

### Homework # 3

#### Schedule:

Review the homework -(5 minutes)

Brainstorm-(5 minutes)

Work on structure problem solving (120 minutes)

Define the problem (5 minutes)

Plan the treatment of the problem(10 minutes)

Execute the plan(30 minutes)

Check your work(10 minutes)

Learn and generalize(20 minutes)

Total time (200 minutes)

#### Problem 1

##### Intel 2004

#### 1. Define the problem

How has Intel's Technology strategy, Product/Market strategy, and developmental goals changed from its inception (1986) to 2004? What are 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)?

a.

#### 2. Plan the treatment of the problem

- Read the Intel case studies provided
- Highlight important information
- Find additional information from other sources
- Draw conclusions

#### 3. Execute the plan:

- How have Intel's Technology Strategy, Product/Market strategy, and developmental goals changed from its inception ?

-	1968	-	-	2004
Tech strategy	Mainframe Computers	Personal Computers	Wireless Technology	Portable computers
Product/Marketing strategy	To be big microprocessor or company in the market	Brand naming		"Intel Inside"
Development	Semiconducto	Microprocess	Branching out	"Intel

al goals	r chips	or		everywhere”
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b) what were the key driving forces that triggered these changes?

After reading the case study a key driving forces that triggered these changes was the fact that everything lead back to Intel since they pioneered microprocessors.

Another driving force I noticed is the fact that Intel branched out into products and taking risks on products that have a high risk of failure.

c) What do you think are the three key technological/product initiatives that the CEO craig Barrett should pursue during the year (2005)?

A product that Intel should pursue should be

- 1) cell-Phones
- 2) Portable music players
- 3) Sound systems

#### **4) Check your work:**

Reflecting on the conclusion that I came up with and reading the case studies, the information that I interpreted aon how Intel has changed over time should be a reflection of the resources that given to me and should be accurate.

#### **5) Learn and generalize/Conclusion:**

After reading the case studies, I found it fascinating how intel got to where it is in the marketplace through attempting risks and branching into new businesses and products.

### **Problem 2**

Sensitivity Analysis for the Umbrella Problem

#### **1) Define the problem**

You have traveled to London and have 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.

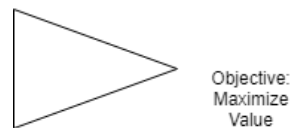
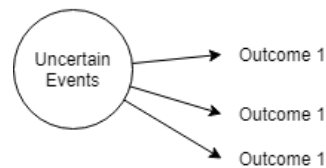
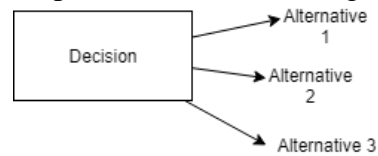
(b) A 20% change in probability of rain.

## 2) Plan the treatment

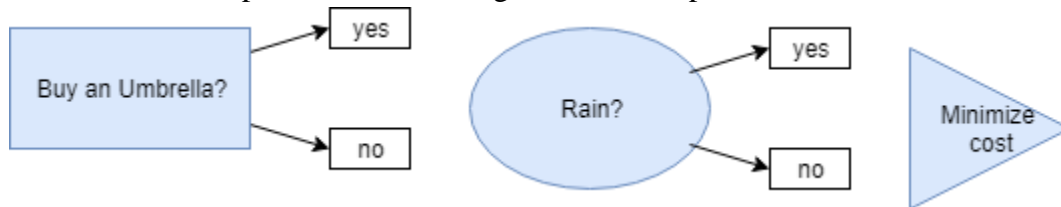
- Read the Problem
- Highlight important information and numbers
- Use notes from class on how to maximize and minimize cost
- Draw decision tree
- Execute
- Calculate conclusions

## 3) Execute the plan

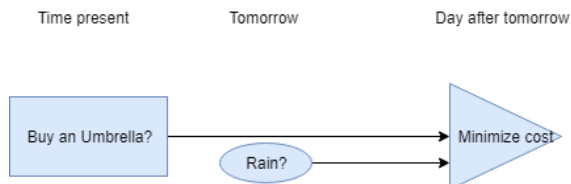
Step 1. List all the building blocks relevant to the problem



