TIM 105 MOT 1: Homework 1
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HW Questions #1
#1: **Structured Problem-Solving**: Use the structured problem-solving approach to solve the following problem: "improve the existing cell-phone".

1. Define the problem: While the current cell-phones are advanced, there is still space for improvement.

Subproblems
SP 1: Need to **establish** the customer needs that all cell phones should satisfy in this day and age.

SP 2: Assess the existing mainstream cell phone - the iPhone. It meets all the customer satisfaction aspects pretty well, but needs some improvement.

SP 3: Identify solutions to improve existing cell phones with respect to customer needs defined in SP1 and the assessment done in SP2.

2. Create a Plan:

(a) I am a product/marketing analyst at Apple, my task is to find ways to improve the iPhone so the development team can work on the technical detail aspect of my suggestions and research. The solutions I provide will go to the new product development team and product design team, but will first get approved by the executive team so it matches their vision for the iPhone. We will continue to use the manufacturer that Apple is most familiar with.
(b) I need to do research to gain information on cell phones. Specifically I need to do research on the functions and needs of cellphones. To do so, I will look at online surveys of cellphones and read articles on the evolution of cell phones.

Plan for solving each subproblem:

Subproblems

SP 1: There are customer needs that all cell phones should satisfy in this day and age, they are:
- Good phone service for fast and accurate calling and texting
- The storage space for apps the user might want to download
- A good quality camera
- A good display on the screen
- Competitive pricing
- A modern look
- Good battery life
- Waterproof

SP 2: The existing mainstream cell phone - iPhones, meet all the customer satisfaction methods pretty well, some areas of improvement could be:
- Providing faster connectivity
- Increasing storage space
- Improving the camera quality
- Improve the technology for the screen display
- Improving pricing so it is similar to the cheaper competitors
- Design a modern look for the iPhone
- Improving battery life
- Make iPhone waterproof

SP 3: Identify solutions to improve existing cell phones with respect to customer needs defined in SP1 and the assessment done in SP2. Solutions to improve existing cell phones are:
- Customers want their cell phones to work efficiently and fast, so the product development team can brainstorm ways on how to make this possible technically
- Users are always running out of storage due to pictures, music and downloaded content. The product development team can create ways to increase storage - one way could be having the photos app be an online

so photos are saved on the internet rather than the phone. (similar to google photos)
- One of the main uses for phones is the camera, so if the product development team can continue to improve the camera it will attract more users.
- Users also like a good and clear display. The product development teams needs to compare the display of iPhones to the competitors and find different ways they can improve it.
- Other smart phones tend to be be significantly cheaper compared to the iPhone, if the price of the phone can decrease while maintaining quality more users will buy the product.
- The product design team can should improve how the iPhone looks by researching new materials and design methods.
- The product development team can improve battery life with faster charging and longer battery life. Providing portable chargers with iPhones could also be another solution to this.
- Currently iPhones are not completely waterproof, while some of the competitors are. The product design team will do research on how to make iPhones waterproof and the development team can help implement this.

3. Execute the plan:

Research
From engadget.com, the most important features on a phone are:
- Design and build quality
- Screen and great camera
- Battery life
- Processing power
- price

From USAtoday.com, the most important features on a phone are:
- A long-lasting battery
- Warp-speed processing
- Crystal-clear display
- A great camera
- Plenty of storage space

- Wireless charging
- Fingerprint sensor

Analysis/Results

My assumptions and recommendations based off of the research I did.

Consumer Needs	Assessment	Improvement	Feasibility (1-10 scale - 10 being very feasible)
Better Connectivity	The connectivity on iPhones is pretty good, however better connectivity is always appealing to the users	There have been complains of iPhones getting slow after a year of use, so improving longevity of the connectivity would be beneficial.	5/10 - Depending on the product development teams priorities, this might be improved or not.
More Storage Space	Users complain that there is not enough storage due to excess apps and pictures.	Making a internet powered photos app similar to Google photos could solve some of this issue. Other than that the product development team can attempt to increase storage space.	6/10 - With the development of a photo app users will not use much storage, and in addition it is possible to create more storage. The price point for more storage just needs to be brought down.
Good Camera Quality	The camera quality on iPhones is rated well, however some competitors have better iPhones	A better lense(s) can be implemented on the iPhone	7/10 - The camera development team has a history of great improvements, and with research on what

