



OLIVER WYMAN

In Search of New Value Growth

Communications, Media,
and Technology | 2010

State
of the
Industry



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Contents

<u>About This Report</u>	<u>3</u>
<u>Executive Summary</u>	<u>4</u>
<u>State of the Industry: An Uneven Picture</u>	<u>6</u>
<u>Telecoms: Where Will Value Growth Come From?</u>	<u>16</u>
<u>Value Growth in Video: A Zero Sum Game?</u>	<u>28</u>
<u>Appendix</u>	<u>38</u>

About This Report

Oliver Wyman's third annual Communications, Media, and Technology (CMT) State of the Industry report reviews performance by region and industry, highlighting value-migration trends and new global strategies. This report is designed to give senior executives insights and information to successfully navigate a highly competitive and uncertain landscape.

Oliver Wyman defines communications, media, and technology broadly. We view CMT as a complex industry with many interrelated sectors—media, software and services, mobile and fixed-line communications, cable, consumer electronics, and hardware equipment and semiconductors. In addition to these sectors, we look at the CMT industry from a global perspective that includes 11 geographic regions:

- United States and Canada
- Western Europe
- Japan
- South Korea
- Greater China
- India
- The rest of Asia
- Latin America including Mexico
- Middle East and Africa
- Central and Eastern Europe
- Australia and New Zealand

We look beyond the stalwarts and the stars to include upstart firms that may not be well known even in their home markets. Our findings are based on publicly available information, Oliver Wyman's deep CMT expertise, and our proprietary Shareholder Performance IndexSM (SPI).

Oliver Wyman's Shareholder Performance Index

CMT firms pursue opportunities in many different sectors and geographies. Senior executives and boards of directors require an objective measure for tracking performance relative to that of their peers and competitors. Executives must be able to measure risk-adjusted shareholder value relative to their own sectors and regions. Investors have correspondingly broad options when allocating capital in communications, media, and technology. They require a relevant benchmark that compares all CMT firms on an even playing field.

The SPI is that benchmark. Developed by Oliver Wyman in 1997, the SPI is an objective ranking of the world's top 450 publicly quoted CMT firms with a market capitalization of at least \$1 billion. By adjusting for the volatility of returns, currency risk, and mergers and acquisitions, the SPI enables apples-to-apples comparison of companies in widely divergent regions and sectors.

Because the SPI calculates shareholder value over a rolling five-year time period, the index identifies longer-term value-migration trends, looking past short-term distortions in the market. The present edition of the SPI for the CMT industry is calculated over the period December 31, 2004, through December 31, 2009. Data for the SPI calculation is sourced from Thomson Reuters (see the Appendix to this report for a fuller explanation of the SPI and its methodology).

Executive Summary

As the Communications, Media, and Technology (CMT) sector emerged from the financial chaos of 2008-'09, the search for new value growth ratcheted up a notch or two.

On the surface, CMT bounced back well in 2009, recovering almost half the market value lost in 2008. But the extent and pace of recovery was far from even. The Technology and Media sectors rebounded strongly—driven by the resilience of industry leaders like Apple, Google, and Tencent (see Chapter 1). Elsewhere, particularly in Communications, traditional sources of value growth showed signs of drying up. And some parts of the CMT universe look increasingly like 'zero-sum' games—with intensifying competition to steal value share rather than grow value. The search for new sources of value growth is as tough as ever.

Telecoms pinched as value migration reverses

The Communications sector struggled to regain much of the market value lost in 2008 (see Chapter 2). The five-year shift in value toward mobile telecom operators, especially those in emerging markets, slowed in 2008 and reversed in 2009.

One traditional source of value growth has been adding new wireless subscribers. Significant growth is still possible in many emerging markets, most notably China and India, but at increasingly challenging ARPU levels. Redesigning business models to take out cost is an imperative for players seeking to capitalize on this opportunity.

A second source of growth has been selling new services to existing customers. Again, value growth is possible, but traditional network-centric business models are coming under pressure as bandwidth hungry activity moves online. We believe operators need to 'double bet' by exploring new business models with revenue-capture mechanisms that have more in common with software and online markets than traditional telecom services.

A third critical lever is to intensively squeeze the core business for profit. On the revenue side, rigorously applying customer value management principles—aligning cost-to-serve with the customer value proposition—can help slow down 'bleeding' voice and data revenues. On the cost side, despite a spate of recent cost cutting, the industry can—and must—cut closer to the bone.

Video-viewing shift poses threats, creates opportunities

The increasing role of the internet in content distribution has affected all CMT sectors over the last decade. Video has been less impacted than, say, news or music. But, as broadband has achieved mass-market penetration levels, a growing proportion of video consumption is moving to 'over-the-top' services delivered across the open internet rather than over traditional TV platforms.

A recent Oliver Wyman survey of 2,500 video viewers in the U.S., U.K., Spain, France, and Germany provides robust data points to analyze this trend (see Chapter 3). For example, our analysis shows that time spent watching video online in the U.S. grew by 50% in 2009, with more than half of that time spent on long-form content—TV shows and movies. In key advertising demographics, the growth is even higher. People who watch TV shows and movies online now watch almost 15% of all long-form content online. But much of this viewing is not monetized, due to piracy or ad-based models that deliver less per viewer than traditional TV.

Based on our survey responses, it is likely that at least some online viewing is cannibalizing traditional viewing platforms, edging the industry towards a ‘zero-sum game’ and increasing the pressure on existing players to sharpen online strategies.

Beyond consumers, who benefit from a wealth of viewing options, few players to date have captured much value from this shift online. Indeed, the business models to profitably monetize online viewing are still unclear. We see an increasingly fierce market-share ‘battle for the remote’ as traditional broadcasters and pay-TV operators fight to retain existing subscribers; and internet-savvy interlopers—consumer electronics giants, game-console manufacturers, broadband providers, and online aggregators—seek to muscle in on the action.

The good news is that the nascent field of internet video is still wide open, with no player(s) having erected insurmountable barriers to entry. Our research into consumer preferences for different ‘over-the-top’ models provides clues to value propositions that might be acceptable to the new and demographically attractive “hybrid” viewer.

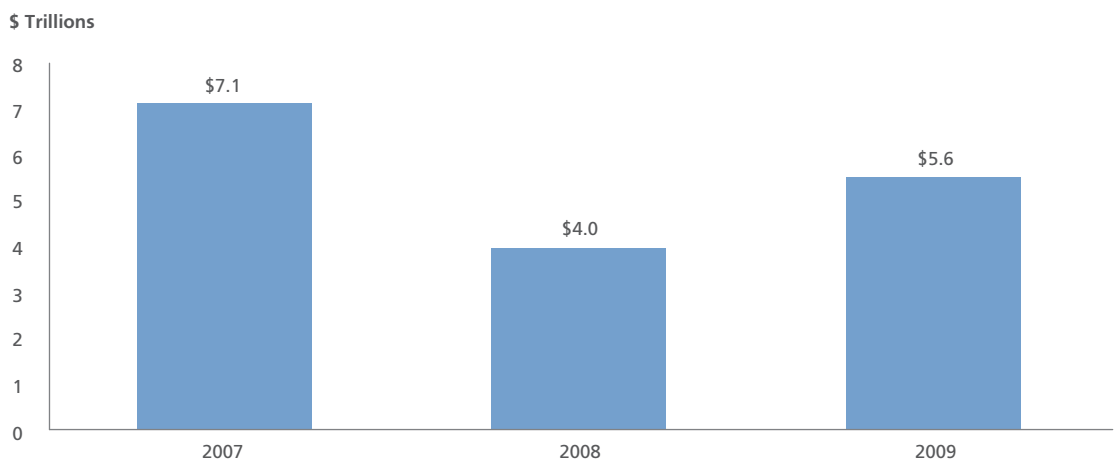
In search of new value growth

Some CMT companies have clearly created significant shareholder value, as Oliver Wyman’s annual Shareholder Performance Index (SPI) indicates (see Chapter 1). For others the search for new sources of value growth has never been tougher. As traditional growth drivers dry up, firms will need to restructure business models to adapt to the new – sometimes harsh – reality. Maximizing the chances of value creation from new opportunities will require double and triple betting to improve the odds of success. 2010 promises to be another eventful year for the industry.

1. State of the Industry: An Uneven Picture

In 2008, the combined market value of the top 450 Communications, Media, and Technology (CMT) firms lost \$3.1 trillion; in 2009, they gained back \$1.6T, or 52% of these losses (see Figure 1.1). CMT's overall growth of 40% in 2009 was better than that of broad stock indices such as the DJIA, S&P, and FTSE All Share, although only slightly less than the NASDAQ. Another good sign for the industry is that CMT has, for the main part, avoided the wholesale restructuring and heavy state intervention required by some industries, such as automotive and financial services.

Figure 1.1 Market value of the top 450 CMT firms 2007-09



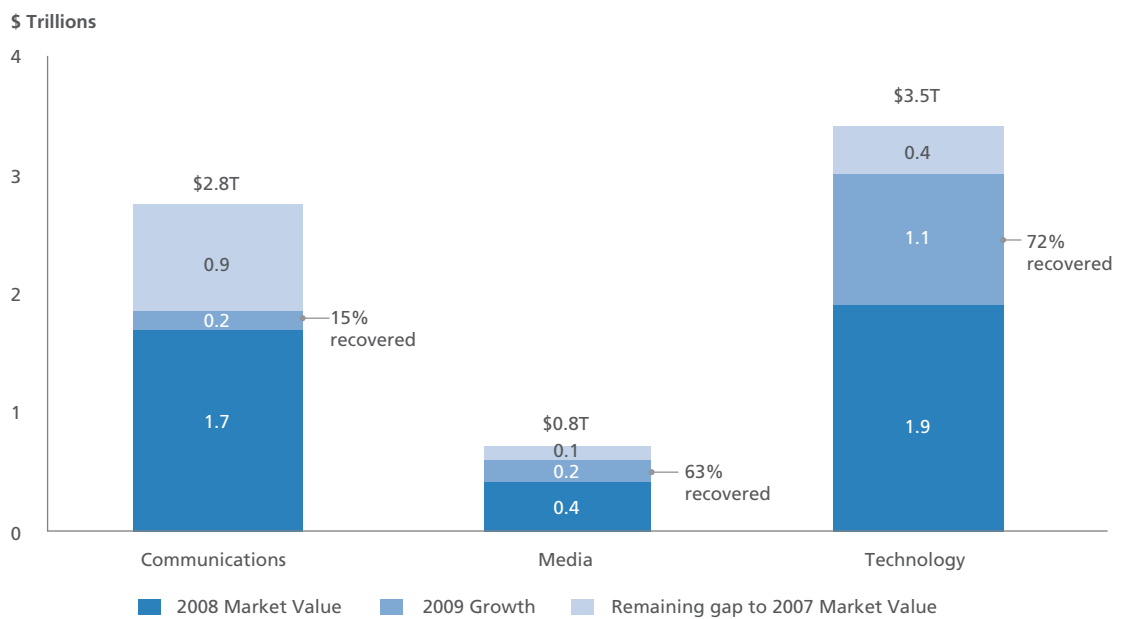
Source: Oliver Wyman analysis.

Looking beyond aggregate gains, there were some clear winners and losers among different sectors and geographies (see Figures 1.2 and 1.3). Looking at sectors:

- The Communications sector has been slow to recover, recapturing just \$0.16T of value in 2009, less than 15% of the \$1.1T lost in 2008:
 - Gains in Western Europe outstripped those in the U.S. & Canada, and offset losses in Japan.
 - Communication's share of the total CMT market value shrank from 43% in 2008 to 34% in 2009.
- The Technology sector bounced back well, recapturing \$1.1T of market value, over 70% of what it lost in 2008:
 - Compared to Communications firms, Technology firms have wider global reach and scale, which insulates them against declines in any given market, and they tend to have broader B2B exposure, which insulates them against the slow bounce-back in consumer spending.
 - The Semiconductor and Computer Hardware sub-sector drove these gains—with 2009 growth of 65%—perhaps an indication that firms over-reacted to the recession by excessively running down inventory levels in the face of uncertainty. Particularly strong within this sub-sector were Computer Hardware firms, growing at 86% and recovering an above-average 94% of 2008 losses.
 - Computer Services firms achieved the highest recovery of any industry (127%), the only CMT industry sector to top year-end 2007 market values; more than half this growth was driven by IBM and Tata Consultancy Services.

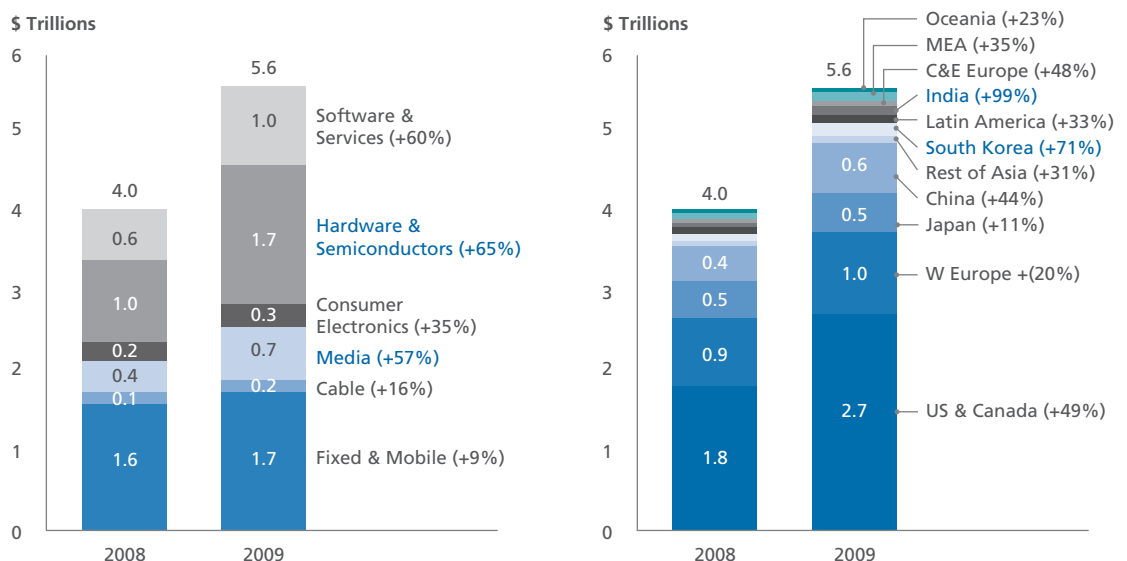
- Technology increased its share of overall CMT value from 47% to 55%, its first increase in five years. Nearly half this value migration was due to computer hardware, with a strong recovery in North America and new growth in China, Hong Kong, and Taiwan.
- The Media sector also performed well, recovering \$0.2T of value, over 60% of what it lost in 2008, and slightly increasing its share of overall CMT value to 12%:
 - Online content providers and distributors provided more than half of these gains;
 - In relative terms, the biggest gains were in China, where market value increased by 200%.
 - In absolute terms, the U.S. & Canada's \$144B increase in market value was the biggest, representing 61% of Media's gains.

Figure 1.2 Value recovery in 2009



Source: Oliver Wyman analysis.
 Note: Due to rounding, components may not sum to total.

Figure 1.3 Market value by CMT sector and region 2008-2009



Source: Oliver Wyman analysis.
 Note: Due to rounding, components may not sum to total.

Looking at geographical regions:

Indian CMT firms grew by 99% in 2009

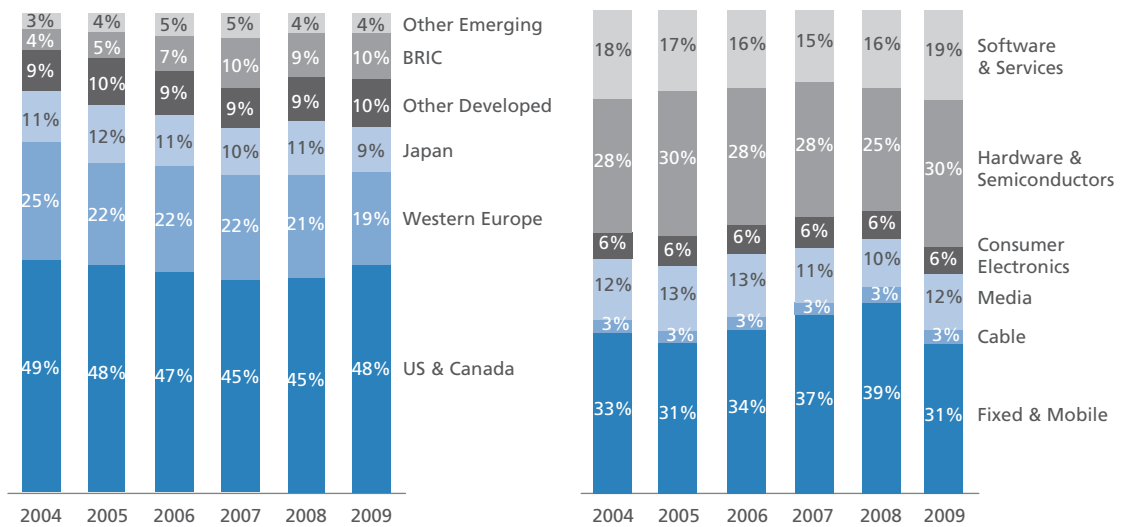
- On average, emerging markets lost more value in 2008 than developed markets (49% versus 42%) and recovered more slowly in 2009 (38% of loss recovered versus 52%). Nonetheless, Indian CMT firms, which lost 55% of market value in 2008, grew 99% in 2009, the highest annual growth rate of any geography, driven by large IT and outsourcing firms such as Tata, Infosys, and Wipro.
- Among mature economies, South Korean firms (+71% MV in 2009) and North American firms (+49%) were top gainers; but Western Europe (+20%), Oceania (+23%), and Japan (+11%) fared relatively less well.

