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TIM 105 HW #3
10/18/18

Problem 1: "Intel 2004": Use the structured problem solving approach to solve this problem. How has Intel's Technology strategy, Product/Market strategy, and developmental goals changed from its inception (1968) to 2004. What were the key driving forces that triggered these changes? What do you think are the three key technology/product initiatives that the CEO Craig Barrett should pursue during the next year (2005)?

Define the Problem: Our goal for this problem is to read "Intel 2004" and answer the given questions.

Plan the Treatment of the Problem:
1. Read "Intel 2004"
2. How has Intel's Technology strategy, Product/Market strategy, and developmental goals changed from its inception (1968) to 2004
3. What were the key driving forces that triggered these changes?
4. What do you think are the three key technology/product initiatives that the CEO Craig Barrett should pursue during the next year (2005)?

Execute the Plan:
1. Read "Intel 2004"
2. How has Intel's Technology strategy, Product/Market strategy, and developmental goals changed from its inception (1968) to 2004
    a. Intel has invested in new business and markets which have ended not working out
    b. However, even with these failure, Intel kept investing this eventually led to success.
    c. Starting from Intel Inside, they have expanded to cell phones, Tv's, video players, wireless home networking and medical gear.
    d. Intel has remained innovative and keeps trying to enter new markets.
    e. Intels persistence and continuous innovation will continue to lead them to success
3. What were the key driving forces that triggered these changes?
    a. Intel was losing customers and this motivated them to try new methods, markets and product ideas. This led to an increased innovation and revenue.
4. What do you think are the three key technology/product initiatives that the CEO Craig Barrett should pursue during the next year (2005)?
    a. Make existing chips much better with new generations.

b. Research WiMax - the chip that could be used to deliver high speed wireless internet access throughout a small city. With WiMax Intel could make a lot of progress.

c. Itanium is something Intel could also invest in.

Draw Conclusions: This article and problem shows us that Intel should not and did not give up regardless of challenges and failures. Learning and growing from these incidents is what helped them become so successful.

Problem 2: Sensitivity Analysis for the Umbrella problem. You have traveled to London (a "rainy city") and forgotten your umbrella. You have an important interview the next day, for which the probability that it will rain is 40%. If you get caught in the rain you will do $75 of damage to your expensive suit. The cost of an umbrella is $25. Draw the decision tree for this problem. What should you do? How sensitive is your decision to (a) a 10% change in probability of rain; (b) a 20% change in probability of rain.

Define the Problem:
In this problem, we are to create a decision tree and make a decision when one forgets their umbrella and whether to buy one given.
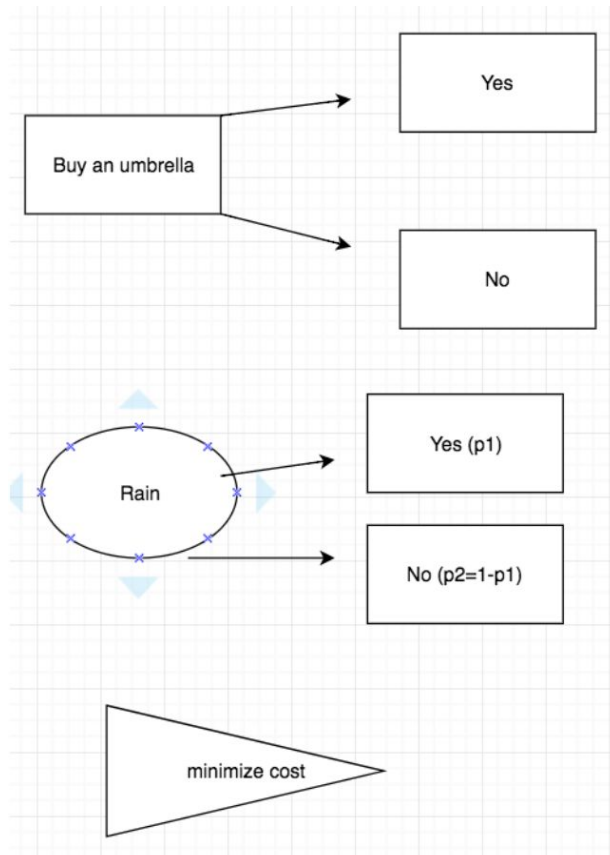
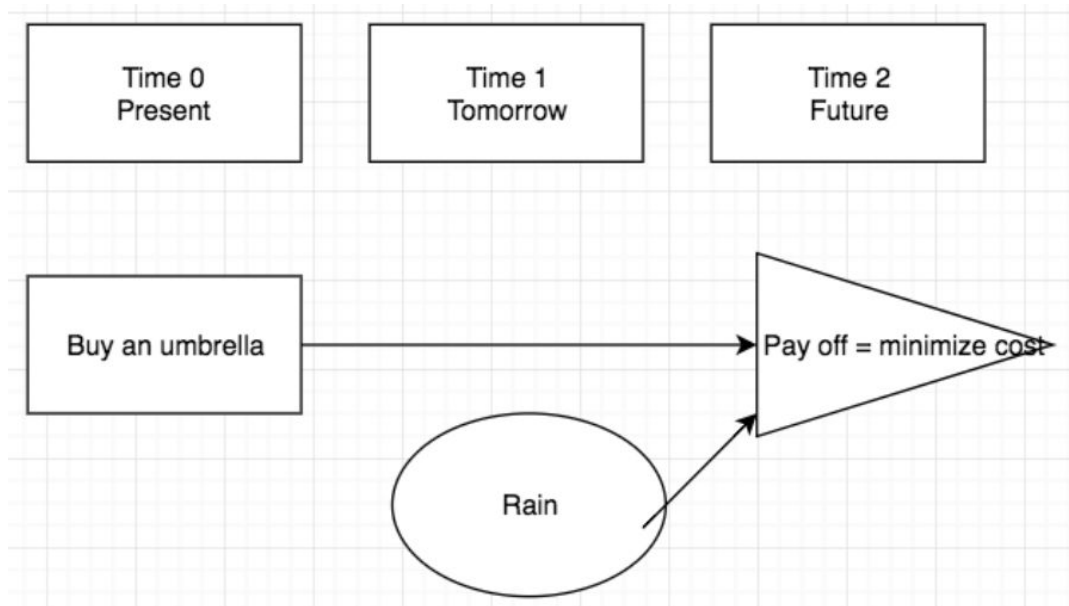**Plan the Treatment of the Problem:**
Complete Steps 1-6.

