JULY 2018

BERNSTEIN

DISRUPTION EVERYWHERE

There's an almost obsessive interest in disruption today as a wide range of industries grapple with a level of transformation not seen since the dot.com era. And while there are meaningful differences, Internet 1.0 remains instructive. What do lessons from the late 1990s teach us about the disruptive forces facing companies today? We've identified three key takeaways—insights that enhance our ability to invest in those companies, whether disruptors or incumbents, that are best positioned to generate sustainable profits going forward.

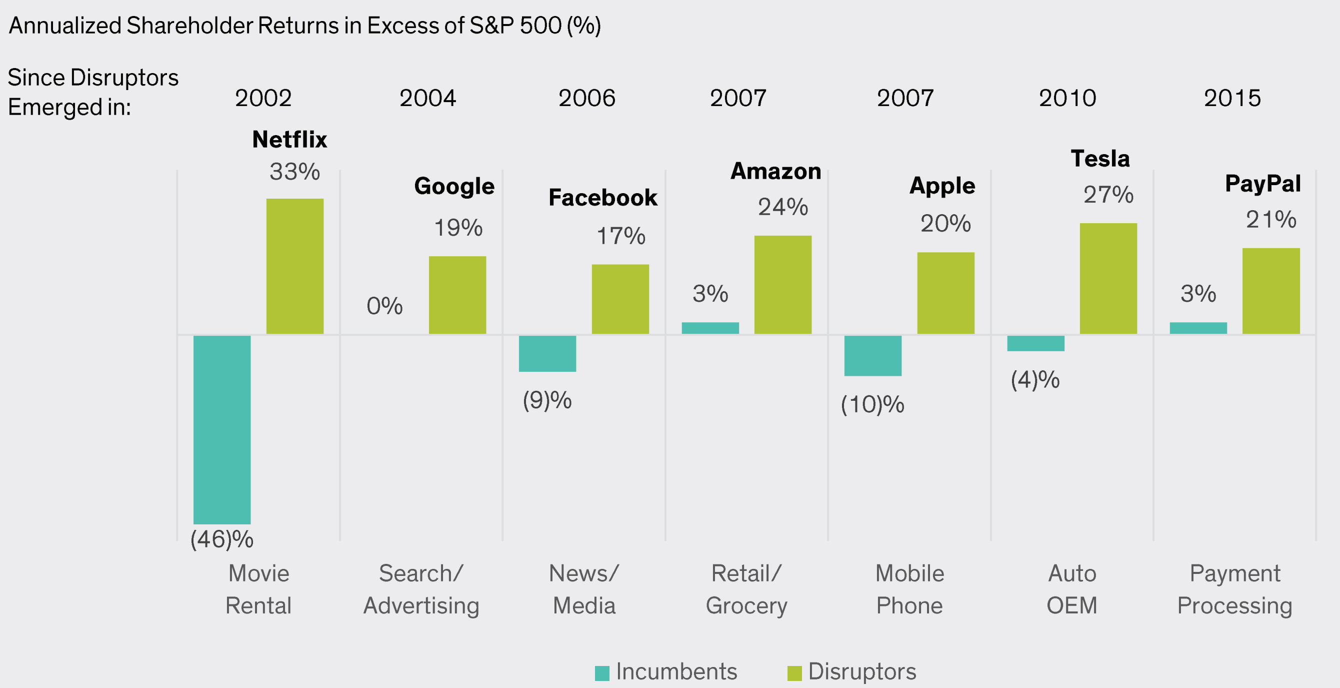
Today, the so-called Fourth Industrial Revolution is causing profound, and highly disruptive, changes across industry after industry (*Display 1*). Emerging technology breakthroughs in fields like artificial intelligence, machine learning, digital analytics, and connectivity—coupled with unprecedented processing power and vast amounts of data—are fueling exponential rates of transformation.