Value migration: A reversal of fortune?

Two major value-migration trends that have dominated the CMT landscape most of this decade showed signs of weakening in 2008 and 2009: the shift in value towards emerging markets and away from mature economies; and the shift in value toward telecoms, especially mobile telecoms (see Figure 1.4).

And one emerging trend showed signs of accelerating: the shift in video consumption from traditional to online viewing platforms (see Chapter 3 for a full analysis of this trend).

Figure 1.4 Value migration by CMT region and sector



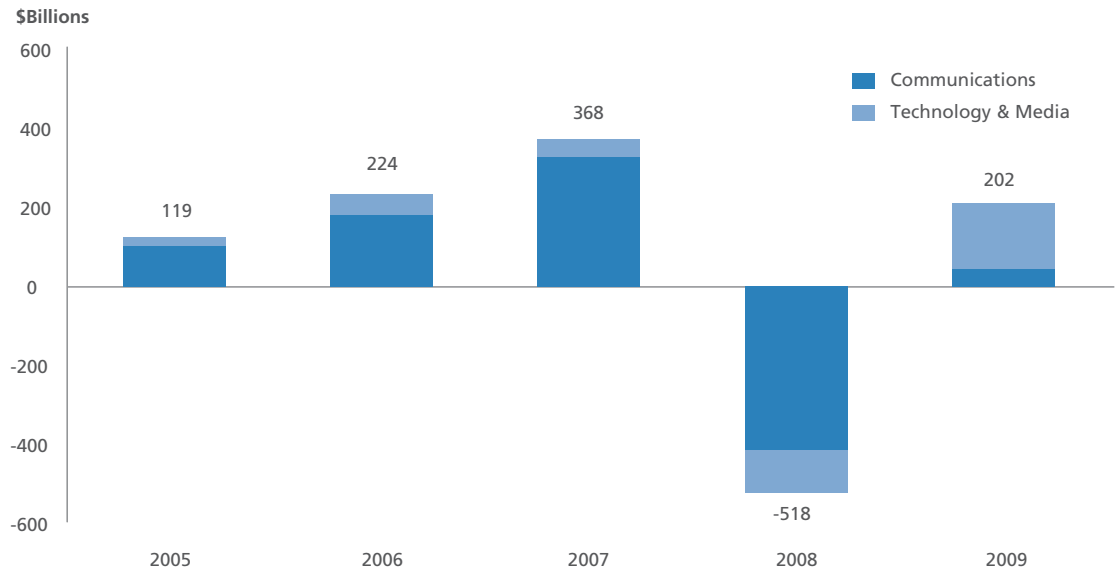
Source: Oliver Wyman analysis.
 Note: Due to rounding, components may not sum to 100%.

Between 2004 and 2007, firms in emerging markets grew their share of overall CMT value from about 7% to 15%. That growth began to slow with the downturn in 2008 and 2009, with emerging markets' share of value dropping to around 14%.

Emerging-market mobile telecoms have lost significant share of the CMT market

One of the key drivers of value migration has been the widespread rollout and adoption of mobile telephony services (see Figure 1.5), which accounted for almost 88% of emerging markets' total value growth in 2007. In 2009, by contrast, after steep value losses in 2008, emerging-market telecoms represented just 22% of emerging-market CMT value growth.

Figure 1.5 Growth in emerging economy CMT market value 2008-09



Source: Oliver Wyman analysis.

One year's data does not necessarily signal the end of value migration toward emerging markets, but the wave of value growth associated with the roll-out of mobile networks in emerging markets has certainly slowed. This is partly due to rising penetration levels and partly to increased pressure on ARPU, as competition forces down prices and operators chase new subscribers within challenging demographics and geographies.

The loss of value in telecoms has not been limited to emerging markets; operators in mature markets have also struggled. Telecom operators in mature economies accounted for 28.5% of total CMT value in 2008; a year later, that value had dropped to 22.5%.

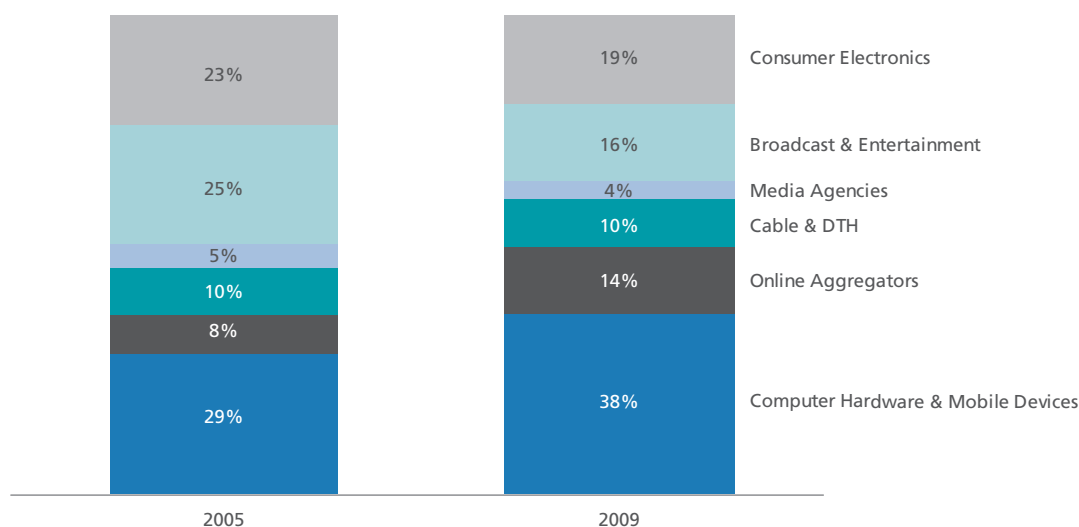
Is this a reflection of a change in the value growth potential of telecom operators or just short term skittishness of investors? We explore the potential for value growth in telecoms in Chapter 2.

The move to digital and online content impacts all Media sub-sectors

As these telecom trends reversed, a nascent media trend accelerated. The Media sector stabilized in 2009, regaining 63% of value lost in 2008. But under the surface, the move to digital and online content continued to accelerate, with market-value implications for sub-sectors such as the TV & Video industry (see Figure 1.6). Value is migrating away from Broadcast and Entertainment providers, and toward Online Aggregators, along with Computer Hardware and Mobile Devices.

Online Aggregators such as Google and Tencent have performed particularly well. Both have increased exposure to video, although monetizing video content remains a challenge even for these online giants. Computer Hardware and Mobile Devices have benefitted from consumers' increasing demand for high-quality computer technology in the home, much of which can be used for 'over-the-top' internet delivery or time-shifted video consumption.

Figure 1.6 Value migration among industries with exposure to video



Source: Oliver Wyman analysis.
 Note: Due to rounding, components may not sum to 100%.

In contrast, Consumer Electronics companies, Media Agencies, and Broadcast and Entertainment companies have seen their share of value decline over the last five years. And, despite innovations in broadband-internet access and digital-cable delivery, the share of value captured by Cable TV companies is no higher than it was five years ago.

We analyze these accelerating video-consumption shifts in more detail in Chapter 3.

2009 Shareholder Performance Index (SPI) results

Oliver Wyman’s Shareholder Performance Index (SPI)—which measures shareholder performance of the top 450 CMT firms adjusted for currency risk, volatility of returns, and mergers and acquisitions over a rolling five-year period (see page 3 and Appendix for more detail)—tells a story that maps closely to raw market-value migration within CMT.

The gap in SPI between mature and emerging-market companies shrank, with emerging-market firms averaging a 160 score (2008: 170) and mature-market firms 109 (up from 96 in 2008). The spread of performance within any given sector or geography is also striking. Within the Software & Services sector, for example, which had the highest average SPI score of 136, the top-quartile performers outscored the bottom quartile by more than 3 to 1.

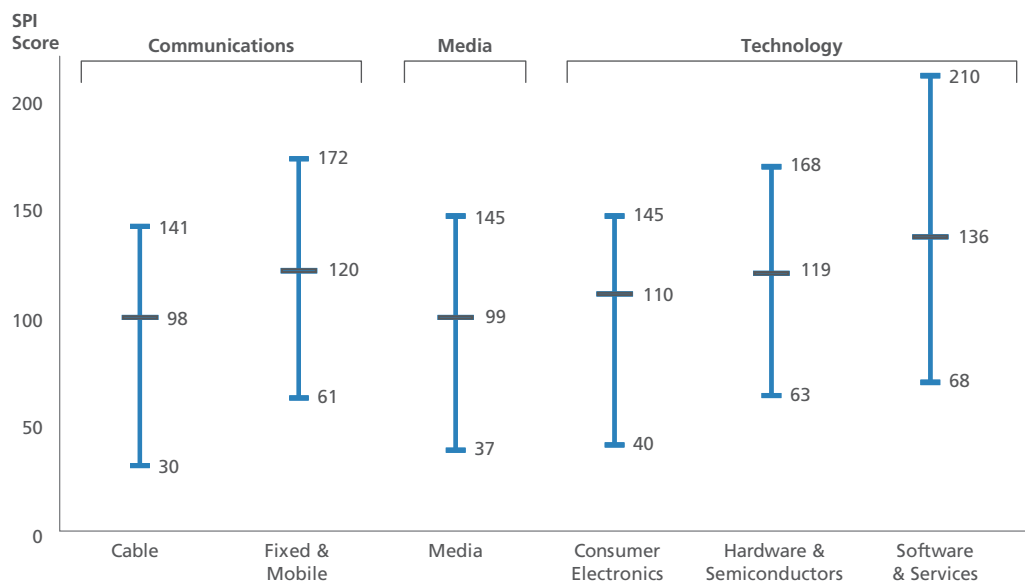
Looking at CMT sectors (see Figure 1.7):

- Technology firms performed notably better in 2009, averaging 124 (2008: 82), leap-frogging both Media and Communications for the top spot.
- Communications firms averaged 115, a big drop (2008: 166).
- Media was virtually unchanged at 99 (2008:104).

Looking at geographic regions (see Appendix for details):

- BRIC¹ nations had the strongest showing, with an average of 171.
- In 'Other Emerging' markets, firms in the Middle East and Africa performed best (163), closely followed by Latin America (142).
- Mature markets lagged considerably behind, with U.S. & Canada firms at 109 (2008: 86), while Japanese firms scored below average at 63 (2008: 74).

Figure 1.7 Average, top and bottom quartile SPI performance by sector



Source: Oliver Wyman analysis.

2009 SPI results: 20 best and 20 most improved

Two firms have made the SPI top 20 for three consecutive years

Tencent, the dynamic Chinese online content and services company and last year's SPI leader, retained the top spot in 2009 with a remarkably high SPI score of 524 (2008: 442)—a considerable 120 points higher than #2, Autonomy (see Figure 1.8 and the Appendix for a full listing of top performers by sub-sector).

Tencent continues to capitalize on a growing hunger for electronic media, and has trebled its raw market value in the last five years. Tencent was one of six firms to return from last year's top 20 list—and only one of two that has made the list three years in a row—the other being Apple.

Technology companies comprise the majority of firms (13) in the top 20—compared to four Media and three Communications firms. Of the 14 new companies in the top 20—12 are Technology firms. Conversely, the Fixed & Mobile segment of the Communications sector took a big hit—only two firms made the top 20, compared to 11 in 2008.

The emergence of so many new firms is testament to the opportunity for new growth that any economic downturn provides. Confirmation of this can be gleaned by looking at the list of top 20 Most Improved Companies (see Figure 1.9). Most have market values below \$5 billion—and 18 of the Most Improved are Technology companies.

1. Brazil, Russia, India and China.

Figure 1.8 **Top 20 SPI performers in 2009 (new entries in bold)**

Name	Industry	2009 SPI	2009 Market Value (\$B)	2009 SPI Rank	2008 SPI Rank
Tencent Holdings	Online content & services	524	39.5	1	1
Autonomy	Software	404	5.9	2	22
Bezeq	Fixed & mobile	350	6.7	3	49
SXC Health Solutions	Software	344	1.6	4	NA
NHN	Online content & services	323	7.9	5	13
Apple	Hardware	319	189.8	6	4
VTech Holdings	Consumer Electronics	318	2.4	7	34
Byd	Hardware	317	7.0	8	67
Wistron	Hardware	317	3.6	9	135
DHC Software	Software	315	1.5	10	NA
Richtek Technology	Hardware	311	1.5	11	NA
Hundsun Electronics	Software	303	1.4	12	NA
Simplo Technology	Hardware	301	1.4	13	NA
Eutelsat	Broadcast & Entertainment	300	7.1	14	35
Naspers	Broadcast & Entertainment	297	16.5	15	11
Digital China Holdings	Hardware	289	1.4	16	NA
Cypress Semiconductors	Semiconductors	289	1.6	17	NA
Software AG	Software	283	3.1	18	37
Shaw Communications	Cable	277	8.5	19	17
Empresa	Fixed & mobile	276	3.4	20	14

Source: Oliver Wyman analysis.

Figure 1.9 **The SPI 450's most improved companies**

Name	Industry	2009 SPI	Increase in SPI Rank 08-09
Atheros Communications	Semiconductors	194	278
Brocade Communications Systems	Communications Hardware	144	258
3Com	Communications Hardware	124	257
On Semiconductors	Semiconductors	128	246
Red Hat	Software	153	240
Compal Electronics	Hardware	183	237
Advanced Semiconductor Engineering	Semiconductors	142	229
Lenovo	Hardware	145	204
Boe Technology	Hardware	87	198
Rovi	Software	124	196
Quanta Computer	Hardware	168	195
Western Digital	Hardware	233	194
HCL Technologies	Computer Services	160	191
ASML Holding	Semiconductors	177	179
Netflix	Broadcast & Entertainment	261	170
Tele2	Fixed & mobile	141	169
Macronix International	Semiconductors	136	166
ARM Holdings	Semiconductors	137	164
Skyworks Solutions	Semiconductors	104	153
Silicon Laboratories	Semiconductors	100	153

Source: Oliver Wyman analysis.

While Technology firms dominate the medium-cap value list, the mix of sectors is more even when looking at higher-cap firms (see Figure 1.10).

Figure 1.10 Top 20 SPI scoring companies by market capitalization

Top 20 Super-large cap (MV > \$35B)			Top 20 Large cap (MV \$5-\$35B)			Top 20 Medium cap (MV < \$5B)		
Name	SPI	Market Value (\$B)	Name	SPI	Market Value (\$B)	Name	SPI	Market Value (\$B)
Tencent Holdings	524	39.5	Autonomy	404	5.9	SXC Health Solutions	344	1.6
Apple	319	189.8	Bezeq	350	6.7	VTech Holdings	318	2.4
Hewlett-Packard	274	121.8	NHN	323	7.9	Wistron	317	3.6
China Mobile	271	188.5	Byd	317	7.0	DHC Software	315	1.5
América Móvil	269	47.4	Eutelsat	300	7.1	Richtek Technology	311	1.5
Google	238	150.7	Naspers	297	16.5	Hundsun Electronics	303	1.4
Telefónica	210	127.8	Shaw Communications	277	8.5	Simplo Technology	301	1.4
Hon Hai Precision Industry	203	40.6	HTC	273	9.0	Digital China Holdings	289	1.4
Taiwan Semiconductors	198	52.2	First Solar	271	11.5	Cypress Semiconductors	289	1.6
Oracle	184	122.9	KPN	271	27.7	Software AG	283	3.1
Singapore Telecom	178	35.3	Chunghwa Telecom	270	19.8	Empresa	276	3.4
Samsung Electronics	161	101.1	Taiwan Mobile	255	7.4	Ufida Software	275	2.5
AT&T	152	165.4	Cerner	252	6.7	Starhub	269	2.6
Research In Motion	140	37.7	Mediatek	246	19.0	Pegasystems	267	1.2
IBM	132	172.0	Inmarsat	245	5.1	Discovery Communications	267	4.1
Canon	105	56.0	Iliad	241	6.5	Concur Technologies	263	2.1
Walt Disney	104	60.1	Baidu	240	10.7	Informatica	262	2.3
Microsoft	91	270.6	PLDT	239	10.6	Quality Systems	262	1.8
Cisco Systems	90	137.7	American Tower	238	17.3	Netflix	261	3.0
Vodafone Group	89	122.1	Western Digital	233	10.0	Jiangsu Zhongtian	259	1.2

Source: Oliver Wyman analysis.