Execute:
- **Step 1: List all the building blocks relevant to the particular problem of interest, with all the associated branches. (go to next page)**

Pay off = minimize cost

- **Step 2: Create an influence diagram (ID), which is a high level chronological view (from left to right) of the relationships between the blocks in Step 1.**

Important remark: When creating the ID, use only the "raw" building blocks.

- **Step 3: Convert the ID (from Step 2) into a decision tree (DT) by including all the appropriate branches for the "decisions" and "uncertain event" building blocks (from step 1).**

Include all relevant cost and probability information in the DT for the umbrella p, the nominal probability p1=0.40.
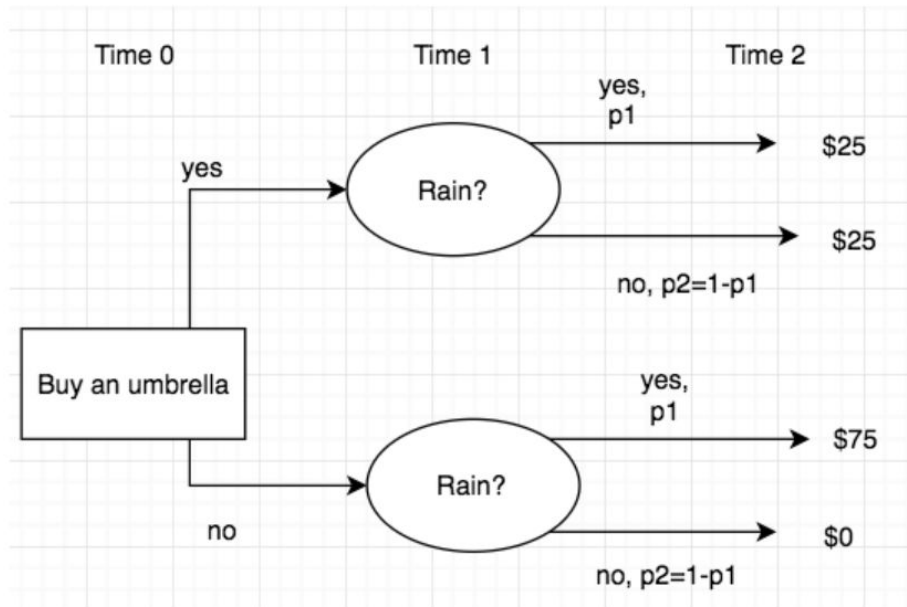
- **Step 4: Fold back the DT to obtain (calculates) the payoff associated with each choice in the decision block(s)**
1. **Buy an Umbrella (yes) → Rain**
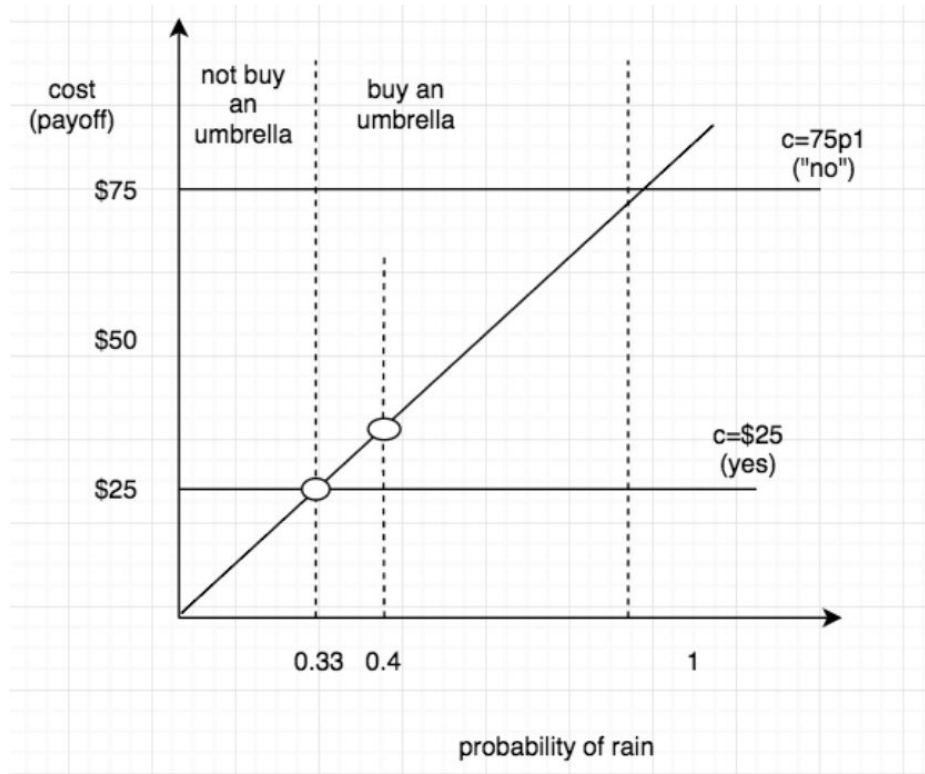   a. Yes: $25: p1=0.4
   b. No: $25 P2 = 0.60
   c. ($25)p1 + ($25)p2
   d. (25)(0.4) + (25)(0.6) = $25

