
iPhone — Evolutionary or Disruptive?

How the Core Competencies Necessary for Success Evolve over Time

By Mark Duncan, askmar, October 16, 2009

This article examines how the core competencies necessary for success evolve over time, using the cellphone industry as an example. The Apple iPhone is a disruptive product forcing competitors to reassess, identify and acquire new core competencies to survive.

A core competency is something that a firm does well and meets the following three conditions:

- It provides consumer benefits
- It is not easy for competitors to imitate
- It can be leveraged widely to many products and markets.

Early cell phone manufacturers such as Motorola and Nokia had to develop core competencies in:

- Cellular wireless technology
- Cellular manufacturing

With the advent of commodity semiconductors and contract manufacturers these core competencies can be easily imitated by competitors. Instead, new core competencies that are becoming increasingly important are:

- Software / User Interface
- Captive retail
- Semiconductor design
- Cash

Cellular Wireless Technology

From 1984 to 2004, the steady evolution of semiconductor technology described by Moore's Law (the halving of the dimensions and doubling of speed of chips every 18 months) enabled new generations of cell phones that were smaller, lighter, less expensive, and had longer battery life.

The 2.1" x 3.9" x 0.54" size and 3 ounce weight of the Motorola RAZR in 2004 represented a market demand apex since further reductions were not needed, due to the dimensions and physics of the human ear / hand / mouth.

Instead, subsequent improvements in semiconductor technologies have moved towards providing more features and capabilities in a cell phone at the same cost.

- Commodity cellphone chips are widely available from vendors such as Broadcom, Texas Instruments, and Qualcomm enabling competitors to quickly provide new cellphone hardware functions.

Cellular Manufacturing

In the early 1980s, Motorola and Nokia had to develop a core competency in manufacturing miniature, complex assemblies of digital, analog, and precise interlocking plastic parts since there were few independent firms providing this service.

Over time, particularly in the 1990s, Taiwanese and Chinese ODM (original design manufacturer) and contract manufacturers steadily became more accomplished in these capabilities.

Initially the growth of these companies was driven by outsourcing of computer manufacturers seeking to minimize their costs. However, as phones became a commodity, increasing numbers of low-end phones were produced either by ODMs or contract manufacturers. Little competitive advantage in cellphones is obtained by having a manufacturing competency.

- In some cases, competitors using ODMs and contract manufacturers may obtain cost and technology advantages over captive manufacturing operations.

Software / User Interface

Traditionally, cellphone companies have been hardware centric, seeing software only as a cost necessary to sell phones. This view began to change with the first smart phones that integrated the functions of a personal digital assistant with a cell phone.

The importance of software and better user interfaces as a core competency came with the advent of the Apple iPhone, providing a handheld computer with specialized mobile and media applications with a complete ecosystem for developing and providing applications, and for consumers to purchase media and applications.

As a result, the market share of the Apple iPhone has steadily increased, while the market share of Nokia smart phones and Windows Mobile phones has been

dropping. The subsequent introduction of Google's open source Android mobile operating system is placing additional pressure on traditional vendors.

- Apple's software / user interface is a core competency because it provides (1) unique consumer benefits, (2) it is very difficult to imitate, (3) it is used in Apple's Macintosh, iPod, and Apple TV products.

Captive Retail

Historically, cellular phone companies have relied on indirect channels to distribute and sell its products, in particular the carriers in each country.

While companies such as Sony have opened captive retail stores, they have focused on being a flagship for showcasing and promoting their products to the public; selling products has been a secondary concern.

Apple's objective was to convince, persuade, and educate the consumer to purchase its Macintosh products. It has been successful in that over half of its customers were former PC owners. With the introduction of the iPod and subsequently the iPhone, traffic to its stores has grown providing it with one of the highest sales per square foot for any retail store.

- Apple's retail stores are a core competency because (1) they provide an unique buying experience to the consumer, (2) the locations of the stores and their trained personnel are difficult to imitate, (3) the stores sell multiple lines of Apple products including computers, iPods, iPhones, and software.

Semiconductor Design

As the semiconductor industry has grown, there have been two important developments; the EDA (electronic design automation) industry, and fabless semiconductor companies.

First, firms such as Cadence, Mentor Graphics and Synopsys provide tools that allow for the design, simulation, layout and testing of semiconductors.

Second, semiconductor foundries such as Taiwan Semiconductor Manufacturing Corporation, United Microelectronics, and Chartered Semiconductor Manufacturing enabled fabless semiconductor companies such as Altera, Broadcom, Cyrix, Marvell, Nvidia, Qualcomm and Xilinx to focus on the design and sale of semiconductors by outsourcing the actual fabrication to them.

While there are a vast number of commodity semiconductors, many specific devices require ASICs (application specific integrated circuits). Field programmable gate arrays (FPGAs), gate arrays, structured ASIC, semi-

custom logic, and full-custom logic represent a tradeoff between the time to design and device cost. FPGAs can be quickly designed and deployed, but are relatively expensive. Full custom logic may require a year or more to design, simulate and test and require high production volumes, but offers the lowest production costs.

- Apple has been acquiring the personnel and resources necessary to design full customer chips for use in its iPod and iPhone products. It appears likely that this will become a core competency for Apple in that (1) it will enable products with longer battery life and increased functionality at a lower cost, (2) it requires a large amount of investment to provide a similar capability, and (3) these devices are likely to be useful in many different Apple products.

Cash

Cash is not normally thought of as a core competency. But used intelligently and aggressively, it provides a substantial competitive advantage.

The ability to prepay for commodity parts enables Apple to both obtain the lowest prices and be the preferred first customer to receive parts. Competitors pay higher prices and may be put on allocation schedules.

The ability to pay cash provides an additional level of secrecy since fewer financial transaction details need to be disclosed to external parties. It enables faster acquisitions and real estate transactions since minimal time is required to arrange funding.

Apple uses its cash to acquire state of the art CNC equipment, moves it to a remote China province having very low labor costs and in a few years time, has it producing state of the art milled metal casings used in its MacBook Pro, iPhone, and iPod products.

- Apple's cash is a core competency because (1) it enables unique price points and features, (2) competitors are unable to provide similar features, and (3) these features are used on a wide range of its products.

Summary

Apple has leveraged its core competencies into new product areas (MP3 player, cellphone) while systematically developing new core competencies. These core competencies are causing it to become such a market force that even when late to entering a market, its complete and well thought out product ecosystem enables achieving market dominance.