Perspective

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# Profit Migration in the Digital Economy

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# EXECUTIVE SUMMARY

*The digital economy has made great strides over the past decade as a result of evolving social trends and advances in technology. Profits for digital players have grown at an average pace of 5 percent a year, from US$498 billion on $3.7 trillion in revenue in 2002 to $726 billion on $4.3 trillion in 2010. But the benefits have not been distributed equally. We performed an analysis of the relative changes in profitability among the six segments of the digital economy's value chain, and the results are clear. Companies in the segments furthest from consumers—the content and service providers—are losing profit share to those closest: the equipment providers and the software, Internet software and services, and devices segments.*

The factors driving this migration of value are many. A principal cause lies in the growing power of consumers compared with producers. The rise of Web 2.0 technologies over the past decade has increased the power of companies that organize the Web, while multiplying the ways in which consumers receive content and enabling them to create their own content and thus compete with content providers. Another factor has been the growing power of consumer-oriented companies that have built huge networks of customers; the business value of this "network effect" is overtaking economies of scale as a way of capturing value. And cloud computing is rewriting the way software is delivered throughout the tech ecosystem.

Armed with an in-depth understanding of shifting profit pools, digital economy players can make more informed decisions about where to invest and which capabilities to develop to ensure their continued relevance in the fast-moving digital landscape.

# A DECADE OF EVOLUTION

Much has changed in the digital economy over the past decade. The dot-com bubble burst in 2000–01, but soon after that came a host of new technologies, often collectively called Web 2.0. These, in turn, generated a resurgence in the digital economy, manifested in the rise of companies like MySpace and then Facebook, as well as YouTube, Twitter, and others. At the same time, the power of somewhat older companies, such as Apple and Google, continued to grow. Much of this activity came about through the ongoing spread of broadband and wireless connectivity, and the development of a raft of new devices, including smartphones and now tablet computers.

Given the many changes that have taken place, it is worthwhile to pause and examine precisely how the digital economy has evolved over the past decade. How has the distribution of revenues and profits changed? Which players are gaining share, and which are losing it? And finally, why have these shifts occurred, and what might it mean for the future of the digital economy and its many participants?

# THE DIGITAL VALUE CHAIN

The digital economy is fundamentally different from the traditional bricks-and-mortar economy. Unlike the standard value chain for physical goods, where a product is literally handed off from one participant to the next, digital goods take a more nebulous path from producer to customer, and the handoffs through the supply chain are less clear. This poses a challenge when trying to identify the digital value chain. What does it look like? What exactly are the elements in the value chain? And who are the participants?

We define the digital value chain broadly as the creation, dissemination, delivery, and consumption of digital content. For the purposes of our analysis, the value chain encompasses six distinct segments (*see Exhibit 1*).

*Exhibit 1*
*Segments of the Digital Value Chain*

| Segment | Description | Company Examples | Industry Examples |
|---|---|---|---|
| **1. Content Providers** | Creators and originators of digital content, such as music, pictures, videos, news, and information | - McGraw-Hill, News Corp., Time Warner, Walt Disney, Washington Post | - Movies and entertainment<br>- Publishing |
| **2. Service Providers** | Firms that build and maintain the networks that deliver content | - AT&T, Comcast, Deutsche Telekom, Time Warner Cable, Verizon | - Alternative carriers<br>- Broadcasting<br>- Cable and other pay-TV services<br>- Integrated telecommunication services<br>- Wireless telecommunication services |
| **3. Equipment Providers** | Producers of infrastructure hardware and networks through which content is delivered | - Cisco, EMC, Juniper Networks, NetApp | - Cable and satellite<br>- Computer communications equipment<br>- Computer storage and peripherals |
| **4. Software** | Producers of software needed to run devices that access content | - Adobe Systems, CA Technologies, Microsoft, Oracle, Symantec | - Application software<br>- Systems software |
| **5. Internet Software & Services** | Producers of online services that broadly aggregate and disseminate digital content | - Amazon.com, eBay, Google, Netflix, Yahoo | - Internet retail<br>- Internet software and services |
| **6. Devices** | Producers of the devices through which content is viewed | - Apple, Dell, Hewlett-Packard, Motorola, Nokia, Research in Motion, Toshiba | - Communications equipment<br>- Computer hardware |

