

Group 22.7 Presentation

Smartphones



Introduction

In this presentation we will explore the technology field of mobile phones, in particular, addressing the e-waste issues that are associated with them by analyzing the environmental, economic and social impacts.

- Smart phones are devices that allow us to carry out an array of functions and act as a digital assistant
- They have operating systems which allows for software to be installed – this would allow us to browse the web, read emails, listen to music and game, practically acting as a portable pc in a sense
- The first smartphone was designed by IBM and released in 1993 (William L. Hosch, Britannica)
- In 2019 it was recorded that 54 tonnes of e-waste was generated worldwide (The Guardian, 2020) approximately 10% of this coming from mobile phones (Weforum, 2021)



Environmental Related Issues



Several environmental issues of mobile phones related to impact and management of waste electronic and electrical equipment (WEEE)

- Mobile phones are great sources of WEEE Material.
- Spread of very small particles of WEEE material caused by unawareness of people.
- Global warming caused by increasing amount of greenhouse gases.

[Timothy G. Townsend \(2011\) Environmental Issues and Management Strategies for Waste Electronic and Electrical Equipment, Journal of the Air & Waste Management Association, 61:6, 587-610, DOI: 10.3155/1047-3289.61.6.587](#)

Economic Related Issues



- With the current growing market of smartphones, there are many new phones being released on a frequent basis (for example the annual release of phones from popular company's or Apple's annual upgrade subscription) which encourage many people to upgrade however this has a knock on effect where the amount of e-waste being produced is growing exponentially.
- More recent mobile phone models are made up of about 25% metal, 30-50% plastic with the rest being glass and ceramic. However, of these materials only metals such as copper, silver, gold and aluminium are recycled. This raises environmental concerns as well as economic concerns as precious resources are being wasted in landfill sites.
- Approximately \$10 billion worth of gold, platinum and other valuable resources are being dumped or incinerated each year (The Guardian, 2020). This alarming value begs the question that are we doing enough to combat the exponential increase in e-waste and are we taking the necessary steps to lay the foundations of a more effective recycling plan for e-waste for the future?

[Carrington, D., 2020. \\$10bn of precious metals dumped each year in electronic waste, says UN.](#)

[The easy way to upgrade to the latest iPhone. From £37.45/month.](#)

Social Related Issues

Lack of E-Waste Awareness



- The average person dispose their phone within 3 year of owning it.
- The main reason of people changing phones is that it is damage or not working.
- When the phones are being disposed 44% are kept at home instead of returning to the manufacturer or a recycling company.
- 60% of people have a low to no awareness about e-waste with 70% not knowing of any recycling companies dedicated to e-waste collection.

[Attia, Y.; Soori, P.K.; Ghaith, F. Analysis of Households' E-Waste Awareness, Disposal Behavior, and Estimation of Potential Waste Mobile Phones towards an Effective E-Waste Management System in Dubai. Toxics 2021, 9, 236. <https://doi.org/10.3390/toxics9100236>](#)

[Islam MT, Dias P, Huda N. Waste mobile phones: A survey and analysis of the awareness, consumption and disposal behavior of consumers in Australia. J Environ Manage. 2020 Dec 1;275:111111. doi: 10.1016/j.jenvman.2020.111111. Epub 2020 Aug 20. PMID: 32829262.](#)

Recycling - An Effective E-Waste Prevention Strategy

Designs for Reuse and Recycling

- Design for reuse and recycling is one of the e-waste prevention strategies.
- Mobile devices contribute towards generation of e-waste, containing a variety of rare, precious and sometimes toxic metals. These devices represent a growing environmental concern as they are often not safely collected and their metals are not retrieved. Improved recycling is one solution, however would necessitate expensive high-tech equipment, thus making it infeasible. A practical strategy is to prolong the usable life of mobile devices. This report will explore strategies used by various companies such as Refined Technologies, and Sustainably SMART to reuse e-waste generated by mobile devices and describe the challenges involved in their recycling practical strategy is to prolong the usable life of mobile devices.

Refined Technology:

- 1. Has developed an optical sorting process that selects devices with reusable components.
- 2. A collaborative robot then assists workers with disassembly to harvest reusable components.
- 3. As a byproduct, this process also collects recyclable components
- 4. These electronics then pass through a desoldering and reworking process, developed by [ITR](#) and [Semicon](#) in Warsaw
- 5. These can then be used in completely different devices or to build the same devices Again.