2. **Buy an Umbrella (no) → Rain**
   a. Yes: $75: p1=0.4
   b. No: $0: p1=0
   c. (75)p1 + (0)(0.6)
   d. (75)(0.4) + 0 = 30

3. **The nominal value of p1 for this problem is 0.40.**

cost (payoff) vs probability of rain. not buy an umbrella | buy an umbrella. $c=75p1$ ("no"). $c=\$25$ (yes). Values on cost axis: $75, $50, $25. Values on probability axis: 0.33, 0.4, 1.

- **Step 5: Choose the option (decision) which maximizes payoffs, which in this case is minimizing cost for p1=0.4.**
  Cost (yes) = $25
  Cost (no) = $75p1 = (75)*0.4 = $30
  = Yes, but an umbrella

- **Step 6: Perform a sensitivity analysis to determine the "robustness" of your decision wrt changes in the nominal value of the input parameters.**

P nom = nominal probability (=0.40 for this problem)→ decision 1 ("buy an umbrella")

Make small changes (+/-10%, +/-20%) in the nominal probability and then determine the corresponding decisions with these new probabilities.

Example: for a 10% in the nominal probability
P nom + 0.10 p nom = 0.40 +(0.10)(0.40) => Decision 2 = p=0.44
P nom - 0.10 p nom = Decision 3 = p = 0.36
Robust decision is one that does not change when the nominal probability is either increased or decreased by a certain percent.

Draw Conclusion:

Using the above process that was taught in class, along with the information given to us in the problem, we were able to accurately predict all case scenarios present. This helped us in creating an informative decision when deciding if we should buy an umbrella or not.

Problem 3: Large Company Analysis for your team project: In your project proposal the project team identified a large company (e.g., Microsoft, Boeing, and Ford) which might conceivably design and develop your product. Perform a company analysis of this large company. Proceed as follows:

- Schedule a time to meet **as a team** for the purpose of performing the Large Company analysis
- (before the team meeting) Use the structured problem-solving process to create an explicit plan for performing the large company analysis. This process will include assigning specific tasks to the team members. The "Company Analysis" process is explained on Pages 17, 18 of the "Lecture Notes on Competitive Strategy" handout on the class web-site.
- (before the meeting) Gather relevant information needed for performing the analysis.
- Conduct a team meeting (1-2 hours) to perform (in a time-efficient manner) the Company Analysis
- Turn in a concise, well-written solution documenting all the work done. This solution should include your problem-solving process and clearly show its implementation.

