

APPLE TEACHING NOTE

The Apple case can be used to illustrate the issues of make or buy and managing the supply chain. It is best used in the middle part of an operations strategy course. It not only introduces the issues of managing suppliers but also affords the opportunity to reinforce other key topics, including developing an operations strategy, designing products, and managing lead times and inventory.

Questions similar to the ones below have been found adequate to bring out the key issues in the case study.

1. How does Apple compete in its major markets: Macs, iPods and iTunes?
2. How has operations designed its supply chain to support these markets?
3. What must Apple do to maintain its competitive position in the future?

1 How does Apple compete in its major markets: Macs, iPods and iTunes?

It is best here to consider each of Apple's major markets separately before then looking at the overall picture. Within each market, it has also been found best to discuss the nature of the products before discussing how it competes in this market.

1) MAC PRODUCTS

The Mac product range currently consists of:

- Desktops – iMac, Mini and Mac Pro
- Portables – MacBook, MacBook Pro and MacBook Air
- Servers – Xserve

a) Product nature

The first question to ask is, what is the nature of the products that Apple designs, manufactures and sells? Its products involve the following key characteristics:

- **High-specification standard products** – there is very little choice and models are continually discontinued to ensure the range does not proliferate (see Exhibit 6). It is important at some time to bring to the attention of participants that although the products are of a high specification, they tend to cost about the same as an equivalent specification from HP or Dell (see TN/1)
- **Short product life cycles** – products tend to be discontinued after 12 to 18 months and replaced with one of a higher specification sold for about the same price as the old one
- **Relatively high margin** – the products must be relatively high margin as Apple makes a 35% gross margin (see TN/2). They are at the luxury end of the desktop and portable computer market
- **Niche** – although the Mac products have annual sales of \$10bn and 8 million units, they still only have 3% market share

b) How it competes in this market

The next step is to ask what the order-winners and qualifiers are for this market. At this point it is worth highlighting the differences between an initial purchase of a Mac (when someone is often moving from a PC) and a repeat purchase. The points raised are summarised in TN/2 and include:

- **Order-winners**

- **Technical support** – for both product hardware and software. This is more important for customers buying a Mac for the first time as there is a feeling of taking a ‘leap into the unknown’ by moving away from a PC
- **Product design** – concerns the form and functionality of the products – how they look and what can they do. Also important is the compatibility between hardware and software (both designed by Apple) and with other Apple products. Apple’s philosophy is to design products to work easily with one another, although this is not as important for the first sale as customers do not already own any Macs
- **Brand name** – some customers buy products simply because they are designed by Apple. This, in part, is a feature of compatibility, but Apple have also created a product image that attracts certain people

- **Qualifiers**

- **Price** – Apple products are generally seen as being good value as they are high specification, as shown TN/1. However, basic HP and Dell products are much cheaper. The subsequent higher margins are reflected in profit performance of the three companies – Apple’s gross margin (% sales) is 1.5 times that of HP and 1.8 times that of Dell (see TN/3)
- **Quality conformance** – quality conformance concerns meeting the design specification described earlier. Customers expect Apple to manufacture and assemble Macs to its high specification
- **Delivery speed and reliability** – although customers are prepared to wait until products become available, they do expect them to be delivered within a reasonable time period (delivery speed) and meet Apple’s promised delivery (delivery reliability)

2) IPOD PRODUCTS

The iPod current product range consists of:

- iPod shuffle – randomly plays up to 240 songs
- iPod nano – stores up to 2,000 songs or 8 hours of video
- iPod classic – holds up to 40,000 songs or 200 hours of video
- iPod touch – stores up to 3,500 songs with a variety of features including touch screen, WiFi connectivity and variety of applications

a) Product nature

As with Macs, these are high-specification products with a short lifecycle and relatively high margin (the first iPod had a 64% gross margin). However, unlike Macs, these are not niche products as their market share has fallen from a high of 97% to its current 62%. Although the MP3 player market is maturing, Apple is still seen as the market leader with technically superior products to its competitors.

b) How it competes in this market

The order-winners and qualifiers are similar to those for Mac products as shown in TN/3:

• Order-winners

- **Product design** – the form and functionality of iPods have been critical to their success. They look good and are easy to use
- **Technical support** – unlike Macs, iPods are seen to have only a limited life (2 to 3 years) before they stop working. Therefore, technical support is not as important, although customers know they can take it into an Apple store if there is a problem. Software is updated on products, but there tends to only be significant functionality changes on the iPod Touch
- **Brand name** – Apple has created an image around their products that attracts a certain user group

