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*Transportation  
invests for a  
new future*

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Automation is  
rapidly accelerating  
and disrupting the  
industry

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# Executive summary



**The replacement of labor with capital** is a broad trend in the U.S., but in few sectors has it been as evident or as profitable as it has been in transportation. On a compound annual basis, in the last 10 years almost no sector has increased its capital spending more than transportation, and almost no sector has seen faster growth in revenue per employee.

In the past, selling an airplane ticket or scheduling a freight pickup required greeting a customer at the counter or over the phone, and transportation companies invested heavily in their staffs. They needed to, in order to make the customer experience as smooth as possible. Digital technology and automation have altered that dynamic and, as a result, they are now the main targets of transportation companies' investments.

This shift from a workforce-based advantage to a capital-based advantage will require substantial changes in how transportation companies are positioned, their planning abilities, and the design of their operating models. Transport companies shouldn't make the mistake of thinking their future workforces will be smaller but otherwise similar to today's. In fact, most transportation companies — whether B2C or B2B — will need to invest in some very new capabilities if they are going to have a chance of winning in the future. Recent developments suggest these changes are coming with surprising speed.

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# *A sea change in customer expectations*

When we take a trip by train or plane, we often make the reservation without ever speaking to a human being. Our boarding pass is likewise something that we get by ourselves, using an app on our smartphone or printing it out at home or at an airport kiosk. We place a call or visit the ticket counter only if we have to make a late change or if there's a problem.

Increasingly, we want the same easy, self-directed process when we rent a car. We want to reserve the car and drive away with minimal human interaction and without ever having stood in line. Whether with the help of a car-sharing service like Zipcar or a traditional rental car company that is embracing the idea of self-service, that's the experience we're getting.

It is not only in the B2C realm that technology is changing transportation. The B2B segments of transport are being transformed with sortation devices and other solutions that the trucking, rail, and airfreight industries are using to replace human labor. You wouldn't ask a person to stack cargo in a train or plane if you had machines that could do it faster, more cost-effectively, and more safely. Even the sales function in B2B transportation is increasingly migrating to online platforms, eliminating the need for human interaction.

