Internet Value Chain Economics

Gaining a deeper understanding of the Internet economy
When considering the technological innovations of the past 50 years, the Internet is probably the one that has had the greatest impact on everyday life in developed economies. Nearly six out of 10 Americans now shop online and more than four out of 10 bank online. Twenty hours of video are uploaded to YouTube every minute, while 5 percent of all time online is spent on the social networking site, Facebook. The Internet has also changed the way in which businesses operate—today, 64 percent of C-level executives conduct six or more searches per day to locate business information. The Internet has been a source of great good—as evidenced by the role played by Internet-based mapping and communications in the relief effort following the recent Haiti earthquake. The Internet also has shown a negative side—more than 97 percent of all emails are spam, while more than 70 percent of Americans fear online identity theft and 57 percent feel that their personal privacy has been greatly diminished by the Internet.¹

Behind these statistics and headlines, however, there remains a low level of understanding of how the Internet economy works. Who are the different players involved in the Internet, beyond the flagship names? How is the industry structured and how concentrated is it? How do players make money and how do revenues flow across the value chain? Is the industry attractive in terms of growth and returns?

As the Internet continues to grow and develop, playing an increasingly important role in the lives and activities of people and organizations, a sound understanding of the Internet economy will be important for all stakeholders. This includes the companies playing a role in the Internet economy, private and business consumers, and the regulators and policy-makers who are increasingly being asked to oversee or intervene in multiple aspects of the Internet.

To help improve the understanding of the Internet landscape, Vodafone commissioned A.T. Kearney to conduct a review of the Internet’s value chain and economics. This paper has been produced independently and does not necessarily

represent the views of Vodafone. Neither Vodafone nor A.T. Kearney is responsible for the use that might be made of this paper.

This paper has a global scope but most examples and illustrations focus on North American and European markets. Terminology has been standardised and may differ from regional usage. The paper begins with a brief overview of the Internet’s growth and usage trends. Next, it lays out the Internet value chain and describes each part of the value chain in terms of key players and revenue models. Finally, it provides an assessment of the industry’s market size, growth trends, profitability and competitive structure.

It is not the purpose of this paper to offer recommendations, but rather to provide a consistent framework and fact base to inform public debate. With such a broad remit we may inevitably disappoint readers who would like more detail about individual markets or issues; for that reason we have provided documentation of our sources and assumptions to assist further research.

1. Summary of Findings

The number of Internet users has grown rapidly to 1.7 billion in 2009, or a quarter of the world’s population. Consumers use the Internet for an increasing range of everyday activities, from shopping and banking to sharing photos and watching TV. As a result, they spend a growing proportion of their media consumption time and wallet on the Internet. A complex value chain has developed to deliver these services, comprising global and local players with assets as diverse as content rights, communications and IT infrastructure, proprietary software and global brands. Businesses also use the Internet extensively to market and distribute their services as well as to procure and manage supply chains.

Total Internet value chain revenues are estimated at US$1,930 billion in 2008, growing on average at 10 percent p.a. More than 60 percent derives from business-to-business activities as many organisations have embraced the Internet to market and sell their services and to manage relationships with suppliers and partners. On the consumer side, the largest categories of spend are for retail Internet access and end-user devices/hardware. Between them, these enablers for households to access the Internet account for 44 percent of total consumer value chain revenues.

Consumer Online Services, the most visible part of the Internet economy, represent a US$242 billion market, of which a substantial part relates to e-Commerce. Search engines capture more than one-third of remaining online service revenues and indeed 59 percent of online advertising revenues.

Revenues for consumer Online Services are growing more than twice as fast as those for Internet access provision and more than five times faster than sales of hardware and software. Bandwidth growth has been even stronger, but online service revenues are for the most part disconnected from bandwidth consumption—in 2008 file-sharing and video-on-demand accounted for nearly three-quarters of bandwidth but only 8 percent of revenues.

Our analysis shows that the most concentrated markets in the value chain are the Online Services of VoIP, gaming and search plus certain categories of hardware/software, namely games consoles, smart phones and operating systems. The online advertising network market is also highly concentrated. In all of these categories the top three players account for more than 60 percent of revenues, driven by strong network and/or scale effects.

We also analysed the profitability of the largest players in all categories. While many factors
influence a company’s profitability in a given year, we found the most concentrated categories to be among those with the highest returns on capital employed (ROCE) in the value chain, at least 20 percent in all cases. Content Rights and Connectivity, on the other hand, are less concentrated markets when measured at a global level, although local differences apply. Both of these markets also have lower ROCE (10 to 15 percent) and the market capitalisations of their largest players have been stagnant for years.

The Internet has a short history characterised by rapid bursts of technological and economic development, often stimulated by the emergence of new entrants on a global scale. Whether it will continue to be so dynamic or is now of such a size and relative maturity that it begins to resemble other parts of the global economy, is beyond the scope of this paper. Certainly one could expect such differences in economic performance across the Internet value chain to influence corporate strategic activity and regulatory decision-making in the years ahead.

2. Growth of Internet Usage

The number of Internet users globally has grown dramatically in the past 15 years (see figure 1). In 1995, there were only 16 million Internet users, equating to 0.4 percent of the world’s population. By 2009, this had risen to 1.7 billion users, corresponding to more than a quarter of the world’s population. In most West European and North American markets, Internet usage penetration now surpasses 75 percent of the population.

In recent years the strongest growth has come from emerging markets. In China, the penetration rate has jumped from 2 percent in 2000 to 27 percent by the end of 2009. With 360 million people online, China has more Internet users than a quarter of the world’s population.
the whole of Western Europe, and 60 percent more than the United States. Brazil already has more Internet users than any European country, while the Middle East has gone from 3 million to 57 million users between 2000 and 2009.

Most users access the Internet via fixed-line broadband connections at home or at work. The take-up of broadband, delivered via multiple technology options but primarily via DSL connections over the original copper telephone networks, has transformed the telecommunications landscape in most countries. With plans to deploy fibre to deliver far greater bandwidth per connection, the telecommunications sector faces a major investment wave in the next decade and is currently engaged in extensive debate over the future regulatory framework and commercial model to support such investments.