• Qualifiers

- **Price** – Apple's iPods are considered good value, but they are not low price. However, their price has either remained the same or fallen even though the technical specification of the product (storage, battery life and product features) has increased significantly every 12 to 18 months since its launch. It is also estimated that each customer spends another 30% of the iPod value on accessories
- **Quality conformance** – customers expect Apple to manufacture and assemble iPods to their high design specification
- **Delivery speed and reliability** – although customers are prepared to wait until products become available, they do expect them to be delivered within a reasonable time period (delivery speed) and meet Apple's promised delivery (delivery reliability)

3) iTUNES PRODUCTS

iTunes was first developed in 2001 as software for customers to extract music from their CDs onto their computers and then onto their iPods. In 2003, the iTunes on-line store was introduced, originally to sell digital music. However, it now sells the following products:

- Digital music and books purchases
- Movies and TV show rentals
- Software applications and games – for iPod Touch and iPhone

a) Product nature

These products are very different to Macs and iPods. Although it is a unique product and Apple continually increase the range of products sold through the store, the products are:

- **Commodity products** – often available from other retailers in a physical or electronic format. They are also relatively easy to imitate as long as the appropriate agreements are in place with distributors. Equally, these products are often available for free elsewhere on the internet if you know how to find them
- **Low margin** – although iTunes products have only a 9% margin, the sales of iPod products grew seven-fold when the iTunes store was first introduced in 2003. iTunes also creates specific music library standards that lock users into using iPods

- **Cash rich** – although iTunes products are low margin, they are cash rich as there is no physical inventory involved. The only cash outlay for Apple is the purchase of equipment on which to store the digital products that are then downloaded by customers

b) How it competes in this market

The different product natures of iTunes to Macs and iPods are reflected in the different order-winners and qualifiers as shown in TN/4:

• Order-winners

- **Price** – it is less expensive for a customer to buy digital products from iTunes than physical products from other retailers
- **Delivery speed** – once products have been bought they can be downloaded and used immediately. This is significantly quicker than physical alternatives
- **Accessibility** – customers can purchase products from anywhere as long as they have an internet connection
- **Product range** – the range of products available is significantly greater than in a typical record (music) or video store (film). Equally, certain products such as iPod Touch or iPhone ‘applications’ or ‘games’ can only be downloaded from the iTunes on-line store

• Qualifiers

- **Delivery reliability** – customers expect product to download at the same speed each time they make a purchase
- **Quality conformance** – customers expect products to meet their design specification – for example, music to play on their MP3 player and be of a sufficient sound quality

2 How has Apple designed its supply chain to support these markets?

The supply chain configuration used to support the Mac, iPod and iTunes product groups has changed during the life of the company as shown in TN/5:

- **1976 – 1997** – the original approach developed by Jobs, Wozniak and Markkula involved manufacturing, assembling and distributing computers themselves. This practice continued until 1990 when Sculley joined the company and started to outsource manufacturing to reduce costs. The CEOs that followed continued this process.
- **1997 – 2001** – when Jobs was reinstated as CEO in 1997 he outsourced the remaining manufacturing, eliminated relationships with smaller retailers and expanded the Apple presence in national chains. In Nov 1997, the Apple web site was launched selling products directly to customers.
- **2001 – current** – in 2001, Apple launched its first retail stores to showcase products and create a fun and enjoyable experience. The stores also offer free services such as the ‘Genius Bar’ to solve customer technical problems and the ‘Design Studio’ to help customers create photos and design graphics. Regular workshops and presentations are held in theatre-like sections of the store to train customers on aspects such as the Mac operating system, editing home movies and recording music. Also, customers can purchase one-to-one weekly training

at a store for a little over £1 per session. By 2007 Apple was the fastest growing retailer in the world with 197 stores drawing over 100 million visitors a year.

Within this, Apple has developed slightly different approaches to support the order-winners and qualifiers within each of its major markets as shown in Attachment TN/6.

3 What must Apple do to maintain its competitive position in the future?

The key to Apple's product/service position in its markets include:

- High specification, yet competitively priced product (comparing similar specification with HP and Dell)
- Make switch to Macs from PCs even more user friendly
- Retain customers once they have switched to Macs
- Provide visible and approachable customer support within their Apple stores
- Continued R&D investment and product range consolidation to maintain "the high specification as standard" strategy
- Short product lifecycles to maintain product leadership and encourage repeat purchases from existing customers

A full market and operations strategy review to support its Mac, iPod and iTunes markets has been summarised in Attachments TN/6 and an illustration of how it acquires and retains Mac customers is shown in TN/7.