Note: To get credit (1) each member of the group must participate in the group meeting, and (2) include the solution when they turn in the homework.

Problem 3. Large Company Analysis (Group 9)

1. **Define the Problem**

   - Perform a large company analysis of Bose

   - Schedule a time to meet as a team for the purpose of performing the large company analysis. Gather relevant information needed for performing the analysis

2. **Create a Plan**

Assumptions:

Who are we?

- We are students in TIM 105/205.

Who are we doing the research for?

- The research on a set of Bose headphone set is for the 7 student individuals in Group 9, Professor Subhas Desa, as well as for the 2 teaching assistants in TIM 105/205. This analytical research will give us an in-depth understanding of the Bose's revenue market, how its products are marketed, and the breakdown of the headphone product itself.

What information do we need?

- Market Share of Bose, Total Value of Market, what products Bose sells, Largest competitors, breakdown of consumers, Who are our suppliers?, Where does the industry stand in relation to complementary products?

What Industry are we a part of?

- Bose is in the consumer electronics industry with a focus on the audio experience market. This includes music consumption technology and music creation devices.

Subproblems:

S.P 1: Establish Business Goals and Objectives.

- Need to find detailed information on Bose to determine their business goals and objectives
- We can use the Bose website and online resources to find this information
- We are also using the competitive strategy handout to use as a guide to do this research

S.P 2: Determine the technology strategy and product/market strategy for the company.

- We need to research the technology behind bose products and what kind of materials and proprietary technology they implemented or have created for their products

- We need to find different advertisement campaigns Bose has ran and analyze the type of consumer they attempted to market to

- We need to analyze different products Bose has released and what kind of consumer each product is trying to market to

S.P 3: Define overall developmental goals and objectives to align business goals,technology, and market strategies.

- We can look at the Bose website to search for their business goals and mission statement.

- From our research on marketing and advertising campaigns, we can narrow down specific strategies that are effective in the technological market.

S.P 4: Develop functional maps of the markets and industry in which the company is embedded. Create functional maps for technology, product/market, and manufacturing strategy of the firm.

- Functional maps based on other companies in the headphone industry

- p/m determine differentiation of products based on customer reviews and product reviews, Forbes list or Fortune 100
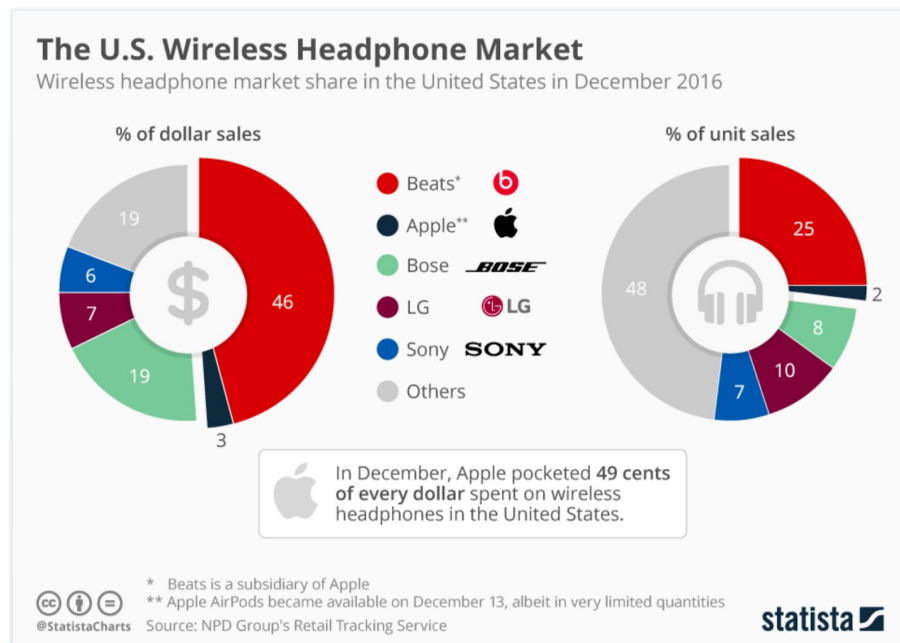
3. Execute the Plan

S.P 1: Establish the business goals and objectives. (ROI, %market share, revenue, and growth aspirations)

As of 2016, Bose holds the second most market share in the wireless headphone market at 19%. Bose is only behind Beats' massive 46% market share. In 2016, Bose had total sales of $3.8 Billion while accounting for 8% of sales in the wireless headphone market. Bose's growth aspirations are to take market share away from Beats and integrate sustainability into their core

business functions. Detailed in their 2018 Sustainability Report, Bose explains that they,

"formally integrated sustainability considerations into the annual strategy planning process for

our manufacturing, global supply chain, and global sales functions." Due to Bose being a

privately held company, their ROI is not publicly accessible for company information.