More recently, mobile devices have become a key means to access the Internet, driven by the availability and increasing affordability of smartphones as well as high-speed data modems and USB “dongles” that provide Internet access for laptop computers. Total shipments for smartphones, for instance, are projected to grow from 54 million in 2005 to 289 million in 2013.2

Time spent online is also growing substantially, to some extent at the expense of traditional media. A recent study conducted in Germany, for instance, projected that the Internet’s share of media consumption time would increase from 4 percent in 2000 to 24 percent in 2015. This, however, does not come solely at the expense of other media. Total media consumption time grew by nearly 50 percent between 2000 and 2009 to an average of 10.3 hours per day. There is a growing

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**Figure 2**

Internet share of consumers’ time and wallet

**Share of time by media**¹ (2000-2015e)

<table>
<thead>
<tr>
<th>Year</th>
<th>Internet</th>
<th>TV</th>
<th>Radio</th>
<th>Magazines</th>
<th>Others²</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>4%</td>
<td>36%</td>
<td>37%</td>
<td>4%</td>
<td>20%</td>
</tr>
<tr>
<td>2005</td>
<td>12%</td>
<td>34%</td>
<td>29%</td>
<td>3%</td>
<td>23%</td>
</tr>
<tr>
<td>2010e</td>
<td>21%</td>
<td>30%</td>
<td>24%</td>
<td>2%</td>
<td>23%</td>
</tr>
<tr>
<td>2015e</td>
<td>24%</td>
<td>29%</td>
<td>21%</td>
<td>2%</td>
<td>23%</td>
</tr>
</tbody>
</table>

**Share of wallet by media** (2000-2015e)

<table>
<thead>
<tr>
<th>Year</th>
<th>Internet</th>
<th>TV</th>
<th>Radio</th>
<th>Magazines</th>
<th>Others³</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>58%</td>
<td>8%</td>
<td>6%</td>
<td>6%</td>
<td>36%</td>
</tr>
<tr>
<td>2005</td>
<td>47%</td>
<td>6%</td>
<td>7%</td>
<td>4%</td>
<td>23%</td>
</tr>
<tr>
<td>2010e</td>
<td>40%</td>
<td>6%</td>
<td>5%</td>
<td>4%</td>
<td>29%</td>
</tr>
<tr>
<td>2015e</td>
<td>34%</td>
<td>5%</td>
<td>5%</td>
<td>4%</td>
<td>42%</td>
</tr>
</tbody>
</table>

Notes: ¹Includes simultaneous media consumption
²Books, films, newspapers, offline-video games and video
³Internet advertising and access spending

² Credit Suisse, June 2009

**Example: Germany**
trend of consuming multiple media at the same time—for instance, browsing the Internet while watching TV.

With increasing share of time, the Internet is inevitably also capturing an increasing share of consumer and advertiser spend—from 5 percent in 2000 to 42 percent of total by 2015 in Germany, potentially twice as much as TV and Radio combined. This trend is likely to be repeated for other European markets (see figure 2).

Internet usage is expanding to a broader range of services and becoming central to everyday lives. In the United States, 56 percent of people reported having bought a product online in 2009 compared with just 27 percent in 2000; 42 percent bank online, compared to 10 percent in 2000; 28 percent use social networking sites, in contrast with only 5 percent in 2000.

Internet usage patterns have evolved rapidly, as illustrated by consumers’ preferred websites. Of the top 15 websites in the United States in 1999, measured by unique visitors, only four remained in this league table by 2009 (see figure 3). Most of the top 11 websites have been launched fairly recently and include sites such as Google, Facebook, eBay and Apple iTun es.

Search and Social Networking are two examples of services where market leadership has changed rapidly. In 1999, Google captured only 4 percent of global search revenues. Today Google has two-thirds of the market, while 1999 leader Yahoo!’s share has shrunk from 29 percent to 7 percent. In social networking, Facebook did not exist in 2003. Five years later, it held 23 percent of the market, while 2003 market leader Xanga is no longer among the top five players.

Figure 3
Top 15 Internet websites (1999 versus 2009)

<table>
<thead>
<tr>
<th>U.S. top 15 sites 1999</th>
<th>U.S. top 15 sites 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web property</td>
<td>UVs(^2) (m)</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>1. AOL sites</td>
<td>46</td>
</tr>
<tr>
<td>2. Microsoft sites</td>
<td>32</td>
</tr>
<tr>
<td>3. Yahoo sites</td>
<td>31</td>
</tr>
<tr>
<td>4. Lycos</td>
<td>29</td>
</tr>
<tr>
<td>5. Go Network</td>
<td>21</td>
</tr>
<tr>
<td>6. GeoCities(^1)</td>
<td>19</td>
</tr>
<tr>
<td>7. The Excite Network</td>
<td>17</td>
</tr>
<tr>
<td>8. Time Warner Online</td>
<td>13</td>
</tr>
<tr>
<td>10. AltaVista</td>
<td>11</td>
</tr>
<tr>
<td>11. Amazon</td>
<td>10</td>
</tr>
<tr>
<td>12. Xoom</td>
<td>9</td>
</tr>
<tr>
<td>15. CNET</td>
<td>8</td>
</tr>
</tbody>
</table>

Note: \(^1\)Now only available in Japan
\(^2\)The Unique Viewers (UV) metric enables a clearer comparison of different types of websites than the more commonly referenced Page Views metric
Sources: ComScore, A.T. Kearney analysis
3. Overview of the Internet Value Chain

The Internet ecosystem is complex and involves multiple activities and players. We break down the Internet value chain into five main markets: Content Rights, Online Services, Enabling Technology/Services, Connectivity and User Interface (devices and applications). Figure 4 shows the main strategic segments within each market and the different service categories within those segments, together with the logos of some of the larger players.

A number of industry players operate in two or more segments of the value chain. This can be powerful in terms of creating a seamless customer experience but can also be used to take full advantage of assets such as technology, brands and customer relationships in order to strengthen competitive positioning.

Description of the Key Markets in the Internet Value Chain

Content Rights

Much Internet content is user-generated, for example, an individual's page on a social networking site or a “tweet” message on Twitter. Such content typically does not involve remuneration to content creators, although they may well retain copyright or some degree of privacy protection over how their content is used by others. The Content Rights market quantified in our subsequent analysis corresponds to the provisioning of content to online service providers on a commercial basis. Examples of such content include music, filmed entertainment, games, news or the content of books and magazines.