SPI success factors

In last year's report, we identified a number of factors that set winners apart from losers. The same framework applies for the 2009 SPI results:



To examine this framework more closely, we profile a selection of firms from each of the three CMT sectors:

- **América Móvil** (Communications, SPI #29, MV \$47.4B)—one of the top two performing super-large cap Communications firms and the largest emerging-market firm outside China.
- **KPN** (Communications, SPI #26, MV \$27.7B)—one of the top two performing large-cap Communications firms.
- **Netflix** (Media, SPI #35, MV \$3.0B)—the only Media firm making the 20 most improved firms, leaping 170 places in 2009.
- **Hewlett-Packard** (Technology, SPI#22, MV \$122B)—the highest ranked super-large cap Technology firm after Apple.

América Móvil: A broad portfolio of high-performance emerging-market firms

From its base in Mexico—where its wireless share is above 70% and EBITDA margins have stayed above 55% for the last five years—América Móvil has built a portfolio of wireless companies across Latin America, the Caribbean, and even the U.S. In some markets, such as Mexico and Colombia, América Móvil acquired incumbents and established dominance before competition; in other markets, such as Brazil and Chile, América Móvil acquired aggressive upstarts. All together, the company has capitalized on the wave of emerging market growth, and now has nearly 200 million wireless subscribers in 18 countries. Market value has increased 119% in five years.

Despite declining ARPUs in most markets, América Móvil has maintained strong margins averaging around 40%, thanks to low-cost structures and tight financial management, exemplified by centralized purchasing of handsets and equipment. In Brazil, América Móvil's second largest market, EBITDA margins are 29% (up from negative margins five years ago). Colombia is another very profitable market, with EBITDA margins higher than 50% for the last three years and cash generation at levels comparable to Brazil, a much larger operation. As markets saturate, the overall aim has still been to secure market share, but operational efficiencies have increasingly driven bottom line growth—especially in Argentina, Paraguay, and Uruguay.

América Móvil has exported its successful low-cost operations model from Latin America to the U.S. Miami-based TracFone, a wholly owned subsidiary, now has 12 million subscribers in North America.

KPN: Aligning cost-to-serve with value delivered

With almost no exposure to the wave of penetration growth in emerging markets (its mobile and fixed businesses are focused on the mature, highly penetrated markets of The Netherlands, Germany, and Belgium), KPN's success is predicated on superior business design and operational excellence.

In its home market of The Netherlands, KPN uses different brands to address different segments, and aligns cost-to-serve with the particular value proposition. The Telfort brand, for example, is aimed at more value-conscious customers than the KPN brand and the distribution and customer service strategies reflect this positioning. Similarly, in Germany, KPN's E-Plus mobile subsidiary is a low-cost, no-frills operator that operates a number of brands targeted at different segments. Market share in Germany has risen from 13% in 2004 to 17% in 2009, with EBITDA margins over 40% in Q3 2009.

Operational efficiency is a core strength. KPN reduced headcount in The Netherlands by over 20% between 2004 and 2008, even more when factoring the impact of acquisitions. When KPN has acquired assets it has acted quickly to jettison anything that is non-core, releasing value and avoiding distraction. During 2008 and 2009, for example, KPN sold parts of the Getronics acquisition that were not a good fit, including North American operations. KPN was one of the first European operators to embrace new low-cost vendors, reaching an agreement with Huawei in 2005 for core network equipment. Faced with the high cost of deploying fiber infrastructure, KPN is pursuing a JV with Reggefiber, rather than bearing the cost alone.

Netflix: Consumer frustrations drive business design

At the heart of Netflix's success—a 400% increase in market value in the last five years—is smart business design. The customer-value proposition built on growing customer frustration with rental models and harnessed the strong growth in DVD-player penetration. No late fees or due dates means subscribers can keep titles for as long as they please, and fast delivery means that they can get a new one almost as quickly as they could by running out to a store.

Leveraging the low-cost U.S. Post Office as its shipper, Netflix delivers more than 10 million DVDs each week, offering next-day delivery to more than 97% of the U.S. population (up from 54% two years ago)—while keeping damages to shipments below 1%. Continual improvements in IT and process automation has led to a 17% reduction in cost-per-shipment over Netflix's history.

A powerful movie recommendation engine moves the proposition from a rental service to a movie-viewing solution. Customers have submitted more than 2 billion recommendations (the average customer has reviewed 200 movies), giving the engine voluminous data. To further improve the recommendation algorithm, Netflix conducted a prize competition to improve prediction accuracy by 10%. In September 2009, after three years of competition, Netflix awarded a \$1m grand prize.

As video consumption shifts, Netflix continues to adapt its business design, with more than 17,000 titles already available for online streaming. Its current standing in the SPI rankings reflects investor confidence in its ability to continue to innovate as it moves from physical delivery to electronic delivery.

Hewlett-Packard: Sustained operational excellence

To combat the economic downturn, Hewlett-Packard re-doubled its cost-cutting efforts in 2008-'09, which had begun in earnest in 2005. As a result Hewlett-Packard's operating margins for the full year to October 2009 held up at 8.8% despite a 3% decline in revenue; and even increased by two percentage points in Q4 over the prior year.

In 2009 Hewlett-Packard applied its proven operational efficiency expertise to the EDS acquisition. Headcount was reduced by 19,000 in the first year and Hewlett-Packard is ahead of schedule in its plan to realize \$1.8B of annual savings from the integration effort. Operating margins in Hewlett-Packard's Services business have risen every quarter since the acquisition was complete, exceeding 16% in Q4 2009.

More broadly, Hewlett-Packard has also used the downturn to change the structure of its compensation; reducing base pay and making a greater proportion of compensation variable. In the short term this helps to shore up profitability without compromising Hewlett-Packard's ability to tune up production when demand increases.

Hewlett-Packard has continued its drive into new and emerging markets. In China, for example, where Hewlett-Packard has shifted its focus toward lower-cost notebooks, year-over-year PC revenue was up 40%. This result helped to offset weaker performance in Europe and enabled Hewlett-Packard to increase its global share of PCs by 1% in Q4.

2. Telecoms: Where Will Value Growth Come From?

Our SPI analysis starkly shows that the Communications sector was slower to recover in 2009 than both the Technology and Media sectors. In this chapter, we examine in depth the major value growth drivers that Fixed and Mobile Telecom operators are exploring.

One traditional source of growth for operators has been acquiring new customers. In emerging markets, the potential for significant wireless subscriber growth remains—but at increasingly challenging ARPU levels. Extracting value will require extremely tight cost management and customer targeting. Players with experience in low-cost markets and the ability to leverage group synergies to ratchet down costs are best positioned.

A second traditional source of growth has been selling new services to existing customers. Again, value growth is possible, but the traditional network-centric business models will come under increasing pressure. For example, there is an increased appetite for online delivery of video content. But operator efforts to extract value from this space through dedicated IPTV platforms are threatened in many markets due to the explosion of ‘over-the-top’ consumption via the open internet. Further, rising penetration of wirelessly enabled devices will drive continued mobile data revenue growth—but profitability is under increasing pressure as flat-rate data plans and the increasing costs of adding network capacity drive a wedge between usage and revenue capture.

Given the potential downside to each opportunity, we believe operators need to ‘double bet’ by exploring new business models with revenue-capture mechanisms that have more in common with the software and online markets than traditional telecom services.

If the upside potential from new subscribers and services is increasingly difficult to realize, what else is left? Intensively managing the core business for profit remains a critical lever. On the revenue side, rigorously applying customer value management principles can help to slow down ‘bleeding’ voice and data revenues. On the cost side, despite a spate of recent cost cutting, the telecom industry can—and must—cut closer to the bone. Looking across the operator landscape, we see considerable variation in the use of key cost-reduction levers. Cost cutting is finite, but the industry can sustain a further three to five years of major cost-reduction initiatives.

Three key drivers for new growth

The agenda for telecoms over the medium term has three parts:

Seize the emerging market growth opportunities that remain, building in low-cost operating models from the outset.

Seize the service growth opportunities that remain, double-betting where relevant to maximize the chances of success.

Apply intensive value management in the core business to stem revenue losses and align the cost base with on-the-ground reality.

We explore this agenda in the following three sections.

Emerging-market growth opportunities

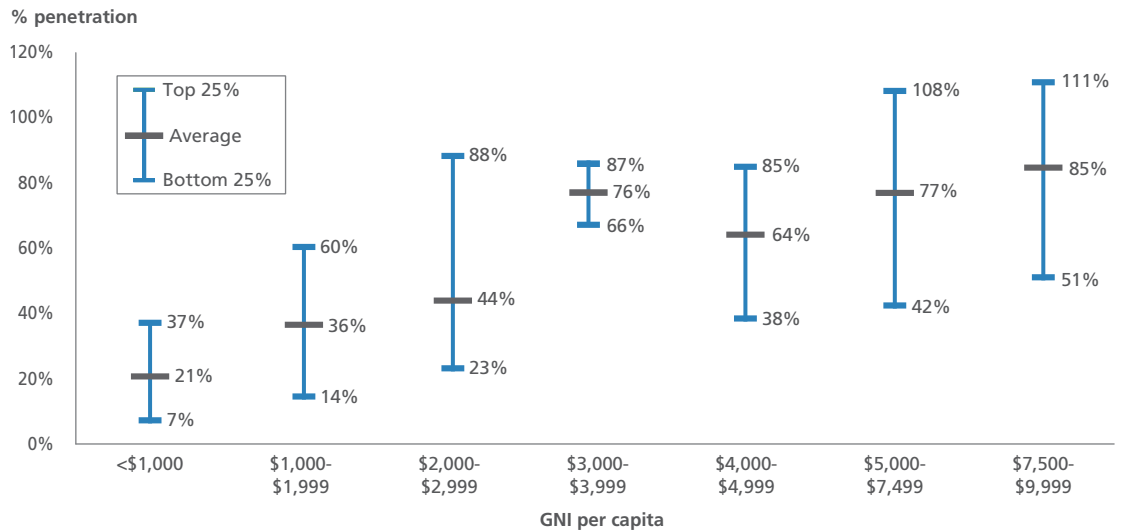
Wireless subscriber growth in emerging markets has been a dominant story in the industry for at least five years, and the story continues: In the first nine months of 2009, 530 million new subscribers were added in emerging markets.¹

How much longer can this emerging market growth continue and how much value will it generate?

Identifying growth potential

To understand the potential for future wireless growth, we grouped emerging markets by per-capita income, and then analyzed both the average penetration and the spread within each bracket (see Figure 2.1).

Figure 2.1 Mobile penetration vs. Gross National Income (GNI) per capita



Source: CIA, Informa, Oliver Wyman analysis, World Bank.
Notes: Minimum of three countries used. Mobile penetrations at 2Q09.

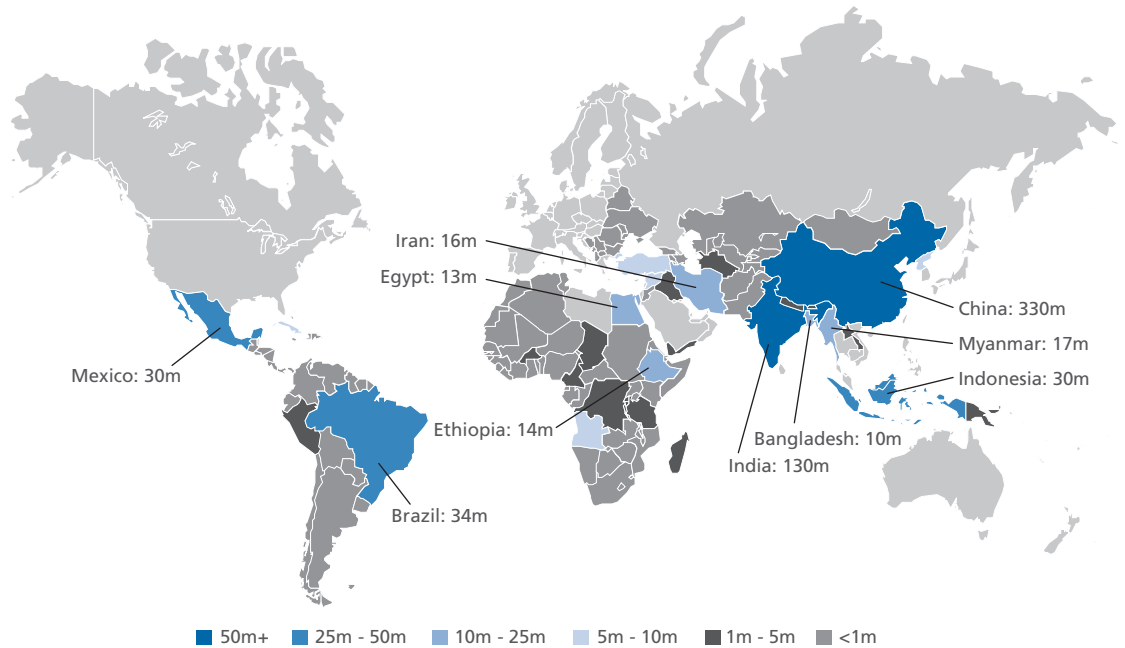
Looking at markets where penetration is below average within that income bracket provides a first approximation of latent growth potential for mobile services. In 10 emerging markets, the gap to *current* average penetration levels in the same income bracket is more than 10M subscribers per country—and in some markets it is more than ten times that amount (see Figure 2.2).

The top 10 potential growth markets

China and India show the highest potential for growth, based on current penetration versus average penetration for others in the same income bracket. China has a gap to average penetration level of 330M, and India a gap of 130M. Year-on-Year (YoY) subscriber growth data confirms this picture. In China YoY subscriber growth has remained comfortably in double digits at 16% (2Q09), down only slightly from 17% three years ago. Meanwhile, India had one of the world's highest YoY subscriber growth rates in 2009 of 49%. Brazil, Mexico, and Indonesia all have the potential for 30M+ new subscribers; 2009 growth was fastest in Indonesia (24%), followed by Brazil (20%), and Mexico (10%)². Ethiopia stands out as a market with low penetration given its per capita income level.

1. Source: Informa, Oliver Wyman analysis.
2. Growth rates as at end of June 2009. Source: Merrill Lynch Global Wireless Matrix 3Q09.

Figure 2.2 Potential new mobile customers in markets with GNI/capita < \$15,000



Source: Informa, Oliver Wyman Analysis.

Who stands to gain?

Examining operator market shares in these top 10 growth markets (see Figure 2.3), we see three broad competitive structures: Markets where...

...competitive entry is already well advanced. In India, Brazil, Indonesia, Egypt, and Bangladesh the scope for new entrants appears limited and existing competitors will likely benefit from further subscriber growth. The value of future subscriber growth, however, will be limited by the extent to which competition continues to drive down prices and ARPU.

...competitive entry has occurred but is still limited nature. In Iran, China, and Mexico incumbents have established dominant positions and stand to benefit from further subscriber growth. Newer entrants may also benefit, but, as we have seen in other markets, the route to profitability for the third and fourth entrants is typically long and difficult.

...no competitive entry has occurred to date. In Ethiopia and Myanmar, where state-owned monopolies rule, the introduction of competition with the resulting downward pressure on prices and innovative offers is critical to unlocking latent demand. New entrants will benefit—if and when these markets open up.

How valuable will this growth be?