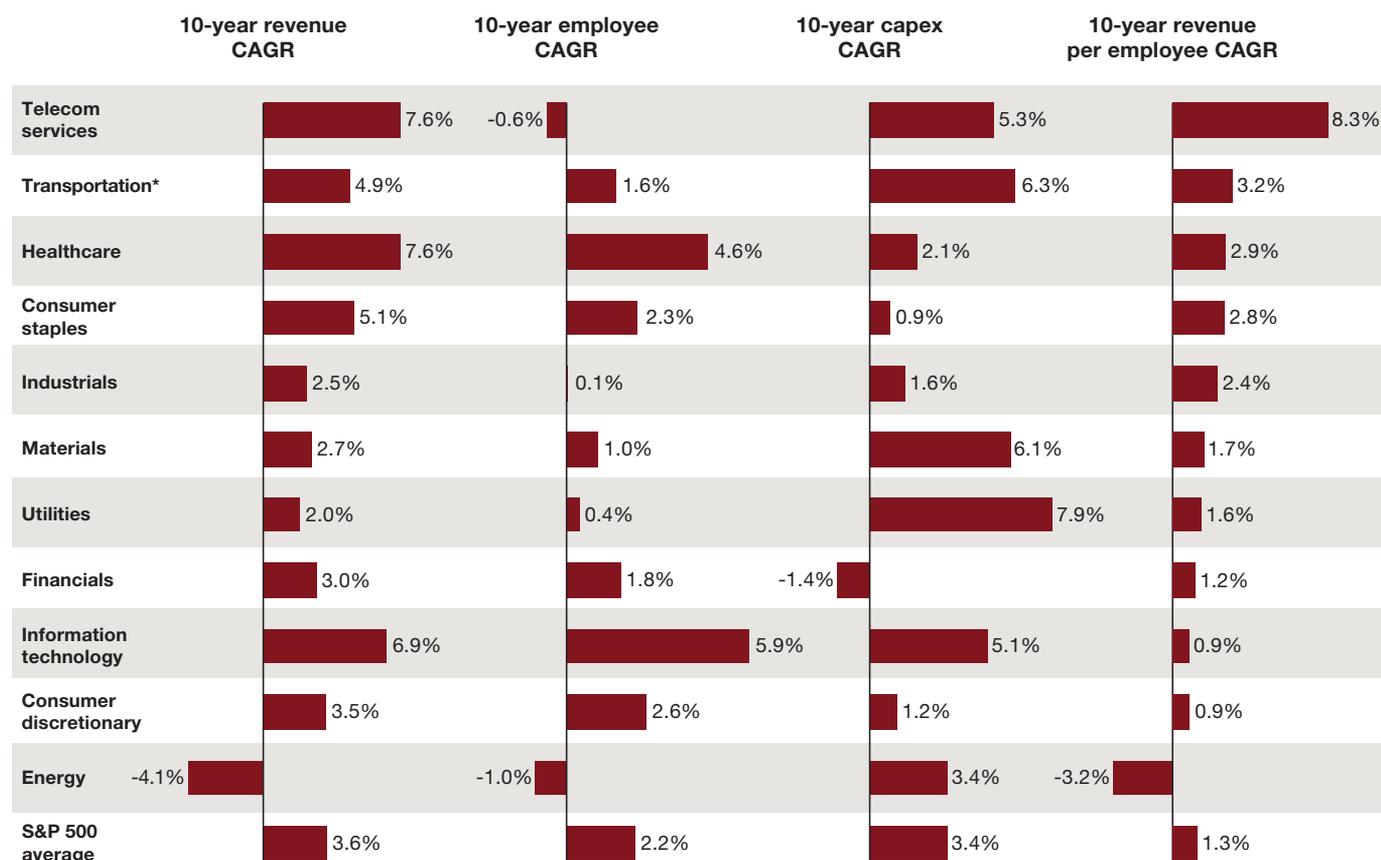
The replacement of labor with capital is a broad trend in the U.S., but in few sectors has it been as evident as in transportation. The airline, railroad, and trucking industries have all made heavy capital investments in the last decade, at rates far faster than they've added employees (*see Exhibit 1, next page*). Among all sectors, only telecom services shows a more dramatic shift in its emphasis on capital spending over head count — a fact easily explained by the shift away from landline toward wireless.

As a result of all these changes, the transportation sector has reached a turning point. Each company must reexamine its strategies and workforces based on industry-wide changes. In a sector as multifaceted as transportation, the changes that make sense for an airline or car rental company are going to be very different from the changes that make sense for a major freight and logistics company.

*The airline, railroad, and trucking industries have all made heavy capital investments in the last decade.*