The U.S. Wireless Headphone Market
Wireless headphone market share in the United States in December 2016

% of dollar sales

% of unit sales

Beats*
Apple**
Bose
LG
Sony
Others

In December, Apple pocketed **49 cents of every dollar** spent on wireless headphones in the United States.

* Beats is a subsidiary of Apple
** Apple AirPods became available on December 13, albeit in very limited quantities
@StatistaCharts Source: NPD Group's Retail Tracking Service

statista

S.P 2: Determine the technology strategy and product market strategy for the company.

Technology Strategy:

- Research, innovation and invention are the essence of Bose's company. Their success
  results from exploring new methods and ideas beyond conventional boundaries. They
  want to continue making improvements to headphones - including adding more features
  and making them more sustainable.

- Bose's ambition is to adopt leading environmental and social management practices and
  embed a sustainability mindset comprehensively across the company. To accomplish this

they have established a global multi-year sustainability strategy that creates value for their customers and the communities in which they operate.

- Their global supply chain and global sales functions integrated sustainability considerations into their annual strategy planning process

- They had a prominent 1.7 MW solar panel array installed at their Massachusetts headquarters which brings enough electricity onto the grid to power a substantial portion of the campus

Marketing Strategy:

- Bose's main marketing strategy is to make it's wide range of products directly available to consumers/producers of secondary products.
  - This includes the use of e-commerce websites as well as opening exclusive Bose

- Their strategy includes minimal advertising, instead targeting and holding a niche market using the company's different and innovative products.
  - Their effort of capturing their market using different and innovative products comes from the reinvestment of a large portion of their profits back into the company for increased growth and the development of new products and technologies

- Bose recently has begun try bring in more customers by striving to share the values held by their customers
  - Like many other companies, Bose has placed importance on sustainability, through the reduced use of electricity in the manufacturing process and the increased percentage of manufacturing waste that is recycled

- ○ This also includes increasing the number of people that benefit from community programs, as well as increasing the number of employees with management participation training.
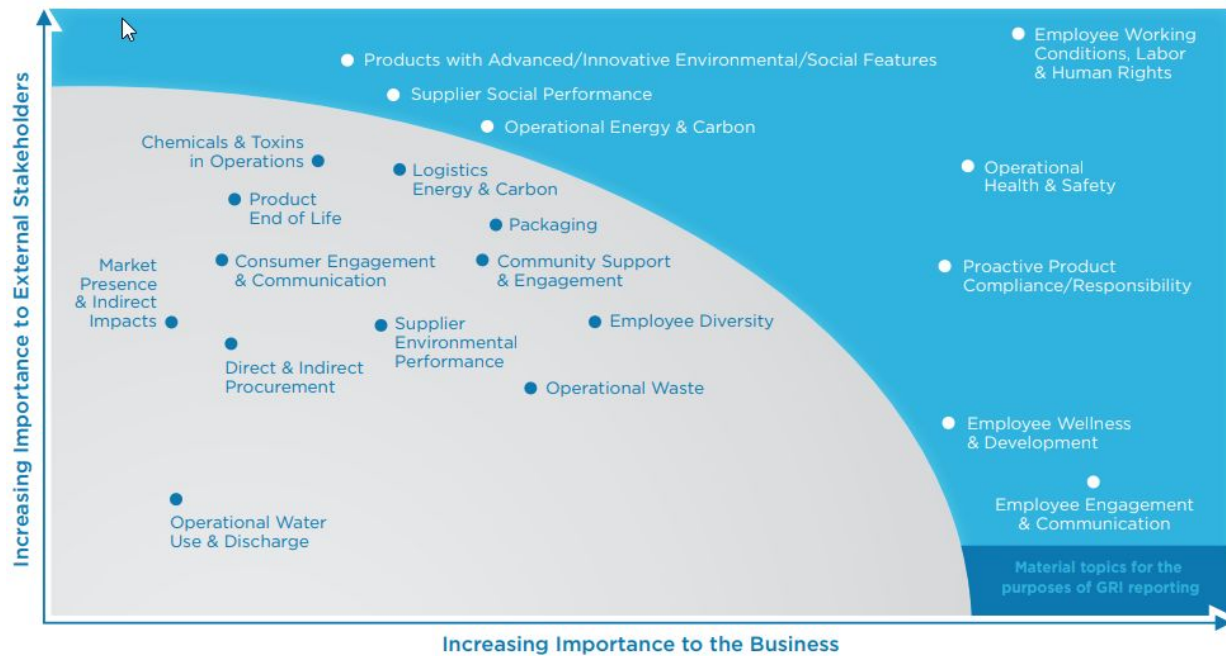
S.P 3: Define the overall development goals and objectives to align business goals, technology, and market strategies