PRODUCT RANGE COMPARISON BETWEEN APPLE AND DELL
(Apple MacBookPro 15" vs Dell Studio 15")

Aspect	Dell (£399 – £1,412)		Apple (£1,400 - £1,600)	
	Standard specification	Number of options	Standard specification	Number of options
Processor	2.0GHz Intel Pentium Dual-Core	5	2.4Hz Intel Core 2 Duo	2
Memory	1024MB 800MHZ	3	2GB 1066MHz	2
Hardrive	160GB	6	250GB	5
Software	Microsoft Works	6	iLife	2
Hardware support	1yr warranty	7	1yr warranty	2
Colour and finish	Black	18	Aluminium	-
Mouse	None	4	None	-
Mobile broadband	None	3	None	-
Screen resolution	1280 x 800	3	1440 x 900	-
Graphics card	4500MHD	2	9400MHD	-
Keyboard	None	2	Backlit	-
Battery	6-cell Lithium	2	6-cell Lithium	-
Webcam	None	2	Included	-
Security	None	2	None	-
Operating system	Windows Vista Home	2	Mac OSX	-
Total combinations		156,764,160		160

Note: Only the standard Apple specification is available for the colour and finish, mouse, mobile broadband, screen resolution, graphics card, keyboard, battery, webcam, security and operating system.

PRODUCT COST COMPARISON BETWEEN APPLE AND DELL
(Apple MacBookPro 15" vs Dell Studio 15")

Cost by product specification (\$)	Dell	Apple
Lowest	399	1,400
Highest	1,412	1,600
Equivalent	1,352	1,400

**GROSS MARGIN AND R&D AS A PER CENT OF SALES FOR APPLE, DELL AND
HEWLETT-PACKARD (1997-2007)
INDEXED ON APPLE PERFORMANCE 1997**

Performance	1997	2000	2003	2004	2005	2006	2007
Gross Margin (%)							
Apple	100	133	138	138	143	143	167
Dell	110	100	90	90	86	81	90
Hewlett-Packard	181	148	138	129	119	124	114
R&D/Sales (%)							
Apple	100	42	67	50	33	33	33
Dell	8	17	8	8	8	8	8
Hewlett-Packard	58	42	42	33	25	25	25

Apple

ANNUAL SALES REVENUE BY PRODUCT GROUP (2002-2007) INDEXED 2002

Product group	Annual sales (US\$M)					
	2002	2003	2004	2005	2006	2007
Mac	100	99	109	138	163	227
iPod	100	241	913	3,175	5,368	5,808
iTunes and other music products	100	900	6,950	22,475	47,125	62,400
Other	100	126	167	209	224	272
Total	100	108	144	243	336	418

ANNUAL SALES REVENUE % TOTAL APPLE SALES (2002-2007)

Product group	Annual sales (US\$M)					
	2002	2003	2004	2005	2006	2007
Mac	79	72	59	45	38	43
iPod	2	6	16	33	40	35
iTunes and other music products	-	1	3	6	10	10
Other	18	22	21	16	12	12
Total	100	100	100	100	100	100

ANNUAL SALES REVENUE % WITHIN MAC PRODUCT GROUP (2002-2007)

Product group	Annual sales as % total Mac products					
	2002	2003	2004	2005	2006	2007
Desktops	62	55	48	55	45	39
Portables	38	45	52	45	55	61
Total	100	100	100	100	100	100

Apple

Attachment TN/4

**ANNUAL SALES, MARKET SHARE, LEVEL OF NEW PRODUCT INTRODUCTION AND
AVERAGE PRODUCT LIFE FOR EACH PRODUCT GROUP**

Product group	Annual sales (US\$BN)	Market share (% total sales)	Average number of new products introduced per year (2000-2007)	Average product life (months)
Mac	10	3	5	20
iPod	8	70	2	17
iTunes	2	70	-	-

MARKET ORDER-WINNERS AND QUALIFIERS BY PRODUCT GROUP

Competitive criteria			Product group				
			Mac		iPod	iTunes	
			First sale	Repeat sale			
Order-winners	Technical support	Software					
		Hardware					
	Product design	Form					
		Compatibility	Between hardware and software				
			With other Apple products				
	Functionality						
	Brand name						
	Price						
	Delivery speed						
	Accessibility						
Product range							
Qualifiers	Price		Q	Q	Q		
	Accessibility		Q	Q	Q		
	Delivery	Speed		Q	Q	Q	
		Reliability		Q	Q	Q	Q
	Quality conformance		QQ	QQ	QQ	QQ	

Key:

, , = increasing level of order-winner weighting

Q = qualifier

QQ = order-losing qualifier

SUPPLY CHAIN DEVELOPMENT BY PRODUCT GROUP

Product group	Year		Supply chain activities completed by Apple in-house				
	From	To	Manufacturing	Assembly	Distribution	Retail	
						On-line	Physical
Mac	1976	1997					
	1997	2001					
	2001	Current					
iPod	2001	Current					
iTunes	2003	Current					

Notes

1. Mac and iPod products are also sold through non-Apple on-line and physical retailers.
2. Mac manufacturing started to be outsourced in 1990.
3. iTunes software was created in 2001, but did not sell music until 2003.