In most of these markets, mobile ARPU has declined significantly (see Figure 2.4). The steepest declines occur in markets where competitive entry is well advanced; in three of these markets (India, Indonesia, Egypt), ARPU has fallen by more than 25% in two years, capping the scope for significant value growth. In markets with fewer competitors (China, Iran, Mexico), the ARPU decline averages 13%, roughly half that of the more competitive markets. In Ethiopia, where penetration is only around 4%, ARPUs have

Figure 2.3 Subscriber market shares of players in 10 high growth potential markets (Q3, 2009)

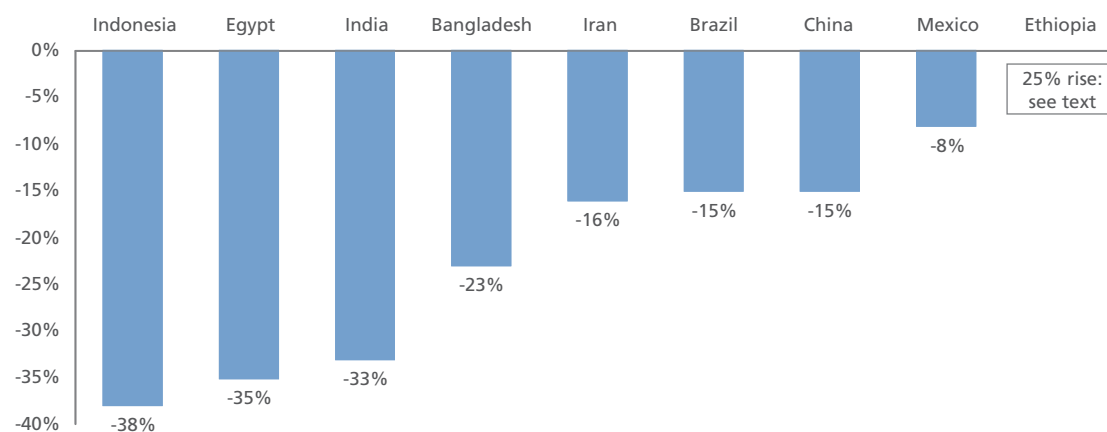
Name	Subscriber Market Share	Name	Subscriber Market Share
CHINA		INDONESIA	
China Mobile	71%	Telkom/Telkomsel (PT Telekomunikasi Indonesia)	49%
China Unicom	20%	Indosat (Qtel)	19%
China Telecom	7%	XL (Axiata)	18%
Other	2%	Other	14%
INDIA		MYANMAR	
Bharti	24%	MPT	100%
Reliance	18%	IRAN	
Vodafone Essar	18%	MCI (TCI)	56%
BSNL	12%	MTN Irancell	33%
Idea Cellular	11%	Taliya	10%
Tata Teleservices	11%	Other	1%
Other	6%	ETHIOPIA	
BRAZIL		Ethiopian Telecom	100%
Vivo (Telefónica & Portugal Telecom)	29%	EGYPT	
Claro (América Móvil)	25%	Mobinil (France Telecom & Orascom)	45%
TIM	24%	Vodafone Egypt	43%
Oi/ Brasil Telecom (Telemar)	21%	Etisalat Egypt	12%
Other	1%	BANGLADESH	
MEXICO		Grameenphone	43%
Radiomóvil/Telcel (América Móvil)	72%	Banglalink	24%
Movistar (Telefónica)	20%	Aktel (Axiata)	22%
Other	8%	Other	11%

Source: Company websites, Informa, Oliver Wyman analysis.

actually risen over this period—but with a government monopoly and a market in the early stages of adoption, Ethiopia is an outlier.

Faced with such a dramatic reduction in ARPU, often from a low base, how can emerging market operators generate value? First, operators need to maximize the revenue potential of their customer bases by providing more services than just basic voice. Several emerging-market operators have been highly innovative, with Safaricom’s M-PESA mobile banking service a prime example of a telecom operator moving beyond traditional communications services. Second, operators need to aggressively reduce cost to serve, by pulling on a combination of the following levers:

Figure 2.4 Mobile ARPU decline 2Q07 to 2Q09 in potential growth countries



Source: Merrill Lynch, Informa, Oliver Wyman analysis.

Note: Calculations based on local currency where available. No data available for Myanmar.

- **Share networks (passive and active) with competitors** to generate significant Capex and Opex savings.
- **Exploit group synergies and outsourcing.** Activities across IT, billing, service platforms, network monitoring, design, and optimization are all candidates for consolidation. Groups with operations in multiple markets might consider consolidation at a group level.
- **Embrace the lowest-cost technologies available.** Deploying technologies in the network that minimize transmission, switching, and energy costs (e.g. alternative energy sources) can provide fast payback and ROI.
- **Manage customer value tightly,** ensuring that costs to acquire and serve a customer are tightly aligned with the revenue that a specific customer generates.

Conclusion

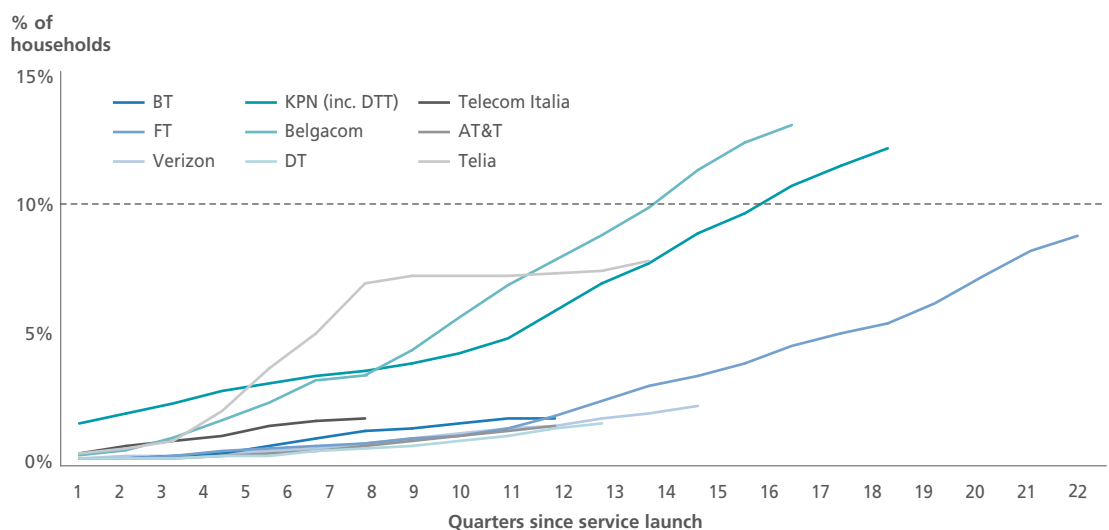
There is still significant growth left in emerging markets, although the number of seats at the table is limited. For new entrants, M&A may represent the best way to gain exposure. However, generating value from the growth that remains is increasingly tough and requires strict adherence to a very low-cost operating model.

New service growth opportunities: IPTV

Two new telecom services that have attracted significant investment over the past year are IPTV and mobile data services, including smartphone applications. We look at IPTV first.

Many incumbent operators have launched IPTV or Video on Demand (VOD) services over the last five years, a timeframe that provides enough data points for analysis. Of the operators we examine (see Figure 2.5), only Belgacom and KPN have built household penetration above 10% within three or four years. For KPN, this was due in large part to its DTT pay-TV service, Digitenne. All others have household penetration of less than 10%, and less than 5% in several instances. So far, there is little sign of an inflection point in the penetration trend lines. No European or North American incumbent is showing any signs yet of reaching the 31% penetration level that PCCW has in Hong Kong for its IPTV offering, Now TV.

Figure 2.5 Percentage of households subscribing to telecom IPTV services since launch

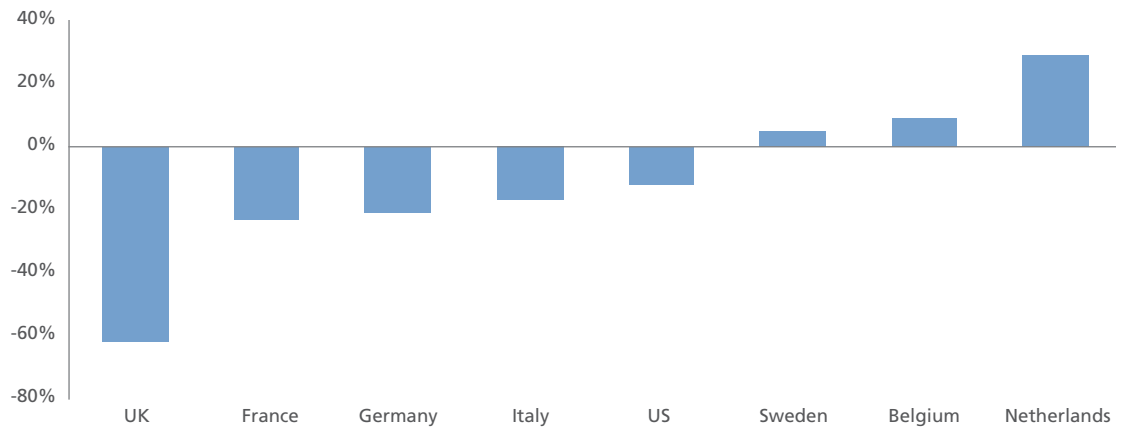


Source: Informa, Oliver Wyman analysis.
Note: Last data point on all series is 2Q09.

One clear reason for this slow uptake is that many TV markets are already mature, often with well-established DTT, DTH, and cable TV offerings. It's a challenge for telecom operators to break into these markets and win market share.

And gaining market share is no guarantee of high ARPU. With some exceptions, IPTV ARPUs are generally lower than the average pay-TV ARPUs (see Figure 2.6).

Figure 2.6 IPTV ARPU percentage deviation from mean pay-TV ARPU by geography



Source: FCC, Informa, Oliver Wyman analysis, PricewaterhouseCoopers.

Premium content a vicious circle

One reason IPTV ARPU is low is because few operators offer as much premium content as competing pay-TV players. Operators looking to improve ARPU may face a vicious circle—they lack the scale to justify the high cost of premium content, but without it they lack the compelling content proposition needed to build scale.

A few operators have moved to break this circle. France Telecom, for example, paid €203 million (\$320M) for three of the 12 Ligue 1 '08-'09 season rights packages, while Belgacom's relative success is in part due to its three-year exclusive deal for the Profliga—Belgium's top-flight football league.

A more fundamental threat

A more fundamental change threatens operators' efforts to generate value from IPTV & VOD services. A growing proportion of video consumption is moving to 'over-the-top' services that are delivered across the open internet rather than over operators' dedicated IPTV or VOD platforms.

This shift creates a number of challenges for operators. First and foremost, as consumers gravitate to online video, operators bear increasing network costs without a commensurate increase in revenue, due to the prevalence of flat-rate broadband packages. In some markets, operators use traffic shaping and bandwidth throttling at peak times to help protect customer experience and perhaps encourage heavy users to move to higher-priced unlimited services.

Second, if demand for 'over-the-top' services continues to accelerate, it threatens to render redundant at least some of the investment that operators have made in IPTV platforms. And third, open delivery further fragments the environment in which operators must fight for pay-TV market share.

Combating the threat

How can operators counter these threats to revenue capture? We see three main levers:

- **Charge end users more.** Simply raise prices for broadband internet access or introduce new pricing based on quality of service. The challenge here is that in many markets—especially across Europe—the regulator has encouraged facilities-based competition. As a result, the risk associated with higher-prices for higher-quality services is that competitors may not follow suit and incumbents will lose market share.
- **Charge content providers or aggregators.** Exploring new business models that generate revenue from content providers rather than end-customers could represent an alternative source of revenue. In the U.K., for example, BT Wholesale has trialed its 'Content Connect' program, which caches content at the local exchange/central office to reduce backhaul and core network demands. Internet service providers using this infrastructure could then charge content providers for an improved quality of service. However, given the high degree of fragmentation within and across national telecom markets—compared with the global nature of web-services firms—negotiating this sort of web-toll is likely to be challenging.
- **Double bet by exploring opportunities to participate in over-the-top video directly.** This latter option may be difficult for telecom operators to swallow, but in a market characterized by uncertainty, double betting on alternative models is a way to maintain a stake regardless of how consumption behavior unfolds. (See Chapter 3 for more details on how 'over-the-top' video delivery is changing consumer behavior.)

Conclusion

To date, most operators have found generating value from IPTV and video services to be tough; subscriber acquisition has been slow and reaching profitability hard. At the same time, rapid changes in video-consumption behavior present far-reaching challenges to telecom operators and others across the TV and video industries. To counter this challenge, operators have a number of options to explore—none of which is straightforward and each of which carries an associated downside.

New service growth opportunities: Mobile data

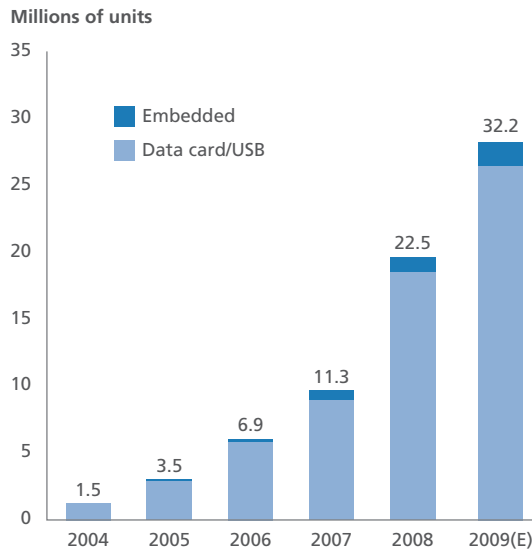
Data services have been an important revenue driver for mobile operators over the last five years. Two trends in particular have underpinned mobile data growth in more mature markets in recent years: growing mobile broadband adoption and growing smartphone penetration.

Shipments of portable devices to wirelessly access the internet—laptops via PCMCIA cards, USB dongles or, increasingly, chips embedded directly in laptops or netbooks—more than doubled between 2007 and 2008 (see Figure 2.7). And smartphones—handheld devices with the processing power, memory and often intuitive touch-screen interfaces required to deliver compelling internet browsing—represented 14% of all handset shipments in 2009, up from only 3% five years ago (see Figure 2.8).

A smartphone application paradigm has arrived

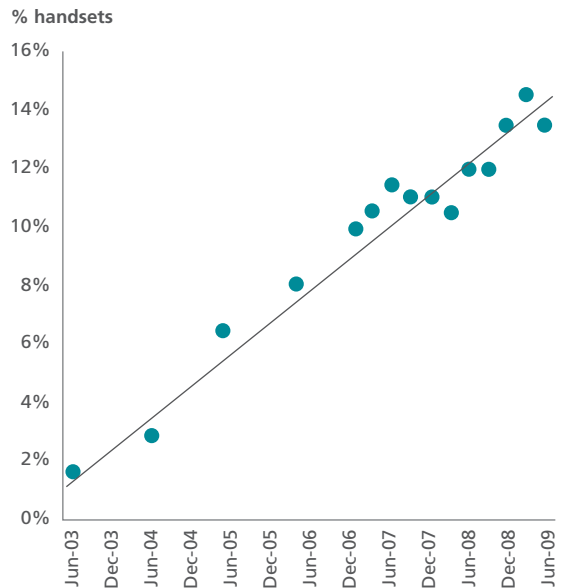
Apple, Google, Microsoft, Nokia, RIM, and Samsung have all launched competing smartphones. As a result, the number of smartphones on offer and the breadth and range of applications that use them has never been higher. Growth in smartphone adoption has led to exponential growth in application downloads.

Figure 2.7 Global data card/USB and embedded modem shipments



Source: Gartner, Oliver Wyman analysis, Oppenheimer.

Figure 2.8 Smartphone units sold as a proportion of total mobile handsets sold



Source: Gartner, Oliver Wyman analysis.

Apple has been a pioneer in this arena, “connecting the dots” from four different value chains: telecom, technology, media, and consumer electronics. The iPhone’s strong functionality and simple user interface solves consumer frustrations; Apple’s business model and savvy marketing creates a ‘must-have’ proposition that has galvanized the mobile-apps industry. Downloads from the Apple App Store surpassed 2 billion in September 2009, and as of October 2009, Apple had more than 125,000 registered developers.³

Mobile operators have enabled the growth of apps by investing in the underlying mobile-network infrastructure to support the delivery of services, and in some markets by subsidizing devices. Some operators and vendors have also reached agreements to share revenues from mobile data subscriptions. The result of these investments for some operators has been a significant uptick in ARPU.

