



WASTE MANAGEMENT: HARNESSING TECHNOLOGY FOR INNOVATIVE COLLECTION

Abstract

Waste collection is a major source of revenue for the waste management industry. A majority of waste management companies are always exploring ways to introduce better efficiencies, reduce costs, keep the workforce safe, and open new revenue streams. The industry is challenged with shrinking margins, escalation in operating costs, and increased expectations of customers. In this environment, enterprises need to transcend reengineering business processes by achieving differentiation with adoption of innovative digital technology.

Let us evaluate how waste management companies can implement innovative waste collection:

- **Market analysis:** Evaluate market dynamics in terms of changing demographics, economic developments, migration, new residential/commercial establishments, and spending patterns of citizens. Data-driven technology can identify trends that mine real-time cues for waste collection.
- **Customer empowerment:** Customer satisfaction ensures repeat business in the waste management industry. A digital tool with smart features such as a voice assistant, chatbot, and personalized intelligence for the customer sustains customer delight. A digital tool not only engages with customers, but tracks their waste generation pattern and spend, provides advance alerts to book a

bin, dumpster, directs them to FAQs, and simplifies booking of a bin. It can schedule and process payments, promptly redress grievances, deeply engage with customers as part of the loyalty program, all of which not only retain customers, but also helps acquire new customers. A digital tool enables the shift from customer satisfaction to customer empowerment.

- **Connected Bins:** Waste management companies face several challenges during trash collection, such as the management of contaminated waste, last-minute changes in collection routes, and accidents and injuries of employees. Connected bins and trucks go a long way in addressing these problems. Bins with load sensors and object detection sensors can alert stakeholders if a bin is empty or full. Digital technology such as a digital brain can optimize a route based on a customer's location, empty/full bin

status, and real-time traffic. It can also ensure optimal movement of vehicles, saving the waste management company time and fuel expenses.

Monitoring drivers can help analyze driving patterns, identify changes/improvement needs, and enable the planning of training programs for drivers. Wearable devices worn by drivers can alert the central command center on distress signals and enable the mobilization of assistance.



- **Fleet management:**

The health of a fleet is crucial for uninterrupted collection services. While the former is needed to uphold the brand image of the company, the latter is imperative to provide efficient services and safety of drivers. Condition monitoring of critical parameters of the vehicle are key features to ensure that there is preventive action before a malfunction. A digital brain ensures timely preventive maintenance, maintains service schedules, and tracks part and component replacement.

- Advance alerts on dynamic demand-capacity enable dispatch managers to organize the right number and type of trucks at the right location, thereby enabling optimized fleet utilization. Truck capacity- full/empty status alerts also enable uniform utilization of the fleet, thus saving fuel and time.

- **New business streams:**

Data is a catalyst for new business models. The waste management industry can collect a huge volume of data with digital technologies. This data can be harnessed and converted into business opportunities that have commercial value and introduce new business models. For example, patterns of waste generation, volume, and the type of waste generated by different customers/ communities reveal insights on their buying and spending pattern. Similarly, condition monitoring data of the fleet provides insights that are valuable to fleet manufacturers, and logistics companies to improve their products and services.

- A digital-first mindset with innovative business process reengineering can help waste management companies create a sustainable, competitive advantage.



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