



Leveraging Disruptive Technologies for the Mid-Day Meal Program in India

Ajay Kavishwar

The Akshaya Patra Foundation, Bengaluru, India

Key messages

- > The Indian Government's Mid-Day Meal (MDM) Scheme is known for being the largest school-lunch program in the world. The Akshaya Patra Foundation (TAPF) supports this scheme by feeding over 1.76 million children every school day.
- > Recently, TAPF deployed technology to enhance the efficacy of this program in its bid to eliminate classroom hunger in India.
- > Accenture and TAPF's Million Meals pilot leveraged technology such as artificial intelligence (AI), the Internet of things (IoT) and blockchain to improve the program's efficiency.

Mid-Day Meal Initiative of the Government of India

The Akshaya Patra Foundation (TAPF)'s support of the Government of India Mid-Day Meal (MDM) Initiative, serving wholesome, safe and tasty meals to over 1.76 million children in India, is known to be the largest NGO-run school-lunch program in the world.

For the past 18 years, the organization has strived to continuously leverage technology to scale its reach to millions of children across the country. TAPF's 41 centralized kitchens serve hot, safe, nutritious and tasty meals every day to schoolchildren in 12 states of India. Its operations are reliant on state-of-the-art technology that is equipped to prepare thousands of meals in just a few hours, while ensuring safe handling, preparation and delivery of the food.

In 2017, TAPF collaborated with Accenture to test technologies that could further improve the operational efficiency and overall

output of its school-lunch program. Tech4Good is a program set up by Accenture Labs with the objective of solving complex social problems through the use of innovative technologies. In collaboration with this program, TAPF launched a pilot initiative in Bengaluru, Karnataka – the Million Meals Project. The Million Meals Project was aimed at significantly extending TAPF's service reach by improving its supply chain and operations while maintaining the high quality standards held by the organization. In order to achieve these objectives, disruptive technologies such as artificial intelligence (AI), the Internet of things (IoT) and blockchain were introduced as part of the project.

“TAPF's operations use state-of-the-art technology that is equipped to prepare thousands of meals in just a few hours”

Implementing the Million Meals Project

The pilot was implemented over 6 months. The preliminary analysis of the pilot showed that it was feasible to improve the efficiency of the program by 20 percent, and that this could significantly boost the number of children served nutritious meals. The project was initiated with a strategic assessment, followed by the development of a prototype by Accenture for improving kitchen operations and outcomes. AI, IoT and blockchain were then applied to four critical processes:

1. monitoring meal production;
2. tracking food delivery;
3. collecting school feedback; and
4. measuring the quantity of food and supplies to be purchased.

Feedback from children and schools moved from manual collection to a more efficient technology-based solution – the use of handheld devices. This, in fact, enabled multiple stakeholders,



Akshaya Patra meals being served to Government schoolchildren

such as parents, teachers and the School Development and Monitoring Committee (SDMC), to give their feedback in real time.

Furthermore, using blockchain and sensor-enabled devices, and leveraging AI technologies, the indent for the next day's meal requirements could be gathered digitally, which allowed for prompt and immediate data collection.

The timelines of food delivered to each school were tracked and the data was collected using mobile devices and a system built by Accenture. IoT sensors were used to monitor the cooking process, to ensure optimum energy consumption and consistent food quality. This system helped to track kitchen performance and provided accurate, real-time data to make better-informed decisions that saved valuable time and effort.

.....

“IoT sensors were used to monitor the cooking process, to ensure optimum energy consumption and consistent food quality”

.....

As a part of this project, real-time temperature sensors were installed in every cauldron – the temperature data was captured automatically on a central server – eliminating the need for man-

ual data capturing and digitization, which had previously taken about 10 minutes of reading time.

Through a temperature-monitored cooking process, cooking cycles were monitored and controlled precisely to prevent undercooking or overcooking of the cooking batch. This also ensured enhanced efficiency of meal production, as seven additional batches of meals could be cooked during the time saved.



The Akshaya Patra kitchen process



Akshaya Patra food packing for schools

TAPF and Accenture’s Million Meals pilot demonstrated how technology such as AI, IoT and blockchain could help to enhance preparation operations and, therefore, expand production processes and improve audit capabilities, attendance recording, order and data collection, and food capabilities.

The use of these technological innovations not only helped TAPF establish a template for operating other kitchens but also revolutionized its supply chain and operations, resulting in improved food quality and extended service reach.

“These technological innovations helped TAPF establish a template for operating other kitchens and revolutionized its supply chain and operations”

About The Akshaya Patra Foundation

Akshaya Patra is a not-for-profit organization that strives to address classroom hunger and bring children to school by implementing the Mid-Day Meal Scheme in Government and Government-aided schools. Since 2000, the Foundation has worked towards reaching more children with wholesome food on every single school day. The Foundation is continuously leveraging technology to cater to millions of children. Its state-of-the-art kitchens have become a subject of study and attract curious visitors from around the world.

In partnership with the Government of India and various State Governments, and the inestimable support of many philanthropic donors and well-wishers, Akshaya Patra has grown from humble beginnings, originally serving just 1,500 schoolchildren across five schools. Today, Akshaya Patra’s Mid-Day Meal Program is the world’s largest (not-for-profit-run) school-lunch program, serving wholesome food to over 1.76 million children from 15,024 schools across 12 states in India.

Correspondence: *Dhanashree BM,*
#72, 3rd Floor, 3rd Main Road, 1st & 2nd Stage,
Yeshwantpur Industrial Suburb, Rajajinagar Ward No. 10,
Bengaluru – 560022, India
Email: *dhanashree.bm@akshayapatra.org*