The current fascination with disruption echoes that of the late 1990s. The heady days of the early Internet laid the groundwork for many of today's most exciting developments, forging changes more far-reaching than even its biggest boosters could have imagined.

Now, with the cost of computing having fallen dramatically, the Internet has matured and billions of people carry it around with them in their pockets.

Of course, investors can point to other notable differences. In hindsight, the dot.com era remains primarily defined by irrational valuations. While innovators also command a premium today, equity values hover nowhere near the stratospheric levels reached then. Nevertheless, the exuberance of the Internet gold rush does offer some important lessons that we've internalized: initial disruptors don't always win; established companies don't always lose; and the path to profitability matters.

DISPLAY 1: TRANSFORMATIVE THREATS ARE ROCKING INDUSTRY AFTER INDUSTRY



As of April 2018
Note: Emergence of disruptors selected based on either IPO date or the date of introduction of a product/service in direct competition with existing offerings from incumbent companies. Incumbents include a representative portfolio of historical market leaders.
Source: Citi GPS, FactSet, AB

INITIAL DISRUPTORS DON'T ALWAYS WIN

The path to challenging—and ultimately disrupting—a well-entrenched incumbent is never easy and rarely linear. Capital constraints and lack of scale in the early years often present serious hurdles for new entrants. Even upstarts that initially gain traction and help reshape their industries may in turn find themselves knocked from pole position.

Countless Internet-based retailers pursued disruptive paths in the late 1990s, but only a handful prospered—a phenomenon that holds true across industries. Palm and BlackBerry both secured a first-mover advantage in the smartphone category, only to be displaced for a time by Nokia and Motorola. Today's dominant players? Apple and Samsung. Then there's Napster. Before its demise, the startup completely revolutionized the way we listen to music and upended the revenue model for the industry. Yet music streaming services are currently led by Apple Music and Spotify.

EARLY STUMBLES, SECOND CHANCES

Few investors can speak more to the fallibility of initial disruptors than SoftBank's Masayoshi Son, a Japanese telecom and early Internet entrepreneur. By the end of the 1990s, SoftBank held stakes in hundreds of Web 1.0 ventures. Though 99% of the conglomerate's value disappeared when the dot.com bubble deflated, its $20 million investment in Alibaba (now worth $140 billion) ranks among the most lucrative in history.

Today, at the helm of SoftBank's Vision Fund, Mr. Son is counting on ridesharing as one of the best ways to profit from wider disruption in the auto sector. The Fund has poured $20 billion into an array of ride-hailing firms, including Ola of India, Singapore's Grab, China's Didi Chuxing, and its recent 15% stake in Uber (*Display 2*). Yet, aware that initial disruptors don't always win, Mr. Son is spreading his bets. In early June, SoftBank also announced a $2.25 billion investment in GM's self-driving vehicle efforts.

Little doubt remains that ridesharing companies have already upended the status quo when it comes to personal mobility—and, that ever-greater disruption is ahead for the auto industry. But, early stage investing in initial disruptors tends to be a high-risk, potentially high-reward proposition. History tells us that early market share does not always predict long-term success. Only time will tell if these investments pay off—and whether the Son will rise again.

DISPLAY 2: SOFTBANK VISION FUND IS DIVERSIFYING ITS GLOBAL RIDESHARING PORTFOLIO

As of December 2017

1 Investment in Uber is held by a subsidiary of SoftBank Group Corp. and may be offered to SoftBank Vision Fund in the future, subject to applicable consents and regulatory and other approvals.

2 Investments in DiDi are held by SB Delta Fund (Jersey) L.P. and other subsidiaries of SoftBank Group Corp. outside SoftBank Vision Fund.

3 Investments in Ola and Grab are held by SoftBank Group Corp. and its affiliates.

The portfolio companies identified herein reflect a subset of SB Investment Advisers' (the "Manager") managed investments as well as investments held by SoftBank Group Corp. and its affiliates, and are provided to demonstrate SoftBank's global ridesharing portfolio. The specific investments identified herein do not reflect all of the investments made by the Manager and no assumption should be made that the investments discussed herein were or will be profitable. It should not be assumed that investments made in the future will be comparable in quality or performance to the investments described herein.