The overall development goals of Bose should align with not just the employees and consumers nationwide, but also globalwide. By adding in more productivity in the research and developmental stage and using more social media platforms to advertise the company, Bose could exceed with high performance. With Bose coming in behind Beats, Bose should execute goals of improving the headphone's internal and external functionalities to suit consumers' needs all over the globe. This will allow users to become interested in products worth their needs. In addition, executing business goals could boost company revenues and create more profit margins.
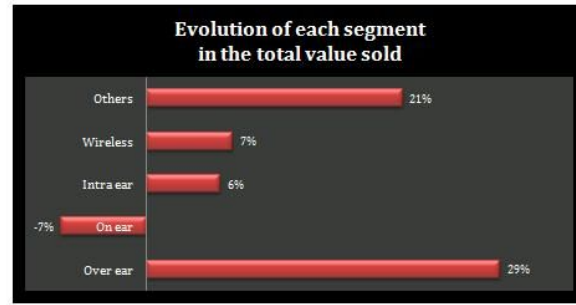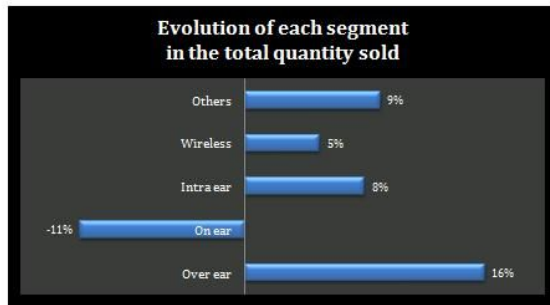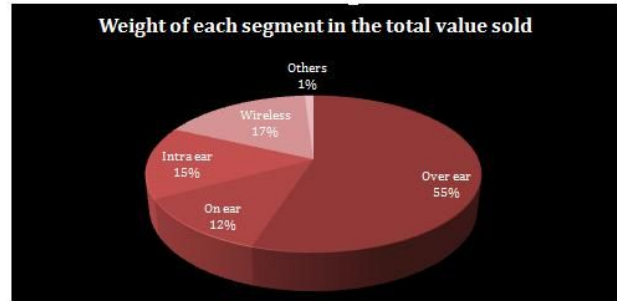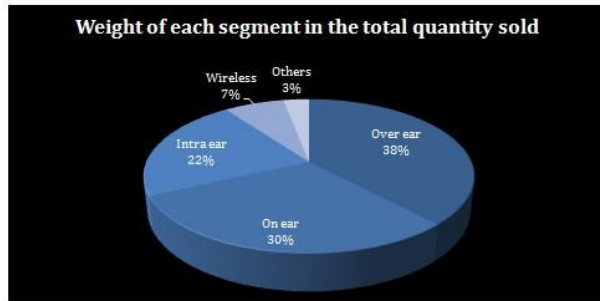
Bose heavily relies on research and inventing and innovating products. Through heavy research Bose is able to provide top of the line products to its customers. Although very technologically driven, Bose has also established a global multi-year sustainability strategy in order to lead environmental and social practices within its company. Their global supply chain and sales functions have integrated sustainability considerations into their annual strategy planning process. Bose's marketing strategy involves minimal advertising and commercials, and attempting to keep the market the have already captured. Bose also reinvests a large portion of their profits back into their company in order to keep providing new and innovative products for their market.

S.P 4: Develop functional maps of the markets and industry in which the company is embedded. Create functional maps for technology, product/market, and manufacturing strategy of the firm.

<u>**Product Strategies:**</u>

<u>Definition:</u> what differentiates the companies products from its competitors?

Based on website information, (https://brandsaudit.wordpress.com/the-headphones-market/), Bose is the best value headphone brand based on technical and price points.