Recycling Environmental Impact

- Some mobile phone materials can produce toxic metals when burnt, for example: mercury, arsenic and more are a product of burning particular metals. In addition, some materials from electronic devices have the capability to contaminate water resources, soil and the air. Recycling as many of these materials as possible, ensuring they don't end up on landfill sites, is a countermeasure to the environmental problem to e-waste.
- As a contribution to the effort in reducing e-waste, mobile companies should offer trade-in deals with old phones when buying a new one to recycle and reuse it, preventing the older ones being disposed of.

Recycling Social Impact

“Gazelle Trade-In is a pioneer of the electronics trade-in space and we are happy to continue building on our legacy by offering a simple process and immediate payouts for unwanted devices.”

-ecoATM Gazelle

[Statt, N., 2021, Gazelle brings back its phone trade-in program two months after discontinuing it, The Verge](#)



Recycling Economic Impact


“A circular electronics system - one in which resources are not extracted, used and wasted, but re-used in countless ways - creates decent, sustainable jobs and retains more value in the industry.”

[Guy Ryder, Z. H., 2019. *The world's e-waste is a huge problem. It's also a golden opportunity*](#)



Conclusion

In summary a place to start in reducing the amount of e-waste annually are:

- encouraging trade-in plans, where customers are rewarded for giving in their older phones (which can be broken down into parts which are recycled)
 - having an efficient and effective recycling method which can be used to recycle as many components of smartphones as possible (beyond just recycling particular metals)
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We appreciate your attention!

Any Questions?



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Images:

1. <https://www.theverge.com/21420196/best-budget-smartphone-cheap>
2. <https://www.trustedreviews.com/best/best-camera-phones-3520817>
3. <https://www.nationalgeographic.com/science/article/e-waste-monitor-report-glut>
4. <https://www.weforum.org/agenda/2019/01/how-a-circular-approach-can-turn-e-waste-into-a-golden-opportunity/>
5. <https://www.ufi.org/industry-resources/research/global-reports/economic-impact-studies/>
6. https://ssir.org/articles/entry/measuring_social_impact_can_help_foster_a_stronger_european_social_economy
7. https://en.wikipedia.org/wiki/Recycling_symbol



Team Contribution Statement

Assignment Number: 2

Group Number: 22.7

Write the name of each of your group members in a separate column. For each person, indicate the extent to which you agree with the statement on the left, using a scale of 1-4 (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). Total the numbers in each column.

Include a completed and signed Team Contribution Statement in your group submission file.

Evaluation Criteria	Alireza Rahimi	Zain Jameel	Ronika Devi	Abdulaziz OA Khashoggi	Musaruf Hussain	Ariyan Mustak
Attends group meetings regularly and arrives on time.	4	4	4	4	4	4
Contributes meaningfully to group discussions.	4	4	4	4	4	4
Completes group assignments on time.	4	4	4	4	4	4
Prepares work in a quality manner.	4	4	4	4	4	4
Demonstrates a cooperative and supportive attitude.	4	4	4	4	4	4
Contributes significantly to the success of the project.	4	4	4	4	4	4
TOTALS	24	24	24	24	24	24

Feedback on team dynamics:

1. *How effectively did your group work?*

As an overview on this assignment, we worked pretty effectively as a group – being organized in the sense of having regular group sessions on Teams where we would update each other on our progression whilst offering assistance when necessary. We also had a WhatsApp group where we would check in, schedule meetings and help each other with editing particular sections of the PowerPoint. Everyone contributed to a universal goal efficiently, spreading out the tasks across the team evenly where we all completed the tasks to the best of our ability.

2. *What did you learn about working in a group from this project that you will carry into your next group experience?*

Communications between all individuals is absolutely key when attempting to produce a goal (in this case a PowerPoint) to a high standard. Offering assistance to members as well as collaborating more frequently builds rapport between team members as well as boosting morale.

Team Names and signatures

- 1. Alireza Rahimi - 210702202
- 2. Zain Jameel - 200244989
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- 5. Musaruf Hussain - 210523294
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