

Innovation in the PC Market

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First there was the desktop, then came the laptop, then came the netbook, and now there is the tablet. Innovation seems to be a constant in the personal computer (PC) market. The desktop computer has ruled the roost for the longest, dating back to the late 1970s and early 1980s. Remember DOS®, the disk operating system, and the computers with no hard drives, only two floppy drives to hold the 5.25" (360 kb single-sided and 720 kb double-sided) disks, one for the operating system and the other for the purpose of collecting data, running applications, or playing games. The McIntosh® computer by Apple® and, later, the Windows® operating system by Microsoft®, with the *GUI* (Graphical User Interface) interface referred to as *WYSIWYG* (*What You See Is What You Get*), eventually pushed DOS and the associated command-line approach to data entry to the sideline, at least from the perspective of the typical home computer user. And, along the way, one cannot forget the upscale Compaq Plus® portable computer (one 5.25" floppy drive and one 10 mb hard drive) from the early 1980s that needed to be plugged in and which looked more like a 28 lb. portable sewing machine with a base that popped-off to serve as the keyboard and to reveal the built-in 7 x 6 inch screen monitor. The high price of desktop computers limited the size of the consumer market. It was not until prices started to fall significantly during the latter part of the 1990s did the market expand greatly.

While laptop computers date back to the early 1980s, the laptop computer, also known as notebooks, that we know today freed the computer user from a stationary, and somewhat permanent, location. The laptop, with the power source; all necessary hardware, including the monitor, keyboard, and mouse and all required software all within a single, self-contained unit allowed the machine; as the name implies, to be used while resting on the lap of the user. Like desktop computers, when first introduced to the consumer market, the high price limited the size of the market. The significantly lower prices during the early part of the 21st century resulted in greater market penetration for these machines.

Netbooks, entered the commercial market in 2007. These machines are smaller and lighter than the typical laptop but still possess the same basic operating features of a laptop, notwithstanding the limited speed and memory capabilities. Netbooks are primarily designed for easy Internet and email access. The smaller monitor size, and sometimes limited memory, restricts the use of this machine for the more elaborate functions that can be carried out on the normal laptop computer. In a relative sense, when first introduced to the market, the typical cost of a netbook was lower than that of a laptop, running in the US\$250 - US\$400 price range. In contrast, as indicated, desktop computers and laptops, when first introduced to the market, were considered to be very expensive and out of the financial reach of the typical consumer of the day.

Unfortunately, for the manufacturers of netbooks (e.g., Acer®, Asus®, HP®, and Dell®), the tablet computer (i.e., Tablet PC) has had a negative impact on the sales of netbooks. The Apple iPad® (see <http://www.apple.com>), which was formally introduced to the market in 2010, holds the honor of being the first commercially successful tablet computer to enter the marketplace. Samsung® has since entered the market with a product branded as the Galaxy Tab® (cf. Graham, 2010), a portable Android device with a 7" touchscreen capable of accessing the Internet (see <http://www.samsung.com>). Both products are designed to allow the user to carry out online activities via wi-fi connection that also can be done on a desktop, laptop, or netbook computer. The primary difference between the tablet PC and earlier computers, of course, is that, in the case of the tablet PC, a touchscreen is used as the input device. Dell®, Toshiba®, Research in Motion®, LG®, and Motorola® have already entered or are planning to enter this market in the coming year (cf. Graham, 2010). Even though the concept of a tablet computer appears to be an idea associated with the 21st century, the concept actually dates back to the 1960s, and even to 1888 (Holwerda, 2010).

The unique feature of a tablet PC, compared to earlier, related innovations, is the use of the touchscreen as the input device. Gone are the keyboard and mouse. Consumer preference for the tablet PC over the netbook includes the touchscreen, the styling, the available apps, and the compactness of the self-contained unit (Graham, 2010).

During 2010, tablet sales reached the \$20 million level (Graham, 2010), the first year of sales for the new product category. In the same time period, sales reached \$33.4 million for netbooks, up from \$32.2 million for the year before, even though the sales forecast was for sales to surpass the \$40 million level (see Graham, 2010). For the coming year, there are mixed views. One prediction is that sales will begin to stabilize around the mid-\$30 million level; a second prediction is that sales for the product will come to an end, with a continual decline in sales over the next few years (see Graham, 2010).