Content Rights owners are typically media companies such as Warner Brothers, the BBC or Electronic Arts providing their content for a share of revenues and/or license fees. Content Rights owners typically retain 50 to 70 percent of the revenues generated by the online service provider that makes the content accessible to Internet users. For instance, iTunes shares approximately 70 percent of revenues earned on each music purchase with the music majors. In some cases, Content Rights owners provide their own Online Services, such as the BBC iPlayer service. Of course, there is still considerable illegal or unauthorised use of content on the Internet for which there is no payment made.

Online Services

Online Services correspond to the range of services accessed by Internet users and are, as a result, very diverse. For simplification, we have grouped Online Services into five main segments:

Communications. Includes all forms of communications among Internet users, including voice (VoIP), social networking, email and instant messaging. Leading providers of such services include Skype (part of eBay), Facebook and Hotmail (part of Microsoft). With the exception of VoIP, these services are invariably provided free-of-charge and funded by advertising revenues.

General/vertical content destinations. This segment includes general content portals (Yahoo!) and more targeted services such as dating websites, general news/consumer publishing or special interest content websites on a diverse range of topics from wine to politics. Revenues are mostly generated through advertising, although some websites charge for access to their services (for example, dating websites and FT.com).

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1 Content Rights are often more complex than described here: an artist may own rights to different elements of a composition and receive royalties out of the revenues collected by the media company.
2 In subsequent analyses we also refer to the main categories of service within these segments where market characteristics are distinct.
Search. This segment consists primarily of web search engines such as Google or Baidu, as well as local/national directories such as Yell in the United Kingdom or Pages Jaunes in France. Revenues are primarily generated from advertising, with sophisticated models such as auctioned keyword references or pay-per-click having established themselves in recent years.

Entertainment. This comprises websites focused on audio-visual entertainment, such as downloads of digital content (iTunes), music and video streaming/online radio (YouTube, last.fm), IPTV, gaming (Xbox Live), gambling (Party-Poker) or adult content. Revenues are generated almost equally from advertising and payments from end-users.

e-Commerce. Many websites sell non-digital products and services. The largest service categories include e-Retail (Amazon), e-Travel (Expedia) and online brokerage (Boursorama.com). Both bricks-and-mortar and pure-play online players are active in this segment. The e-Commerce site operator will collect payment from the customer and retain a margin, with the remainder passed on to the manufacturer or service provider. Online costs are typically much lower than for traditional retailing so that prices are often, although not always, lower. This has triggered substantial growth and a displacement of volumes from traditional retail to e-Commerce for items such as books.

Revenues generated by Online Services therefore originate from a combination of advertising, paid-for access to content and services, and e-Commerce transaction fees.
Enabling Technology/Services
Enabling Technology/Services are generally invisible to the end-user, but are essential for the technical delivery of web content and the generation of revenues. Highly fragmented, these services fall into three broad segments: support technology, billing and payments and advertising services.

Support technology refers to a set of technical services provided to online service providers and includes website design and development, web hosting and technical service platforms (such as content management platforms). Akamai, for example, provides content delivery services through its network of servers that improve the speed and reliability of the connection and manage the network load efficiently on behalf of online service providers.

Billing and payments comprise all payment platforms used to process monetary transactions made by consumers on the Internet—to pay for accessing specific services (such as music downloads) or to conduct online e-Commerce transactions. Beyond payment processing services provided by banks and payment processors such as First Data, there are also pure-play online payment service providers such as PayPal (part of eBay) and Google Check-Out.

Advertising services providers are fundamental to revenue generation for most online service providers. This segment includes four categories:

- Advertising agencies that provide a range of services to their clients, including media campaign planning, ad inventory acquisition for online advertising campaigns, and creative services to design and produce online advertising. They charge commissions based on the total volume of advertising spend and, in the case of large multi-service agencies such as OMD and WPP, online advertising is simply part of their portfolio of client services, albeit a growing part that requires specific skills.
- Dedicated online advertising networks and exchanges such as Doubleclick (part of Google). Ad networks are a technical and payment clearing house for advertising space. They both acquire advertising space on behalf of media buyers and advertisers and sell ad inventory on behalf of Internet websites. They also provide the technical platforms that facilitate the placement of display ads on websites. In some cases, such as Advertising.com (owned by AOL), ad networks will acquire and resell ad inventory with a mark-up.
- Third-party ad serving providers that host and distribute online ads. This is also often performed by the advertising agency that provides the creative services.
- Ratings and analytics service providers that pro-
vide Internet user and usage metrics. Advertisers have the option to buy advertising space either through ad networks, through their regular advertising agency or directly from the website/content publisher.

**Connectivity**

Connectivity refers to Internet access services provided by telecommunications network operators, whether fixed or wireless. Telecommunications markets vary in their structure based on regulatory and competitive dynamics, particularly with regard to the “access layer,” colloquially known as the “last mile.”

Many customers will arrange their Internet access service via their home telecommunications provider, but cable TV companies, independent resellers or service providers and wireless operators provide highly competitive offers in terms of network speed and pricing. These services are typically provided on the basis of a monthly subscription fee, which in some instances can include the fixed-line subscription fee and bundled voice calls and TV subscriptions. As usage volumes grow exponentially for some heavy users, there is debate on the future revenue model, with options including volume-based pricing (benefitting occasional users) or models where the online service provider pays for the customer connectivity to ensure a particular quality of service that matches its content offering.

Also involved in providing connectivity are core network operators that provide the so-called “highways” of Internet traffic transport. Core network operators tend to be remunerated based on the capacity they provide to the access providers. They connect the access network nodes to the “super-exchanges” of Internet traffic, which route global Internet traffic based on technical standards defined by the Internet Corporation for Assigned Names and Numbers (ICANN). Major core network providers exchange traffic with each other on the basis of “peering,” whereby each covers its own costs for installing and operating equipment that interconnects with others. Many providers also procure interconnection on the basis of IP transit, since this is more cost effective at lower traffic volumes.