Source: Booz & Company analysis

## CHANGING VALUE POOLS

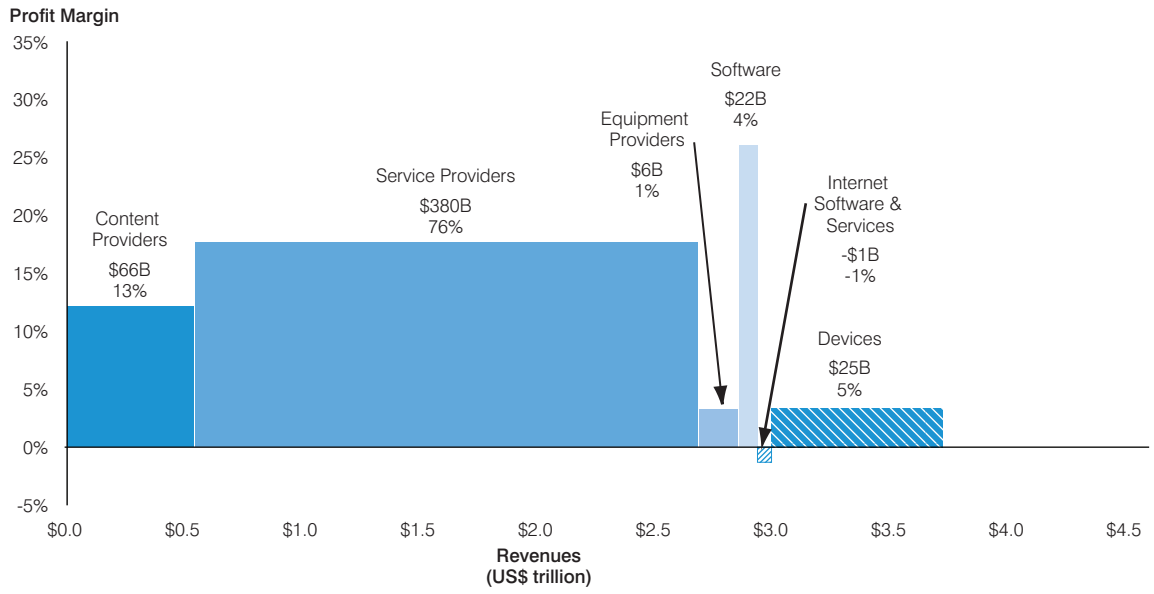
Back in 2002, following the bursting of the dot-com bubble, the digital economy began to rebound. When the six segments of the digital value chain are plotted on a "profit pool" chart for that year, a picture emerges of the size of the share of profits of each segment (*see Exhibit 2*). The width of each box along the x-axis indicates the segment's total revenues, while the height along the y-axis indicates the segment's average profit margin (operating free cash flows, defined as EBITDA less capital expenditures). Thus, the area of each box represents the total dollar profits earned by that segment.

In 2002, the digital economy's profits totaled $498 billion on $3.7 trillion in total revenues. Service providers captured fully 58 percent of the revenues and 76 percent of the profits. At the other end, the Internet software and services segment took in just 1 percent of the revenues while losing $658 million that year (*all figures are adjusted for inflation; see "Methodology," page 9*).

By 2010, total revenues in the digital economy were up 17 percent, to $4.3 trillion, and total profits had grown to $726 billion, a 46 percent increase or a compound annual growth rate of 5 percent. But the relative value of the six segments in the value chain had shifted considerably, making the picture look very different (*see Exhibit 3*).