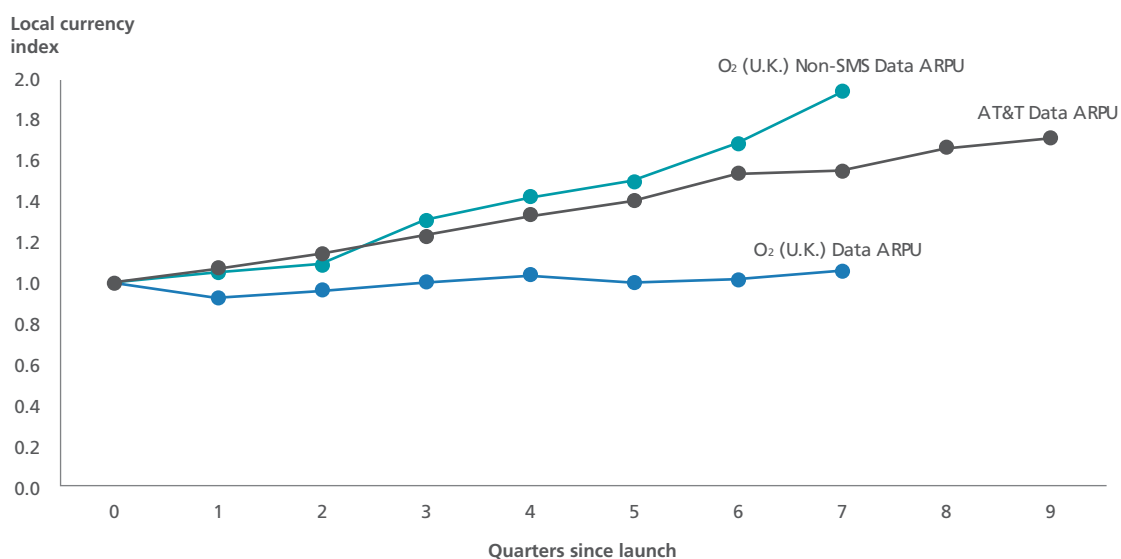
There have been data ARPU gains, but is value being captured?

For example, since the U.S. launch of iPhones in June 2007, AT&T, which has exclusive distribution rights, has seen monthly data ARPU (inclusive of SMS) increase steadily with 27% YoY growth (while overall ARPU has remained steady at around \$50/month). In the U.K., the iPhone was launched in November 2007, exclusively carried by O₂. The operator has seen data ARPU (including SMS) rise 5% YoY since the iPhone launch; more significantly, data ARPU excluding SMS has risen a dramatic 46% YoY over the same period (see Figure 2.9).

The growth in data ARPU enjoyed by many operators is encouraging, but profitability is threatened: Flat rate, all-you-can-eat bundles divorce the revenue line from underlying cost drivers. Combined with the scale of investment required for mobile backhaul (more capacity) and radio access networks (more sites) to accommodate the growing volume of wireless data activity, flat-rate pricing threatens the profitability of mobile data services for operators.

3. Source: Apple.

Figure 2.9 Data ARPU for O₂ (U.K.) and AT&T (U.S.) since domestic iPhone launches



Source: AT&T, Oliver Wyman analysis, Telefonica.
 Note: Non-SMS data ARPU not available for AT&T. Launch quarter = 1.0.

This pricing problem is most acute in markets where mobile-broadband services are priced at a discount compared to fixed-broadband services. Even in markets with more robust pricing, mobile operators are facing a math problem, weighing incremental mobile-broadband revenue against the capital expenditure required to support acceptable user experience (or increased customer-service expenses associated with poor user experience).

How can operators address this pressure? One way, at least in the short term, is to tamp down demand—by reducing handset subsidies and commissions for large bucket or unlimited data plans, imposing usage caps and fair usage policies, and raising prices for mobile broadband packages.

Remedial measures

Over the longer term, operators can invest in new technologies that reduce cost, and explore new business models that bring incremental revenue. Measures to reduce the cost of providing mobile-data services include:

- **Offload traffic to fixed networks.** Some 70-80% of all mobile phone traffic and the majority of all 3G data traffic originates indoors.⁴ Off-loading this traffic using WiFi or Femtocell technology could significantly reduce demand on the wireless network.
- **Use lower-frequency spectrum.** In some markets, gaining access to a lower-frequency spectrum with better coverage properties through re-farming may help lower deployment costs.
- **Share networks.** Network sharing between operators represents a way to reduce backhaul costs.
- **Upgrade to 4G.** LTE offers the potential to deliver higher speeds, more cost efficiently.

Measures to augment revenues from mobile-data services include:

4. Source: Informa.

- **Rethink the pricing model.** Charge more for speed, time of use, or quality of service.
- **Emulate internet monetization models.** 3 UK, for example, generates incremental revenue by using its ‘connection established’ dashboard screen as an advertising platform.
- **Increase exposure to growth in application downloads and usage.** Launch an application store in a direct B2C approach; invest directly in applications development; or adopt a B2B2C approach—exposing network functionality to application developers. User identification, location, presence, and security/DRM are all technical assets that an operator may choose to leverage.

Conclusion

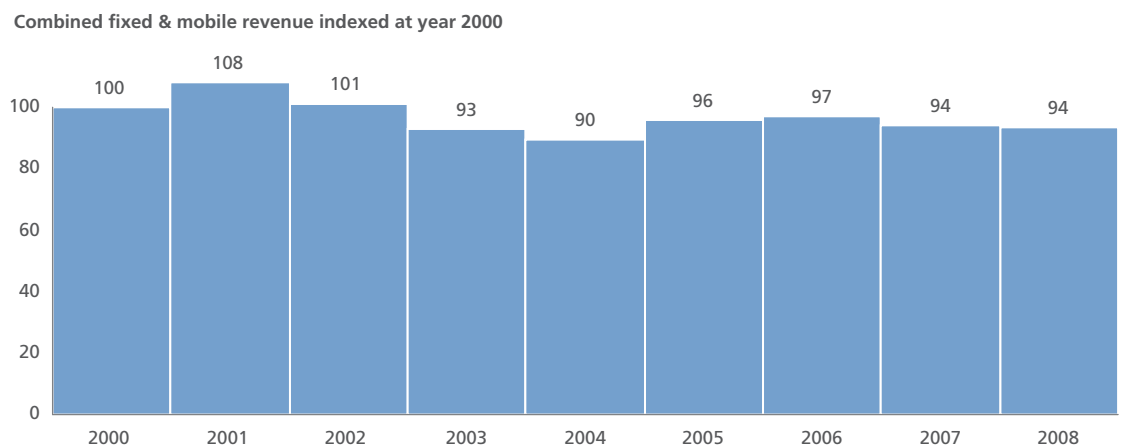
Mobile data continues to enable strong revenue growth. However, capturing value from this growth will be increasingly difficult as competition forces pricing structures toward flat-rate tariffs, and increased data usage drives up the cost to serve.

Operators that generate the most value will be those that manage costs effectively, seeking to align cost to serve with individual consumer value as far as possible. This may require new technologies to reduce the costs of mobile broadband, alongside innovative B2B2C and B2C business models to capture incremental revenue.

Intensive value management in the core business

Driving top-line revenue growth in more mature markets has proved a difficult challenge. Growth in mobile data has been diluted by slower growth (or declines) in mobile-voice revenue, and what mobile-revenue growth remains has been offset by declines in the fixed-line business. In Europe and North America, for example, revenues for fixed and mobile services for the major incumbent operators are less than they were in 2000 (see Figure 2.10), although there have been two short spurts of growth (2000-2001 and 2004-2006).

Figure 2.10 **Combined fixed & mobile revenue for major European & North American incumbents 2000 - 2008**



Source: Company financials, Oliver Wyman analysis.

Faced with this harsh reality, there are two growth levers that operators—especially those in more mature markets—can play on to maximize value from their core business: 1) intensive value management of the customer base to slow down declining

revenues; and 2) large-scale strategic cost reductions to bring the cost base in line with reality. Neither lever is new, and neither is a one-time effort. Instead, each represents a continuous cycle of improvement, undertaken quarter after quarter and year after year to drive increased profitability.

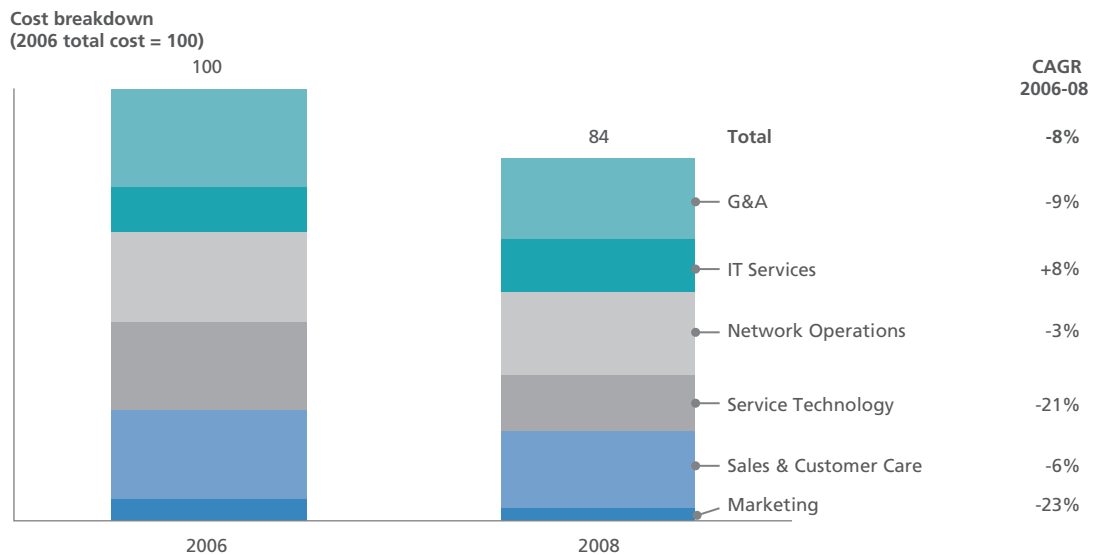
Customer value management

Operators typically hold a wealth of data on individual customer-usage behavior, spending patterns, and (to varying degrees) the costs associated with acquiring, retaining, and serving those customers. Mining this data on a de-averaged ‘customer by customer’ basis to optimize pricing, promotion, cross selling, bundling, and the return on acquisition or retention costs represents an evergreen opportunity for value enhancement. All operators employ customer value-based thinking to some extent; few have driven it down to the individual customer level, and even fewer have truly established a value-based management culture. While increasing the focus on customer value might not be sufficient to reverse the decline in revenues, it can at least help to ‘stem the bleeding’ and buy time for more fundamental change.

Strategic cost reduction

Overall operators have significantly reduced cost over the last three years. For example, in our International Telecoms BenchmarkingSM analysis we have seen the average fixed-line operator cut operating costs (including capitalized labor) by ~8% per annum between 2006 and 2008 (see figure 2.11). The distribution of that cost-reduction effort has not been even across the different cost categories. Marketing has been particularly hard hit as operators have economized on product and service development. Service Technology (the installation and repair of access lines) has fallen dramatically, driven by increased automation of scheduling and dispatch, improvements in remote diagnostics, and productivity of field forces. Conversely, IT Services is the only category that has increased, reflecting investments in automation required to deliver efficiency improvements, especially in service platforms.

Figure 2.11 Fixed line operating cost category evolution 2006-2008



Source: Oliver Wyman benchmarking.
 Note: Operating expenses include capitalized labor.

Operator performance varies widely between top and bottom performance tiers. Some of this can be explained by structural differences between markets and networks, but

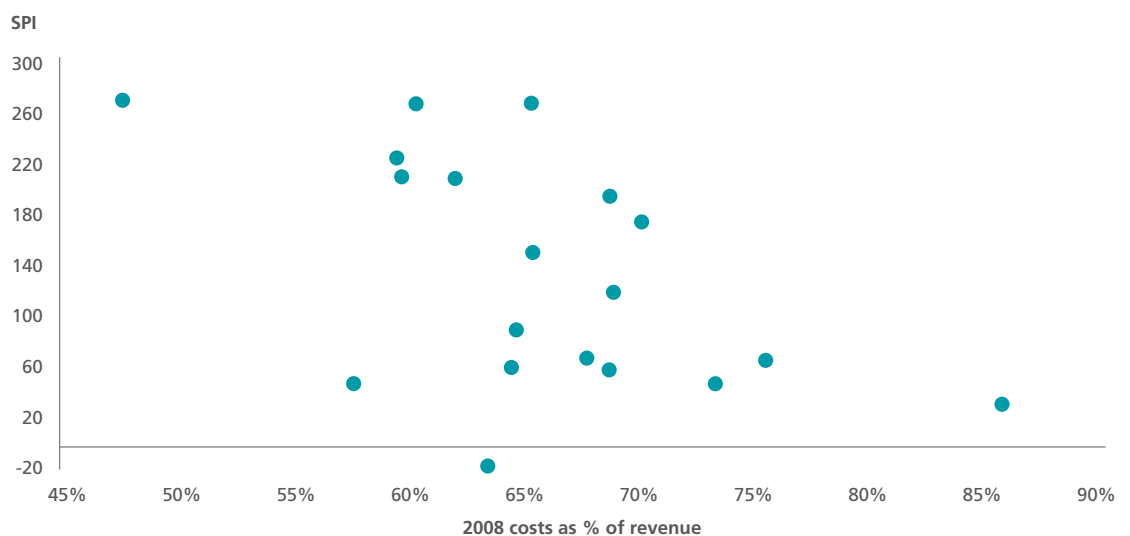
a good proportion results from the performance and execution by individual firms. In particular, operators focus on six best practices to reduce cost:

- **Purchase smarter.** The level of purchasing maturity in the telecom sector lags that in other industries such as manufacturing, where cost pressure has been the focus of attention for decades. Operators still have opportunities to buy cheaper, buy smarter, and buy less.
- **Increase field-force productivity.** Operators can improve network efficiency through process automation, improved remote diagnostic tools, smarter dispatch, extended maintenance intervals, and enhanced workforce flexibility.
- **Redesign incentives.** Reforming governance and incentive mechanisms should ensure that the right behavior is encouraged and process improvements stick.
- **Consolidate & centralize.** Collapsing regional structures and integrating fixed and mobile operations allows operators to benefit from economies of scale and scope.
- **Outsource.** Operators can still go further in outsourcing low value-added activities. The key is to do so with the right management structure and performance indicators in place. Badly structured outsourcing deals save nothing.
- **Retire legacy infrastructure.** Saving energy and maintenance costs by retiring legacy infrastructure as soon as possible should enable cost savings even if wholesale migration to next generation platforms takes longer to realize.

Conclusion

When we look at the SPI results (see Chapter 1), there is no simple relationship between cost and shareholder performance (see Figure 2.12). Very few operators with a relatively high cost base have achieved a high SPI score. On the other hand, many operators with a relatively low-cost base still have a relatively poor SPI score. Low costs are a necessary condition for strong shareholder returns, but they are not a sufficient condition. Nonetheless, while cost reduction cannot provide a source of value growth forever, it should be a central plank of telecoms' agenda for the next three to five years.

Figure 2.12 2008 costs as percentage of revenue vs. SPI score for selected telecom operators



Source: Company financials, Oliver Wyman analysis.

3. Value Growth in Video: A Zero Sum Game?

The internet is playing an increasingly important role in home entertainment, dramatically changing consumption of TV and other video¹. In 2009, rapid growth in online TV and video consumption, along with catch-up TV, began to take hold in several important markets. At the same time, consumption of traditional video declined in certain markets; in the U.S., for example, consumer spending on DVD and Blu-ray discs fell by 8% last year, while spending on rentals remained flat.²

Taken together, these changes beg a number of questions:

- Is video becoming a zero sum game in which rising online video viewership comes solely at the expense of reduced traditional TV or DVD viewing?
- Who is deriving value from the growth of online video consumption?
- What value propositions and business models are needed to extract value from the move online?

To explore these issues, Oliver Wyman conducted primary research, surveying 2,500 adults in five countries in November 2009 (see box). In this report, we provide key highlights. Additional country-specific data and more detailed insights are available upon request.

Oliver Wyman primary research on video consumption

In November 2009, Oliver Wyman commissioned an online survey of 2,500 adult video viewers in the U.S., U.K., France, Spain, and Germany. The goal was to understand how video consumption is changing, and to test alternative online video services and business models. Questions addressed current, past, and projected video consumption, device ownership, and usage, together with preferences for different video platforms and value propositions. Data was subsequently weighted by age and gender to ensure a representative sample.