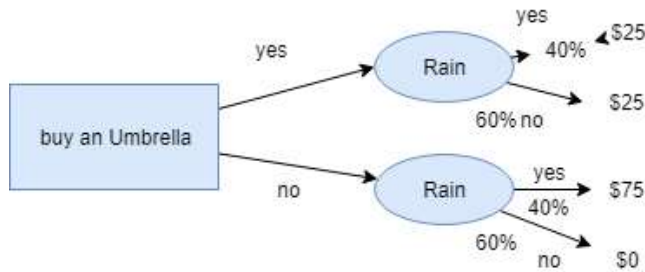
Step 2. List the building blocks to the problem



Step 3. Create an influence diagram which a high-level chronological view, from left to right, of the relationships of the blocks shown in step 1.

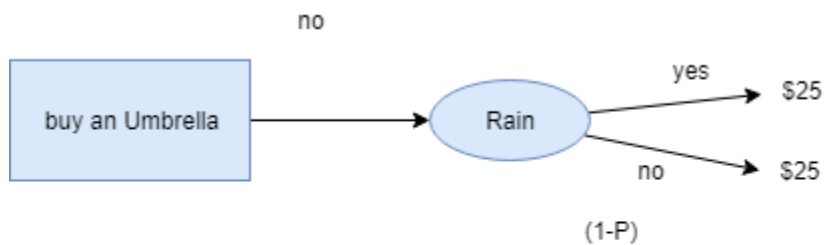


Step 4. Convert into a decision tree with choices, outcomes, form step one for each block of the decision tree.



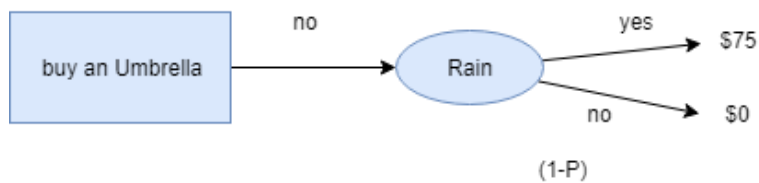
Step5: Count the number of choices for each decision that needs to be made

Choice#1: “buy” the umbrella



$$\text{"cost" (for "yes")} = (p)(\$25) + (1-P)(\$25) \\ = \$25$$

Choice#2: “no” to umbrella



$$\text{"cost" (for "no")} = (p)(\$75) + (1-P)(\$0) \\ = \$75$$

Step 5. Choose the option that maximizes value.

Choice 1 : Buy the umbrella



Through all the work shown whether to buy or not to buy the umbrella with a 10% and 20% change in the variation of rain, I conclude that with a 10% chance in the variation of rain, you do not need to purchase an umbrella. On the other hand, with a 20% chance in the variation of rain, you drop to a 32% chance of rain and you'll most likely will need to buy an umbrella or risk \$75 dollars worth of damage to your expensive suite.

### **Problem 3:**

#### **Large Company Analysis for your team project:**

**Topic:** Laptops/Computers; Dell

**Problem:** Perform a Company Analysis

**Schedule: Structured problem solving**

- A. Review the project (10 minutes)
- B. Brainstorm (30 minutes)
- C. Work on structured problem solving (100 minutes)
- D. Define the problem (5 minutes)
- E. Plan the treatment (30 minutes)
- F. Execute the plan (30 minutes)
- G. Check your work (5 minutes)
- H. Learn and Generalize (30 minutes)

**Total time:** (235 minutes)

**1. Define the problem:** Perform a large company analysis for Dell to assess Dells' position in the marketplace in modular laptops.

