



FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT
SSA Examination 2014

<u>DEPARTMENT</u>	QUALITY & OPERATIONS
<u>MODULE</u>	QUALITY PLANNING & IMPLEMENTATION IV
<u>CODE</u>	QPI44-1
<u>DATE</u>	17 July 2014
<u>DURATION</u>	3 HOURS
<u>TIME</u>	08h00 – 11h00
<u>TOTAL MARKS</u>	100

<u>EXAMINER</u>	MRS. N SUKDEO
<u>EXTERNAL MODERATOR</u>	MR. P H GROBLER
<u>NUMBER OF PAGES</u>	6 PAGES (including cover page)

INSTRUCTIONS TO CANDIDATES:

- Answer all questions based on the case presented.
- This is a closed book assessment.
- Read the questions carefully and answer only what is asked.
- Number your answers clearly.
- Answers must be in paragraph format.
- Marks will not be allocated appropriately for bullet structured answers
- Write neatly and legibly.
- Structure your answers by using appropriate headings and sub-headings.
- The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this assessment.

Section A – Case study

Apple Computer Incorporated

Apple's motto, "Think Differently," is a concept that the company does very well by creating innovative products that continue to define the world of computer design. Other computer manufacturers have attempted for decades to replicate the iconoclastic appeal of the Apple design. None have succeeded in the manner of Apple. When Steve Jobs assumed the post of CEO in 1998, he re-revolutionized the entire company. Apple introduced the iMac and iBook product lines for the more basic computer buyers and the PowerBook and G series computers for the advanced purchasers. Apple continues to forge ahead in design with the introduction of the iPod digital music player and the iTunes Web site for the sale and download of music. Among giant rival firms, such as IBM, Apple is on the forefront of a revolution of technology, integrating music, images, and animation.

History

Founded in 1976 in a garage in Santa Clara, California, Apple is the brainchild of Steve Wozniak and Steve Jobs, two college dropouts who sought to provide a user-friendly computer to a new and distinct market of small computer users. Between 1978 and 1980, sales increased from \$7.8 million to \$117 million, and in 1980 the company underwent its initial public stock offering. In 1983, Steve Wozniak left Apple. That same year Steve Jobs hired John Sculley from Pepsi, to be the company's president. After experiencing several product failures, Apple unveiled the Macintosh computer in 1984 to overwhelming success, setting the stage for Apple's rise and its recognition as a household name. By 1985, relations between Sculley and Jobs became contentious. Finally, the board of directors sided with Sculley, and Steve Jobs was forced from the company he helped found. Additionally, while CEO of Apple, John Sculley ignored Microsoft founder Bill Gates's appeal for Apple to license the Macintosh operating system to Microsoft. Gates had hoped to make the Macintosh platform an industry standard. However, with Sculley refusing to license the operating system, Gates purchased and developed the DOS operating system, which has become the international operating standard for more than 90 percent of all personal computers in the world. By the late 1980s, competition from Microsoft's Windows operating system and the abject failure of Apple's Newton handheld computer caused the earnings of Apple to plunge, forcing a reduction in the Apple workforce and the resignation of John Sculley. In 1997, Gilbert Amelio, Apple's current CEO, orchestrated the purchase of the company Next Step from Apple founder Steve Jobs. The NeXT operating system was a vast improvement over the then outdated Macintosh operating system. At the time of the purchase, it was hoped that the NeXT operating system could be used to upgrade and overhaul the Macintosh operating system. However, sales in the corporate and education sectors continued to fall, and Apple was forced to trim its workforce by 30 percent, canceling projects and trimming research costs.

In 1998, Apple CEO Gilbert Amelio was ousted, and Steve Jobs triumphantly returned as interim CEO-iCEO, as he referred to himself. Jobs took immediate control of Apple by forging a surprising relationship with Microsoft, which included releasing a Macintosh version of Microsoft's popular office software. To protect Apple's declining market share, Jobs rescinded the licensing of the Macintosh operating system from chief imitator Power Computing. Apple also implemented other cost saving measures, including canceling the Newton handheld device and the production of printers. In addition, Jobs streamlined Apple's product line. Prior to Jobs' return, Apple produced 12 versions of the Macintosh computer, none profitably. Jobs refocused Apple to concentrate on two markets: consumer and professional. The professional series of Macintosh computers would have the prefix "Power," such as the PowerMac desktop series and the PowerBook laptop series. The consumer series would have the prefix "i" for Internet, such as the iMac desktop series and the iBook laptop series. Steve Jobs' real value for Apple has been his willingness to be innovative. Shortly after his return as CEO, Jobs