Viewing video online is becoming a mainstream activity

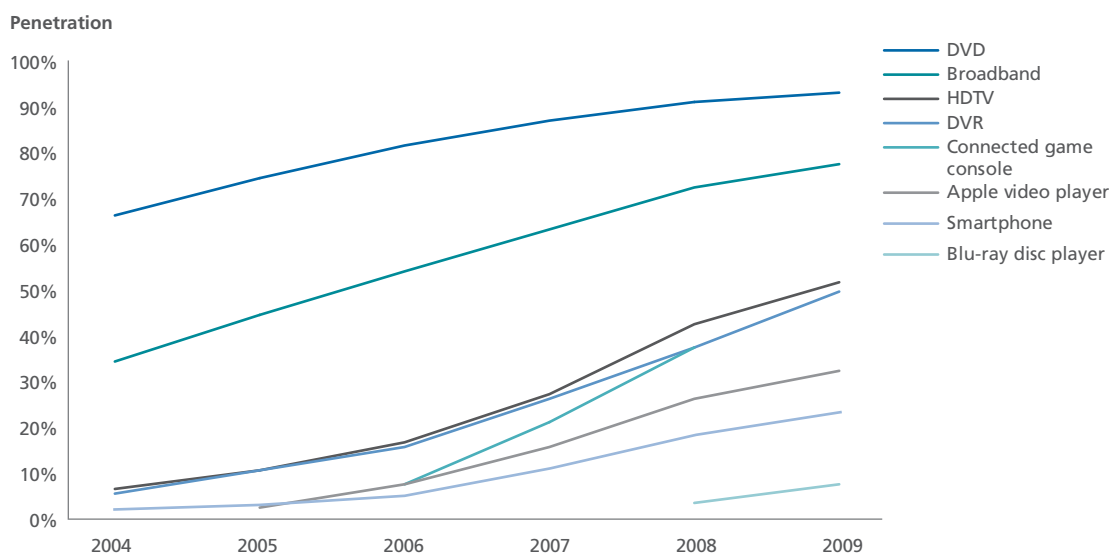
Video consumption: fast-forward to the future

Consumers have increasing access to more video-capable devices than ever before. Technologies that the industry has been aware of for the past five to ten years have now reached mass-market penetration, changing the way broad swaths of the population consume video. For example, DVR and HD penetration is now at 50% in the U.S., up from a mere 5% five years ago (see Figure 3.1). In the U.K., DVR penetration is over 25%, but in other European countries it remains under 10%. Broadband internet now reaches more than two-thirds of households in the U.S., U.K., France, and Spain, more than double the number five years ago. Germany is not far behind, with over 60% broadband penetration. Even as these digital-video devices become commonplace, a new wave of *portable* video devices is building fast. More than one-quarter of the U.S. population now owns an Apple iPhone or video iPod.

¹ "Video" refers to all free and paid audio-visual content that is viewed on the TV, PC, portable video device or mobile phone. It includes linear television broadcasts (analog, digital, satellite, cable & IPTV), physical media such as VHS, DVD, Blu-ray, and on-demand content (both user generated and professional). It excludes cinema viewing and video gaming.

² Source: Screen Digest.

Figure 3.1 U.S. penetration of video devices



Source: Informa Telecoms and Media, Informa Global DVR Report, Morgan Stanley Research, 2009 CEA Fast Facts, Economic Intelligence Unit, Oliver Wyman analysis.
 Note: Penetration is of households for all devices other than Apple video players and Smartphones, which are penetration of the total population.

The impact of this video device proliferation on viewing habits varies considerably by country, but overall the major area of growth is online video.³ Watching long-form video content—TV shows and movies—on a PC or game console is quickly becoming commonplace for a significant segment of consumers. In the U.K., for example, 33% of the online population watched TV shows and movies online on a weekly basis last year; in the U.S., 28% of people did so.

The volume of online viewing is also growing rapidly. Among our sample population, online video minutes (including both pirated and legal content) increased in 2009 by 50% in the U.S. and 30% in Spain (see Figure 3.2). TV shows and movies now account for around half of these minutes in the U.S. and Spain. As a result, the online channel represents 4% of total long-form content viewing minutes in the U.S., and more than 10% in Spain.

These averages mask the full extent of the change among the subset of the population that watches long-form content online. In the U.S., for example, among those who watch long-form video online, 15% of their total long-form viewing is online. In the U.K., the corresponding number is 13%.

The cannibalization threat

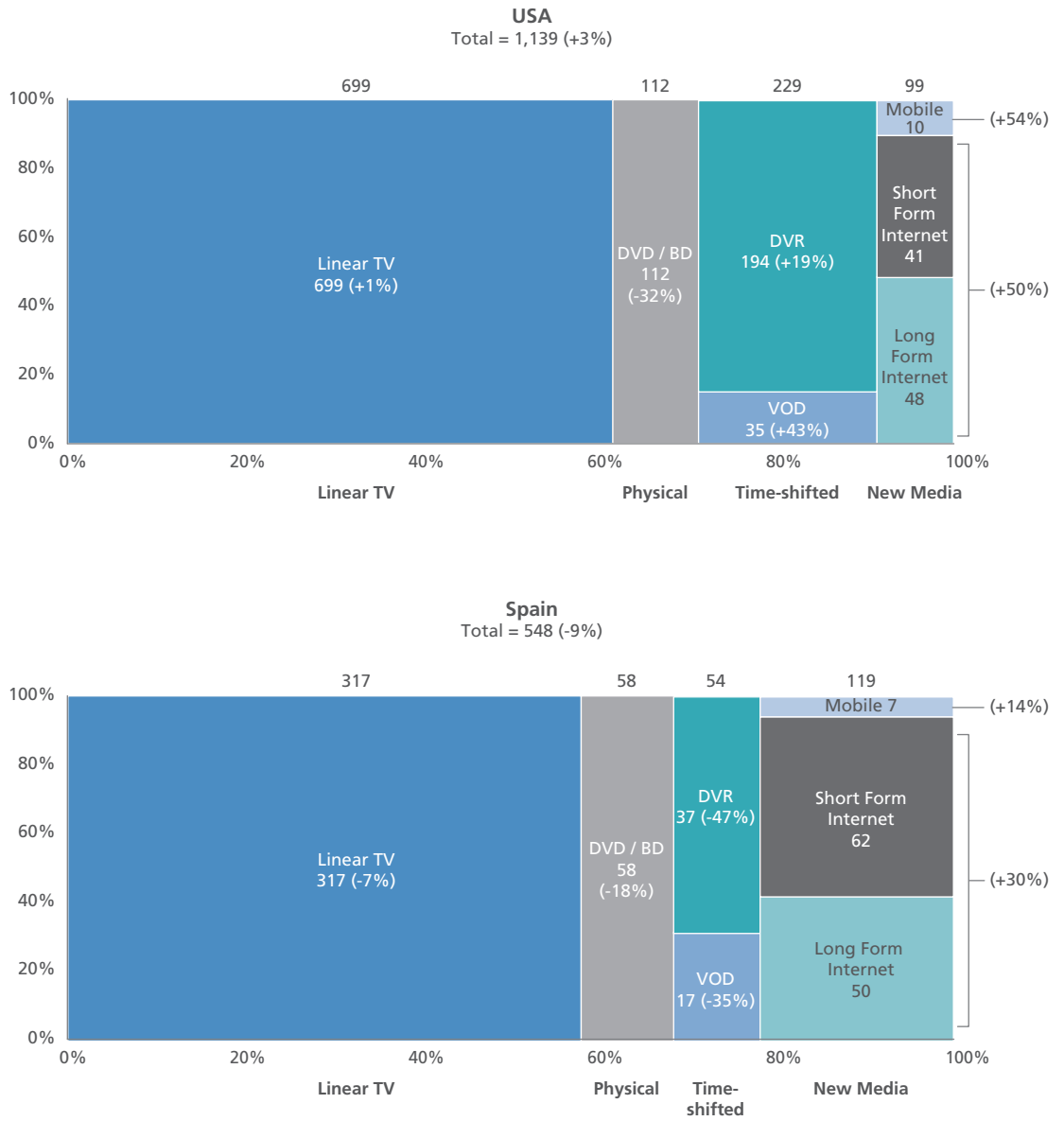
The extent to which this growth in online viewing minutes cannibalizes traditional forms of viewing is a key question for the industry. The evidence from our online sample is mixed and varies significantly by country.

In the U.S., our research suggests total video minutes grew 3% last year, with DVR, VOD and linear TV all recording an increase in viewing minutes. The one format that declined

³ 'Online video' refers to audiovisual content viewed on the PC over an internet connection or via an internet-connected game console.

Figure 3.2 Average weekly video viewing by type (minutes) in 2009

Weekly video minutes by video type, online population only



Source: Oliver Wyman survey data.
 Note: Numbers in parentheses indicate growth. Internet video includes both legally accessed and pirated content.

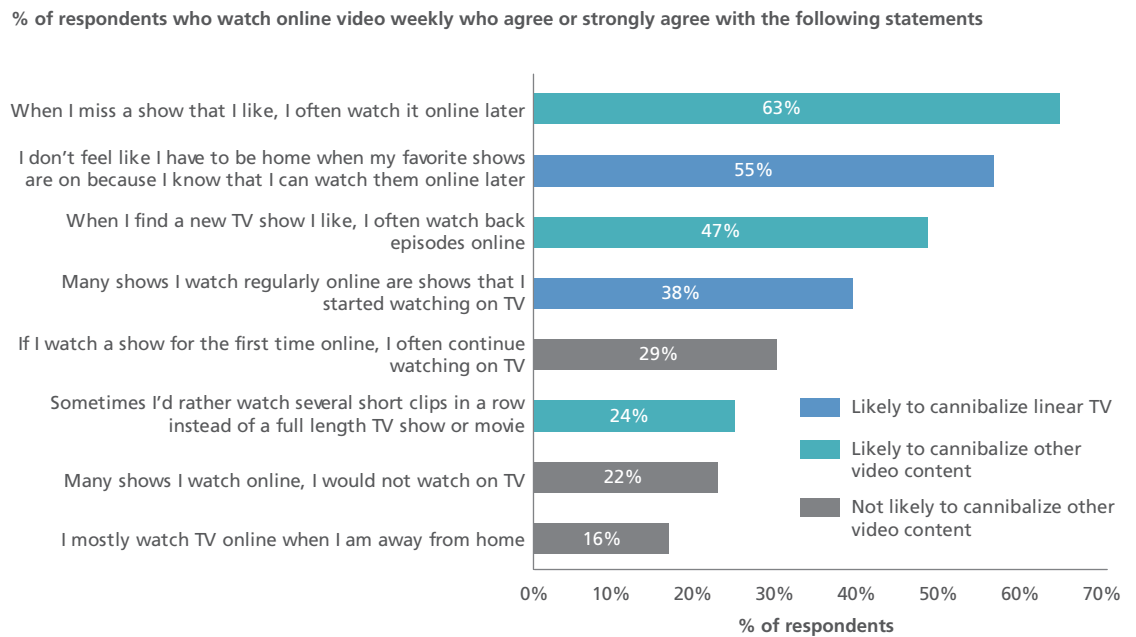
significantly was DVD viewing (rentals and sell-through). Some of this decline may be due to increased online viewing of movies and TV shows, but the reduction in DVD minutes (down 50 minutes per week per person) is greater than the increase in online minutes (plus 30 minutes per week per person), suggesting that there are other drivers of this shift in addition to online viewing.

When we look at de-averaged results in the U.S., a few more worrisome patterns emerge. For example, among those who watch long-form content online, linear TV and DVD viewing *decreased* in 2009. Similarly among all 18-34 year olds, a key advertising demographic, all forms of viewing other than online and mobile dropped in 2009, with VOD and DVD viewing dropping significantly.

In Spain, by contrast, the picture is much starker: The only growth sectors are online video and mobile. Linear TV, physical, and time-shifted TV viewing have all fallen significantly. Online viewing may not account for the entire decline in traditional forms of viewing, but seems likely to be a major contributory factor. Again, when we look at people who watch long-form video online, we see that their consumption of linear TV has fallen by nearly double the average. DVR and VOD consumption have also decreased for this population.

The reasons people give for watching video online also suggest that at least some online viewing is cannibalistic (see Figure 3.3). For example, 55% of respondents indicated that they are starting to change TV-consumption behavior as a result of online services.

Figure 3.3 **Changing attitudes towards online video**



Source: Oliver Wyman survey data.

Mobile video: poised for explosive growth

Mobile video is also growing fast, but is still a niche service. Viewing minutes on mobile phones grew by 54% in the U.S., but only 7% of respondents watched any mobile video. That percentage rises dramatically for all iPhone owners (in all countries surveyed), 33% of whom watch mobile video weekly. While this group is small, iPhone video viewers in our sample watch 20 times as much mobile video as the population as a whole. Mobile video could explode in the next couple of years, as iPhones and other full-screen smartphones proliferate, but only if mobile network operators are able to solve capacity/pricing problems.

Who is extracting value from the move online?

If, as our research suggests, the total video-viewing pie stays broadly the same, then value growth for one type of firm has to come at the expense of others: Value growth in video becomes largely a zero-sum game. We are starting to see this battle break out on a number of fronts, as incumbents try to defend—and attackers try to steal—advertising dollars, pay-TV subscriptions, and one-off video purchases.

One of the biggest fights is over TV advertising dollars. Free-to-air broadcasters have been hit hard by the impact of the recession together with the growth of online viewing, which is capturing an increasing share of advertisers' budgets. In response some broadcasters are rapidly seeking to restructure their business model and renegotiate contracts to capture more pay-TV subscription revenue. As our value-migration analysis suggested (see Chapter 1), the main beneficiary from the shift of advertising dollars online has been a handful of powerful *online aggregators*. However, these players have not yet solved the problem of how to profitably monetize online video (see sidebar, "Monetizing online video viewership").

Monetizing online video viewership

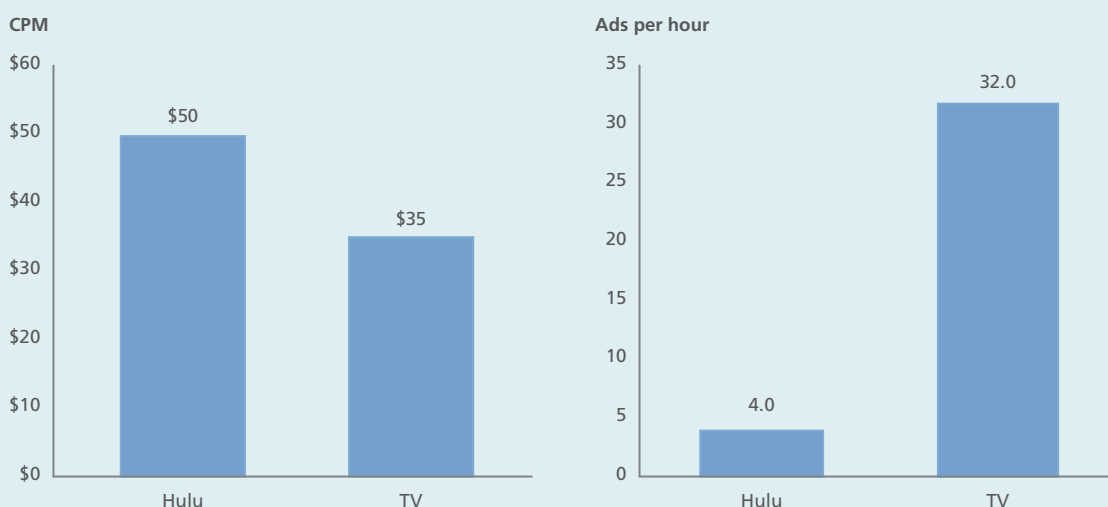
The profitability of even the most popular video sites, including Hulu and YouTube, is uncertain. Online ads command higher CPMs than TV ads, but significantly fewer ads online means lower total revenue per viewer hour (see Figure 3.4).

As a result, we estimate every hour of TV content viewed on Hulu produces \$0.92 less in ad revenue than regular TV does. In July 2009, viewers watched 46 million hours of video on Hulu. If ads were evenly distributed and all Hulu viewing is cannibalistic to TV—two big "ifs"—that would compute as a loss of \$42.5 million in ad revenue to the TV industry that month.

In order to recoup such a loss, either ad volumes or ad prices have to rise significantly. Although survey respondents prefer advertising to paying for content, they are not likely to tolerate a four- to five-fold increase in advertising. In order to match TV revenues without increasing advertising, Hulu CPMs would have to rise to \$280, a price that advertisers would be unlikely to tolerate.

Success in monetizing online video will likely encompass a combination of new online advertising models, higher CPMs justified by more effective customer targeting, and potentially moving to subscription models for online content.

Figure 3.4 CPM and advertising time: online vs. TV (primetime shows)



Source: Soleil Equity Research "Google" 9/9/2009, Oliver Wyman analysis.

The 'battle for the remote'

The battle for the remote control represents a second front, as different players compete to control the gateway through which consumers access video content. *Computer hardware and mobile device manufacturers* have been early winners, capturing value as consumers upgrade hardware to support its use as an entertainment device. Some players, such as Apple, are now seeking to break into video services. *Game-console and Blu-ray manufacturers* have also stepped decisively into this space, leveraging new platforms (e.g. PS3, Xbox 360) to quickly build an installed base of internet video-capable devices. *TV manufacturers* have been slower to move, but the availability of internet-enabled TV sets began to increase in 2009. However, all these hardware-centric attempts to tap into video spend remain in their infancy, and none have yet generated significant value from online-video services. *Telecom operators* are also trying to capture the remote control with IPTV and VOD offers. But as we saw in Chapter 2, building scale is proving difficult, as 'over-the-top' delivery threatens to drive up network costs without necessarily increasing revenue.

