Budget Plan

Proof of concept

* 3 Bluetooth microcontrollers (ESP32)
* 3 Motion trackers(MPU-9250)

ESP32 mini x 3 = $7.57\*3 = **$22.71**

<https://www.aliexpress.com/item/32964909906.html?spm=2114.12010615.8148356.2.6ece40faCay66j>

MPU-9250 x 3 = $3.90\*3 = **$11.70**

<https://www.aliexpress.com/item/32693237987.html?spm=a2g0s.9042311.0.0.15b94c4dVuq0PP>

Shipping for above products: **$5.70**  
  
Equipment needed for construction (ie. soldering iron, wire, etc.) is already owned.

The cost of hair clippers vary in quality and cost. Because of this we have some freedom in the market we would like to target. The average cost of a males haircut is $28.30 as projected by salons (Modern Salon). We want to be able to make the hair clippers product affordable but also high quality to appease a demographic of people that would like frequent, high quality hair cuts. The average time between a males haircuts is 3.8 weeks (Modern Salon). As outlined in the business plan we estimated that a $150 hair clip set could be paid off in under 21 weeks.

The ideal pcb would consist of all the necessary components to include a microcontroller, a Bluetooth module, and a motion tracking system. The motion tracker can be bought off AliExpress for $3.90 <https://www.aliexpress.com/item/32693237987.html?spm=a2g0s.9042311.0.0.15b94c4dVuq0PP>

An arduino pro mini can be purchased off aliexpress for $2.40.

<https://www.aliexpress.com/item/32340811597.html?spm=a2g0s.9042311.0.0.1aac4c4dQjHTSl>

A wireless Bluetooth transceiver can be purchased for $2.64 off of AliExpress

<https://www.aliexpress.com/item/32342784842.html?spm=a2g0s.9042311.0.0.1aac4c4dQjHTSl>

Total comes to **$8.94.**   
This is not a comprehensive list of all components, and we expect that in order to make a custom PCB, and to make it smaller (small enough to fit into earbuds), it will cost slightly more. Therefore a very rough estimate of the cost of each pcb is $13. We need 3 3D tracking PCBs which will come to a total of **$40.**

Each coin cell battery will cost $1.50, but we need one for each earbud, so total cost is **$3**. The housing for the is estimated to be **$5**.

Total so far comes to $48.

Final Product

* 2 Small Rechargeable Batterys (LIR2032)
* 2 Battery Holders
* Hair clippers (WONER Cordless Rechargeable Hair Clippers)
* IOS app development

LIR2032 x 6 = 4.01\*3 = $12.03

<https://www.aliexpress.com/item/1005001291105365.html?spm=a2g0o.productlist.0.0.1acf7fbbTL2U7R&algo_pvid=6f9b9f72-ab16-49bb-be66-32b3f2649486&algo_expid=6f9b9f72-ab16-49bb-be66-32b3f2649486-0&btsid=0bb0623216030521476983002eb902&ws_ab_test=searchweb0_0,searchweb201602_,searchweb201603_>

Battery holder x 4 = $1.93\*2 = $3.86

<https://www.aliexpress.com/item/32952668027.html?spm=a2g0o.productlist.0.0.6e381ae04UIafv&algo_pvid=6d455b8d-919f-4d72-aaa9-6a3d9485862e&algo_expid=6d455b8d-919f-4d72-aaa9-6a3d9485862e-4&btsid=0bb0622c16030524675654523e77af&ws_ab_test=searchweb0_0,searchweb201602_,searchweb201603_>

Rechargeable Hair Clippers = $47.00

<https://www.amazon.ca/WONER-Cordless-Rechargeable-Clippers-Trimmers/dp/B07JHWVFGW/ref=sxin_9_ac_d_rm?ac_md=0-0-Y2xpcHBlcnM%3D-ac_d_rm&cv_ct_cx=clippers&dchild=1&keywords=clippers&pd_rd_i=B07JHWVFGW&pd_rd_r=75b29989-fbb2-4b80-85e0-c008f9fbe65e&pd_rd_w=jmvCj&pd_rd_wg=SSW2L&pf_rd_p=415c1297-1cb5-49d8-aa8d-10fe4403c8e8&pf_rd_r=DQM5BBFJQ3KC44DYK2TA&psc=1&qid=1603053004&sr=1-1-12d4272d-8adb-4121-8624-135149aa9081>

Shipping for above components = $0.51

IOS app development 1 year contract = $100

**Total Cost = $203.51**

Based on the business plan, to hit the $150 budget, we will subtract the cost of motion tracking PCB/earbud tracker, to get an estimate for the cost of the hair clippers.

Industrial robotic arms cost between $25 000-$400 000 (Robotic Arm). It is estimated that a robotic arm of the caliber we wish to have will be around $60 000.

<https://insights.globalspec.com/article/4788/what-is-the-real-cost-of-an-industrial-robot-arm#:~:text=Today%2C%20an%20industrial%20robotic%20arm,anywhere%20from%20%2425%2C000%20to%20%24400%2C000>.(Robotic Arm)

**Business Plan Estimates**

| Item | Cost(USD) | Revenue(USD) | Profit(USD) |
| --- | --- | --- | --- |
| High precision robotic arm with environment sensors | $35k - $60k |  |  |
| Cart set up equipment, design, and UI | $500-2k |  |  |
| Rental space, Mall of America, cart sized(~40 ft^2) | $1500-2500/month |  |  |
| Maintenance | $1k/annum |  |  |
| Clippers/earbud development | $100 |  |  |
| Clippers/earbud | $103.51/item | $110/item | $16.59/item |
| Robotic haircut |  | $10/item | $12/item |
|  |  |  |  |
| Total upfront cost - 1 booth | $35.6 - $62.6k |  |  |
| Total for x amount of time(not including upfront cost, taking the lowest range) - 10 haircuts/day, 1 Clippers/earbuds sold/day |  |  |  |
| 1 year | $56.78k | $87.6k | $30.82k |

**References**

<https://www.modernsalon.com/370823/the-2015-mens-grooming-study#:~:text=According%20to%20the%20male%20clients,their%20hair%20cut%20more%20frequently>. (Modern Salon)

<https://www.modernsalon.com/364083/how-to-set-the-price-for-your-mens-haircuts>