULTURE: STATUS AND PROSPECTS FOR SRI LANKA

From the IPS flagship publication ‘Sri Lanka: State of the Economy 2019’



levels of per capita food consumption. As the population grows at approximately 1 per cent annually and real per capita income is rising at 4.7 per cent per year, the national requirement for food will also be rising constantly in the years to come. A possible solution to this problem from the domestic production front should come through yield improvement. However, data indicate that the rates of growth in average yields have declined in recent times, and growth in production is mainly due the expansion in land area. Latter will be somewhat impossible in future due to land constraints.

for selected crops. The economic costs of these measures are a reflection of the unsustainable and misdirected measures adopted by successive governments to achieve self-sufficiency in domestic production. In a bid to overcome such disruptive drivers, Sri Lankan agriculture too has seen a number of technological transformations in the last decades, albeit on a fairly limited scale.

Smart Farming in Sri Lanka

While the agriculture sector has not seen much of high impact and medium impact technologies as yet, different initiatives taken by the government as well as private agribusiness firms to improve production in an efficient and sustainable way are commendable. The Sri Lanka E-agriculture Strategy was developed with the aim of harnessing the ICT poten-

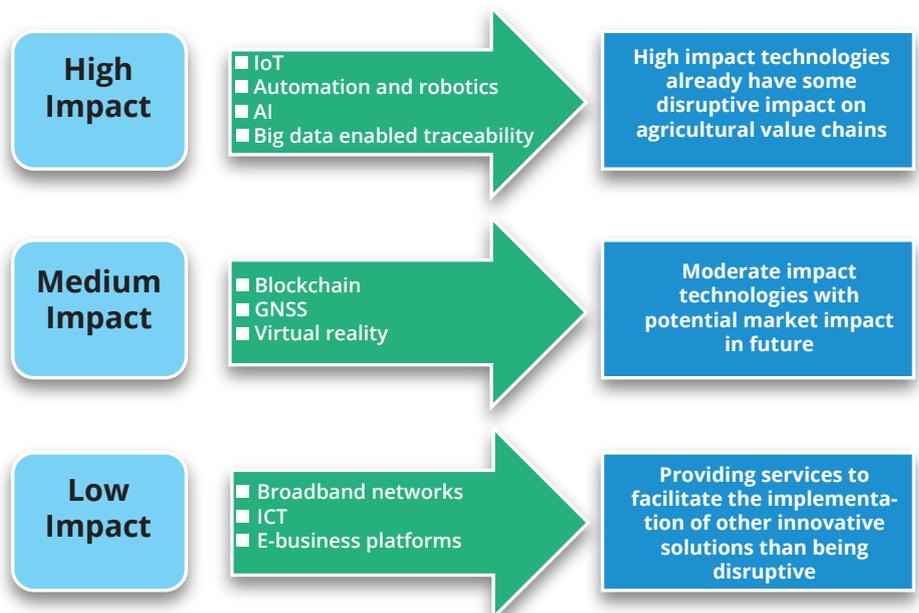
It is evident that emerging technological innovations driven by the fourth industrial revolution (4IR) have the potential to overcome the structural weaknesses of the current agricultural systems and as such, to deliver a more productive, competitive and sustainable outcome, based on a more precise and resource-efficient approach. The expectations are high that smart farming will change agriculture positively, while bridging the gap between large and small-scale farmers, not only in developed countries but also in developing countries.

Why Sri Lanka’s Agriculture Sector Needs 4IR Technologies

The yield levels of domestically grown food crops, except for rice, have stagnated for more than a decade at unimpressive levels even by the standards of developing countries. Therefore, domestic production will not be able to meet national requirements even under present

Agriculture survives due to direct and indirect support measures provided by the government such as free irrigation, a large fertilizer subsidy, support prices for rice, and ad hoc trade protection measures