Weight of each segment in the total quantity sold

Weight of each segment in the total value sold

Evolution of each segment in the total quantity sold

Evolution of each segment in the total value sold
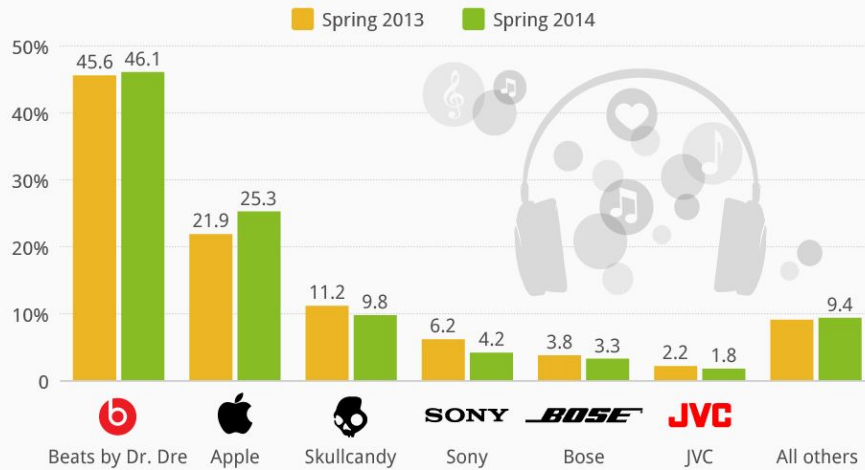
Market Strategies

https://www.marketing91.com/marketing-mix-bose/

Their primary marketing strategy is that Bose products are sold using no middlemen or resellers; instead only specific stores and E-commerce websites are allowed to sell products. In comparison to other competitors, Bose focuses on minimalistic advertisements to market their brand.

U.S. Teens Love Beats Headphones

Preferred headphone brands among U.S. teenagers (% planning to purchase next)

Spring 2013 · Spring 2014

Beats by Dr. Dre: 45.6 / 46.1
Apple: 21.9 / 25.3
Skullcandy: 11.2 / 9.8
Sony: 6.2 / 4.2
Bose: 3.8 / 3.3
JVC: 2.2 / 1.8
All others: (Spring 2014) 9.4

n=7,500 teens at an average age of 16.4 years
@StatistaCharts Source: PiperJaffray & Co.
statista

THE BEST FROM BOSE®
JUST GOT WIRELESS

Charactersitics Consumers look for in products:

- Battery autonomy
- The quality of bass, medium and highs
- Pressure on the ears
- Nomadism of the headphones (whether they are easy to carry or not)
- The weight
- Size dimensions of the earphones
- Noise cancellation feature
- Waterproof option

Definition: What markets does the company serve?

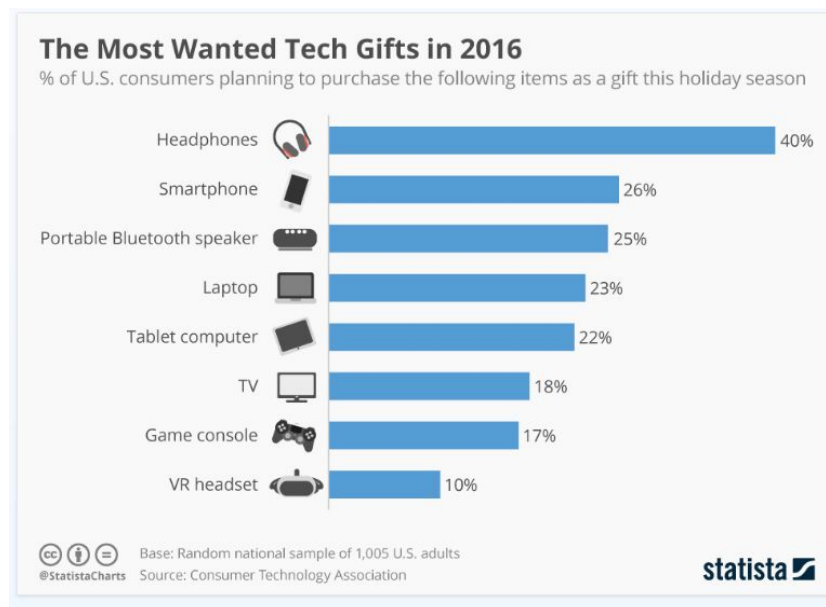Markets Bose Serves: (https://www.statista.com/chart/7993/headphone-market-share/)
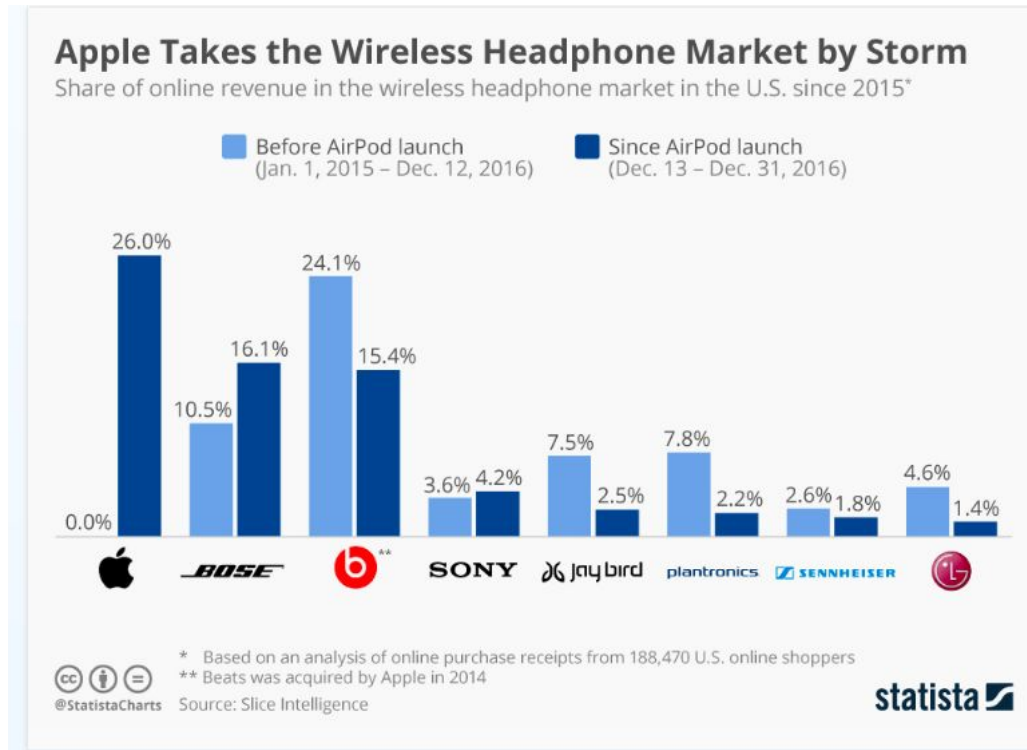
Bose has 16.1% of the wireless headphones share. This is 2nd brand coming right behind Apple airpods, and has increased market shares since the apple product launched. As this data was taken from 2015, the present number of Bose online revenue shares is expected to continuously increase from more recognition.