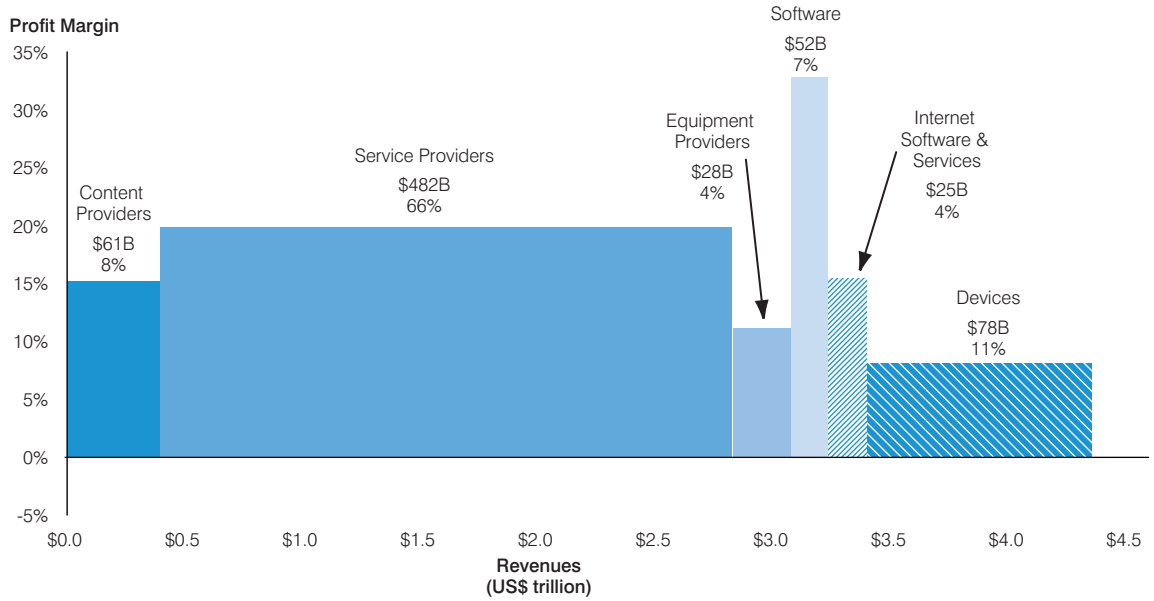
***The relative value of the six segments in the value chain shifted considerably between 2002 and 2010.***