#### **2. Plan the treatment of the problem:**

- **Stage 1: Company Analysis - Richard William Eric**
  - Establish the business goals and objectives (ROI, %market share, revenue, and growth aspirations). (Assigned to Qizhang Chen, Wan Fong)
  - Determine the technology strategy and product market strategy for the company. (Caleb Jones, Wan Fong,
  - Define the overall development goals and objectives to align business goals, technology, and market strategies. (Assigned to Caleb Jones, Monique Van)
  - Develop the functional evolutionary maps of the markets and industry in which the company is embedded. Create functional maps (time-based evolutionary maps) for technology, product market, and manufacturing strategy of the firm. These maps will be useful in the process of assessing and creating competitive strategy. (Assigned to Eric Hong, Yu Chen Shih)

- **Stage 2: Industry Analysis**
  - Perform the structural analysis of the industry in which the company is either an active competitor, or a new entrant, or a substitute (Assigned to Antoine Rocha, Yu Chen Shih)
  - Determine the existing competitive strategy of the company within the industry. (Assigned to Antoine Rocha, Monique Van)
  - Determine the relationships between the company and the other players in the industry. (Assigned to Caleb Jones, Monique Van)
- **Stage 3: Assessment and Evolution of the company's strategy within the relevant markets and industries**
  - Using the functional maps of the overall markets and industry in which the company is embedded, as well as the company specific functional maps, assess the evolution of the company's competitive strategy. (Assigned to Caleb Jones, Yu Chen Shih)
  - Decide on what the company's future competitive strategy should be, and the corresponding technology strategy, product market strategy, and manufacturing strategy. (Assigned to Eric Hong, Qizhang Chen, Yu Chen Shih)

### 3. Execute

#### Stage 1: Company analysis:

##### Dell ROI:

DELL Annual Return On Investment	(FY 2012)	(FY 2012)	(FY 2011)	(FY 2010)	(FY 2009)
	(Jan. 31, 2012)	(Jan. 31, 2012)	(Jan. 31, 2011)	(Jan. 31, 2010)	(Jan. 31, 2009)
Y / Y Investment Growth	6.96 %	17.87 %	30.17 %	26.21 %	28.64 %
Y / Y Net Income Growth	-32.07 %	32.52 %	83.88 %	-42.17 %	-15.97 %
Annual Return On Investment	9.84 %	15.5 %	13.78 %	9.75 %	21.29 %

Dell ROI - Return on Investment Historical Data			
Date	TTM Net Income	LT Investments & Debt	Return on Investment
2018-07-31	\$-1.56B	\$55.63B	-2.61%
2018-04-30	\$-2.21B	\$61.75B	-3.66%
2018-01-31	\$-3.33B	\$61.48B	-5.49%
2017-10-31	\$-4.14B	\$60.64B	-6.80%
2017-07-31	\$-5.12B	\$58.31B	-8.19%
2017-04-30	\$-4.39B	\$62.34B	-7.71%
2017-01-31	\$-3.25B	\$62.07B	-7.33%
2016-10-31	\$-1.59B	\$67.10B	-4.99%
2016-07-31	\$-0.16B	\$36.03B	-1.04%
2016-04-30	\$-0.33B	\$12.25B	-5.37%
2016-01-31	\$-0.52B	\$12.12B	-17.27%
2015-10-31	\$-0.52B	\$0.00B	-14.60%
2015-07-31	\$-0.44B	\$0.00B	-12.39%

## Dell's Market Share

Table 1  
Preliminary Worldwide PC Vendor Unit Shipment Estimates for 4Q17 (Thousands of Units)

Company	4Q17 Shipments	4Q17 Market Share (%)	4Q16 Shipments	4Q16 Market Share (%)	4Q17-4Q16 Growth (%)
HP Inc.	16,076	22.5	15,084	20.7	6.6
Lenovo	15,742	22.0	15,857	21.7	-0.7
Dell	10,841	15.2	10,767	14.7	0.7
Apple	5,449	7.6	5,374	7.4	1.4
Asus	4,731	6.6	5,336	7.3	-11.3
Acer Group	4,726	6.6	4,998	6.8	-5.4
Others	13,990	19.6	15,599	21.4	-10.3
Total	71,556	100.0	73,015	100.0	-2.0

Notes: Data includes desk-based PCs, notebook PCs and ultramobile premiums (such as Microsoft Surface), but not Chromebooks or iPads. All data is estimated based on a preliminary study. Final estimates will be subject to change. The statistics are based on shipments selling into channels.

