1. Industry analysis (25% of grade)

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| Industry Analysis | Likehood |
| 1.1 Political | |  | | --- | | 1. The Supreme Court directed the government of India, state governments, and municipal authorities to take the necessary actions. 2. The Ministry of Environment and Forests was directed to expeditiously issue rules regarding MSW management and handling Regulation defines the process that waste should be sorted at the initial dumping time and collect the waste in different container. 3. Contract of system is only for 5 years and need to be renew. | |
| 1.2 Economic | |  | | --- | | 1. Opportunity costs of clean up campaigns and behavior change initiatives. 2. Financial support as capital investment need to grow. 3. Inflation rate affect the price of system and ongoing operation. 4. Urban location is the main market, 5. 25 % Corporate tax and 18% GST tax affect the cost of system. | |
| 1.3 Social | |  | | --- | | 1. Awareness of segregate the waste at home and collection of waste in different container help us to grow faster. 2. Increase the urbanization increase the sale of system and help the citizen to learn to sort waste. | |
| 1.4 Technology | |  | | --- | | 1. Artificial intelligence, IOT, Machine learning, Computer vision help to develop the system efficient 2. Internet access and IOT help to reduce the cost of system . 3. Cloud service price are high of waste detection . 4. Lithium ion battery for good power backup. | |
| 1.5 Industry | 1. Low use of waste sorting bin because of less awareness on waste. 2. Increasing of population, increase in waste and improper waste management, hence help to grow faster but competition is also increasing. 3. Need to invest millions to money to just awareness and then sell and not have faster cash flow. |

1. Competitor analysis (10% of grade) - List up to 4 competitors

2.1 Competitor analysis for Clean Robotics

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| 2.1.1 Competitor | Clean Robotics |
| 2.1.2 Established date | Oct 2015 |
| 2.1.3 Product | 1. Clean Robotics has built an autonomous system that uses robotics, computer vision and artificial intelligence to detect and separate landfill from recyclables. 2. It does this more accurately than human beings, captures high quality waste data and it lets staff know when it’s getting full. Cloud connectivity allows individual units to learn from the global. 3. TrashBot fleet, becoming more intelligent over time. It also has a monitor for corporate communications, education and advertising. |
| 2.1.4 Market share (%) |  |
| 2.1.5 Value to customers | Our AI is 3x more accurate than human beings at the point of disposal. |
| 2.1.6 Strengths | * 1. Diversion, expense and savings projections.   2. On-demand and exportable waste audits.   3. Fullness and TrashBot status for custodial operations.   4. Customizable AI for compliance.   5. Granular data for decision insights. |
| 2.1.7 Weaknesses | 1. Clean Robotics’ AI enabled sorting technology separates recyclable vs. landfill items with only 90% accuracy.  2. Only one item dump in bin at a time.   1. Sometime confuse where to push the material   No process that can teach system about new waste where to dump when it is confused |

2.2 Competitor analysis for Cambridge consultants

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| --- | --- |
| 2.2.1 Competitor | Cambridge consultants |
| 2.2.2 Established date | Established in 1960 |
| 2.2.3 Product | 1. Product design and development firm Cambridge Consultants has developed a smarter recycling concept which tackles the challenge of improving the efficacy of recycling and incentivizing consumers to recycle, whilst addressing the end-of- life problem faced by consumer brands. 2. The technology within the system is designed to identify the type of waste the consumer wants to dispose of using image recognition. The system combines machine vision with machine learning and can be trained to recognize new items over time. 3. It can also detect the difference between a recyclable cup and a compostable cup, potentially challenging to the untrained eye. It then indicates which section of the waste disposal unit the item should be placed in. |
| 2.2.4 Market share (%) |  |
| 2.2.5 Value to customers | Smart bin can distinguish between PET, PP, compostable. |
| 2.2.6 Strengths | 1. Have fund to develop accurate prototype 2. It acts as a marketing tool, to show that the brand is proactively leading the way to a sustainable future. 3. Provides additional consumer insights such as when and where products are consumed. |
| 2.2.7 Weaknesses | 1. Only developed for high profile shop like Starbucks. 2. not feasible for outdoor waste. |