Exhibit 1

More investment in capital and less in labor



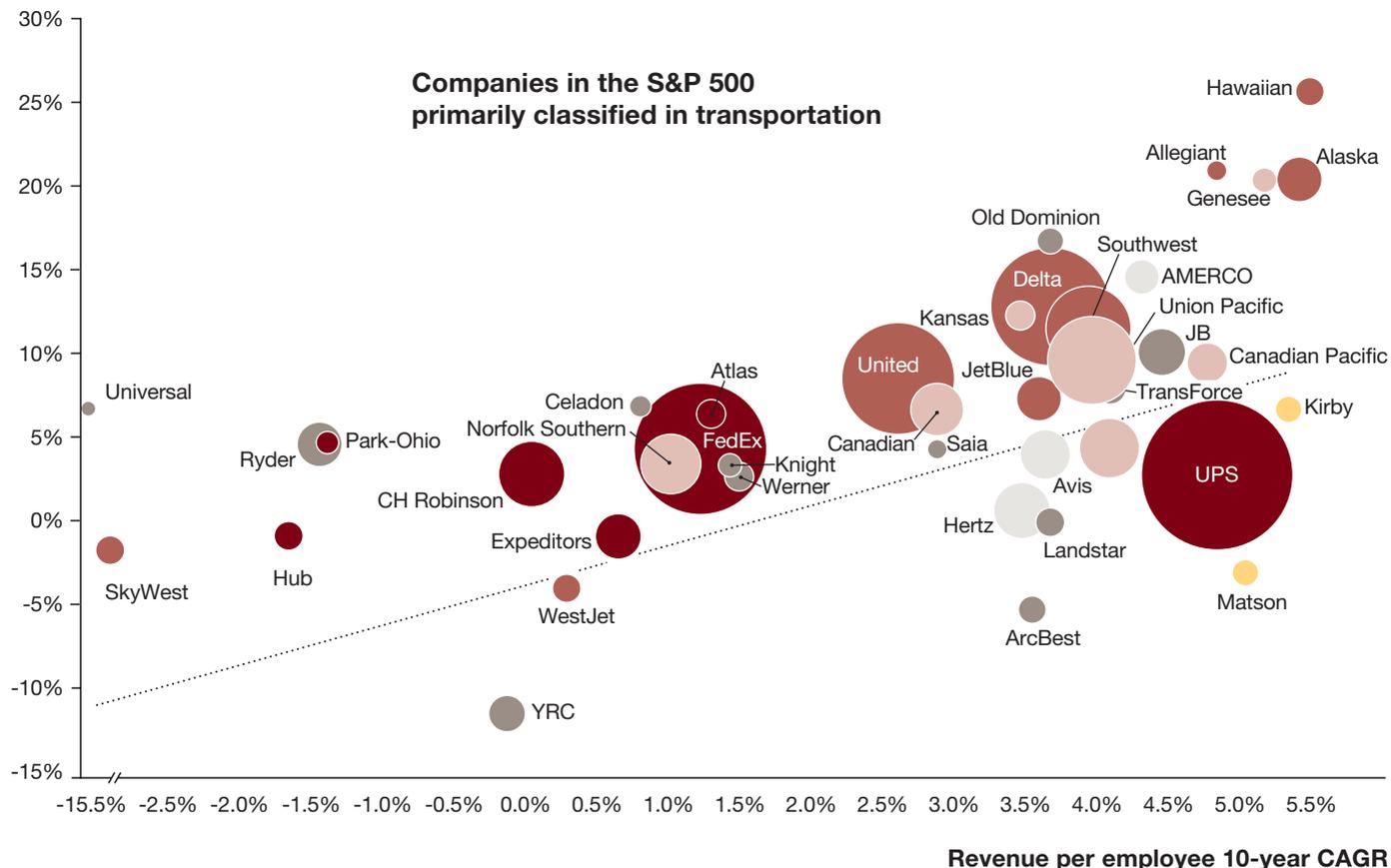
\*Transportation is a subset of industrials sector.

Source: Capital IQ data for 2006–16; Strategy& analysis

But the steps of getting to a future in which a company has the right investments in the right places — what we call being “fit for growth” — are the same no matter which transportation segment a company is in. And the evidence suggests that substantial rewards — in the form of increased enterprise value — are already accruing to transportation companies that are rapidly replacing labor with capital, based on our comparison of transportation companies in the S&P 500 index (see Exhibit 2, next page).

*Exhibit 2*  
**Higher productivity means better returns**

**Enterprise value  
 10-year CAGR**



- Airfreight and logistics
- Airlines
- Railroads
- Trucking
- Rental
- Marine

Note: Bubble size reflects revenue.

Source: Capital IQ data for 2006–16; Strategy& analysis

As transportation companies consider how these industry-wide changes will affect their futures, there are three actions they should take, detailed below. The first is to reassess — and, if necessary, begin to adjust — their strategies in light of the changes taking place in their industries. This includes figuring out whether they need to invest in any new capabilities or cut back on any investments that the market no longer values. The second action is to improve how they go about planning and performance management, since change will be impossible without a disciplined approach. And the third action is to challenge their operating models — that is, changing how they organize their regional operations and their support functions.