Technologies Impacting Agricultural Value Chains



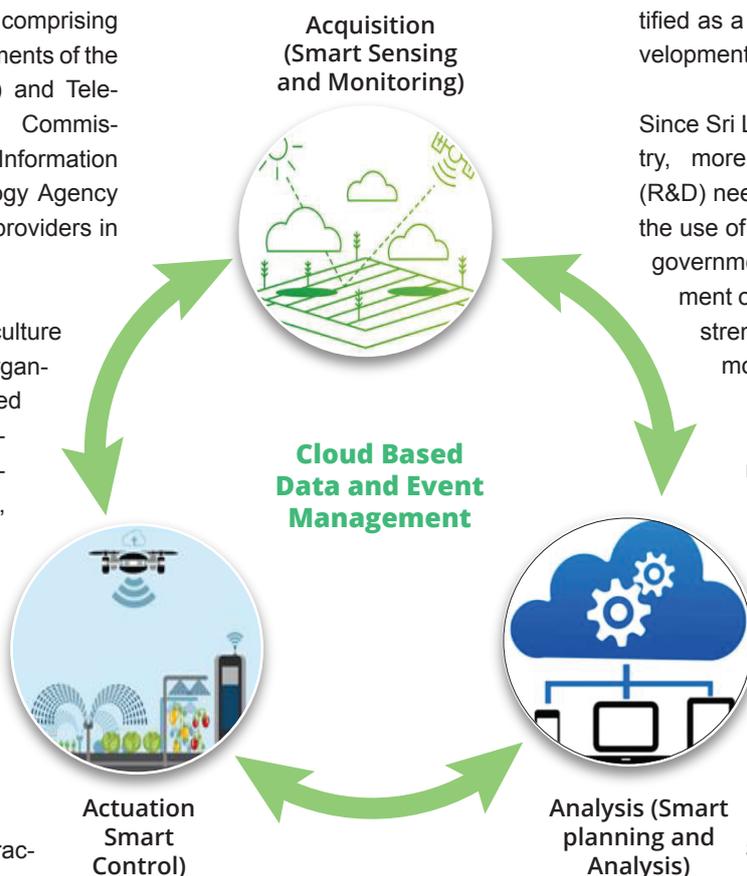
Source: Adopted from Shaji, Shanto (2019). IoT Applications in Agriculture. Retrieved from <https://www.tomsonelectronics.com/blogs/news/iot-applications-in-agriculture>

tial to achieve agricultural goals. Based on the E-agriculture strategy, an e-agriculture task force was set up, comprising members from various departments of the Ministry of Agriculture (MOA) and Telecommunications Regulatory Commission of Sri Lanka (TRCSL), Information and Communication Technology Agency (ICTA) and Telecom and ICT providers in Sri Lanka.

The Department of Agriculture (DOA) and other relevant organisations have already initiated several e-agriculture programmes that include interactive ICT and mobile platforms, software applications, etc., to disseminate agriculture information. Meanwhile, a seed and planting material management information system, progress monitoring system for National Food Production Programme, and a QR code system for good agricultural practices (GAP) certification programme are under development.

Moreover, some of the potential applications of ICTs to improve existing agriculture system information collection, efficiencies and services have been identified. These include mobile-based integrated agriculture advisory service; food crop forecasting and marketing information service; pesticide registration and pesticide information e-service plant quarantine e-service; weather forecast-

IOT Application in Agriculture



Source: Adopted from Shaji, Shanto (2019). IoT Applications in Agriculture. Retrieved from <https://www.tomsonelectronics.com/blogs/news/iot-applications-in-agriculture>

ing and advisory service; land use and soil conservation mapping and e-information system; geospatial information service; and farm machinery e-information service among others.

Other than that, various private sector companies pioneering agriculture technology in Sri Lanka have initiated some advanced medium and high impact agricultural technological solutions such as drone technology, automated climate control systems and smart weather solutions.

Way Forward

Digital transformation is much essential for Sri Lanka's agriculture given its significant role in the economy as a contributor to GDP, employment, food, and income of people. Yet, the sector faces a growing number of challenges and constraints that include low productivity, poor product quality, climate change, etc.

It is much clear that Sri Lanka is lagging behind in introducing 4IR technologies in agriculture in relation to ongoing developments in the field. Moving away from

traditional and old-fashioned farming and towards high tech agriculture can be identified as a positive step in agricultural development in the country.

Since Sri Lanka is still a developing country, more research and development (R&D) needs to be carried out to improve the use of modern technologies. Both the government and private sector involvement on R&D in technology should be strengthened by collaborating with more foreign institutions as well as with local universities. The country's marginal farmers may not be able to use these sophisticated technologies as yet. Hence agriculture companies need to implement these at the field level. Farmer participation in technology usage can also be strengthened through contract farming systems.

Smallholder farms are a crucial part of food systems and rural economies, and will play a major role in sustainable food systems in future as well. However, their lower resource endowments such as lack of capital and other resources, and poor access to markets and institutions – including extension services – may affect and put them at a disadvantage in reaping the benefits associated with 4IR in agriculture. Thus, the government will need to adopt a different approach for such farmers in facilitating the technological transformation.

This Policy Insight is based on the comprehensive chapter on "Smart Digital Farming in Agriculture: Status and Prospects for Sri Lanka" in the 'Sri Lanka: State of the Economy 2019 Report' - the flagship publication of the institute of Policy Studies of Sri Lanka (IPS). The complete report can be purchased from the publications section of the IPS.

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