Pay-TV providers—both cable and satellite—arguably have the most to lose in this battle since they are the main recipients of consumer spending on video services. Our research indicated that 87% of total video spending in the U.S. was for monthly TV service. Satellite operators are particularly exposed if they lack an internet offer and hence struggle to match true on-demand services. Pay-TV providers need to determine how best to develop online offers without cannibalizing existing revenues and losing share to competitors. Some pay-TV providers, including Comcast and Time Warner Cable, are attempting to do that by creating 'TV Everywhere' offers that allow subscribers to access an extensive library of TV content over the internet. The aim is to increase customer loyalty and prevent them straying to other providers for online content.

For *content owners*, these battles disrupt existing distribution channels. Protecting the value of their core asset during this period of turbulence is a critical priority. Digital piracy is a significant problem, and while prevention may help to reduce its scale, changing business models may ultimately be the best way to tackle the threat in the longer term (see sidebar overleaf, "Combating digital piracy").

Evaluating new business models

Beyond consumers, who have benefitted from increased choice, no player has extracted much value from the shift of video online. Clearly, new models are needed. To shed light on which new models might resonate with consumers, we showed survey respondents a variety of potential online and traditional video offerings and asked them to indicate their preferences. Using this data and statistical analysis, we uncovered some important results.

Business models tested included traditional TV and a variety of internet-based video services delivered 'over-the-top', without relying on proprietary cable or IPTV infrastructure, and included:

Traditional TV: Similar TV services as today, including pay-TV.

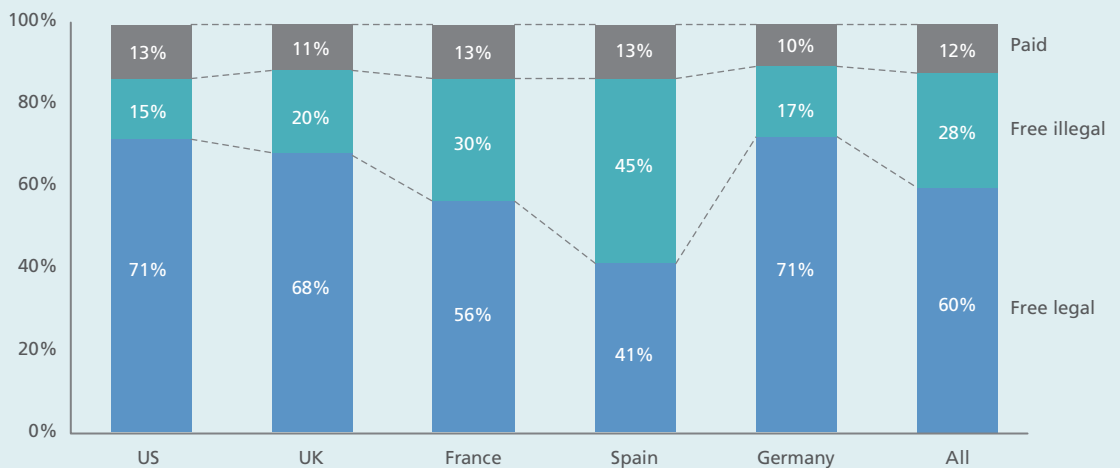
Do-it-yourself TV: Hardware solutions that connect the TV to the internet, allowing users to download or stream online content. Consumers buy the box at a retail price that includes a margin, and can then access free online content or purchase it *à la carte*.

Combating digital piracy

One challenge facing the video ecosystem is digital piracy. Overall, 43% of online-video watchers in our survey admitted to pirating online content regularly, with the result that 28% of all long-form online video is pirated (see Figure 3.5). In some markets, such as Spain, more than two-thirds of online video viewers say they regularly pirate video.

Figure 3.5 Long-form online video by country and by type

Share of long-form online video minutes, regular online video watchers only



Source: Oliver Wyman survey data.

Note: Due to rounding, components may not sum to 100%.

Content owners are pursuing two options: stopping piracy, and competing with it. The first option requires a sustained effort over many years, although it can be successful in slowing piracy. The second option, competing with piracy, can be successful because some online pirates are also heavy consumers of legitimate forms of video. In our survey, consumers that acknowledged watching pirated content watched more than two hours more video and 30 minutes more DVD content than average. Reluctance to pay is one reason for piracy, but there are others, such as product availability and convenience. Some studios are beginning to play on these levers, changing the product to compete more effectively with piracy. Warner Bros. for example, has released some of its most popular movies (e.g. *The Curious Case of Benjamin Button*) for download on iTunes at the same time as the DVD release, reducing the “first-mover advantage” of the illegal websites.

Limited-service subscriptions: Respondents pay a monthly fee for online-video content that is streamed directly to the TV via equipment which is included in the subscription. These subscriptions cost less than today’s pay-TV subscriptions for a limited selection of video content accessible only via an on-demand model. In some cases this option was presented as a supplement to current TV services; in others as a replacement.

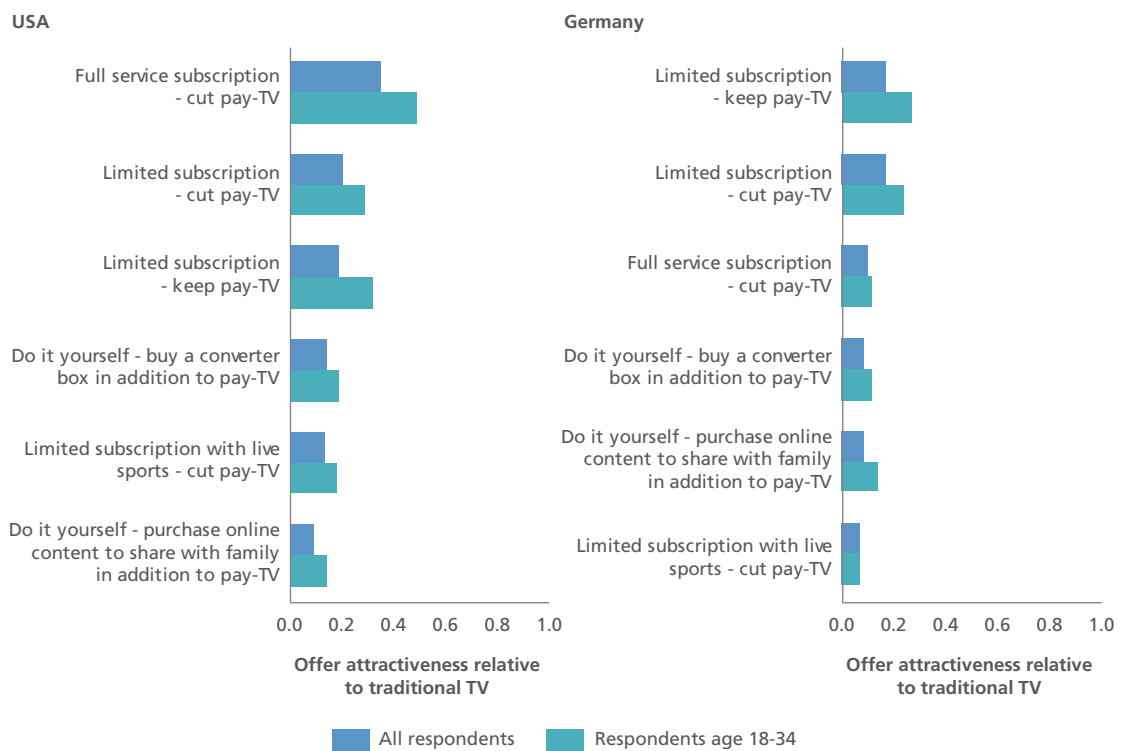
Full-service subscriptions: A monthly fee buys extensive video content, accessed on-demand through the TV, which includes next-generation features such as streaming live sports or HD-quality video. This offer required existing pay-TV subscribers to ‘cut the cord’.

We found that although traditional TV services were the most popular choice across all countries, the level of interest in alternative models is striking (see Figure 3.6). Here are the key takeaways:

Key takeaways

Subscriptions trump ‘DIY TV’. Contrary to the assumption that consumers will not pay for content, our work revealed that consumers will pay for online video content (especially in the U.S.), and are more likely to purchase subscriptions than buy content *à la carte*. Consumers were two to four times as interested in offers that provided on-demand content for a fixed fee per month as they were in buying a device and finding content online themselves. Ease of use is clearly a definitive factor in determining consumer choices. By implication, the opportunity for hardware vendors to sell internet enabler boxes for TVs without a service offering attached may be limited.

Figure 3.6 **Attractiveness of alternative online video offers relative to traditional TV**



Source: Oliver Wyman analysis.

Some customers are ready to exchange pay-TV for premium on-demand subscriptions. The offer attracting the most interest in the U.S. was our top-end, full-service subscription. This offer included HD content, live sports, and a full library of pay-TV programming offered only on-demand. It was priced slightly lower than existing *à la carte* cable TV offers—and required consumers to cancel their pay-TV service. This offer was 1.75 times as popular as limited subscriptions and 2.5 times as popular as

do-it-yourself options. We believe a significant segment of consumers would consider switching to an on-demand subscription service if the online provider can provide an extensive library of content, and the same picture quality that TV providers offer today. This willingness to switch should encourage those seeking to attack incumbent pay-TV operators, but acquiring the rights to the premium sports, movie and TV content required is likely to be a significant challenge. Putting existing premium content online—as Comcast has just done in the U.S.—is probably far easier to achieve.

Limited subscriptions are also appealing. Perhaps more worrisome for pay-TV operators was the interest in limited subscription models. As a supplement to pay-TV services, it was the preferred offer in the U.K. and France, and as a substitute for pay-TV it was second in the U.S., U.K, and France. In Germany, both versions of the limited subscription offer were tied for first place. In Spain, there was nearly equal interest in three offers: both versions of the limited subscription offer and the full service offer described above. The interest among non-pay-TV subscribers may represent an opportunity for pay-TV operators that make some of their content available online. In the U.K., for example, Sky offers free online access to a variety of TV shows and movies to their Satellite TV subscribers, but also limited content to non-subscribers for a relatively low fee. However, the willingness of some customers to ‘cut the cord’ on existing pay-TV services for a much more limited basket of popular TV content represents a material threat to existing pay-TV providers. It also provides some encouragement to players like Apple that are seeking to launch limited content offers.

Video quality matters. Offers that included HD fared the best, followed by SD offers with “TV quality” imaging, without errors or “jitter”. Offers for current internet quality were much less attractive. This is good news for the many traditional pay-TV providers that currently have superior video quality to their online competitors in the video space. It may be bad news for network operators who bear the costs of delivering high-quality video, unless consumers show a greater willingness to pay for higher bandwidths.

Preferences differ by market. Individual players must determine what is best for their own markets. For example, in Spain there was nearly equal interest in the three top offers (the full service subscription and the limited subscriptions with and without pay-TV), but in France there was significantly more interest in a limited offer that allowed people to keep their pay-TV service, and in the U.S. the full service subscription was by far the most popular. French respondents had the most interest in all of the alternative offers, while German respondents showed little interest in any of them.

18-34 year-old demographic most interested in non-traditional models. Respondents 18-34 years old in all markets showed a greater affinity for all non-traditional viewing options, and their order of preference amongst the options remained stable. If these young adults maintain their preferences as they become the primary decision makers for household video services, there will be greater opportunities for video providers to sell these services.

Conclusion

The pace of growth in online-video viewing is striking. However, while the platform is still in its infancy, the behavior of today's online population suggests that some, if not most, of this growth will come at the expense of traditional platforms. Video could be headed for a zero-sum game.

Despite significant efforts from a variety of players in the video space, no one has yet determined the right business model to profit from the growth in online video. The good news is that this nascent field is still wide open, with no one sector having erected insurmountable barriers to entry. We see potential for a number of players to create new business models that will create value.

Appendix

Oliver Wyman's Shareholder Performance Index

The Shareholder Performance Index (SPI) is a measure of adjusted shareholder returns over a five-year period. It is adjusted for risk, volatility, and mergers and acquisitions. It is an ideal measure for senior executives, boards of directors, and investors who want to compare the medium-term performance of companies across sectors and regions.

The SPI Top 450 are the 450 top performing CMT companies in the world based on their SPI scores.

Advantages of the SPI over other performance measures

Adjusted for Risk

The SPI is adjusted for risk using the risk-free interest rate for each company's home country. (For the U.S., that is the 3-month Treasury bill rate.) If two companies have the same returns and volatility, the company in the country with the lower risk-free rate will receive the higher SPI score.

Adjusted for Volatility

The SPI is adjusted for volatility using the standard deviation of the monthly excess returns (monthly returns less the relevant risk-free interest rate). If two companies in the same country have the same returns, the company whose returns displayed less volatility will receive the higher SPI score.

Adjusted for Mergers and Acquisitions

The SPI is adjusted for M&A financed at least in part with stock. This provides a more accurate view of the medium-term performance of companies that have been involved in an M&A transaction in the past five years.

Five-Year Time Horizon

The SPI is designed to measure performance over the medium term, so it is calculated over a five-year window (Dec. 31, 2004 to Dec. 31, 2009). This has two important consequences:

- Changes in a company's SPI score from year to year do not solely reflect performance in the last year; rather, they reflect a shift in that company's performance over the last five years.
- Short-term market turbulence does not exert undue influence on the SPI.

Calculation of the SPI

$$\text{SPI (firm)} = [\text{Sharpe Ratio (firm)} - \text{Sharpe Ratio (median firm)}] \times 1000 + 100$$

$$\text{Sharpe Ratio} = \frac{\text{Geometric mean (Excess returns)}}{\text{Standard deviation (Excess returns)}}$$

Excess return = monthly shareholder returns minus the relevant risk-free interest rate

In cases where the geometric mean is negative, the Sharpe ratio is multiplied by an adjustment factor to control for volatility in down markets. The adjustment factor equals the standard deviation squared divided by the median standard deviation squared.

Sector classifications

As stated above, Oliver Wyman defines CMT broadly. We view CMT as a complex, global industry with many interrelated sectors. For the purposes of evaluating performance between and within sectors, however, we have classified our SPI 450 firms into one of the three sectors (Communications, Media, and Technology) and twelve sub-sectors described in the table below.

In many cases companies earn revenues from a number of CMT sectors, and because of this, classifying companies can be difficult. We based our classification taxonomy on industry classification codes from Datastream supplemented with a review of the revenue mix at individual companies. Over time, these classifications are evolving: for instance, although Apple is classified as a hardware company in this year's report, if its revenue mix changes sufficiently in the future, it could be re-categorized as a communications hardware firm or an online content and services provider.