## Dell annual revenue





**Dell mission statement:** Our mission is to be the most successful IT systems company in the world by delivering the best customer experience in all markets we serve. In doing so, Dell will meet customer expectations of:

- highest quality
- leading technology
- competitive pricing
- individual and company accountability
- best-in-class service and support
- flexible customization capability
- superior corporate citizenship
- Being Eco-Friendly

**Dell vision statement:** Dell's vision is "to be the customers' first and only selection at the computer market." Dell's **mission** is to "produce high quality products with competitive pricing to serve our customers with the best shopping experience and service support."

#### Technology Strategy:

- Dell focuses on developing technologies around data and AI.<sup>2</sup>
- To dominate the market and data---the making, gathering, transporting, connecting, viewing, storing, and analysis of it.
- The aim is to be hardware and VM-centric.<sup>6</sup>
- They have the resources to supply clouds with hardware, help customers develop cloud-native applications, and wrangle clouds with VMware.<sup>7,8</sup>

#### Product Market Strategy:

- Dell products are targeted towards tech savvy people and working people.<sup>4</sup>
- It has a large amount of manufacturing units and sales offices around the world (China, Ireland, India, etc.)
  - This allows Dell to have a competitive advantage in customer service.
- Instead of choosing to eliminate or go against their rivals, Dell chooses to collaborate/form partnerships with them to rid of competition.

Ex:

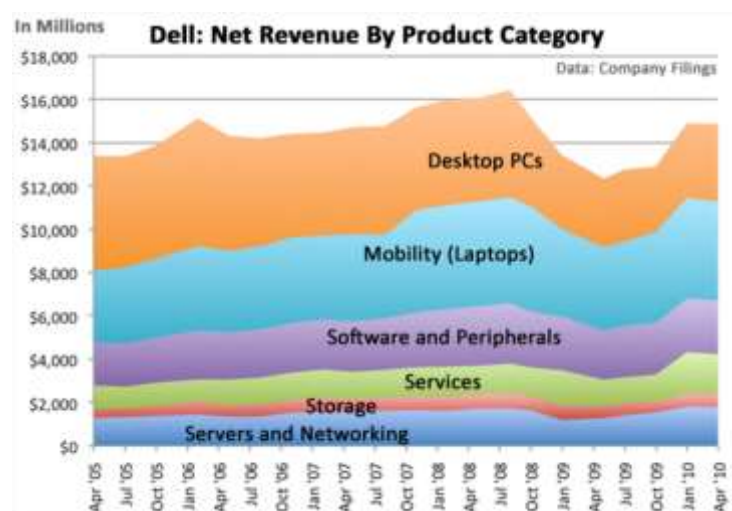
- Xerox - Supplied Dell with printing technology that they could offer to their customers
- Juniper Networks - offer optimum network solutions under Power Connect Brand.
- They sell more than just laptops and computers.
  - Sells projectors, printers, supercomputers, etc. Allows for a broader range of consumers.
- Pricing Strategies:
  - Dell utilizes the low cost pricing strategy that other competitors are unable to do, giving them a competitive advantage in the market.

### **Overall Development Goals and Objectives:**

- *Technology:* Digitize content/hardware as much as possible (cloud computing, VMware, etc.).
- *Market:*
  - Collaborate with or acquire competitors.
  - Direct selling and offers customization to products
    - Avoids higher costs because of retailers and wholesalers
  - Sell products at an optimal cost by decreasing inventory cost and delivery time
    - Have the right amount of inventory so that it satisfies the supply and demand without affecting the level of service
    - Having sufficient amount of sales data and market trends to predict the demand
      - Therefore an abundance of products in inventory would not be a problem
- *Development:* Sustainability: divert 90% of waste generated from landfills. Source 50% of total electricity from renewable resources. Reduce product energy demand by 80%.
- *Business:*
  - Position themselves as the world's biggest infrastructure company in the pursuit of cloud based technology.
  - Build factories around the world and look for location that provides advantages such as low labor cost and productive workforce