Source: SoftBank investor presentation, AB

THE DISRUPTED DON'T ALWAYS LOSE

Not every first mover makes it to the winner's circle, but neither should incumbents be dismissed. Displacing deep-pocketed scale players isn't easy. They have the financial firepower to respond strategically to disruptive threats—and the runway to fine-tune should initial efforts fall flat. Our research challenge is to determine which incumbents have the ability, agility, and resources to develop effective strategies to compete.

Consider Walmart, which initially struggled along with other big-box retailers as Amazon eroded its primary competitive advantages: price and assortment. In the pre-digital era, Walmart's core strategy relied on customers' weekly grocery trips to generate ancillary purchases of other items. The company's initial e-commerce efforts attempted to extend this model online and slow Amazon's march as it expanded its reach. Doing so required a substantial investment in fulfillment and logistics, essentially adding retail capacity at a time of intensifying competition. The efforts were largely unsuccessful: By 2011, Walmart's e-commerce revenues had only reached $4.9 billion of $418.5 billion in global sales compared to Amazon's $48 billion, according to analysts' estimates.

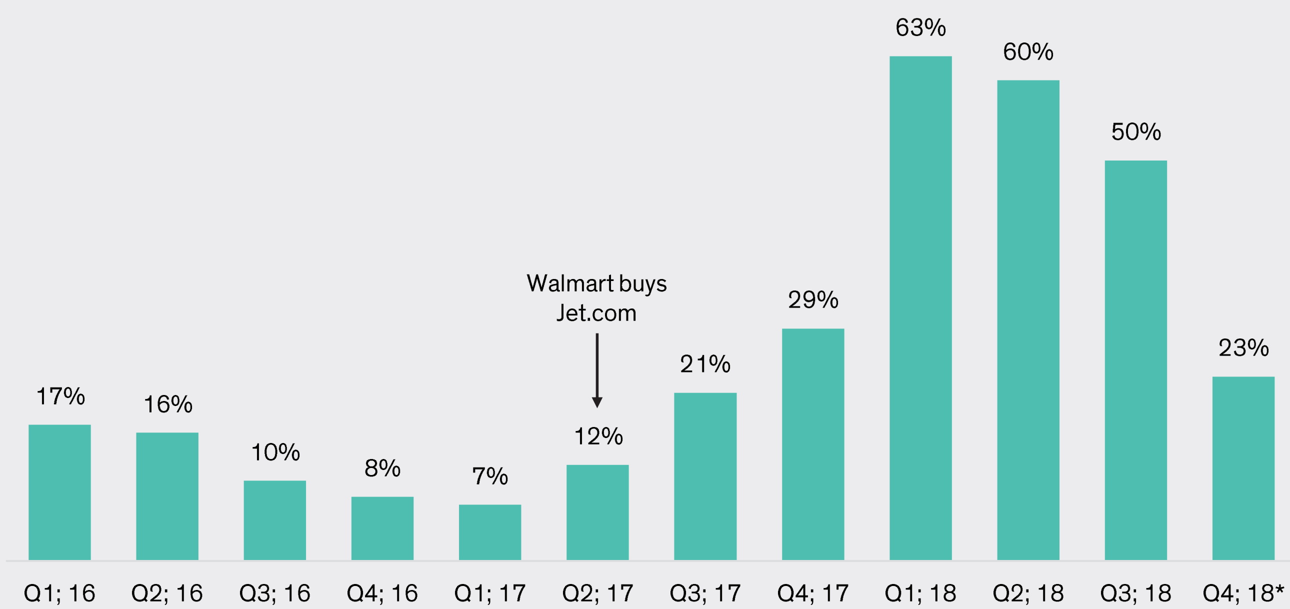
But more recently, Walmart has shifted from defense to offense. Investments in online search and analytics, a multibillion-dollar e-commerce acquisition spree, and a complete revamp of its online marketplace have begun to bear fruit. With $11.5 billion in online sales in the fiscal year ending January 2018—versus Amazon's $37.3 billion in North America for 4Q17 alone—Walmart remains a distant challenger. However, we think Walmart's online strategy seems to have found its footing with its recent purchases of Jet.com, ModCloth, Bonobos, Moosejaw, Flipkart, and Shoebuy (*Display 3*). Beyond the physical assets and customers, Walmart is poised to benefit considerably from the new talent and e-commerce expertise each acquisition conferred.