MARKET SUPPORT BY PRODUCT GROUP

Market order-winners and qualifiers		Market support by product group		
		Mac	iPod	iTunes
Technical support	Software	<ul style="list-style-type: none"> • Extensive on-line product support and help on Apple website • Genius Bar to solve customer technical problems • Free extensive product training in retail stores • Design Studio to help customers create photos and design graphics • Regular workshops and presentations to train customers on aspects such as the Mac operating system, editing home movies and recording music 		<ul style="list-style-type: none"> • Extensive on-line product support and help on Apple website
	Hardware	<ul style="list-style-type: none"> • Genius Bar to solve customer technical problems 		<ul style="list-style-type: none"> • N/A
Product design	Form	<ul style="list-style-type: none"> • Products are stylish and most have become design icons 		<ul style="list-style-type: none"> • Software is stylish and striking
	Compatibility	<ul style="list-style-type: none"> • All products 'plug and play' with other Apple products 		<ul style="list-style-type: none"> • Software runs on PCs, Macs, iPhones and iPod Touch
	Functionality	<ul style="list-style-type: none"> • Products have cutting-edge technology, simple hardware and easy-to-use software 		<ul style="list-style-type: none"> • Product is simple and easy-to-use • Products can be downloaded directly to a computer, iPhone or iPod Touch
Price		<ul style="list-style-type: none"> • Manufacturing and assembly are outsourced apart from basic assembly to compile the products, peripherals, software, documentation and accessories necessary for each order • Suppliers are expected to reduce costs over time 		<ul style="list-style-type: none"> • Software is free to download • Products tend to cost less than buying or renting them elsewhere – for example songs are 99 cents • Profits very low on sales (about 9%)
Delivery speed		<ul style="list-style-type: none"> • Apple's global procurement function is split into product teams comprising buyers, engineers and designers who work collaboratively with suppliers to plan capacity and meet delivery schedules 		<ul style="list-style-type: none"> • Products such as music, movies, television shows, music videos, games and publications are delivered instantly and directly to customers through the on-line store
Accessibility		<ul style="list-style-type: none"> • Products can be purchased through various on-line and physical retail stores • Apple had 197 retail stores In 2007 		<ul style="list-style-type: none"> • The store is accessed through the internet using the iTunes software
Product range		<ul style="list-style-type: none"> • Products are updated every 12 to 18 months 		<ul style="list-style-type: none"> • Product range is continually increasing and includes: music, movies, television shows, music videos, games and publications

HOW APPLE ACQUIRE AND RETAIN MAC CUSTOMERS

Market order-winners and qualifiers		Acquiring customers	Retaining customers
Technical support	Software	<ul style="list-style-type: none"> • Extensive on-line product support and help on Apple website • Genius Bar to solve customer technical problems • Free extensive product training in retail stores • Design Studio to help customers create photos and design graphics • Regular workshops and presentations to train customers on aspects such as the Mac operating system, editing home movies and recording music 	<ul style="list-style-type: none"> • Software is not available for non-Apple products • Software is updated every 12 to 18 months • Software updates are inexpensive – typically half the price of the Microsoft equivalent
	Hardware	<ul style="list-style-type: none"> • Genius Bar in Apple Store solves customer technical problems 	<ul style="list-style-type: none"> • Genius Bar in Apple Store solves customer technical problems
Product design	Form	<ul style="list-style-type: none"> • Products are stylish and most have become design icons 	<ul style="list-style-type: none"> • Products are updated every 12 to 18 months • Existing customers are contacted about new products
	Compatibility	<ul style="list-style-type: none"> • All products ‘plug and play’ with other Apple products 	<ul style="list-style-type: none"> • All products ‘plug and play’ with other Apple products
	Functionality	<ul style="list-style-type: none"> • Products have cutting-edge technology, simple hardware and easy-to-use software 	<ul style="list-style-type: none"> • Customers would have to learn how to use non-Apple products • Genius Bar in Apple Store to solve customer technical problems
Accessibility		<ul style="list-style-type: none"> • Products can be purchased through various on-line and physical retail stores • Apple had 197 retail stores In 2007 	<ul style="list-style-type: none"> • Apple retail stores showcase products • Staff demonstrate product functionality
Product range		<ul style="list-style-type: none"> • A limited range of desktop and portable computers are available 	<ul style="list-style-type: none"> • Products are updated every 12 to 18 months • Existing customers are contacted about new products
Price		<ul style="list-style-type: none"> • Manufacturing and assembly are outsourced • Suppliers have to reduce costs over time 	<ul style="list-style-type: none"> • Price remains constant for products even though technical specifications increase
Delivery speed		<ul style="list-style-type: none"> • Product Teams comprising buyers, engineers and designers collaborate with suppliers to plan capacity and meet delivery schedules 	<ul style="list-style-type: none"> • Existing customers will wait for Apple products