oversaw the introduction of the iMac line of personal computers. The iMac, with its innovative all-in-one design and choice of five colors, was a herald of changes and products to come. In a world that had seen the personal computer become anything but personal, the iMac was a sensation. Under Jobs, Apple is again the innovator of the computer market. His leadership has led to the adoption of USB and, later, Firewire ports for digital connection of the computer to peripherals. It was Apple's introduction of the *AirPort* that heralded the coming of wireless interconnectivity. Apple's current line of products and services ranges from the tiny Mac Minito the ultra-powerful PowerMac GS. Introduction of the iPod digital music player and the iTunes music site have again put Apple at the forefront of the digital computing age.

Internal Issues

Vision Statement

Apple ignited the personal computer revolution in the 1970s with the Apple II and reinvented the personal computer in the 1980s with the Macintosh. Apple is committed to bringing the best personal computing experience to students, educators, creative professionals, and consumers around the world through its innovative hardware, software, and Internet offerings.

Mission Statement

Apple Computer is committed to protecting the environment, health and safety of our employees, customers and the global communities where we operate. We recognize that by integrating sound environmental, health and safety management practices into all aspects of our business, we can offer technologically innovative products and services while conserving and enhancing resources for future generations. Apple strives for continuous improvement in our environmental, health and safety management systems and in the environmental quality of our products, processes and services.

Organizational Structure

Apple's organizational structure is shown in Exhibit 1. Steve Jobs is the CEO and is in direct control of the company. The nine senior vice presidents and their portfolio of responsibilities are specified. Apple manages its business primarily on a geographic basis, with offices in the Americas, Europe, Japan, and Asia-Pacific. In addition, Apple operates and separately tracks sales in 86 retail stores with the majority located in the United States. Apple's products are primarily assembled in Sacramento, California; Cork, Ireland; and by external vendors in Fullerton, California; Taiwan, Korea; the People's Republic of China; and the Czech Republic.

Competitors

Apple's top three hardware competitors are Dell, Hewlett-Packard, and IBM. In addition, Apple competes with Microsoft in many areas of the personal computer software industry. With the computer market continuing to be characterized by rapid technological advances both in hardware and software development, all computer manufacturers face steep competition. In an area that it helped create-and once dominated-Apple is now quite small in the personal computer industry. Sales of the Macintosh line of personal computers account for less than 5 percent of the total market in the United States and less than 3 percent of the international personal computer market. However, Apple's customers tend to be loyal to the brand-nearly fanatical in fact.

Dell Inc.

Founded in 1984 by Michael Dell, Dell Inc. (www.dell.com) was the largest manufacturer of personal computers in 2001. Dell's total revenue in 2004 of \$49,205 million dwarfs Apple's 2004 total revenue of \$8,279 million. Dell's greatest strength is its ability to drive down costs through its direct sales approach. Dell computers are manufactured once an order has been received, thus reducing inventory and warehousing expenses. Dell has nearly perfected the cost and quality control aspects of just-in-time manufacturing, and thereby has enjoyed a tremendous advantage over its rivals in quality and production costs. This has allowed Dell to

grasp 30 percent of the annual personal computer sales in the United States in 2004 and almost 18 percent of worldwide sales. However, Dell is not known for innovation. Dell has limited itself to few product categories outside of its core computer hardware. Dell's sales of items such as printers, network switches, projectors, and USB storage devices have been limited. However, due to the slowing computer business, and Apple's success in consumer products, Dell is diversifying its product line into consumer electronics. Dell has begun to branch out into other areas by launching its own music download store, digital music jukebox, and wireless personal digital assistant, and it is even going so far as to market flat-panel televisions. Apple, via its iPod and iTunes digital music line and other products, such as iPhoto and iMovies, has shown that music, movies, and photos are a natural extension for the computer user. Apple maintains a Web site that allows customers to browse and find the latest products available. Apple recognizes the need to have previous customers revisit the site to make future purchases and is capitalizing on this through iTunes: music that can be purchased only at Apple's Web site and downloaded to its iPod. Dell, in an attempt to replicate Apple's success, has entered this realm of music with its Jukebox software, whereby customers can download music for a fee or listen to Internet radio at no charge. However, the iPod digital music player and the iTunes music site were clearly leading in the digital music arena in 2004.