### **Functional Evolutionary Maps:**

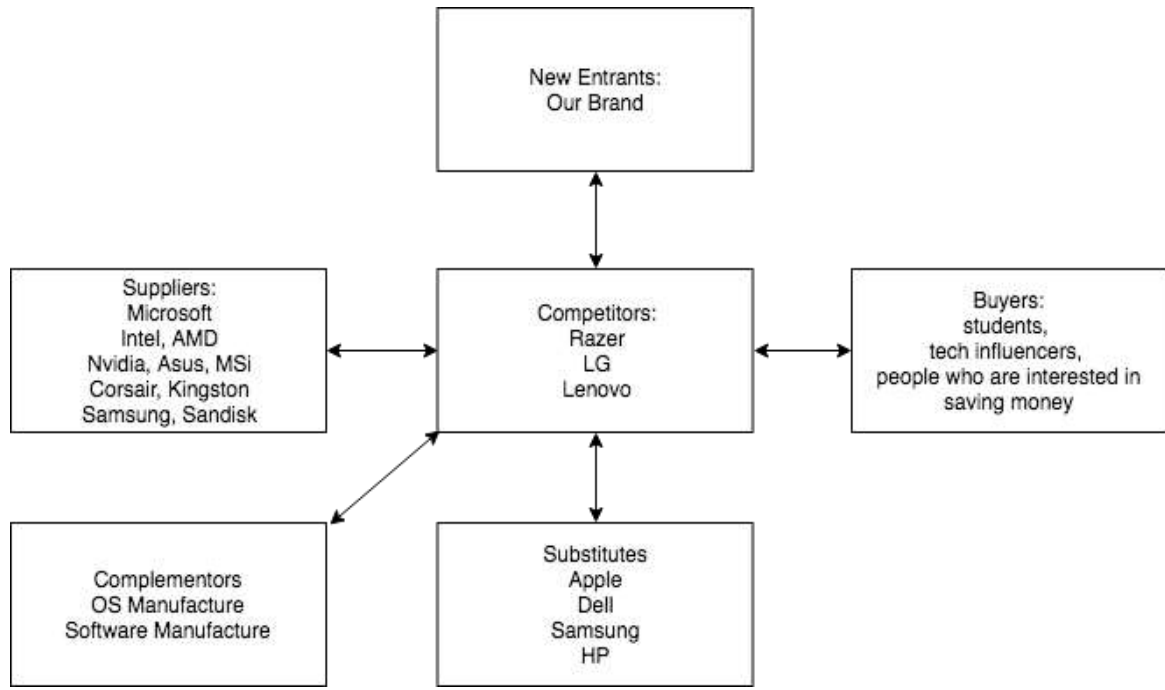
Time →	1989	1991	1994	2000	2006	2007	Now
Technology Strategy	First Personal Laptop	→ Color Screen Laptop	→ Lithium ion Battery	→ WiFi	→ BlueRay	→ HDMI LED Blacklit eSATA Fingerprint	→
Product Market	316 LT	→ 325 NC	→ Inspiron Series	→ Latitude D Series	→ Vostro Studio XPS		
Manufacturing Strategy			Reduce number of Suppliers (1994-1997)		Cooperate with AMD		



## Stage 2: Industry Analysis

Being that Dell is a billion dollar plus company one would assume that Dell is an active competitor in the computer/laptop business industry. Below is the Porter five(six) forces model which depicts competition and over all acrivariveness(???) of the market.

### Porter five(six) forces model



#### **Threat of New Entrants (Low)**

The threat of new entrants in the PC industry is low. It is because there are major barriers of entry in this business. Apart from tremendous capital investment, the need for technological infrastructure and skilled employees strongly discourage any new entrants.

#### **Threat of Buyers (Low)**

The buyers' power is low to moderate due to the already established brand image. The consumers are either individuals or large enterprises. Customer loyalty is high because customers buy from name brands and Dell has focused on excellent customer service. These factors reduce the power of buyers.

#### **Threat of Suppliers (Low)**

Supplier power is low. This is because the industry is populated with suppliers where the number of established PC brands they already sell is small. Thus, brands that have established brands have leverage on suppliers making supplier power low.