2.3 Competitor analysis for E-bin

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| --- | --- |
| 2.3.1 Competitor | E-bin |
| 2.3.2 Established date | 1. 2015 |
| 2.3.3 Product | 1. 1. Bin-e is an IoT-based smart waste bin that recognizes, sorts and compresses the waste automatically. It was born out of the need for a smart waste separation solution in places where an efficient sorting system is hard to introduce. 3. 2. In public and office spaces people often don’t sort the waste properly due to lack of motivation, knowledge or proper infrastructure. Bin-e improves the recycling chain by increasing the amount of recovered resources and reducing the amount of waste that goes to landfills. It transforms waste management into an integrated system to facilitate the way towards a circular, sustainable economy. 4. automatic separation – the smart waste bin identifies the type of waste thanks to a recognition system based on Artificial Intelligence and image processing 5. compression of plastics and paper – an embedded mechanism reduces the volume of plastics and paper 6. fill level control – the fill level of each bin inside of the device is displayed on the touchscreen and in the app   Automatic notifications - the waste management company gets notified via the app when one of the bins is full and needs to be emptied ⦁ data collection – the device gathers data about each object and uploads it onto a cloud; the app delivers real-time data and summary reports.   1. IoT Platform – for optimizing all waste management operations. |
| 2.3.4 Market share (%) |  |
| 2.3.5 Value to customers | 1. Combined automatic sorting, compression, fill level control and data processing into one device. All these functions allow to transform waste management into an integrated system. 2. It’s the key for reaching our global recycling goals and a circular economy. |
| 2.3.6 Strengths | 1. More resources recovered & higher quality of raw materials.  2. Less waste on landfills.  3. lower frequency and costs of waste disposal  4. optimized waste collection routes & convenient waste management.  5. Reduced costs, time and labor of waste management. |
| 2.3.7 Weaknesses | It is very costly 5800$ |

2.4 Competitor analysis for Green creative

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| --- | --- |
| 2.4.1 Competitor | Green creative |
| 2.4.2 Established date | 1. 2010 |
| 2.4.3 Product | 1. An iron first in a beautiful case, **R3D3** revolutionizes the world of sorting bins. R3D3 is a linked bin that recognizes, sorts and compacts cans, cups and plastic bottles.  2. Dedicated to any space where beverages are consumed, in public spaces, at the workplace, **R3D3** invites you to participate actively in sorting drink packaging, whilst improving how this waste is recycled.   1. Drop the package. 2. It compact and sort. 3. Stay connected, It send an email of bin is full 4. Real time monitoring of your fleet and sorting statistics. 5. It can sort paper, can, bottle less then 50 cl. |
| 2.4.4 Market share (%) |  |
| 2.4.5 Value to customers | 1. Combined automatic sorting, compression, fill level control and data processing into one device. All these functions allow to transform waste management into an integrated system.  2. It’s the key for reaching our global recycling goals and a circular economy. |
| 2.4.6 Strengths | 1. 100% reliable sorting  2. Time saving  3. Connectivity  4. Capacity\*10  5. Hygiene |
| 2.4.7 Weaknesses | 1. NOT work for municipality  2. Can handle limited waste type only |

3 Products and/or services (30% of grade)

3.1 Products and services you will be providing

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| --- | --- | --- |
| Product/service | Description | Price range |
| Intelligent sorting bin | 1. It is an IoT based device which identify the plastic, paper, metal, glass, wet waste, and e -waste material. 2. Each type of waste have separate compartment inside the bin. After the identification of material, it transferred to its compartment. 3. This device have sensor to detect the material type and camera take two photo of it and feed the photo to computer vision algorithm to predict the material. Further the data generated by sensor and CV algorithm feed to Machine learning algorithm to identify the material and then transferred. 4. Information on the weight of material and bin fullness level and other factors can be viewed on app. Information feedback to system for better identification of material. 5. A consumer goes to a Starbucks and orders a latte in a paper cup (or a juice in a plastic bottle, or a milk in a carton, etc.). Once he's finished, he goes up and taps his phone against the bin, registering his identity with the bin app via Bluetooth. 6. He then dump his cup into the bin where sensors identify the properties of cup and bin’s cameras, which take two photos. The computer vision and machine learning identifies the cup lights up the correct area and transferred to that area. If the user didn’t want to use the app or register his identity, He simple dump his cup. | 1800$-3000$ |

3.2 Market position:

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| Market position: |
| My targeted customers are who produce similar type of waste daily like Starbucks café. They compare my product as this is low cost product then other. |

3.3 Benefits to customer:

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| Benefits to customer: |
| 1. Total containment eliminates overflow, windblown litter, resulting aesthetics and a safe environment, 2. Encourage recycling and reduce carbon footprints &green house emission 3. Our system leaves the labour free other productive tasks 4. Saves lot of money |

1. Pricing strategy (10% of grade)

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| --- | --- | --- | --- | --- | --- |
| Product | Forecast total sales ($) | Forecast costs ($) | Mark-up (%) | Gross profit ($) | Gross profit margin (%) |
| Intelligent sorting bin(per unit) | 2000 | 1500 | 33.3% | 500 | 25% |
| Intelligent sorting bin(10 unit) | 20000 | 13500 | 48.1% | 6500 | 32.5% |

1. SWOT ANALYSIS

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| Strength   * Low cost system * Cloud connectivity * Track amount of waste generated and track type of waste * Coordinates between bin and collection truck | Weakness   * Not able to sort mixed waste only sort one material at a time * Only sort specific material plastic, metal, glass, specific e-waste * Need continuous external power and 4G internet connectivity * No stored much waste and required more space inside the bin |
| Opportunity   * Need advance deep learning technology * Need to detect batteries and mixed waste * Need to develop compactor system in bin to store waste * Provide route optimization technique | Threat   * Bin-e is the market leader and have product in production with 3X advance deep learning * Bin-e have good fund to expand fast * Cambridge Consultants is also a market leader and have good fund to expand fast. * Our product can use only at low density area like coffee shop only |