*Exhibit 2*
*Profit Pools in the Digital Value Chain, 2002*




Source: Capital IQ; Booz & Company analysis

*Exhibit 3*
*Profit Pools in the Digital Value Chain, 2010*




Source: Capital IQ; Booz & Company analysis

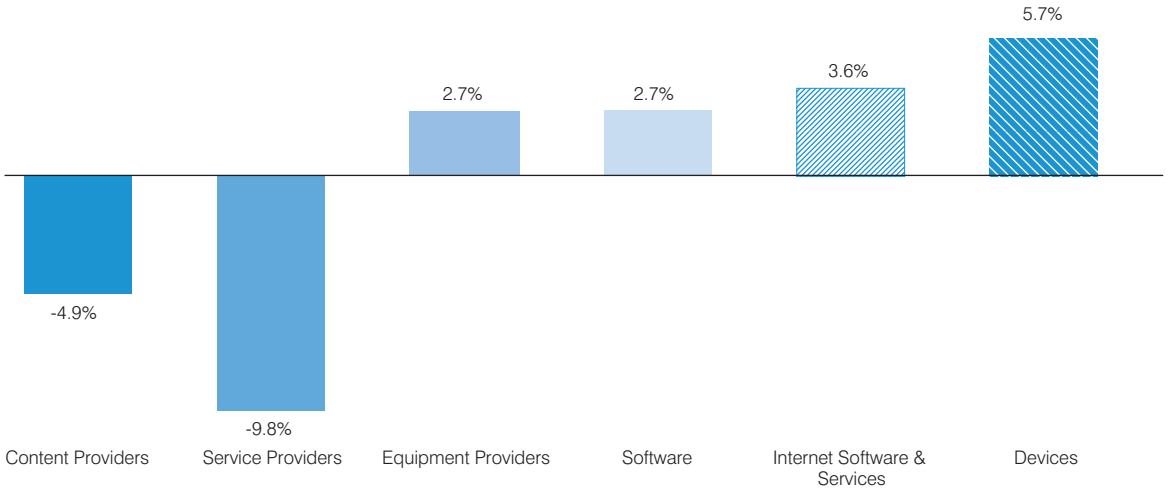
## WINNERS AND LOSERS

Over the eight years between 2002 and 2010, the digital economy experienced a sustained shift in profits and revenues toward the consumer end of the value chain. The content providers, the segment furthest from the customer, saw their revenues and profits actually fall. And while the service providers continued to earn by far the most profits, $482 billion, their share of total profits fell 10 percentage points, to 66 percent. All of the other segments grew their shares, collectively capturing 14.7 percentage points from the declining segments (*see Exhibit 4*).

Much of the profits gained at the consumer end of the value chain came in the form of growth in the devices segment, whose share of the profits grew by 5.7 percentage points. Apple alone accounted for 47 percent of the profit growth in this segment. Indeed, Apple was the largest single winner across all segments in terms of absolute profit gain. But the biggest gainer in terms of both revenue and profits was Internet software and services, which went from a loss in 2002 to a gain of $25 billion in 2010. Again, much of this is attributable to one company—Google—which accounted for 28 percent of the segment's profit growth. These companies—Apple and Google—represent the major winners in their respective segments.

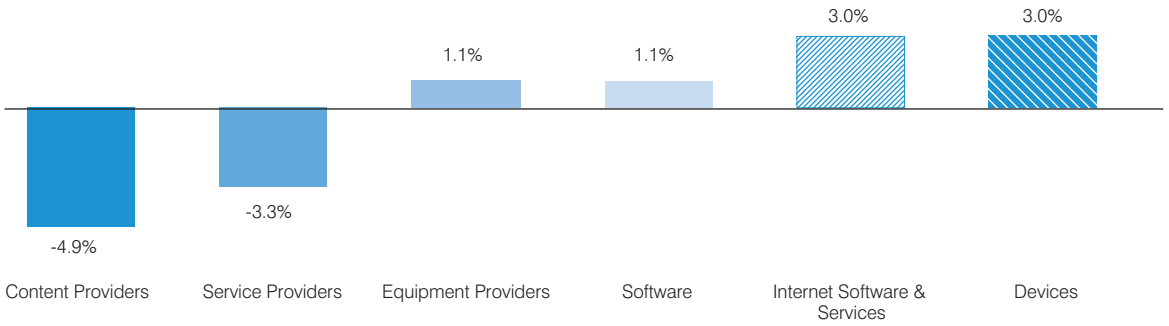
It is worth noting that despite the large gains made by a few large companies such as Apple and Google, those organizations alone do not account for the shifts in profit pools. An analysis of the changes in profit pools that excludes the 10 largest companies in each segment leads to essentially the same result (*see Exhibit 5*).

*Exhibit 4*
*Change in Profit Share by Segment, 2002-2010*




Source: Capital IQ; Booz & Company analysis

*Exhibit 5*
*Change in Profit Share by Segment, 2002-2010, Excluding 10 Largest Companies in Each Segment*




Source: Capital IQ; Booz & Company analysis

# TILTING THE BALANCE

The shifts in the profit pools of the digital economy since 2002 are the result of a number of technological changes that have shifted power from the forces of production to those of consumption, and of the strong positive network effects that are accompanying—indeed, in many ways causing—that shift, as companies such as Facebook and Twitter build massively powerful networks of consumers. These changes include the following:

*The filtered Web:* The core asset of the digital economy in 2002 was the content itself—thus the conventional wisdom at the time that "content is king." Since then, however, the onslaught of information, news, media, and entertainment available on the Internet has become relentless, to the point where the more filtered and categorized it is, the more meaningful—and valuable—it becomes. Thanks in great part to the rise of Web 2.0, the segments closest to the consumer, including devices and Internet software and services, have gained in influence, since they are the ones that are most able to filter and categorize content.