#### **Threat of Substitutes (Moderate)**

The PC industry has been on the decline. Large established brands such as Apple and Dell have lost market share and profits. Till some years ago laptops were tools of professionals. Now there are better options that provide similar features like tablets and smartphones, so the threat of substitutes are moderate.

#### **Threat of Rivalries (High)**

Rivalry in the PC industry is high. Companies such as Acer, Asus, HP, and Lenovo. HP and Lenovo are at the top with the highest market share followed by Dell and Apple. Due to the decline in the computer industry the focus has shifted to price and innovation.

### **Threat of Complementors (High)**

Due to having high rivalries with companies such as Acer, HP, and Lenovo, complementors to the PC industry is relatively high. Goods and services that complement the PC industry have countless applications to complement the PC industry.

### **Competitive Strategy**

Dell's competitive strategy is mostly centered around product differentiation and maintaining their competitive advantage. Historically, this competitive advantage comes from a direct-to-consumer model, as well as Dell's superior supply chain. There are four primary elements in Dell's competitive strategy:

- Simplify the product and services
- Obtain new customers
- Win the industry-leading end-user computing solutions
- Scale alternative computing solutions <sup>9</sup>

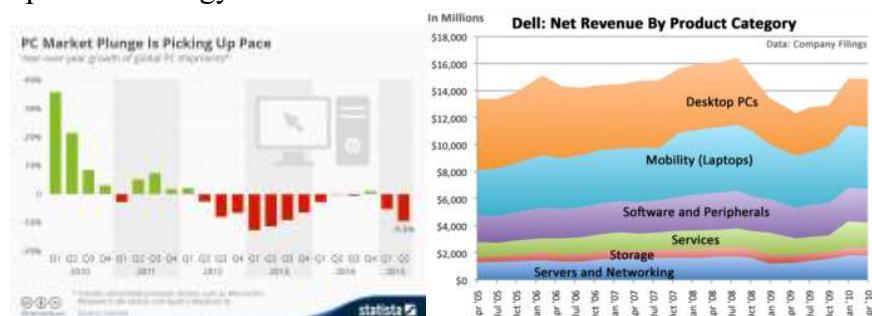
### **Dell's strategy with Rivals**

Dell's Strategy with rivals is centered on their mission statement which is to produce high quality products by competitive pricing to serve our customers with best shopping experience and service support. This vision is the plan that Dell wants to execute to edge Competitors/Rivals

### **Stage 3:**

Stage 3: Assessment and Evolution of the company's strategy within the relevant markets and industries

1. Using the functional maps of the overall markets and industry in which the company is embedded, as well as the company specific functional maps, assess the evolution of the company's competitive strategy.



- 1994: Launched as internal tech support site
- 1996: Became commercial site with limited product set
- 1997: Reached \$1M/day in revenue
- 1999: 1st Content Publishing capability
- 1999: Accounted for 50% of Dell Revenue
- 2000: Re-platform to VB and J++
- 2001: Online technical staff moved into IT
- 2002-3: New content publishing system
- 2003: Code re-written to .Net, consolidation onto global code base
- 2005: Widespread AJAX implementation
- 2009: Completed widespread globalization
- 2010+: Radically improve Customer Experience

#### Assessment of Dell's strategic evolution:

Dell pioneered the Direct model which was Direct contact with customers along with the ability to provide customized products(build to order) through mid 200's then a strategy shift from the Direct model which was the foundation of Dell's brand recognition and excellent customer service to Dell's Indirect business strategy. The indirect model produced a solution or consultation and made coverage easier for new or minor markets(ie salesforce enterprise applications, customer preferences). Dell's New business model shift introduced early 2010's offers pre-set desktops/laptops for consumer, limited configurations for customers, and unique configurations available for large enterprises. Throughout Dell's history Dell has adapted its competitive strategy to better serve customers several times.

2. Decide on what the company's future competitive strategy should be, and the corresponding technology strategy, product market strategy, and manufacturing strategy.