Hewlett-Packard

Bill Hewlett and Dave Packard founded Hewlett-Packard (www.hp.com) in 1939. Hewlett-Packard's merger with Compaq on May 3, 2002, has created a large company with total revenue in 2004 of \$79,905 million, compared to Apple's total revenue of \$8,279 million. In addition, Hewlett-Packard's net income in 2004 of \$3,497 million is much larger than Apple's net income of \$276 million. Today, Hewlett-Packard is a leading global provider of products, technologies, solutions, and services to consumers and business; its offerings span IT infrastructure, personal computing and access devices, global services, and imaging and printing. Currently Hewlett-Packard commands 15.7 percent of the global personal computer market. However, the profit margin for Hewlett-Packard's personal computers is a razor-thin 0.9 percent. However, Hewlett-Packard does have certain competitive strengths. Sales of printers and printer ink account for approximately 30 percent of the company's total revenue but generate 70 percent of its operating profits. Like Dell, Hewlett-Packard poses a threat to Apple's growth. Hewlett-Packard can capitalize on the longevity of its name and offer a desktop computer at a price much lower than Apple can.

Conclusion

Refinement of speech recognition programs will soon make the operation of a computer even easier. Virtual reality, the technology of interacting with a computer using all of the human senses, will also contribute to better human and computer interfaces. Apple's history of innovation and its motto of "thinking differently" will be the key advantages for keeping current Apple users and for enticing new consumers. Originality has been a hallmark for Apple from the very beginning, and it is that sense of style that enables Apple to prosper in this ever growing and changing market. Apple's recent successes and expansion have led Apple's CEO Steve Jobs to predict that Apple's market share will double from 5 percent to 10 percent in the near future. Although Apple's 5 percent market share of the U.S. computer market might seem small, this percentage is still larger than the combined market share of Mercedes and BMW in the United States. Moreover, Apple is currently the most profitable computer company in the industry despite the dampened economy and its small size relative to the industry giants. However, Apple's continuing success does hinge on its ability to expand market share.

QUESTION ONE

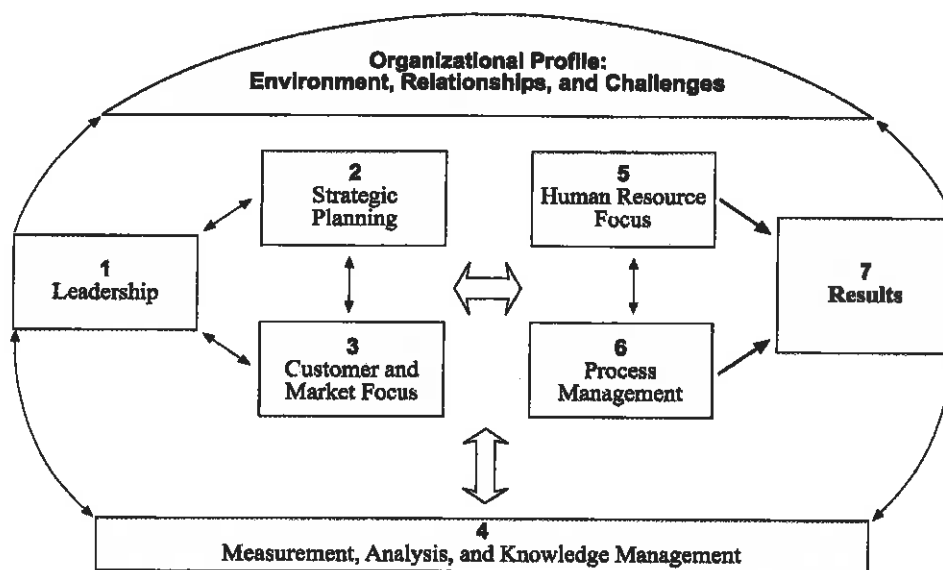
- 1.1 What strategy would you recommend to Apple in order to face the competitors in its market? (5)

- 1.2 Discuss how competitive advantage was maintained at Apple. (10)
- 1.3 Explain the role of partnership in the success of Apple. (5)
- [20]

QUESTION TWO

- 2.1 Discuss how Apple could apply the stages of the design process, to a new product initiative. (18)
- 2.2 Discuss the model identified in Figure 1 and elaborate on the importance of this model. (2)
- 2.3 Explain how each criteria indicated in Figure 1, could be applied by Apple. (7)
- [27]

Baldrige Criteria for Performance Excellence Framework: A Systems Perspective



Source: Baldrige (2006)