Both core network and interchange operators tend to be part of large, integrated telecoms operators such as Verizon or BT, but there are specialist companies such as Level 3 or XO.

**User Interface**

The User Interface is an essential part of the Internet value chain, involving both devices (such as PCs, game consoles and mobile phones) and the related software (such as operating systems, web browsers, media players and games) used to render services to end-users. Key players include hardware manufacturers such as Dell, Nintendo, Apple and Nokia, as well as software providers such Microsoft, Real Media and McAfee.

Revenues generated from the User Interface mainly derive from the end-user’s acquisition of the device, which often includes pre-installed software. Subscription models are increasingly common for some applications, such as anti-virus security software. In some cases, software is provided free-of-charge (for example via Internet browsers and media players)—as providers seek to maximize their user base and generate revenues from advertising. In wireless markets, it has been common for the connectivity provider to supply the device on a subsidised basis and recover the cost through ongoing subscription revenues. In some markets there have been trials with laptop computers provided on a similar basis.

The replacement cycle for devices from PCs to wireless phones has been very short, with
a virtuous cycle from the perspective of the players in this segment, as new applications drove a need for stronger device functionality (for example, chip processing speeds) which encouraged customers to upgrade. In the economic downturn, however, many corporate customers sought to slow down replacement cycles for their computing infrastructure. The subsidised model in wireless markets has also become increasingly strained as operators question the profitability of customers acquired on this basis.

4. Market Size and Growth

Internet Market Size

Total revenues generated in the Internet value chain amounted to US$1,930 billion according to our estimates for the year 2008 (see figure 5). Revenues generated from consumer services, the main focus of this paper, amounted to US$732 billion.

Revenues from business services were substantially higher at US$1,195 billion. Eighty percent of these revenues derive from the Online Services market and by far the biggest category here is B2B e-Commerce, accounting for 86 percent of the revenues for Online Services (see figure 6). The Internet has brought substantial efficiency gains to the way in which businesses deal commercially with one another, through electronic data interchange (EDI) services, which offer greater speed and traceability than offline transactions. This has resulted in the rapid replacement of offline transactions with web-based transactions—in 2007 around half of e-Commerce transaction volume between businesses in the United States was already taking place through the Internet. The analysis in Figures 5 and 6 omits the actual value of the goods and services and related fulfilment costs for B2B e-Commerce.

After e-Commerce, the next biggest service category in B2B Online Services is online information services, a US$71 billion market for the provision of professional data on subjects such as finance, healthcare and law. Providers include the likes of Thomson Reuters and Reed Elsevier. Other major Online Services categories are the provision of professional online e-Learning services and Internet communication services, the latter incorporating professional (or corporate) VoIP, email, instant messaging, video-conferencing and machine-to-machine communications.

The Content Rights, Connectivity and User Interface B2B markets largely share the same categories as the consumer market. In the User Interface market, however, it is worth noting that user-paid software and other Internet hardware categories are significantly larger for businesses.
than for consumers. The B2B user-paid software market was worth US$12 billion in 2008, compared to just US$2 billion for the parallel B2C markets. This includes, for example, corporate security and networking applications. The Internet hardware market was worth US$49 billion in 2008, compared to US$7 billion for the parallel B2C market and incorporates the likes of enterprise storage, Ethernet and enterprise routing hardware. The remainder of this paper focuses on the B2C market.

Revenues generated by consumers (B2C) are focused on Connectivity (US$262 billion), User Interface (US$151 billion) and e-Commerce (US$146 billion), which covers e-Retail, e-Travel and e-Brokerage services (see figure 7 on page 12). In other words, a typical household will spend most of its “Internet budget” on the access device (such as a PC with software) and the access connection (such as a broadband subscription), as well as paying substantial sums per year as margin on their e-Commerce purchases. As before, this analysis omits the actual value of the goods and services and related fulfillment costs, so, for instance, the wholesale price of a book sold by a publishing house to an e-Retailer such as Amazon
is excluded and only the gross margin earned by Amazon is included.6

Online Services represent perhaps the most visible part of the industry to the general public, but of the US$242 billion in revenues most are related to e-Commerce while Search and Entertainment generates US$76 billion—10 percent of total value chain revenues. Even high-profile players such as Skype, Facebook and YouTube generate less than a half a billion dollars in revenues each, despite substantial user numbers.

As Figure 8 illustrates, more than 75 percent of the revenues from online advertising and user-paid content and services are concentrated in search and the largest entertainment categories, namely gambling, gaming and adult.

Advertising (mainly Search-related) generates over US$58 billion, or 60 percent of total online search revenues, while the remaining 40 percent comes from payments by Internet users. The ratio of advertising revenue to end-user payments in the Online Services market is similar to the ratio seen in more traditional media such as consumer publishing.

6 Approach based on An Economic Map of the Internet (MIT 2002).
A comparison between global Internet traffic volume (as measured in petabytes7) and the generation of Internet revenues suggests a significant disconnect (see figure 9 on page 14). File sharing, including both legal and illegal downloads and uploads, generates 54 percent of total Internet traffic but only 2 percent of total revenues. Video- and music-on-demand services generated 18 percent of traffic but only 6 percent of revenues. This might explain the concerns raised by a number of Internet Service Providers (ISPs, operating in the Retail Internet Access segment of the market), as traffic transportation costs account for more than 40 percent of their costs yet Internet traffic growth does not, under current pricing models, translate into incremental revenues.8

Internet Growth Perspectives
A.T. Kearney has reviewed the growth trends in each market, strategic segment and service

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7 One petabyte is equal to 1,000,000 gigabytes.
8 This has led to a number of disputes between ISPs and providers of online services, particularly media services. For example, in 2009 the BBC voiced concern that BT was limiting Internet download speeds during peak times, and that this was affecting the user experience of the BBC’s iPlayer video-on-demand service.
category in the Internet value chain and collated growth forecasts from multiple sources (see Appendix on page 22 for details). It is challenging to make long-term forecasts, but for the next three years, we expect Internet revenues to grow at 10 percent p.a. but with substantial differences across the industry value chain.