			competitors do they can make a even greater improvement
Good Screen Display	The screen display on the iPhone is pretty good, and is rated well by many customers	While not the first improvement that should be made on the iPhone, a better screen could have a great impact on iPhones/iPhone sales	7/10 - The screen development team also has a history of great improvements, and even if they can not improve the screen, customers will still be satisfied.
Competitive Price Point	Despite paying for quality headphones, only a certain demographic of people can afford the headphones. This device costs around $350 in comparison to Sony - WH-CH700N that are priced $200,	Having a competitive price point would increase more consumers to buy the product.	5/10 - In order to lower the price, advanced features might have to be excluded, if the phones could be manufactured at a lower price while maintaining its high quality it would work, but will prove challenging.
Modern Look	iPhones are known for their great and modern look. To continue this, the design team should continually be working on a better look.	The product design team can do research on different materials that can improve the iPhone display and durability at the same time.	Feasibility: 10/10 The product design team is constantly improving iPhone displays with every release, so this is very feasible.

Battery life	21 hours of battery life	Increase the battery life time	8/10 - Improving battery life can be done with a higher capacity battery, the only issue would be to ensure the small design of the phone while having a more powerful battery.
Waterproof	Not waterproof	Make waterproof so consumers can take pictures in the water and they are less likely to break their phone due to a water accident.	10/10 - Waterproofing electronics is being done regularly on phones, so I think it is very feasible

4. Check

As a product/marketing analyst at Apple I checked all my recommendations and improvements. All my assumptions are reasonable as they are based on research and my personal experience with my iPhone. In terms of what I know, my results and feasibility analysis make sense.

5. Learn

I have found that users care most about these features when it comes to buying a new cell phone:
- Good phone service for fast and accurate calling and texting
- The storage space for apps the user might want to download
- A good quality camera
- A good display on the screen
- Competitive pricing
- A modern look
- Good battery life

- Waterproof

While iPhones are a lead in the market, there is still space for improvement in all these aspects. Once the product development team and product design team look over the changes that need to be made to iPhones there will be great results. My assumptions were supported completely by my research. I think most of my results are good enough to work on, the only one that might need a little more research are the iPhones being waterproof because it has not been done before.

HW Questions #2

Product Needs Analysis: This exercise is an important precursor to your project. Examine the following products: Cell Phones, I-Pod, and Notebook Computers. What are the basic customer and/or societal need(s) that these products and their associated technologies satisfy? Develop a set of criterion to evaluate these products, and then, using these criteria and an appropriate table (i.e., a matrix with rows and columns) evaluate each of these products.

The Basic Customer/Societal Needs for cell phones: handy camera, calling capability, texting capability, and app usage.

The Basic Customer/Societal Needs for iPods: listening to music, and being portable.

The Basic Customer/Societal Needs for Notebook Computers: Doing work (for school and work), online streaming, organizing/storing files, and app usage.

Set of criteria to evaluate all products: portability, storage space, wireless charging, communication capability, and overall convenience.

Product Needs Analysis

	Portability (1-10 scale, 10 being very portable)	Storage space (1-10, 10 having a lot of storage)	Wireless Charging	Communication Capability (1-10, 10 having good	Overall Convenience (1-10, 10 being very

				communication capabilities)	convenient)
Cellphone	9/10 - Cell phones are very portable due to the small size, however cell phones are starting to come in bigger sizes making them not as portable.	8/10 - Cell phones tend to have a lot of storage small (16GB being a minimum) however people still tend to run out of space due to pictures.	Some cell phones have wireless charging, but most require a wire.	10/10 - Cell phones are mainly meant for communication, so they are used to communicate very frequently.	9/10 - Cell phones are very convenient because they serve so many different purposes.
iPod	10/10 - While iPods are not used anymore since they are included in cell phones, they are very portable and small.	8/10 - IPods also have a decent amount of storage space, similar to phones.	iPods mostly require a wire to charge.	0/10 - iPods are not used to communicate.	3/10 - iPods are not so convenient because they only serve the purpose of a music player, when a phone as that and much more.
Notebook Laptops	8/10 - Laptops are also	9/10 - Laptops come with	Laptops mostly require a	7/10 - Laptops can power	8/10 - Laptops are very

	very portable and new design have made laptops smaller and more portable. However, compared to cell phones and iPods they are less portable.	many different storage options so depending on how much one is willing to spend there can be a lot of storage or not much.	wire to charge.	many applications and websites that can be used for communication. Examples being: whatsapp, facebook.com, groupme and more.	convenient because they make it easy to do work on the go and are portable. However due to the big size of laptops, phones are more convenient.