FIGURE 1

QUESTION THREE

- 3.1 Explain how Ishikawa's seven tools of quality improvement, could be applied by Apple. (14)
- 3.2 Explain the concept of Customer Relationship Management (CRM) and discuss how CRM could benefit Apple in developing customer relationships. (1;8)
- [23]

QUESTION FOUR

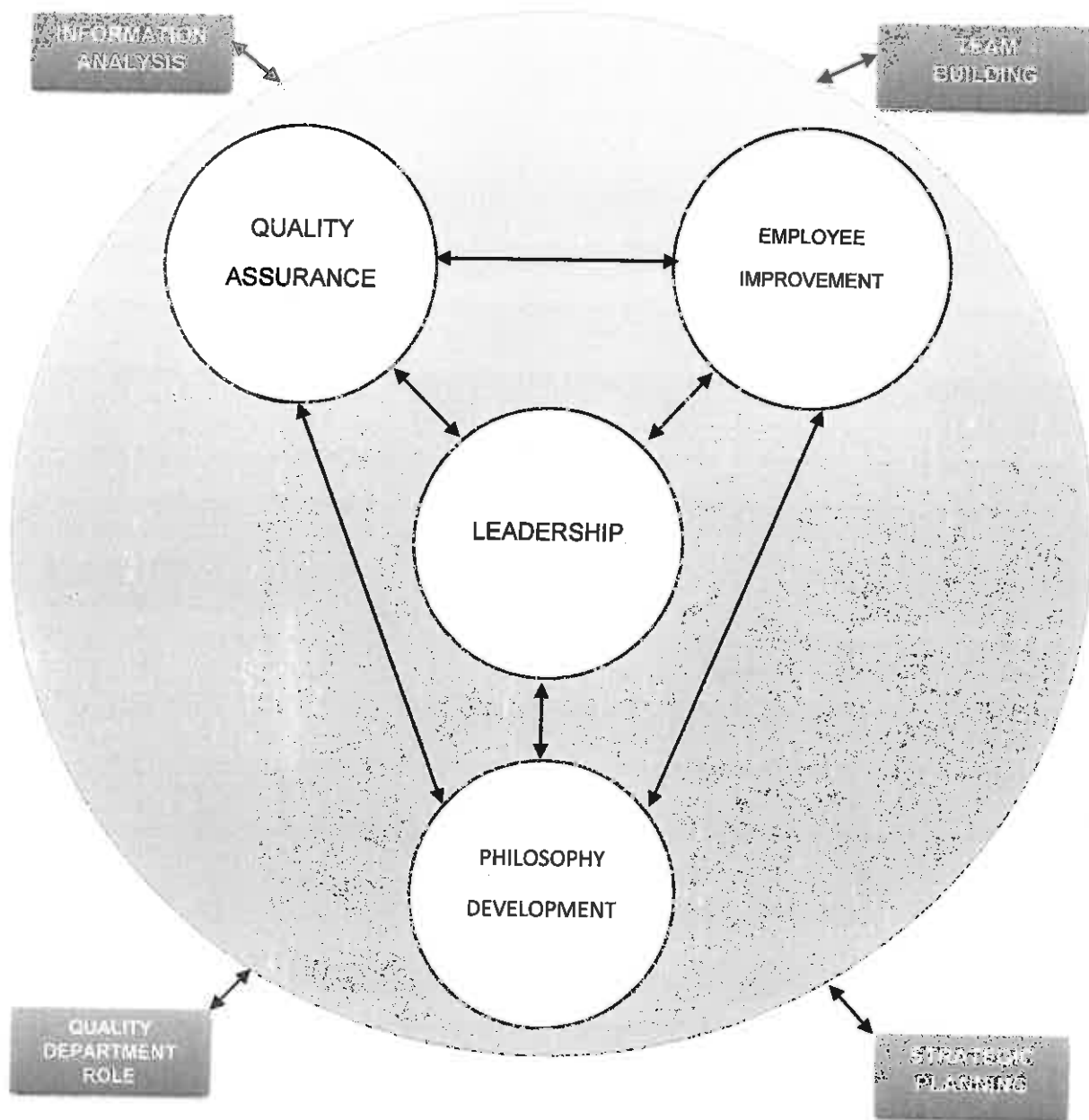


FIGURE 2

- 4.1 Discuss the importance of each element in Figure 2 to Quality Management at Apple (16)
- 4.2 Apply Deming's 14 points of quality management to Apple. (14)
- [30]

Total = 100 marks

