

“One man’s trash...”

How much is beat-up cardboard and old plastic film worth? Millions of dollars per year for one large U.S. retailer, thanks to a planned new recycling program that turns discarded packaging materials into bottom-line value.

Great idea, but how much is it worth?

To offer consumers name-brand goods at outlet prices, this company needs to keep its own costs under tight control and extract every cent of value from its operational investments. So when executives realized that recycling the corrugated boxes and plastic film used to ship merchandise to stores could help the company both earn revenue and cut waste hauling costs, they naturally decided to pursue the opportunity.

The challenge lay in working out the details. Because its stores differed widely in their physical layout, waste management cost structure, and distribution arrangements, the company couldn't apply a single standard recycling approach to its entire store network. Specifically, complicating factors included:

- Stores varied in the amount of back-room space they had available to sort and store recyclables as well as in the policies applied by different landlords to storing recyclables for pick-up.
- Stores also varied in the extent to which they could reduce waste management costs by recycling. Some stores paid for waste hauling on a per-ton or per-pickup basis, which would allow them to cut hauling costs by diverting some of their waste to recycling. Other stores had waste hauling

arrangements (such as flat-fee contracts) whose costs wouldn't track any reductions in trash tonnage enabled by recycling.

- Differences in the stores' distribution networks affected the way recyclables could be processed and sold. Stores that were stocked through a closed-loop distribution network – one whose delivery trucks visited only that company's stores before returning to the distribution center – could load the delivery trucks with recyclables to take back to the distribution center, which could then aggregate recyclables from several stores to achieve the volumes needed to sell them directly to recycled content manufacturers. Stores that were part of an open-loop distribution network – one whose routes included other companies' stores – would not have this option. They would need to process and sell their recyclables independently and in smaller quantities, usually through a reseller that would pay correspondingly less for recyclables than a recycled content manufacturer.

All of these factors would affect not only the operational and process decisions needed to implement a recycling program at any one store, but also the cost/benefit profile of the company's entire recycling effort. All of these factors had to be accounted for in building the business case for recycling and in planning how to execute the recycling program at its stores.

Figuring the benefit

Executives decided to tackle the problem one U.S. region at a time. With Deloitte's assistance, the company segmented the stores in a pilot region into mutually exclusive categories based on a number of operating characteristics relevant to recycling, including back-room size, waste management cost structure, and type of distribution network. For each configuration of store operating characteristics, the company then developed a baseline recycling approach describing the investments and processes needed to enable recycling at each type of store. Using cost and price information obtained through RFIs to potential vendors and recyclables purchasers, as well as factors such as labor costs, the volume of recyclables generated per store, and other relevant information, the company calculated the anticipated net profit that recycling should yield at each individual store as well as for each store segment.

To perform the analysis, the company built a computerized model that automatically segments stores and calculates the expected cost, revenue, and savings of each store's recycling activities based on cost, pricing, and operational parameters supplied by the user. The model allows the company to perform easy "what-if" analyses of various possible scenarios (to compare, for instance, changes in commodity prices, labor costs, or operational constraints), helping management evaluate the cost-effectiveness of different recycling approaches.



The bottom line

The detailed analysis showed that a properly structured recycling effort could cut the company's waste management costs by 43 percent and generate more than \$3 million in revenue annually in the region covered by the analysis, which represents 15 percent of the company's national store footprint. The recycling program would also help the company reduce carbon dioxide equivalent emissions by approximately 37,000 metric tons in the pilot region alone (by, among other things, reducing the amount of waste routed to greenhouse gas-emitting landfills and incinerators).

The company is now taking steps to implement the appropriate recycling approaches at its stores throughout the pilot region. Executives also plan to use the analytical model developed in this project to evaluate recycling opportunities at stores in other regions as well as in the company's other lines of business.

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