### ***Action 1. Establish a differentiated, capabilities-driven strategy***

Up until the last few years, the predictable factors affecting transportation companies' environments prompted many to seek advantage by investing their capital in industrial assets with significant revenue-producing potential, including new facilities or bigger, more modern fleets. In many cases, the companies' differentiating capabilities — that is, the set of things they do to create value for customers — have had to do primarily with how they manage those assets in order to get customers or cargo from point A to point B quickly and reliably. A second differentiating capability for many transportation companies has been their ability to continually increase their efficiency (for instance, by increasing speed and/or reducing miles traveled), a discipline that has allowed them to operate at lower unit costs.

These capabilities have lost some of their primacy in a world in which technology — sometimes explicitly in response to customers' preferences — is replacing labor. In the car rental business, to take one of the most obvious examples, the day is fast approaching when the customer-service counter will be a relic. With these kinds of changes in preferences, retention strategies in all sorts of consumer-facing transportation industries will need to be rethought. For many companies, that process has already begun.

Similarly, once there is a way of using robots to replace dockworkers or even drivers, a company in the business of delivering physical goods won't be able to set itself apart by the productivity of its hourly workforce. Its source of advantage will shift to other things — including its expertise in technology-enabled logistics. These shifts will require companies in both the passenger and cargo transportation industries to rethink their capabilities systems (*see Exhibit 3, next page*). The urgency of this was reinforced not long ago by the news that a vehicle from Otto, an autonomous truck manufacturer owned by Uber, had delivered 2,000 cases of beer after a 120-mile trip in Colorado.

The point isn't that the transportation industries' past value-creation strategies are going to lose their power entirely. It's that the source of value

Exhibit 3

**Dramatically evolving capabilities**

	<b>From...</b>		<b>To...</b>
<b>Passenger companies</b>	Frontline customer service excellence Sales and distribution partnering		Self-service customer service model Direct to consumer sales
<b>Freight companies</b>	Hourly workforce management Operational cost efficiency		Technical excellence in automation Real-time operations enabled by data analytics

Source: Strategy& analysis

and the way value is created are going to shift, and having a sense of how and when that will happen is going to be critical.

**Action 2. Strengthen planning and performance management mechanisms**

The challenges transportation companies have faced over the last few decades have been predictable — swings in energy prices being the biggest — which has meant that they have not had to become particularly good at strategic planning and performance management. In the next few years, however, they will have to develop these muscles.

Planning and performance management both flow from a company’s assessment of how strategically it needs to evolve. Transportation companies should develop medium- and long-term strategic plans. In the case of a trucking company, a new strategy could include the addition of autonomous vehicles to its fleet. To make this happen, the trucking company would also have to form a sense of which capabilities it was going to invest in, set milestones, and track the progress of emerging technologies, most importantly autonomous-vehicle vendors and systems. The company would also have to balance the programs it has in place to manage the current shortage of qualified drivers against the longer-term likelihood of driver demand plummeting as autonomy emerges.

Indeed, planning for technology change — specifically, figuring out which technologies merit their capital — has already become an imperative for

transportation companies. This has added complexity to the companies' strategic planning processes. These companies have traditionally been good at operational planning — figuring out where they could use a new location or asset, for instance, or knowing how many worker hours to add during peak seasons. They don't have the same expertise in technology planning, which often involves multiple interrelated projects, often done in a specific sequence, with the goal of achieving a specific outcome.

For instance, an airline testing a service to automate VIP passengers' airport check-in experience would have to fund several projects. One project would involve developing the proximity sensors to identify VIPs when they arrive at the airport. A second project would produce the RFID tags that these customers could affix to their bags. A third would develop a smartphone app that could communicate in lieu of an RFID tag. Back-end software would have to be developed — project four — that would communicate with these customers and apprise them of travel alternatives in the event of a flight cancellation. Of course, these new systems would all need to be integrated into legacy platforms, itself a fifth project. And even these five projects are a vast simplification of what would be involved in actually creating a better VIP check-in experience at an airline's hub.

Finally, there is the need for performance management. Transportation companies devote a huge amount of attention to accountability and the achievement of financial plans. They employ cost control engineers who can generate millions of dollars in savings by identifying seemingly trifling changes. But they are not as good at tracking their progress with respect to new strategies or operating models — there has not been a need for rapid innovation and transformation until recently.