THE RACE TO OMNICHANNEL

Rather than try to "out-Amazon Amazon," Walmart's latest e-commerce strategy aims to leverage its physical assets—its logistics network and constellation of stores located within 10 miles of 90% of America's shoppers. It's a shrewd approach that may give the retailer a leg up in the battle for Amazon's next target: online grocery. The move comes as no surprise. Online grocery spending as a percentage of total grocery sales is projected to climb from under 5% at the end of 2017 to over

DISPLAY 3: WALMART'S ONLINE STRATEGY IS GAINING MOMENTUM

Walmart E-Commerce Quarterly Year-over-Year Sales Growth



As of January 31, 2018
*Walmart's Fiscal Year 2018 (or Q4 – FY2018) ends on January 31, 2018
Source: 1reddrop.com, Walmart, AB

8% by the end of 2022—a compound annual growth rate 10 times higher than in-store grocery sales (*Display 4*).

In June 2017, both Amazon and Walmart made back-to-back announcements reflecting their belief that the future of retail lies in combining online with physical presence.[1] This move toward omni-channel retailing—which offers consumers a choice between online, smartphone, and physical stores—is drawing Amazon and Walmart ever closer into combat. And, with $500 billion in annual sales, Walmart remains one of the few traditional offline retailers with the firepower to take on Amazon head-to-head.

Walmart's evolution underscores why investors should not underestimate an incumbent's ability to meet competitive challenges, even when they're slow off the mark to respond. We believe that understanding management's approach to defending against or capitalizing on disruption remains paramount.

PATH TO PROFITABILITY MATTERS

Gauging disruptive forces entails more than just consulting the leader board. As the dot.com era showed us, the pace of new product adoption and the path to profitability also matter. There are numerous examples of early Internet ventures that failed, only to have the same idea reborn as a profitable and ultimately highly successful venture in Web 2.0. While lack of capital after the tech bubble burst starved some promising companies, countless others received initial funding based on dubious business models.

Take Webvan, an online grocery and delivery service launched in 1999. While the idea appealed to customers, it was ahead of its time given the low Internet penetration in those years. Flush with over $1 billion from venture capital and an IPO, management expanded geographically at breakneck speed. Besides delivery, Webvan warehoused all its own merchandise, adding logistical complexity. A billion-dollar investment in automation to handle orders that failed to materialize sealed the company's fate. Management filed for bankruptcy in 2001.

While Webvan is often cited as a poster child for dot.com-era excess, its founders had struck upon a real need. Time-starved consumers were willing to pay for home delivery of weekly groceries. Unfortunately, management made a series of grave miscalculations. And they were simply too early: it would be years before shopping online would become the default for even the earliest adopters.

DISPLAY 4: ONLINE GROCERY COULD BE THE NEXT BATTLEGROUND

Online grocery sales to grow 10× faster than in-store
5-year CAGR ending 2022 (excluding inflation)

As of May 2, 2018
There is no guarantee that forecasts will be met.
Source: Brick Meets Click Online Grocery Forecast—2018

1 Amazon announced its $13.7 billion bid for brick-and-mortar grocer Whole Foods while Walmart unveiled its $310 million bid for the online apparel retailer Bonobos.