4. Check your Work

We collaborated as a group to come up with this company analysis. We used the resources give to us in addition to online research from the Bose website. Based on what we analyzed, our analysis matches their company goals and developments. Our results make logical sense and after re-analyzing our processes and problem-solving techniques, we have come to the conclusion that our work is all correct.

5. Learn and Generalize

We learned about how Bose focuses on innovation and sustainability while making their products and they are always working to make their products better. We also learned how to do a company analysis as a group using the 4 step process from the handout provided to us in class. We also found out that headphones are a great market, and we should continue to do our group project on headphones based on this survey questions:

The Most Wanted Tech Gifts in 2016
% of U.S. consumers planning to purchase the following items as a gift this holiday season

Item	Percentage
Headphones	40%
Smartphone	26%
Portable Bluetooth speaker	25%
Laptop	23%
Tablet computer	22%
TV	18%
Game console	17%
VR headset	10%

Base: Random national sample of 1,005 U.S. adults
@StatistaCharts Source: Consumer Technology Association
statista

(https://www.statista.com/chart/7286/most-popular-tech-gifts-2016/)

Problem 4: "Intel 2006": Use the structured problem solving approach to solve this problem. Read the Intel 2006 article and answer the questions in Question 1 Above. How has Intel's Technology strategy, Product/Market strategy, and developmental goals changed from its inception (1968) to 2004. What were the key driving forces that triggered these changes? What do you think are the three key technology/product initiatives that the CEO Craig Barrett should pursue during the next year (2005)?

Define the Problem: Our goal for this problem is to read "Intel 2006" and answer the given questions.

Plan the Treatment of the Problem:
5. Read "Intel 2006"
6. How has Intel's Technology strategy, Product/Market strategy, and developmental goals changed from its inception (1968) to 2006
7. What were the key driving forces that triggered these changes?
8. What do you think are the three key technology/product initiatives that the CEO Craig Barrett should pursue during the next year (2007)?

Execute the Plan:
5. Read "Intel 2006"
6. How has Intel's Technology strategy, Product/Market strategy, and developmental goals changed from its inception (1968) to 2006
   a. Intel has worked on improving their brand image
   b. They have also tried to get new markets
   c. Intel is starting to focus on consumer electronics, communications and healthcare.
   d. Intel has remained innovative and keeps trying to enter new markets.
7. What were the key driving forces that triggered these changes?
   a. Intel wanted to enter new markets to stay relevant and keep customers engaged. Otellini, the new CEO, is also a major reason for these changes.
8. What do you think are the three key technology/product initiatives that the CEO should pursue during the next year (2006)?
   a. Make existing chips much better with new generations.
   b. Continue to expand in more markets, especially unique ones like healthcare. If Intel is the first in the market to expand to these areas they can have a huge impact.

Draw Conclusions: This article and problem shows us that Intel is continuing to be innovative and can make big changes with their new CEO. Learning and growing from their past is what helped them become so successful in the end.