Performance management is a different kind of discipline than project management or strategic planning. It involves setting targets or key performance indicators (KPIs) that focus on the new things a company must achieve, and measuring progress against them. Do your proximity sensors recognize 99 percent of VIP customers within five seconds of their arriving at the terminal? Is your app bug-free? Did you develop it on time and on budget? Is the proportion of manual transactions you need to support your VIP customers under the threshold you've identified? And then, ultimately, Is your market share of high-end customers — those flying business class or first class — increasing? For many transportation companies, these kinds of KPIs, as opposed to those focused on more strictly financial measures, are not ingrained in their management systems.

### ***Action 3. Challenge the global operating model***

Regardless of how dramatically its strategy shifts, every company in the transportation industry will need to review its operating model.

*There has not been a need for rapid innovation and transformation until recently.*

As technology enables more self-service and starts to automate some of the more grueling, dangerous activities in transportation, it stands to reason that there will be a continued trend toward slow or negative employee growth. Indeed, our expectation is that employee growth will hover around the 1 to 2 percent level, even as revenues continue to increase by about 5 percent a year.

But the slow-growing or, in some cases, shrinking employee numbers don't mean there won't be profound changes in the makeup of the workforce. In a world of automation, some formerly critical functions will be able to get by with much smaller staffs. At the same time, the need for new capabilities may require building up staff in areas that hadn't previously been on companies' radars at all. For instance, general management used to be the main skill needed at transport hubs — including train stations, airports, truck terminals, and seaports. In the future, people working at these hubs will need to have an understanding of how to do maintenance on automated equipment or analyze massive amounts of telematics data. There will probably be fewer people with undergraduate business degrees, and more engineers and computer scientists. In addition, centers of expertise may be created to work with local operations and to help manage some of the more technical aspects of companies' work. Attracting this new, more technical generation of the workforce to the industry and to the geographic locations in which many transportation facilities are located will be especially challenging.

Human resources departments will play a big role in this exercise in workforce planning — including the number and type of employees and contractors that will be needed at different points in a company's operating-model transition. A guiding principle should be to reduce the costs for all activities that are necessary but not differentiating, while investing in the capabilities that create value for customers. Multinational transportation companies may be able to apply this principle globally, outsourcing to take advantage of external expertise and low wage or tax rates, while adding automation expertise in places where it's needed.

Because of their impact on the employee base, operating model changes that result from innovation and labor transformation run the risk of slow adoption. For this reason, it is often smart to look for ways to make changes within the context of a company's culture. Culture-led change uses internal champions, informal peer networks, and reminders about larger objectives — having the fastest deliveries, the most satisfied customers, the best safety record — to encourage employees to embrace the new. We expect this change approach to be more widely used in transportation in the next few years.

*A guiding principle should be to invest in the capabilities that create value for customers.*

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# Conclusion

There's no question that automation is benefiting the transportation sector. The data suggests that transport leads virtually every other major sector in the extent to which capital has replaced labor over the last decade. What's more, the substitution of capital for labor is just getting started and will likely accelerate. When people talk about a future time when autonomous cars owned by companies will start to replace individually owned and operated vehicles, they can now point to experiments with self-driving cars around the country. Likewise, the notion of autonomous trucks hauling 40 tons of cargo down the highway, or drones delivering small packages to the homes of shoppers within minutes of their having clicked "Place Your Order," is no longer a fantasy. Instead, these are developments that, with the right commercialization efforts and regulatory changes, could soon be part of the world we all inhabit. Many of these changes will require transportation companies to reimagine how they create value for customers. All of these changes will require transportation companies to become better at strategic planning and to rethink their use of labor.

Transportation is a bit of a zero-sum game, in which a finite universe of demand is fought over by incumbent and upstart suppliers. Automation is rapidly accelerating and disrupting existing transportation businesses. This is not an area in which followers will fare well. Our bet is on those that are proactive and act boldly.

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