BOOSTING THE BOTTOM LINE

But it's more than just being in the right place at the right time. Today, the Internet gives upstart companies a direct route to consumers, decreasing the cost to acquire customers while accelerating the rate of adoption for products or services that resonate. This has created a whole new category of asset-light businesses with relatively low levels of capital intensity. All of which makes it easier for companies today to achieve profitability sooner.

For instance, within social media, it took the Internet nearly 10 years to reach 100 million customers, Facebook four years, WhatsApp two years, and Instagram only nine months (*Display 5*). Whereas market share or "eyeballs" reigned in the early days of the Internet, today we focus on how those users will be monetized.

Facebook is emblematic of this newfound focus on profitability. Since its bumpy 2012 IPO, Facebook's management has launched dozens of initiatives to maximize revenue generated per active user. This has helped boost its bottom line every year since the firm first turned a profit in 2013. The majority of revenues are driven by advertising while ongoing improvements in data analytics allow Facebook to reach target audiences at a substantially lower cost than traditional ads. Though recent concerns about privacy raise the risk of attrition, Facebook users have proven remarkably sticky despite the outcry. Still, we believe the company will need to enhance efforts to address public concerns as sentiment could change quickly, with negative implications for profitability.

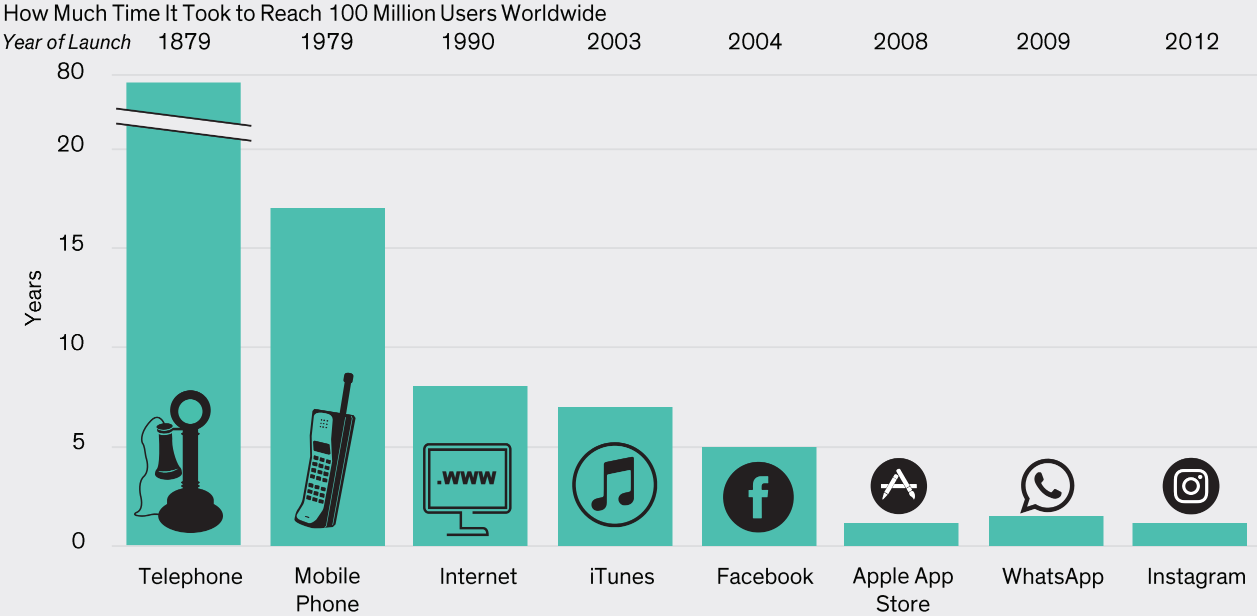
PUBLIC PRESSURES

Unlike Facebook, Tesla has yet to find a way to convert customer loyalty into a profitable business. Few doubt that Tesla's innovation has shaken the status quo—both in electric vehicles and self-driving technology. And, Tesla's customers express near fanatical devotion to the brand.[2] Pre-orders of its Model 3 exceed the annual sales of the BMW 3 Series, despite no advertising and a one-year-plus wait time.

