Table for Feature SWOT Analysis and Costing

Feature	Level of Desirability	Feasibility	Level of Utility	Cost increment (in Rs.)	Remarks
1. Small and Lightweight	High	Not Feasible	High	Small batteries will cost less but will reduce the overall capacity.	Size of the battery cannot be controlled, but other component's size can be kept small.
2. Ergonomic design	High	Feasible	Medium	Premium quality materials will increase cost significantly.	Depends upon what the cost segment of the product is.
3. Multi Adapter Capability (Charging Input for the PB)	High	Feasible	High	Multi-adapter (type c, mic-USB) = +100 to 150	Cost increases as the no. of input port increases as well as the amp rating of the PB charging module.
4. Simultaneous Charge support	High	Feasible	High	Simultaneous charge supp = +100 to 150	
5. Waterproof	Medium	Not Feasible	Medium	Cost for the casing, adhesive, anti-corrosion materials increases the overall costing of the PB.	Making it waterproof is very difficult since the USB ports are always open and the cost will increase significantly.
6. Dust/splash proof	High	Feasible	High	Cost increases as per the material used. E.g. plastic/aluminum etc.	We can add a silicon protective layer over the USB and the exposed ports of the PB to make it dust/ splash resistant.
7. Efficient Battery	High	Feasible	High	Li-poly or Li-ion batteries are the best choice for this purpose, but are quite expensive as compared to NiMH/Lead acid batteries. Approx. Cost = 250 for a 15K mAh li-ion/polymer	Li-ion/polymer batteries have a good cost to performance ratio as well as keeping the overall size of the PB small. Costing depends on the capacity and the C rating of the battery.
8. Overcharging protection (Safety Feature)	High	Feasible	High	LVC as well as Overcharging protection circuit is included in most of the charging modules. Approx. Cost = 50	
9. Temperature Monitor/protection circuit	High	Feasible	High	Temp sensors like the LM35 are very cheap and thus, would increases the cost by a very small amount. Approx. Cost = 40-50	

10. Time left till 0%	Medium	Feasible	High	No cost increment as such, because it is on the software side.	External hardware may be required for sensing the battery voltage to get a very accurate reading
11. Sleep Mode	High	Feasible	High	Already a function built-in in the newer microcontrollers such as the ESP32, or in Bluetooth modules such as the HM-10. Cost = As per the selected configuration of mic-controller and modules.	
12. LCD/OLED Screen	Medium	Feasible	Medium	Approx. Cost = 50-100 for LCD Screens, Approx. Cost = 200-250 for OLED screens (Less than 1 inch in width)	
13. Wireless Charging	Medium	Feasible	Medium	Approx. Cost = 400 to 800 as per the amperage of the coil. Cost increase is significant.	There is a lot of loss in case of wireless charging as only about 60 to 75% is only transferred depending upon the power rating, thus making it quite inefficient as well as unnecessarily expensive.
14. Fast Charging	High	Feasible	High	A higher power rating charging module must be selected with a minimum power output of 15 to 18 Watts (5V 3A or 9V 2A).	
15. State of Charge	High	Feasible	High	No such cost increase as it is on the software side.	
16. Low Battery Notification	High	Feasible	High	No such cost increase as it is on the software side.	
17. Built-in Speaker	Medium	Not Feasible	Low	Approx. Cost = 150	Considering a buzzer would be a preferred choice, since it is cheap and smaller in size as compared to a speaker.
18. Latest Bluetooth Capabilities	High	Feasible	High	Depends upon the cost of the Bluetooth module or the microcontroller config chosen.	
19. Connected & Battery % Notification	High	Feasible	High	No such cost increase as it is on the software side.	
20. Anti-Theft alarm	Low	Not Feasible	Low	Would cost same as the buzzer, but the anti-theft program would be much harder to implement.	

21. Find My Device (Buzzer based)	Medium	Feasible	High	Would cost same as the buzzer, but it would be much harder to implement.	
22. Find My Device (Bluetooth based)	Medium	Feasible	Medium	Would cost same as the, Bluetooth module/mic-controller, but it would be much harder to implement on the software side.	
23. GPS Tracking	Low	Not Feasible	Low	Approx. Cost = 300-400	
24. In-built Memory	Low	Not Feasible	Low	Approx. Cost = 80-100	Memory is only required to store the battery voltage values or a tone/song/audio msg for a speaker.
25. Independent Amp Control	Medium	Not Feasible	High	TBD	
26. Multi-function button	High	Feasible	High	Would increase the cost by a very small amount, almost negligible.	
27. Mini built-in Solar panel for charging the PB	Low	Not Feasible	Medium	Approx. Cost = 50-60	Very inefficient and it is quite dangerous to keep it in direct sunlight since there is a li-ion/polymer battery which could explode due to overheating.
28. Flashlight (Built-in)	Medium	Feasible	Medium	Negligible cost	High power consumption and thus will drain the battery quickly.

Table for accessories for the PB:

Feature	Level of Desirability	Feasibility	Level of Utility
1. Phone Holder	Medium	Feasible	High
2. Hand Strap	Medium	Feasible	Medium
3. Cable	Medium	Feasible	Medium
4. Mini Fan	Low	Feasible	Low