Consumers are disappointed with the netbook, considering it to be inferior to the notebook (i.e., laptop) (Graham, 2010). Even though the product came with a full keyboard and Windows® operating system, many consumers consider the machine to be too slow because of the slower processor (Graham, 2010). The more expensive iPad®, at \$499 for the base model, is considered to be faster and ease to use (Graham, 2010).

Another reason that sales of netbooks have failed to reach predictions is the overall decline in the price of the basic laptop, falling within the \$400 - \$500 range (Graham, 2010). For just \$100 more, consumers consider the additional benefits associated with a laptop to be worth the higher price (Graham, 2010).

While the sales of notebooks continue to outpace the sales of desktops, both product categories realized an increase during the past year, but the increase for notebooks was much greater (Graham, 2010). Furthermore, the sale of notebooks is considered to have the greatest growth potential (see

Graham, 2010). At the overall industry level, sales for personal computers are on a positive trend, even when dealing with a recession (Graham, 2010).

Focus: Product life cycle - definition, stages (introductory, growth, maturity, saturation, decline), and areas of application; sales forecast; consumer satisfaction; generic demand; selective demand; brand name; registered trademark; product characteristics; product image; demand state (see Kotler 1973): no demand, negative demand, full demand, faltering demand, irregular demand, unwholesome demand, latent demand, and overfull demand; Internet; email; innovation; diffusion of innovation; types of new products: new concept, new process, new to the company, and new model; conceptual content of a new product/service (i.e., innovation): compatibility, relative advantage, divisibility (trialability), communicability (observability), complexity; degrees of innovation (impact on behavior of consumer and relatedness to currently existing products): continuous, dynamically continuous, discontinuous; external environment: competition, economic, regulatory, technology, social (culture and political) (CERTS); attitude: unweighted expectancy-value model, weighted expectancy-value model, new product pricing: normal pricing, introductory price dealing, skimming pricing, penetration pricing; inelastic vs. elastic demand.

Questions:

1. Define each of the concepts listed in the focus section.
2. Based on the facts in the case, explain how the concept of product life cycle applies to personal computers overall, to desktop computers, to laptop computers, to netbook computers, and to tablet computers. In each case, identify the stage in the product life cycle for the product.
3. Can there be a life cycle for a product category (e.g., computers), for a particular type of computer (e.g., desktop), and for a particular brand of computer? Explain each response.
4. Using the data in the case, explain how the concepts of generic and selective demand apply.
5. Explain how the weighted expectancy-value attitude model and the unweighted expectancy-value model apply to a consumer's evaluation of a netbook and the evaluation of a tablet PC.
6. Based on the contents of the case, identify the demand state that best applies to notebooks and tablet PCs. Explain.

7. How would you classify a netbook and a table PC in terms of the degree of innovation? Explain.
8. From the perspective of the conceptual content of a new product and based on the facts presented in the case, evaluate the product categories of notebooks and tablet PCs. Based on the analysis, what is the likelihood that each product would be successful on the market? Explain.
9. Based on the CERTS acronym and the facts presented in the case, which component or components apply to the case. Explain.
10. Based on the type of new product classification, how would a notebook be classified when it was first introduced to the market? how would a netbook be classified when it was first introduced to the market? how would a tablet PC be classified when it was first introduced to the market? Explain each response.
11. When computers were first introduced to the market, prices were set very high; however, over time, prices came down, resulting in an increase in demand. The same pricing approach was used for laptops (notebooks). To date, the high prices for tablet PCs, including the iPad, have remained high. Why would a company set a very high initial price for a computer and then eventually reduce the price? What concept is relevant when this approach to pricing is used? How would you classify the nature of pricing used for netbooks? Explain. Why do you think such an approach is used?

Note. All dollar amounts are in U.S. \$.

Sources: (1) Graham, Jefferson (2010, December 28). High hopes for netbooks diminish as tablets' popularity surges. USA Today. Retrieved from http://www.usatoday.com/tech/products/2010-12-28-netbooks-predictions_N.htm (2) Holwerda, Thom. (2010, January 15). A short history of the tablet computer. *OSNews*. Retrieved from http://www.osnews.com/story/22739/A_Short_History_of_the_Tablet_Computer

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