However, production delays have prevented Tesla from capitalizing on the dramatic acceleration in electric vehicle adoption. Failure to resolve these issues may cost Tesla its first-mover advantage in the automotive arms race as most major competitors invest heavily to close the gap. And, as a highly capital-intensive, publicly traded company, Tesla must contend with shorter-term investor demands on its journey to profitability.[3]

DISPLAY 5: FASTER ADOPTION RATES CREATE A TAILWIND FOR PROFITS

How Much Time It Took to Reach 100 Million Users Worldwide



As of January 2018

Source: Boston Consulting Group ITU, BCG research, Business Insider, Digital Quarterly, Fortune, Internet Live Stat, iTunes, mobilephonehistory.co.uk, OS X Daily, Scientific American, Statista, TechCrunch, VentureBeat, Wired, AB

2 "TSLA: Our Survey of 286 Tesla Owners: The Great, the Good and the Not So Good." August 1, 2017. Source: Sanford C. Bernstein

3 Compare the pressure on Tesla to reach profitability to another upstart in the auto industry: Uber. Privately held and venture-capital backed, Uber remains somewhat insulated from similar demands to reach profitability.

The firm's accelerating cash burn and a marked shift in investor sentiment may make future access to much-needed capital more difficult.

Tesla's struggles remind us of the glare of public pressures. That could help explain a common nexus among many of the new issuers of recent tech-related public offerings. While not all are profitable, most are generating substantial revenues. Some appear to have postponed profitability to gain a foothold and grow share in rapidly evolving markets. But over time, equity market returns are driven by corporate earnings. While investors may give promising yet unprofitable companies some runway, they must see the path to profitability before committing long-term.

SEEING THE FOREST AND THE TREES

Research shows that investors tend to overestimate the impact of transformative technologies in the short term and their ability to pick the "winners." At the same time, they underestimate the impact of disruptive forces on industry structure and profitability in the long term. Investors wildly embraced the early days of the Internet, but after a dramatic shakeout, the landscape changed in more ways than early enthusiasts ever dreamed. Likewise, today we believe that exponential progress and technological synergies are resulting in extraordinary, and extremely disruptive, changes around the world. And, in many cases, the early rumblings are only just beginning to be felt.

In-depth, fundamental research is critical to understanding the ultimate impact on industry dynamics and profit pools. While companies at the forefront of innovation may or may not make sound investments, we study them nonetheless. Why? To understand the shifting landscape and the long-term impact disruption will have on the prospects for individual companies within those industries. Some of the takeaways from Web 1.0—initial disruptors don't always win; established companies don't always lose; and the path to profitability matters—help us look beyond the veneer of innovation to those companies best positioned to survive.

WIN, LOSE, OR DRAW: DISRUPTORS RESHAPE INDUSTRIES

Disruption matters to investors because it has tremendous power to alter the distribution of profits. Transformative forces can shift the balance of power both within industries and between companies and their customers. And, disruption is often felt well beyond the initial impact. Whether initial disruptors make attractive investments or not, investors ignore disruptive forces at their peril.

For example, AOL changed the way that people accessed the Internet and, for many Americans, provided their first gateway to the World Wide Web. Well after AOL's peak, we still see the ripple effect of the disruptive forces it unleashed. Traditional media has been completely upended in the intervening years, as advertising revenues and profits have migrated online (*Display 6*). Yet beyond that, the rise of e-commerce continues to disrupt brick-and-mortar retailers. And e-commerce represents more than just a new channel. It has changed shopping behaviors while offering a direct route to the consumer, further accelerating the pace of innovation.