Figure 10 represents our growth estimates, with the darker-shaded categories of the value chain being those with the strongest growth trajectory. Online Services is one of the most dynamic markets in the Internet value chain, with a growth rate of 16 percent per annum—driven by migration of advertising spend to online formats and increased success in charging end-users for access to audio-visual entertainment services as opposed to illegal downloading. Growth of Connectivity services is set to be moderate at approximately 6 percent p.a., representing a mix of robust growth in emerging markets and in wireless access but a major slow-down of broadband Internet access penetration growth in developed countries and intense pricing pressure. As discussed earlier, the User Interface market should experience the slowest growth at 3 percent p.a. following a period of strong device penetration growth (for example, PCs and game consoles). New devices, such as e-Books, may well provide new growth impetus.
5. Industry Structure and Economics

Structure and Concentration of the Internet Value Chain

The Internet value chain comprises some segments and categories that are global and others that are more local in nature. PCs and operating systems are inherently global businesses, due to the standardised nature of these products and the very high economies of scale. Businesses such as e-Commerce and Connectivity are much more local in nature—although some players might operate in multiple countries (for example, eBay or Vodafone).

Viewed at the global level, the Internet value chain seems highly fragmented, with a few notable exceptions. For categories such as operating systems, smartphones, search, games consoles/services, music and video, the top three market players account for more than 40 percent of the global market and, in some cases, more than 80 percent. This is due to the inherently global nature of these activities and the high economies of scale and/or network effects.
Figure 11 provides a graphic representation of the degree of concentration at a global level of the Internet value chain categories; the darker-shaded categories have higher concentration. e-Commerce appears particularly fragmented at a global level. This is due to the local nature of these activities and specialization of industry players by type of service. Although fragmented when considered at a global level across all retail types, e-Commerce is highly concentrated in some specific areas, that is, at a national level and at a product category level. For example, Amazon has a 53 percent share of the U.S. online book market, which is projected to grow at a CAGR of 44 percent between 2008 and 2013. In Connectivity, concentration at a global level for Network Access is low as this is a fundamentally local business. Market concentration at a country level may be strong, given local economies of scale and the legacy of monopoly infrastructure providers. There are however significant differences across countries. In 2008, the five largest UK ISPs accounted for more than 91 percent of the Consumer market (following a wave of consolidation) while the five biggest U.S. ISPs had a combined market share of 56 percent.

**Profitability in the Internet Value Chain**

A.T. Kearney further attempted to calculate the profitability of the larger players across the value

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Figure 11

Market concentration of the consumer Internet industry (2008)

Notes: * Size of box indicates relative market size (2008)

1 Includes ad networks/exchanges, 3rd party servers, ratings/analytics services
2 Includes other Internet hardware

9 Global Entertainment and Media Outlook: 2009-2013, PWC.
chain. Figure 12 represents our estimates, with the darker-shaded categories having the highest returns (measured as Return on Capital Employed, ROCE). Higher ROCEs (20 percent+) can be observed in User Interface (such as operating systems, PCs, smartphones and games consoles) and selected Online Services (such as e-Commerce, search, gaming, gambling and adult services).

Returns in Connectivity and Enabling Technology/Services appear significantly lower (10 to 15 percent). This is likely due to higher capital intensity, more fragmented competition and in some cases specific regulation of prices and/or margins, as in the case of telecoms services in many countries. Consumer publishing demonstrates returns that are likely below the cost of capital—the problems of this market in responding to the challenge of “free” content have been well documented.

Beyond the mainstream market leaders, the Internet offers multiple niche positioning options—some of which appear particularly profitable. For instance, online nutrition company Nutrisystem delivers a ROCE of nearly 80 percent; the company offers customized online nutrition programs and delivers ready-made meals that can be ordered online.

**Economics of the Internet**

Economic theory would suggest that the highest

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**Figure 12**

Returns on capital employed for market leaders in the consumer Internet industry (2008)

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Notes: * Size of box indicates relative market size (2008)

1 Includes ad networks/exchanges, 3rd party servers, ratings/analytics services

2 Includes other Internet hardware

3 ROCE is based on top 3 players by market share in each category

Source: A.T. Kearney analysis
returns should be earned in categories with high market concentration. Such concentration may be due to high economies of scale and strong network effects (including customer switching costs). Our analysis seems to confirm this for a number of categories, including operating systems, games consoles and smartphones (see figure 13). Categories with low to moderate network effects and economies of scale are expected to deliver modest returns. For example, this is the case for general interest portals and web hosting/design.

Some service categories do not deliver returns in line with what economic theory would suggest. Social networking delivers low returns despite strong network effects. This might result from the emerging and fast growing nature of these services and from challenges to date in monetizing usage. Internet access service providers also deliver low returns, despite high scale effects. Possible explanations might include the highly capital intensive nature of this industry, strong competition, regulation and limited opportunities to differentiate beyond price given legacy technology platforms. Some categories of Online Services may appear fragmented at a global value chain level but actually involve concentrations in national or regional

![Figure 13](image)

**Figure 13**

Network effects and economies of scale for selected consumer Internet strategic categories

<table>
<thead>
<tr>
<th>Network effects/ customer switching costs</th>
<th>Economies of scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Notes:**
- Low: low capex, low operating economies of scale;
- Medium: low capex, high operating economies of scale;
- High: high capex, high operating economies of scale
- Relative weighted average ROCE of top 3 players (where possible)
- Includes e-Retail and e-Travel

Source: A.T. Kearney analysis
markets that underpin stronger profitability. Another exception to common theory would be “vice” services, such as gambling, dating, adult content and gaming. Despite moderate economies of scale and network effects, returns are high (>15 percent) for these services—perhaps due to strong customer willingness to pay.

**Future Outlook**

At a highly aggregated level, the Internet value chain offers a strong growth outlook (10 percent p.a.) and good returns for market leaders (>10 percent and in some cases much higher). Yet, as this paper has shown, it is important to understand differences between service categories. Some categories deliver low returns and face decelerating growth perspectives—for example, web hosting and Internet access provisioning. They may see attempts to consolidate or expand into other parts of the value chain: there are some cases of telecoms companies investing in devices or in content, for instance. Figure 14 shows our estimates of future growth and current returns.