END OF HW #1

Preliminary Project Proposal

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(Also emailed separately to Professor Desa)

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Problem:

Get to know our project partners

STEP 1: Define the real problem

SP 1: Establish who is in Group 9

SP 2: Assess when and where should weekly meetings be held

SP 3: Identify ways to hold efficient meeting during time restriction

STEP 2: Create a plan

SP1: Establish

a. Introducing each other by names, majors, graduation year
b. Icebreaker
c. Meetings: McHenry Library Conference Room, 8:00 PM Wednesday

SP2: Assess how well team members are working together and participating

a. Each member will attend meeting
b. Members are communicating concerns and progress
c. Everyone finishes their assigned work on time

SP3: Improve team meetings

a. Communication through groupme application
b. Full attendance
c. Divide work equally

STEP 3: Execute the plan

We had a meeting and talked about our plan. We applied our plan while working on the rest of the proposal.

STEP 4: Check your work

After looking back at all of our work assignments, we went back and fixed errors to made sure the proposal was neat and clearly written. We made sure each steps were broken down as much as possible for clarity.

STEP 5: Learn and generalize

We learned we work well as a team, but we have conflicts when it comes to meeting times so it may sometimes be difficult to be all together. May be better to meet over video call applications and VOIP to avoid time conflicts without losing the teamwork aspect of this project. If one or two people absolutely can not attend the agreed meetup time, the other team members will recap what happened at meeting to those that missed the meetup.

Problem:

        Decide on technology/product domain that your team would like to work on

List of possible technologies: headphones from Bose, Beats, Plantronics and Apple. We decided to pick Bose.

STEP 1: Define the real problem: How can we improve Bose headphones

        SP 1: Establish what Bose headphones are

        SP 2: Assess existing Bose headphones product and service and assess if customers are satisfied

        SP 3: Identify ways to improve existing Bose headphones based on customer needs

STEP 2: Create a Plan

        SP1: Establish

           a. QuietComfort 35 Wireless Headphones II by Bose

           b. Priced at $349.95

           c. Rechargeable over ear headphones that have noise cancelling technology that can be used with or without wires

        SP 2: Assess

           a. Ranked best headphones by CNET and TechRadar

           b. Strong and positive customer reviews on Amazon

           c. Customer surveys

        SP 3: Identify

           a. Improve battery life

           b. Make all headphones waterproof

           c. Make headphones more comfortable

           d. Have a competitive price point

STEP 3: Execute the Plan

Consumer Needs	Assessment	Improvement	Feasibility
Battery life	20 hours of battery life	Increase the battery life time	Feasibility:4/5 Improving battery life can be done with a higher capacity battery, the only issue would be to ensure the small design of the headphones stays supported while having a more powerful battery.
Waterproof	Not waterproof	Make waterproof so consumers can use headphones in more situations	Feasibility: 3/5 Waterproofing electronics is being done regularly on phones, it would be a newer market on over ear headphones but still very similar, it might prove a bit challenging maintain the leather comfort.
Comfort	Headphones are comfortable, but can still improve	Make headphones more comfortable compared to competitors	Feasibility: 5/5 Improving comfort can always be done with adding higher quality materials that can withstand longer use time.
Wireless Charging	Currently requires USB wire to charge, can potentially lose wire .	Creating a portable wireless charging station for easy access	Feasibility:3/5 Although wireless charging has been made available for phones, creating the technology for headphones might prove a bit more difficult and

			potentially not a worthwhile expense.
Competitive Price Point	Despite paying for quality headphones, only a certain demographic of people can afford the headphones. This device costs around $350 in comparison to Sony - WH-CH700N that are priced $200,	Having a competitive price point would increase more consumers to buy the product.	Feasibility:2.5/5 In order to lower the price, a lot of advanced features might have to be excluded, if the headphones could be manufactured at a lower prove while maintaining its high quality and advanced features it would work, but might prove challenging. Also, profit margins could be reduced in hope that more people would buy the product at the cheaper price thus offsetting the slimmer margin.

STEP 4: Check your work

Based on the official website and reviews online, we conclude our work is right and we are headed in the right direction. Our problem statements, plan and execution of the plan are aligned and will help us improve Bose headphones.

STEP 5: Learn and generalize

Bose headphones are one of the leads in the market but they still have pretty big competitors. Our team is working to improve them in many different aspects: battery life, waterproof capability, comfort, wireless charging capability and competitive price point. We will work as a team to analyze each of these aspects and identify how we can improve the headphones as a whole. With these improvements Bose headphones can be superior to the competitors: Beats, Plantronics, and Apple headphones.