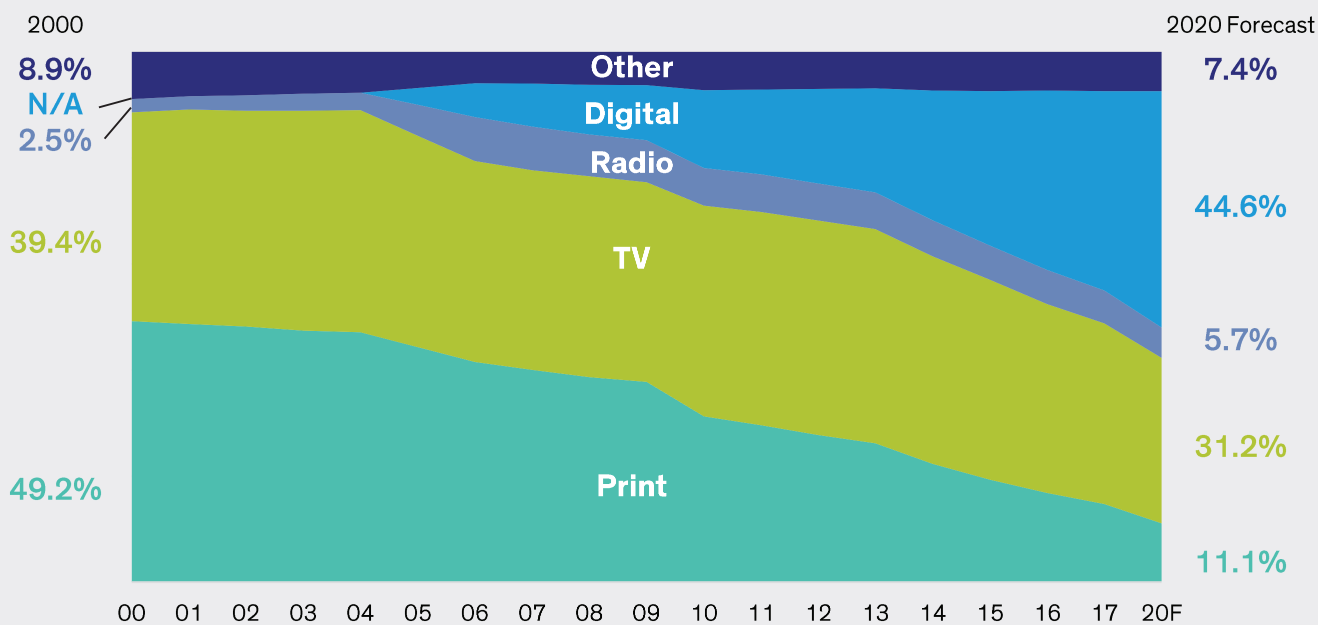
Consider packaged consumer goods companies, which traditionally relied on scale and mass media to purchase supermarket shelf space and national advertising. The combination used to present an almost impenetrable barrier to entry. Today, the fragmentation of media and the advent of low-cost precision marketing—along with new routes to market stemming from e-commerce platforms—gives upstart brands a much better chance to establish a foothold.

Likewise, today's developments in artificial intelligence and machine learning are being applied to an ever-increasing list of applications in retail, transportation, healthcare, and finance. Rapid innovation is enabling technology companies to cross traditional sector boundaries. For example, new entrants rather than traditional automakers are primarily driving research and development in both electric vehicles and driverless cars. And artificial intelligence is shaping data analytics. When coupled with digital connectivity, machine learning is reinforcing direct consumer access, cutting out the traditional middlemen in many industries.

These applications will impact industry profit pools and the balance of power for decades to come. As technology and consumer behaviors continue to evolve, our research focuses on the long-term earnings growth potential of both disruptors and the disrupted. Only those companies that can translate innovation to sustainable earnings growth will be the winners over time.

DISPLAY 6: THE RISE OF DIGITAL MEDIA HAS HAD A RIPPLE EFFECT

Share of Ad Expenditure by Medium



As of March 2018

There is no guarantee that forecasts will be met.

Source: McKinsey, Zenith Media, AB

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