In a number of smaller categories such as social networking, returns are expected to increase

---

**Figure 14**

Forecast growth versus returns of the consumer Internet industry by category

---

Notes: *Size of bubble denotes relative market size 2008 (value in brackets in US$ billions); all categories over $10 billion have same bubble size; bubble border thickness denotes relative barriers to entry, through network effects or economies of scale/capital intensity.*

Based on combined market share of top 3 players.

Source: A.T. Kearney analysis.
substantially as market leaders benefit from greater scale effects and diminishing needs for start-up investment. However, the value chain is dynamic and a number of market leaders in 2010 could in theory be out of business by 2015.

Differences in growth perspectives and returns largely explain diverging market capitalization gains over the last six years (see figure 15). Connectivity and Content Rights have failed to create significant shareholder value—largely due to sluggish market growth prospects and relatively low returns. Online Services and User Interface have delivered the strongest market capitalization growth—due both to strong growth prospects and high returns. Although more impacted by the stock market downturn in 2008/2009, the rebound in these markets has been very strong.

**Concluding Remarks**

This paper has shown some clear trends in terms of the economic performance of the various markets in the Internet value chain. Online Services and some categories of hardware and software at the User Interface show high concentration, rapid growth and high returns, which are reflected in the market capitalisation of their leading players. Content Rights and Connectivity are less concentrated globally and earn returns around 10 to 15 percent, but their market capitalisations have stagnated as investors weigh high capital requirements against continued margin pressure. Strategic moves along the value chain may be expected as players react to these economic trends. Understanding these trends in such a dynamic part of the global economy is a key challenge for the companies involved, for investors and for policymakers.

**Figure 15**

Evolution of market capitalisation by value chain market (base 100 in 2004)

Notes: 1 Average for Disney, NewsCorp, Time Warner, Warner Music Group, Vivendi and Electronic Arts
2 Average for Amazon, Google, Yahoo!, eBay, Baidu, Expedia and Partygaming
3 Average for Akamai, CyberAgent, Google, Valueclick, Verisign and WPP
4 Average for AT&T, Vodafone, NTT, British Telecom, Deutsche Telecom and France Telecom
5 Average for Microsoft, Apple, Dell, Acer, Nokia and McAfee

Sources: Bloomberg, A.T. Kearney analysis
Authors

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Appendix: Report Methodology and Sources of Information

Value Chain Definition
The Internet value chain includes all activities that exist as a direct result of Internet usage. The Internet value chain includes five markets and 15 strategic segments, as described in section 3. Suppliers to segments have only been described when they are specific to the Internet. For example, we did not isolate call center providers or insurance brokers providing services to e-Commerce players, but have included web hosting. Each segment was also further broken down into more detailed service categories—47 consumer categories and 20 business categories. We assessed separately revenues generated by consumers and businesses—given the specifics of business services. These include services such as B2B e-Commerce and exchange platforms, online information services (for example Reuters), and paid-for hosted applications such as email servers, Software as a Service and videoconferencing.

Market Sizing Analysis
All market sizes are based on gross revenues, except where otherwise stated. Revenues generated from other companies in the value chain (for example, through commissions, fees, sales or advertising) are not distinguished from those generated from companies outside the value chain. In other words, this is not a “value-add” analysis for the Internet economy and there are overlaps among revenue categories. For example, revenues from Content Rights overlap with revenues from Online Services.

For all Online Services categories, we have calculated revenues generated from advertising and from end-users. Advertising covers all formats—that is, search, display, lead generation, classifieds, email direct marketing and in-game online advertising. Advertising revenues are calculated on a net advertising value basis (source: IDC). Online Services revenues from end-users include subscriptions, pay-per-use services and digital goods purchases.

ROCE Analysis
ROCE has been used as a key financial metric to evaluate the profitability of companies involved in the Internet value chain. The ROCE calculation used is the company’s EBIT divided by its Capital Employed. Capital Employed is defined as Total Assets less Current Liabilities.

Where ROCE is calculated at segment or category level, we have taken an average for the top 3 players in the category (which report financials), weighted by their 2008 Revenues. In segments where there are no pure players, we have had to apply the overall returns of the leading players in that category or select second-tier pure players. ROCE is calculated using Bloomberg data and annual reports. Focusing on the top 3 does of course exclude the effect of failed companies which may have experienced negative returns in any given year, but we believe that it captures the long term profitability characteristics of the segment for successful players.

Market Competition and Concentration Analysis
To provide a view of the level of competition in each category, we evaluated the combined market share of the three largest companies, at global level.

The HHI index system is a commonly used measure of market concentration. Due to the global scope of our analysis and the nature of the industry, a full HHI indexing would, however, be impossible to conduct with high accuracy.
Therefore, we avoided using this methodology. We do however believe that the results of an HHI analysis would be in line with our current approach, in terms of providing a picture of the relative level of concentration across Internet value chain categories.

### Market Definitions

The definition and market sizing methodology for all service categories are provided here. We only elaborate on the market sizing methodology for cases requiring a specific explanation and not based on an established public source of information.

#### Content Rights

<table>
<thead>
<tr>
<th>Segment</th>
<th>Methodology/Description</th>
</tr>
</thead>
</table>
| Media rights owners    | • Market size is based on the percentage of revenues made by Online Services that is paid to Content Rights owners, either as:  
  — Revenues from digital product sales after commission  
  — Content acquisition or license cost  
  • Online Services categories in scope are: VoD, MoD, IPTV, video gaming, casual games, filmed entertainment sales, digital music sales, electronic book sales, global portals, consumer publishing, adult content  
  • For each category of Online Services we estimated the percentage of total online revenues that would be subject to a revenue share with the corresponding Content Rights owners—based on publically available information and interviews with key industry stakeholders  
| User-generated content | • Revenue received by user-generated content owners is not included in the analysis—but is negligible as is user generated content that is rarely remunerated                                                                                                                                                                                                                                                                                                                                 |

