Proposed solution for smart waste management system

Problem statement:

- Smart waste management system would include; a sensor attached to the trash bin that measures fill level; and a communication system that transfers this data to Cloud.
- By exploiting this data, trash collection can be planned as well as truck routes can be optimized.

Idea/solution description:

- This project deals with the problem of waste management in smart cities, where the garbage collection system is not optimized.
- This system allows the user to know the fill level of each garbage bin in a locality or city at all times, to give a cost-effective and time-saving route to the truck drivers.
- The Proposed system consists of main subsystems namely Smart Trash System(STS) and Smart Monitoring and Controlling Hut(SMCH).

Novelty/uniqueness:

1. ***Solar-powered Trash compactors:***

    - These machines compress trash as it accumulates to increase bin capacity, and they collect and transmit data on fill and collection times to help streamline the collection process.

2. ***E-waste kiosks:***

    - Electronic waste that is improperly disposed of can be harmful to both humans and the environment.
    - Fortunately, many companies and organizations have started e-waste recycling programs that will accept — and even reimburse you for — old electronic devices.

3. ***Recycling Apps:***

    - These apps provide users with information on recycling rates and center locations, and their comprehensive lists of materials help users determine which items can be recycled.

Social impact/customer satisfaction:

- Improve efficiency - using the resources available to us in a more focused and targeted way.
- Reduce the number of bins required - decluttering and improving the street scene.

- Drive down our carbon emissions - by doing away with the need to drive to bins that still have plenty of space in them.
- Encourage recycling-on-the-go - by ensuring litter bins aren't over-flowing, residents will be encouraged to put the right thing in the right bin when they're out and about.

Business model (Financial Benefit):

1. ***Reduction in collection cost:***
    - The solution reduces waste collection frequency dramatically, enabling you to save on fuel, labor, and fleet maintenance costs.
    - It has been seen that the solution has reduced the operational cost of municipalities up to 80%.
2. ***No mixed pickups:***
    - Using the solution, the managers, as well as the garbage truck drivers, can see which garbage containers are not picked up and needs to be picked.
    - So, there will be no missed pickups, keeping the residents away from the disease which occurs due to bacteria, vermin and insects prosper from the garbage.

3.Reduced overflows:

- The solution takes care of this issue by allowing the waste collectors to keep track of every bin's fill status and schedule the pickup on time.

4.co2 Emission Reduction:

- The solution decreases the fuel consumption which ultimately reduces carbon emission by up to 70%.
- This is indeed a huge reduction both in terms of finance and environmental impact.

Scalability of solution:

1. *Decentralized waste management:*
    - This is not the waste treatment method but the waste segregation method.

2. Biological Reprocessing:

- Better known as Composting, this waste management solution is a win-win for you.

3. Reduce, Recycle & Reuse:

- Recycling not only saves energy but also prevents the materials from going to landfills & incineration, and provides raw materials for new products.
- Installing more bins for collecting recyclables like paper, glass, plastics, etc., and then recycling them can be a huge step.
- Also, reuse products wherever possible like reusing plastic bottles instead of simply disposing of them.
- The more you reuse, the more you contribute to keep these items away from the garbage can.