Sector descriptions

Sector	Sub-sector	Explanation	Company examples
Communications	Cable	Offer television access through subscriptions (includes satellite TV)	BSkyB, Comcast, DirecTV
	Fixed and mobile	Operate fixed-line and/or wireless telecommunications services (includes Internet service providers)	América Móvil, AT&T, Telefónica
Media	Broadcast and entertainment	Offer channel broadcasting and/or entertainment media	Discovery, Netflix, Walt Disney
	Media agencies	Advertising and media consultancy agencies	Ipsos, Omnicom Group, WPP Group
	Online content and services	Internet-based businesses providing content access or services	Baidu, Google, Tencent
	Publishing	Publishers of news media or other information	Dun & Bradstreet, Gartner
Technology	Communications hardware	Provide telecommunications equipment and devices	American Tower, Cisco Systems, Nokia
	Computer services	Provide IT services to businesses	Accenture, IBM, Infosys
	Consumer electronics	Offer consumer-targeted electronic products	Nintendo, Samsung Electronics
	Hardware	Provide computer and electronic equipment	Acer, Hewlett-Packard, Lenovo
	Semiconductors	Manufacturers of semiconductors	Intel, Texas Instruments
	Software	Provide computer software	Autodesk, McAfee, Oracle

Performance tables by sub-sector, 2009

■ Fixed and mobile communications

Top 20, ranked by SPI

Name	SPI	Market value (\$ billions)
1 Bezeq (Israel)	350	6.7
2 Empresa (Chile)	276	3.4
3 China Mobile (Hong Kong)	271	188.5
4 KPN Kon (Netherlands)	271	27.7
5 Chunghwa Telecom (Taiwan)	270	19.8
6 Starhub (Singapore)	269	2.6
7 América Móvil (Mexico)	269	47.4
8 Taiwan Mobile (Taiwan)	255	7.4
9 Inmarsat (UK)	245	5.1
10 Iliad (France)	241	6.5
11 PLDT (Philippines)	239	10.6
12 Bharti Airtel (India)	225	26.8
13 Telefónica (Spain)	210	127.8
14 MTN Group (South Africa)	209	29.5
15 Rostelecom (Russia)	199	3.6
16 Teliasonera (Sweden)	197	32.6
17 Millicom (Luxembourg)	195	8.0
18 Elisa (Finland)	194	3.8
19 Carso Global Telecom (Mexico)	186	15.5
20 Singapore Telecom (Singapore)	178	35.3

■ Cable

Top 20, ranked by SPI

Name	SPI	Market value (\$ billions)
1 Shaw Communications (Canada)	277	8.5
2 Abovet (US)	246	1.6
3 Rogers Communications (Canada)	225	15.3
4 DirecTV (US)	225	31.9
5 Telenet (Belgium)	167	3.1
6 Beijing Gehua CATV (China)	133	2.2
7 Cablevision Systems (US)	121	6.4
8 Cogeco Cable (Canada)	113	1.1
9 Phoenix Satellite (Hong Kong)	111	1.3
10 Jupiter Telecom (Japan)	93	6.9
11 BSkyB (UK)	68	15.9
12 Sky Network TV (New Zealand)	58	1.4
13 Liberty Global (US)	39	2.8
14 Sun TV Network (India)	39	2.9
15 Comcast (US)	32	34.8
16 Virgin Media (US)	25	5.5
17 Astro All Asia Networks (Malaysia)	7	1.7
18 Dish Network (US)	5	4.3
19 Zon Multimedia (Portugal)	-6	1.9
20 SKY Perfect JSAT (Japan)	-28	1.4

■ Media

Top 20, ranked by SPI

Name	SPI	Market value (\$ billions)
1 Tencent Holdings (Hong Kong)	524	39.5
2 NHN (South Korea)	323	7.9
3 Eutelsat Communications (France)	300	7.1
4 Naspers (South Africa)	297	16.5
5 Discovery Communications (US)	266	4.1
6 Netflix (US)	261	3.0
7 Chengdu B-Ray Media (China)	254	1.5
8 Baidu (US)	240	10.7
9 Google (US)	238	150.7
10 Pearson (UK)	187	11.7
11 Sohu (US)	181	2.2
12 Morningstar (US)	178	2.3
13 Bec World (Thailand)	177	1.5
14 Corus Entertainment (Canada)	173	1.5
15 Hunan TV & Broadcast (China)	171	1.1
16 Modern Times Group (Sweden)	166	2.9
17 Dolby Laboratories (US)	159	2.6
18 Liberty Media-Capital (US)	156	2.2
19 Dun & Bradstreet (US)	151	4.4
20 Factset Research Systems. (US)	149	3.1

Top 20, ranked by market value

Name	SPI	Market value (\$ billions)
1 China Mobile (Hong Kong)	271	188.5
2 AT&T (US)	152	165.4
3 Telefónica (Spain)	210	127.8
4 Vodafone Group (UK)	89	122.1
5 Verizon (US)	71	94.1
6 France Telecom (France)	62	66.2
7 Deutsche Telekom (Germany)	47	64.7
8 Nippon Telegraph & Telephone (Japan)	60	61.7
9 América Móvil (Mexico)	269	47.4
10 Telstra (Australia)	51	38.4
11 Vivendi (France)	70	36.7
12 Singapore Telecom (Singapore)	178	35.3
13 Teliasonera (Sweden)	197	32.6
14 China Unicom (Hong Kong)	162	31.2
15 MTN Group (South Africa)	209	29.5
16 KPN (Netherlands)	271	27.7
17 Bharti Airtel (India)	225	26.8
18 Softbank (Japan)	100	25.2
19 KDDI (Japan)	68	23.8
20 Telenor (Norway)	122	23.3

Top 20, ranked by market value

Name	SPI	Market value (\$ billions)
1 Comcast (US)	32	34.8
2 DirecTV (US)	225	31.9
3 BSkyB (UK)	68	15.9
4 Rogers Communications (Canada)	225	15.3
5 Shaw Communications (Canada)	277	8.5
6 Jupiter Telecom (Japan)	93	6.9
7 Cablevision Systems (US)	121	6.4
8 Virgin Media (US)	25	5.5
9 Dish Network (US)	5	4.3
10 Telenet (Belgium)	167	3.1
11 Sun TV Network (India)	39	2.9
12 Liberty Global (US)	39	2.8
13 Beijing Gehua CATV (China)	133	2.2
14 Zon Multimedia (Portugal)	-6	1.9
15 Astro All Asia Networks (Malaysia)	7	1.7
16 Abovet (US)	246	1.6
17 Sky Network TV (New Zealand)	58	1.4
18 SKY Perfect JSAT (Japan)	-28	1.4
19 Phoenix Satellite (Hong Kong)	111	1.3
20 Cogeco Cable (Canada)	113	1.1

Top 20, ranked by market value

Name	SPI	Market value (\$ billions)
1 Google (US)	238	150.7
2 Walt Disney (US)	104	60.1
3 Tencent Holdings (Hong Kong)	524	39.5
4 Time Warner (US)	34	34.0
5 Thomson Reuters (Canada)	70	26.9
6 News Corporation (US)	19	24.9
7 Naspers (South Africa)	297	16.5
8 Viacom (US)	9	16.5
9 WPP (UK)	77	12.3
10 Omnicom (US)	59	12.2
11 Pearson (UK)	187	11.7
12 Baidu (US)	240	10.7
13 McGraw-Hill (US)	29	10.6
14 RTL (Luxembourg)	62	10.3
15 Grupo Televisa (Mexico)	135	10.1
16 Reed Elsevier (UK)	74	10.0
17 Mediaset (Italy)	40	9.7
18 Dai Nippon Printing (Japan)	52	8.9
19 Publicis Groupe (France)	107	8.1
20 NHN (South Korea)	323	7.9

■ Consumer electronics

Top 20, ranked by SPI

Name	SPI	Market value (\$ billions)
1 VTech Holdings (Hong Kong)	318	2.4
2 Chinese Gamer (Taiwan)	254	1.2
3 Nintendo (Japan)	185	33.8
4 Skyworth Digital (Hong Kong)	169	2.6
5 Samsung Electronics (South Korea)	161	101.1
6 Capcom (Japan)	150	1.1
7 LG Electronics (South Korea)	145	15.1
8 Sichuan Changhong (China)	136	1.8
9 Lite-On Technology (Taiwan)	132	3.4
10 Playtech (UK)	129	1.6
11 Nikon (Japan)	126	7.9
12 Olympus (Japan)	125	8.7
13 TiVo (US)	117	1.1
14 Ubisoft Entertainment (France)	111	1.3
15 TCL (China)	99	2.2
16 Philips (Netherlands)	89	28.9
17 Garmin (US)	67	6.2
18 Panasonic (Japan)	53	34.9
19 Namco Bandai (Japan)	40	2.4
20 Konami (Japan)	35	2.6

■ Software and services

Top 20, ranked by SPI

Name	SPI	Market value (\$ billions)
1 Autonomy (U.K.)	404	5.9
2 SXC Health Solutions (Canada)	344	1.6
3 DHC Software (China)	315	1.5
4 Hundsun Electronics (China)	303	1.4
5 Software AG (Germany)	283	3.1
6 Ufida Software (China)	275	2.5
7 Pegasystems (US)	267	1.2
8 Concur Technologies (US)	263	2.1
9 Informatica (US)	262	2.3
10 Quality Systems (US)	262	1.8
11 AVEVA (UK)	255	1.1
12 Cerner (US)	252	6.7
13 ANSYS (US)	235	3.9
14 AsialInfo Holdings (US)	235	1.4
15 Totvs (Brazil)	233	2.1
16 Blackboard (US)	228	1.5
17 Salesforce.com (US)	224	9.2
18 Nuance Communications (US)	221	4.3
19 Neusoft (China)	221	3.1
20 BMC Software (US)	220	7.4

■ Hardware and semiconductors

Top 20, ranked by SPI

Name	SPI	Market value (\$ billions)
1 Apple (US)	319	189.8
2 Byd (China)	317	7.0
3 Wistron (Taiwan)	317	3.6
4 Richtek Technology (Taiwan)	311	1.5
5 Simplo Technology (Taiwan)	301	1.4
6 Digital China Holdings (Hong Kong)	289	1.4
7 Cypress Semiconductors (US)	289	1.6
8 Hewlett-Packard (US)	274	121.8
9 HTC (Taiwan)	273	9.0
10 First Solar (US)	271	11.5
11 Jiangsu Zhongtian Technologies (China)	259	1.2
12 Aisino (China)	255	2.7
13 SBA Communications (US)	247	4.0
14 Mediatek (Taiwan)	246	19.0
15 American Tower (US)	238	17.3
16 Phison Electronics (Taiwan)	235	1.3
17 Western Digital (US)	233	10.0
18 Chicony Electronics (Taiwan)	226	1.4
19 Acer (Taiwan)	216	8.1
20 Siliconware Precision Industries (Taiwan)	216	4.2

Top 20, ranked by market value

Name	SPI	Market value (\$ billions)
1 Samsung Electronics (South Korea)	161	101.1
2 Panasonic (Japan)	53	34.9
3 Nintendo (Japan)	185	33.8
4 Philips (Netherlands)	89	28.9
5 Sony (Japan)	17	28.8
6 LG Electronics (South Korea)	145	15.1
7 Sharp (Japan)	32	13.9
8 Olympus (Japan)	125	8.7
9 Nikon (Japan)	126	7.9
10 Garmin (US)	67	6.2
11 Konica Minolta (Japan)	23	5.4
12 Lite-On Technology (Taiwan)	132	3.4
13 Skyworth Digital (Hong Kong)	169	2.6
14 Konami (Japan)	35	2.6
15 Square Enix (Japan)	24	2.4
16 Namco Bandai (Japan)	40	2.4
17 VTech Holdings (Hong Kong)	318	2.4
18 TCL (China)	99	2.2
19 Sichuan Changhong (China)	136	1.8
20 Playtech (UK)	129	1.6

Top 20, ranked by market value

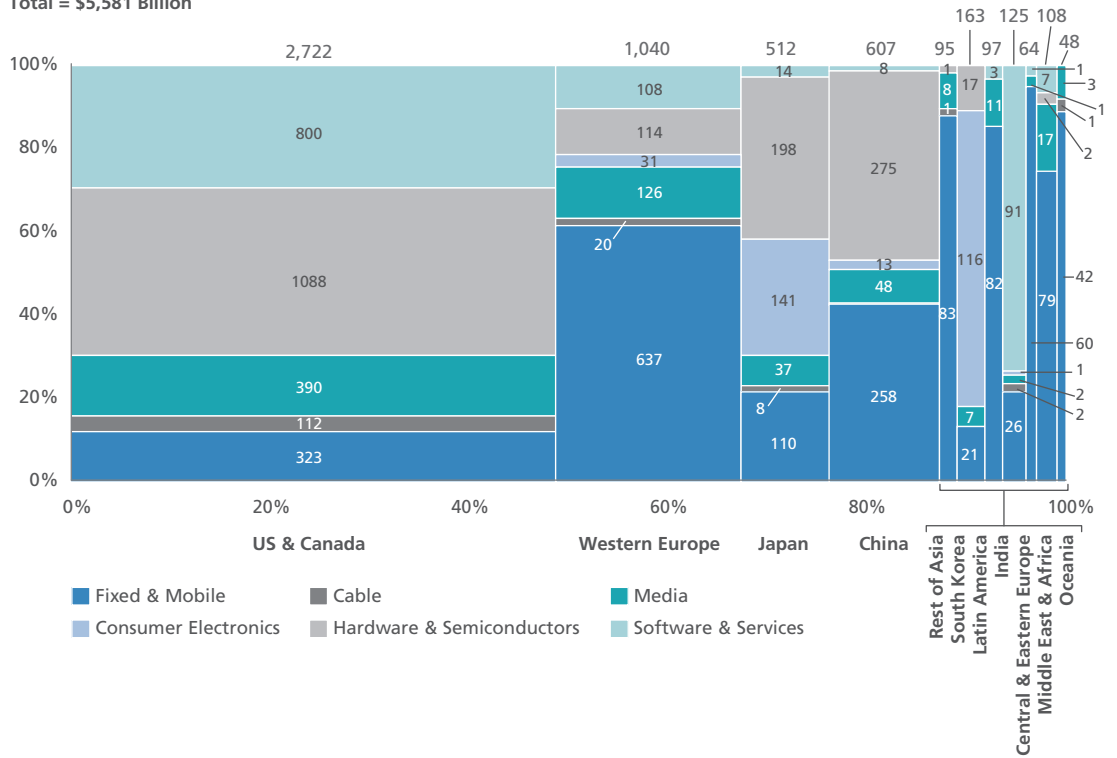
Name	SPI	Market value (\$ billions)
1 Microsoft (US)	91	270.6
2 IBM (US)	132	172.0
3 Oracle (US)	184	122.9
4 Sap (Germany)	65	58.2
5 Infosys Technologies (India)	200	32.1
6 Tata Consultancy Services (India)	168	31.5
7 Accenture (US)	175	26.2
8 Wipro (India)	127	21.4
9 Adobe Systems (US)	86	19.3
10 Symantec (US)	3	14.5
11 Cognizant Technology Solutions (US)	178	13.4
12 CA (US)	32	11.7
13 Intuit (US)	115	9.7
14 Salesforce.com (US)	224	9.2
15 Computer Sciences (US)	60	8.8
16 Citrix Systems (US)	140	7.6
17 BMC Software (US)	220	7.4
18 Check Point Software Technologies (Israel)	100	7.1
19 Cap Gemini (France)	120	7.1
20 Cerner (US)	252	6.7

Top 20, ranked by market value

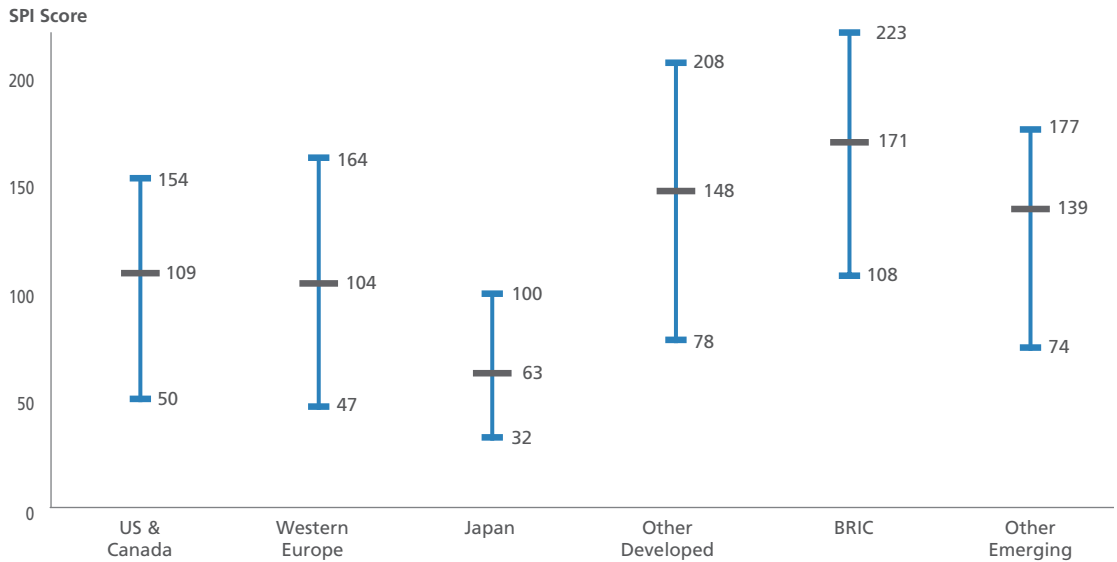
Name	SPI	Market value (\$ billions)
1 Apple (US)	319	189.8
2 Cisco Systems (US)	90	137.7
3 Hewlett-Packard (US)	274	121.8
4 Intel (US)	56	112.6
5 Qualcomm (US)	76	77.3
6 Canon (Japan)	105	56.0
7 Taiwan Semiconductors (Taiwan)	198	52.2
8 Nokia Corporation (Finland)	40	47.9
9 Hon Hai Precision Industry (Taiwan)	203	40.6
10 Research In Motion (Canada)	140	37.7
11 EMC (US)	79	35.6
12 Texas Instruments (US)	71	32.6
13 Corning (US)	131	30.0
14 Ericsson (Sweden)	7	27.8
15 Toshiba (Japan)	100	23.3
16 Mediatek (Taiwan)	246	19.0
17 Applied Materials (US)	41	18.6
18 American Tower (US)	238	17.3
19 Kyocera (Japan)	89	16.8
20 Fujifilm (Japan)	43	15.4

2009 market value map of top 450 CMT companies

Total = \$5,581 Billion



Average, top, and bottom quartile performance by geography



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