*Easier access to information:* Meanwhile, technological advances in data storage, digitization of content, and communications have made it far easier to copy, share, and transfer content. Content providers have struggled to control the dissemination of all sorts of content, including music, movies, news, and the like. Service providers, too, have suffered as further advances have whittled away at their pricing power and business models. Thanks to Hulu and Apple TV, for instance, many consumers are opting to drop their cable TV subscriptions. Cellphones have significantly reduced the need for landlines. Netflix encourages moviegoers to stay at home, watching movies in groups rather than paying for high-priced cinema tickets. Together, these advances are continually chipping away at the bargaining power of equipment and service providers.

*User-created content:* In a similarly significant shift, the means of consumption on the Internet are literally becoming the means of production. In the bricks-and-mortar economy, consumers do not have the ability and resources—or the desire—to produce the goods they consume. In today's digital economy, however, anyone with an Internet connection and a computer, or even a smartphone, can create and write blogs, editorials, and user reviews, or post pictures and videos. Social networks such as Facebook and services such as YouTube organize and screen the content for users, and thus replace the role of traditional content providers. The result: increased competition among traditional content providers in the early stages of the value chain—and with increased competition come lower profits.

*Network effects:* Over the past decade, companies such as eBay, Amazon, Google, Apple, and more recently Facebook and Twitter have benefited from the positive network effects of their vast customer bases. Apple's network of programmers in its App Store and Facebook's enormous network of users, for example, afford these companies greater bargaining power, engender user loyalty, and create significant switching costs for users. Such companies, all of which are in the software, Internet software and services, and devices segments, and thus closest to the consumer, have enjoyed stronger pricing power and influence as their networks have grown. In contrast, the upstream segments typically benefit primarily from traditional bricks-and-mortar economies of scale, the benefits of which lie largely in their ability to bring down costs. Since 2002, the companies closest to the consumer have disproportionately exploited network effects to grow faster than their production counterparts, capturing a greater share of the profit pool.

*Software in the cloud:* Finally, the advent of cloud computing has created a struggle between the software segment and the Internet software and services segment. In 2002, software boasted a profit margin of 26 percent and profits of $22 billion, towering over a tiny Internet software and services segment, which had approximately two-thirds the revenue and negative profits. By 2010, Internet software and services had grown to become larger than the software segment in terms of revenue, while boosting its profit margin to 15.5 percent and bringing its total profits to half of the software segment's total. We expect this transition, from software on the desktop to the cloud, to continue.

### METHODOLOGY

In producing our research, we analyzed the financial results for more than 6,000 companies from 2002 through 2010. We began our analysis in 2002 in order to exclude the volatile effects of the 2000 dot-com crash, and that year also represents the approximate beginning of Web 2.0.

We used standard industrial classification (SIC) codes as a simple, uniform method of categorizing companies into segments and analyzing the profitability of each of the segments. We are aware, however, that in some cases this can be an oversimplification. Hewlett-Packard, for example, has an SIC code that places it in the devices segment, even though the company sells products that might also place it in the equipment provider segment.

In determining each company's profits, we used EBITDA minus capital expenditures. EBITDA serves as a measure of free cash flows from operations, and capital expenditures were subtracted because the profit pools analysis compares companies in very different industry segments. For some companies, such as equipment providers and service providers, capital expenditures are an essential aspect, whereas in the software segment, they are less relevant. EBITDA less capital expenditures takes these important differences into account.

All figures have been adjusted according to the GDP implicit price deflator, which was approximately 20 percent higher in 2010 than in 2002. It is available in the 2011 Economic Report of the President, Department of Commerce, Bureau of Economic Analysis (www.gpoaccess.gov/eop/tables11.html). Please note that the 2010 price deflator figure is preliminary as of the writing of this Perspective.

## THE CONSUMER IS KING

Further technological advances and social trends will likely continue to tilt the balance of power in the digital economy toward the consumer. Certainly, capturing the new value created in the digital space over the next several years will depend on the ability of companies—even those currently furthest from consumers—to develop strategies that bring them closer.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