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Who Benefits Most From The iPod Being Produced Mostly Overseas? Apple And Its Knowledge Workers

Not much of Apple's iPod is manufactured in the United States, but the majority of value added is captured by Apple, according to the Personal Computing Industry Center in Irvine, Calif. In hiring a company to dismantle an actual iPod and identify suppliers of the components, the center found that Apple made \$80 in gross profit on a 30-gigabyte video iPod that retails for \$299. Its profit is 36 percent of the estimated wholesale price of \$224. The total cost of parts was \$144.

Apple's gross profit "is greater than the price of any single input, so it is definitely greater than the value added for any of its partners," says the Personal Computing Industry Center in preliminary findings for a study sponsored by the Alfred P. Sloan Foundation. "[F]or sales made through Apple's own Web or store outlets, it retains an even larger share of the value."

The most expensive part in the iPod dissected by Portelligent Inc. was the hard drive supplied by Toshiba, at a cost of \$73. Toshiba's drive represents more than 50 percent of the total cost of all components. Toshiba's estimated profit on the drive, based on its stated corporate gross margin of 26.5 percent, is about \$19.45.

The next most valuable part is the display supplied by a joint venture of Toshiba and Matsushita. The cost: \$20.39, with an average gross

margin for the two companies of 28.7 percent, or \$5.85.

The value captured by Japanese companies for supplying the two most expensive parts was \$25.30.

"The biggest winner is Apple, an American company with predominantly American employees and stockholders who reap the benefits," says the study. "If the iPod had been made by Sony or Samsung, the value to the U.S. would be considerably less."

Portelligent provided the Personal Computing Industry Center, based in Irvine, Calif., with "teardown" reports from dismantling the iPod and identifying suppliers. It found that there are more than 400 parts worth from pennies apiece to \$2. After the display and hard drive, the next two most expensive parts were the video playback chip supplied by U.S.-based Broadcom, and the chip that manages the iPod's functions supplied by U.S.-based PortalPlayer. Given that their respective margins were 52.5 percent and 44.8 percent respectively, the chips created value for the two companies worth \$6.60.

The center intends to do a more in-depth analysis of the supply chain involved in the higher-value components, and determine where the manufacturing is done for such parts as PortalPlayer's controller chip. It will look at the

companies doing design, and determine which firms are receiving royalties from Apple on technology incorporated into the iPod.

“Because Apple is particularly sensitive about its supply base, field research and other inquiries will be needed even to make educated guesses,” says the study.

The center also looked at the back-end of the supply chain — the distribution and retail aspect of the iPod. It found that with the wholesale cost of \$225 (minus the \$80 for Apple’s profit) the remaining \$75 is for distribution (\$30) and retail (\$45). “In the case of retail units sold in other countries, a significant portion of the U.S. share [of value captured] would shift elsewhere,” says the study. “For a unit sold in Japan, the total value captured by Japanese companies might even be

larger than the U.S. share, depending on the identity of the company that handles distribution.”

The first phase of the study has not determined the direct labor costs involved in making all the parts that go into the iPod, “most of which will be outside the United States,” due the lack of data. Even the Japanese companies have moved their production to China.

“Trade statistics can mislead as much as inform,” the study concludes. “For every \$300 iPod sold in the U.S., the politically volatile U.S. trade deficit with China increased by about \$150 (the factory cost). Yet, the value added to the product through assembly in China is probably a few dollars at most. While Apple’s share of value capture is high for the industry, the iPod’s overall pattern of value capture is fairly representative.

The Most Expensive Inputs In the 30 Gigabyte 5th-Generation iPod, 2005

Component	Supplier	Company HQ Location	Manufacturing Location	Estimated Factory Price	Cost as % of all iPod Parts	Gross Profit Rate	Est'd Value Capture
Hard Drive	Toshiba	Japan	China	\$73.39	51%	26.5%	\$19.45
Display Module	Toshiba-Matsushita	Japan	Japan	\$20.39	14%	28.7%	\$5.85
Video/Multimedia Processor	Broadcom	US	Taiwan or Singapore	\$8.36	6%	52.5%	\$4.39
Portal Player CPU	PortalPlayer	US	US or Taiwan	\$4.94	3%	44.8%	\$2.21
Insertion, test, and assembly	Inventec	Taiwan	China	\$3.70	3%	3.0%	\$0.11
Battery Pack	Unknown			\$2.89	2%		\$0.00
Display Driver	Renesas	Japan	Japan	\$2.88	2%	24.0%	\$0.69
Mobile SDRAM Memory - 32 MB	Samsung	Korea	Korea	\$2.37	2%	28.2%	\$0.67
Back Enclosure	Unknown			\$2.30	2%	26.5%	
Mainboard PCB	Unknown			\$1.90	1%	28.7%	
Subtotal for 10 most expensive inputs				\$123.12	85%		\$33.37
All other inputs				\$21.28	15%		
Total all iPod inputs				\$144.40	100%		

(Source: Portelligent Inc., 2006, and PCIC authors' calculations)

“Today, no single country is the source of all innovation and therefore U.S. companies need to work with international partners to bring new products to market. These companies will capture profits commensurate with the extra value they bring to the table. This is simply a fact of business in the 21st century and the good news is that many American companies are winning this game and continuing to bring significant benefits to the U.S. economy.

“As long as the U.S. market remains dynamic, with innovative firms and risk-taking

entrepreneurs, global innovation should continue to create value for American investors and well-paid jobs for knowledge workers. But if those companies get complacent or lose focus, there are plenty of foreign competitors ready to take their places. If this happens, the benefits from the global innovation system could quickly shift away from the U.S.”

The report, entitled “Who Captures Value in a Global Innovation System? The Case of Apple’s iPod,” is located at <http://pcic.merage.uci.edu/papers/2007/AppleiPod.pdf>.

**The Geography Of \$190 Of The Captured Value
In A Single \$299 Video iPod (very preliminary)**

	U.S.	Japan	Korea	Total
Distribution and Retail	\$75			\$75
Apple	\$80			\$80
Seven Identified Inputs in Table 1	\$7	\$26	\$1	\$34
PortalPlayer suppliers	\$1*			\$1
TOTAL	\$163	\$26	\$1	\$190

Note: For this table it is assumed that the unit is sold in the United States.

**PortalPlayer suppliers could also be located in Taiwan.*

Source: Personal Computing Industry Center report’s authors’ calculations.