<https://slideplayer.com/slide/6388715/>

#### Competitive Strategy:

- R&D on product/manufacturing due to threats of substitutes & rivalries
  - "focus has shifted to price and innovation"
- Differentiated Strategy
  - Deliver capable, affordable and flexible solutions for:
    - Large enterprises
    - Custom institutions
    - Small and mid-size business

#### Technology Strategy:

- Pursue lighter and more portable designs without sacrificing built quality while remaining affordable in laptops
  - Today's fast-paced consumers want convenience and portability
- Artificial Intelligence and Machine learning
  - Allows them to pursue security, manufacturing and etc. through the use of AI
- Multi-Cloud Technology
  - Cloud service with better workload, flexibility of pricing and better security
  - Reduces disk drive sizes and instead move towards the cloud for storage allowing for lighter and more portable laptops
- Virtual Reality and Augmented Reality

- AR and VR play a huge role in skill training, enabling 3D modeling make the learning more effective and easier.
- Dell optimizes computer systems to handle the rendering of virtual reality and augmented reality

#### Product Market Strategy:

- Push towards portable devices for consumers on the go because of their convenience (cell phones, laptops, etc.)
- Decrease the size of the PC tower so that it will take up less space and increase overall convenience.
- AI, Machine Learning PCs.
  - Could become another promotional factor if it takes off

#### Manufacturing Strategy:

- Ready-made, in stock systems to reduce delivery times through warehousing
  - In stock systems should be the model that sells the most through data acquired
  - Partnerships with shipping companies to reduce delivery times
- Offerings of customizable components for different consumers (will take longer)
  - Provides consumers with more value with the same product
- R&D in manufacturing to reduce bugs or defects
  - Especially if we are mass producing for business and government consumers
- Transparency in Supply chain
  - More and more customers want to know about their products, how their product made, and how did the product delivered to them. It helps to have a better relationship between DELL and customers.

#### 4. Check your work:

Given the amount of information we have collected from various sources listed below. Among them numerous reports and analysis from reputable firms we are confident that we have obtain accurate information about Dell without being able to look at Dell's current financial report. Based on all the information given by the problem and with all the notes on on how to conduct a company analysis, We believe that our work is accurate.

#### 5. Learn and Generalize:

Though all the work shown above and the resources listen below we have learned a lot of about the large company Dell. Conducting a Porter's five forces analysis, industry analysis, and assessment of Dell's Technology market and competitive strategy. Dell's new strategy has correlated with the decline of the PC business and Dell's new indirect model along with entering new business/ markets(ie cell-phone). Overall we have learned a lot the Pc industry and how functional maps are essentially market trends.

#### Resources:

1. <https://www.dell.com/community/New-to-Dell-Community/What-is-the-Dell-Vision-and-Mission-Statements/td-p/4543363>

2. <https://www.irishtimes.com/business/technology/technology-top-of-the-agenda-now-for-businesses-says-dell-1.3479560>
3. <https://csimarket.com/stocks/DELL-Annual-Return-on-Investment-ROI.html>
4. <https://www.marketing91.com/marketing-strategy-dell/>
5. <https://www.gartner.com/en/newsroom/press-releases/2018-01-11-gartner-says-worldwide-pc-shipments-declined-2-percent-in-4q17-and-28-percent-for-the-year>
6. <https://www.forbes.com/sites/jasonbloomberg/2018/05/06/dell-technologies-struggles-to-connect-it-infrastructure-to-digital-transformation/#1dc5e30442e3>
7. [https://www.theregister.co.uk/2018/07/03/dell\\_returning\\_to\\_public\\_ownership\\_analysis/](https://www.theregister.co.uk/2018/07/03/dell_returning_to_public_ownership_analysis/)
8. <https://www.ciodive.com/news/dell-is-considering-its-future-strategy-what-could-it-mean-for-cios/516244/>
9. <https://www.forbes.com/sites/patrickmoorhead/2013/06/21/dells-pc-growth-strategy-in-it-to-win-it/#5dd152054b87>
10. <https://toughnickel.com/industries/Dell-Competitive-Advantage> (1.Company Analysis)
11. <http://www.assignmentpoint.com/business/marketing-business/dell-marketing-strategies.html> (1.Company Analysis)
12. <http://techinsidr.com/can-dell-turn-it-around/>