Source: A.T. Kearney analysis

#### Online Services

<table>
<thead>
<tr>
<th>Segment</th>
<th>Category</th>
<th>Methodology/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entertainment</td>
<td>VoD (video-on-demand)</td>
<td>• Websites providing audio-visual content on-demand through a streaming service, funded by either ads or subscription. Excludes adult content (see below).</td>
</tr>
<tr>
<td></td>
<td>MoD (music-on-demand)</td>
<td>• Websites providing audio content on-demand through a streaming service, funded by either ads or subscription</td>
</tr>
<tr>
<td></td>
<td>IPTV</td>
<td>• Television services delivered through an IP connection</td>
</tr>
</tbody>
</table>
|                | Video gaming        | • Websites and applications providing the ability to play console or PC games on the Internet, usually with other gamers, through an interactive streaming service  
  • End users are generally required to purchase a console and game software (through a physical disk or download) in order to play  
  • Includes subscription revenue, in-game online advertising and sale of in-game virtual items  
  • Combined with casual games under “gaming” for parts of the analysis  
|                | Casual games        | • Websites providing Internet-hosted games to end users through an interactive streaming service  
  • End users are not required to purchase a game or gaming device in order to play  
  • Combined with video gaming under “gaming” for parts of the analysis  
|                | Gambling            | • Includes websites providing all types of online gambling services, including betting, casino and other gambling services  
|                | Adult content       | • Websites providing adult content                                                                                                                                                                                                                                                                                                                                 |
|                | Video sales/rental  | • Websites providing the ability to either purchase and download digital filmed entertainment products, or rent physical filmed entertainment products. Excluded from e-Retail                                                                                                                                                                                                                             |
|                | Music sales         | • Websites providing the ability to purchase and download digital music products  
  • Excluded from e-Retail                                                                                                                                                                                                                                                                                                                                                                                                  |
|                | Book sales          | • Websites providing the ability to purchase and download electronic books  
  • Excluded from e-Retail                                                                                                                                                                                                                                                                                                                                                                                                   |

Source: A.T. Kearney analysis
Online Services (continued)

<table>
<thead>
<tr>
<th>Segment</th>
<th>Category</th>
<th>Methodology/Description</th>
</tr>
</thead>
</table>
| General/vertical content sites | Consumer publishing | • Websites operated by newspapers and magazines, usually with similar branding and content  
• Revenues include advertising only  
• The market for paid content on consumer publishing sites remains negligible although many publishers are considering how to change this |
| Online dating | | • Websites offering match-making and communication services focusing on developing romantic relationships |
| Global Portals | | • Selected General Interest Portal and website operators with a global scope, including Yahoo!, MSN, AOL, IAC and their subsidiaries  
• Market sizing includes revenues from all branded product types including webmail and instant messaging but excludes Casual Games and search revenues, which are captured elsewhere |

Search

<table>
<thead>
<tr>
<th>Category</th>
<th>Methodology/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directories</td>
<td>• Websites providing categorised, searchable lists of organisations—typically consists of “Yellow Pages” publishers’ websites</td>
</tr>
<tr>
<td>Web search</td>
<td>• Search engines providing the ability to find information/other websites on the Internet</td>
</tr>
</tbody>
</table>

Communications

<table>
<thead>
<tr>
<th>Category</th>
<th>Methodology/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social networking</td>
<td>• Websites primarily focused on facilitating person-to-person communications through a variety of channels including one-to-one (e.g., in-site delayed and instant messaging) and one-to-many formats</td>
</tr>
</tbody>
</table>
| VoIP | • Companies providing voice communication transmission services over IP networks  
• Only includes third-party VoIP (i.e., VoIP based on bespoke applications downloaded by end-users from a website)  
• Excludes VoIP services operated by telecom operators |

Transactions (e-Commerce)

<table>
<thead>
<tr>
<th>Category</th>
<th>Methodology/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-Brokerage</td>
<td>• Websites providing the ability to buy and sell financial products on the Internet</td>
</tr>
</tbody>
</table>
| e-Retail | • Websites selling goods/services over the Internet; includes marketplaces and auction sites  
• Revenues are based on total transaction value less direct cost of goods/services sold and fulfillment  
• The percentage to be subtracted is an estimate based on company reports for a selection of leading operators |
| e-Travel | • Websites providing travel booking services on the Internet  
• Revenues are based on total transaction value less direct cost of goods/services sold and fulfillment  
• The percentage to be subtracted is an estimate based on company reports for a selection of leading operators |

Source: A.T. Kearney analysis

Enabling Technology/Services

<table>
<thead>
<tr>
<th>Segment</th>
<th>Category</th>
<th>Methodology/Description</th>
</tr>
</thead>
</table>
| Billing and payments | Billing and payments | • Consists of payment processing for online transactions  
• Market sizing is based on total B2C e-Commerce transaction value plus user-paid Online Services multiplied by an estimated average transaction processing fee |
| Advertising | Online ad agencies | • Companies providing services to plan online campaigns and acquire online ad inventory for advertisers  
• Companies that design, produce, host and serve online ads |
| Online ad networks/ exchanges/ other services | | • Companies providing intermediary online advertising services to advertisers  
• Includes companies that acquire ad inventory from websites to resell to advertisers, platforms for buying and selling inventory, or tools to optimise online advertising effectiveness  
• All market size numbers are gross revenues |
| Online ad servers | | • Companies offering technology that places ads on websites  
• Includes third-party ad serving only. Excludes ad serving performed by interactive ad agencies. |
| Ratings/ analytics services | | • Companies offering data and analytics on Internet user and usage metrics |
| Support technology | Content management | • Companies that offer services that allow online services to optimise the flow of content through the Internet (primarily content delivery networks) |
| | Web design and development | • Companies create and code Internet pages |
| | Web hosting | • Companies that provide a service allowing individuals/organisations to store their websites on their servers and make them available on the Internet |

Source: A.T. Kearney analysis
### Connectivity

<table>
<thead>
<tr>
<th>Segment</th>
<th>Category</th>
<th>Methodology/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core network</td>
<td>Core network</td>
<td>• Companies that own and operate the core telecommunications network, providing wholesale services to Retail Access Providers (which may be a division of the same company as the core network provider, but typically with some degree of regulatory separation)</td>
</tr>
<tr>
<td>Interchange</td>
<td>Interchange</td>
<td>• Operators providing the “super-exchanges” of Internet traffic between core network operators • There are limited standalone/independent interchange operators, besides Level 3 Communications and XO Communications, which are both U.S. operators • In the majority of other major markets, Interchange is provided by large network operators</td>
</tr>
<tr>
<td>Retail Internet access</td>
<td>Retail Internet access</td>
<td>• Companies providing access to the Internet, typically known as ISPs • Includes both fixed and mobile Internet access; excludes charges for voice calls, TV and fixed line rental • For the market concentration analysis, we took the leading players in three major markets (U.S., Japan and France) and evaluated their share of the total global market. This is notwithstanding the fact that retail access providers largely operate on a local basis.</td>
</tr>
</tbody>
</table>

Source: A.T. Kearney analysis

### User Interface

<table>
<thead>
<tr>
<th>Segment</th>
<th>Category</th>
<th>Methodology/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devices</td>
<td>Games consoles</td>
<td>• Personal gaming devices and software with the ability to connect to the Internet • Based on total worldwide sales multiplied by the percentage of gamers who play online</td>
</tr>
<tr>
<td></td>
<td>Operating systems</td>
<td>• Based on total worldwide sales multiplied by the percentage of PCs bought by consumers (as opposed to businesses), multiplied by the estimated percentage of consumer PC time spent on the Internet • We assume for simplicity equal average purchase price for consumers and businesses</td>
</tr>
<tr>
<td></td>
<td>PCs</td>
<td>• Based on total worldwide PC sales, multiplied by the percentage of PCs bought by consumers (as opposed to businesses), multiplied by the estimated percentage of consumer PC time spent on the Internet • We assume equal average purchase price for consumers and businesses</td>
</tr>
<tr>
<td></td>
<td>Smartphones</td>
<td>• Mobile handsets offering Internet access • Based on total worldwide smartphone sales, multiplied by the percentage of smartphones bought by consumers (businesses excluded) • We assume equal average price for consumers and businesses</td>
</tr>
<tr>
<td></td>
<td>Other Internet access hardware</td>
<td>• Peripherals allowing other devices to connect to the Internet and enabling usage of online services (e.g., modems, routers and webcams)</td>
</tr>
<tr>
<td>Applications*</td>
<td>Applications</td>
<td>• Other applications providing tasks relating to Internet usage, including endpoint, messaging, web and IAM software sales multiplied by the percentage of sales to consumers (as opposed to businesses) • For this percentage we took the same percentage split as for Internet access hardware</td>
</tr>
</tbody>
</table>

*Also includes Internet browsers and media players, however these have generally not been provided on a paid-for, stand-alone basis

Source: A.T. Kearney analysis
**Business-to-Business**

The additional clarifications in the chart below only relate to those B2B categories that we felt required additional explanation of methodology and assumptions not covered in the overall report methodology, or where our approach is different to the equivalent category in the consumer Internet economy.

<table>
<thead>
<tr>
<th>Segment</th>
<th>Category</th>
<th>Methodology/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Rights</td>
<td>Content Rights</td>
<td>• Market size is based on the percentage of revenues made by Online Services paid to Content Rights owners, either as:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>— Revenues from digital product sales after commission</td>
</tr>
<tr>
<td></td>
<td></td>
<td>— Content acquisition or license cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The categories in scope are: corporate e-Learning, information services and professional digital book sales</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For each category we estimated the percentage of total online revenues that would be subject to a revenue share with the corresponding Content Rights owners</td>
</tr>
<tr>
<td>Online Services</td>
<td>Communications</td>
<td>• Includes revenues from business VoIP (58 percent), email (17 percent), instant messaging (2 percent), video conferencing (11 percent) and machine-to-machine communication (12 percent)</td>
</tr>
<tr>
<td></td>
<td>Corporate e-Learning</td>
<td>• Web-based enterprise education and training programmes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Includes professional digital book downloads</td>
</tr>
<tr>
<td></td>
<td>e-Commerce</td>
<td>• Commercial transactions between businesses over the Internet, generally through electronic data interchange</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The approach and assumptions taken are for consumer B2B, i.e., transaction volume less cost of goods sold and fulfilment costs</td>
</tr>
<tr>
<td></td>
<td>Information services</td>
<td>• Online business information services estimated based on percentage of sales that are online for a basket of information services genres (e.g., legal, tax, healthcare)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Includes advertising revenues from digital trade magazines (accounting for less than 3 percent of total for this category)</td>
</tr>
<tr>
<td></td>
<td>SaaS/MFT</td>
<td>• Online revenues from businesses from Software-as-a-Service products and from professional Managed File Transfer services</td>
</tr>
<tr>
<td>Devices</td>
<td>Other Internet hardware</td>
<td>• Peripherals allowing other devices to connect to the Internet and enabling usage of Online Services (e.g., modems, routers and webcams)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Business hardware includes enterprise video conferencing, Ethernet, enterprise storage and routing</td>
</tr>
</tbody>
</table>

Source: A.T. Kearney analysis
Sources of Information
Market sizing and profitability estimates in this report are based on a large set of recognized sources of information—both primary and secondary. Primary research includes interviews with experts in the field of online media and the Internet value chain, including both A.T. Kearney and external experts. We thank interviewees for their time and openness in supporting this research paper.

The data collected from financial statements and press releases by companies in the Internet value chain has been primarily used to estimate total market size and growth, market concentration levels and ROCE for each category. For market sizing, ROCE and market concentration analyses, we used 2008 data where possible. At the time of writing, this is the latest year for which full-year company financial data was widely available. For market growth estimates, we used a five-year forecast covering the 2008-2013 timeframe.

Secondary research covers a broad range of publicly available research resources. Many market size and growth forecasts are from Telecoms/Media/Technology industry research reports such as PwC’s Global Media & Entertainment Outlook, and general industry and category-specific forecasts are from research companies such as Forrester, Gartner, Screen Digest, Business Insights and Ovum. We also used relevant industry broker reports. For Internet traffic and usage data, we used sources such as IDC, ComScore Media Metrix, Nielsen Netratings, Hitwise, Zenith, Bloomberg, OneSource and Reuters Knowledge.

In addition to industry-specific reports, we have also drawn on general economic/macro research reports, including reports by the OECD, ITU, Pew, IAB, U.S. Department of Commerce and Economist Intelligence Unit. Most exhibits include a reference to the primary sources used but some are composites of multiple sources, together with A.T. Kearney assumptions and are therefore sourced as “A.T. Kearney analysis.”
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