



Global semiconductor industry outlook

Industry demonstrates resilience during global disruption

February 2021

KPMG International
Global Semiconductor Alliance

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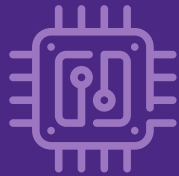
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Welcome to the 16th annual KPMG Global Semiconductor Industry Outlook, which delivers key findings from a survey of 156 semiconductor CEOs conducted with the Global Semiconductor Alliance.

The outlook is designed for semiconductor CEOs, COOs, CFOs, controllers, VPs of finance, strategy, and corporate development, as well as executives from companies whose products are heavily reliant on semiconductor products, including electronics, telecommunications, Internet of Things (IoT), and automotive. This year's outlook focuses on:

- The impact of COVID-19
- Financial expectations
- Growth products and applications
- Industry issues and strategic priorities

Foreword



2020 brought many unforeseen challenges to the global semiconductor industry. The COVID-19 pandemic and ensuing global economic downturn put pressure on industry fundamentals, temporarily closing manufacturing plants, disrupting day-to-day business, compromising supply chains, and reducing chip order expectations in the short-term. Meanwhile, election year uncertainty in the United States made it difficult for semiconductor leaders to anticipate regulatory and policy changes related to global trade and tariffs. Some long-term uncertainty remains, but the impacts of COVID-19 on the semiconductor industry appear more favorable than those seen in other sectors.

For the most part, semiconductor companies mobilized quickly to understand and respond to the near-term effects of these disruptions. Massive digital acceleration is underway by consumers and enterprises as more people stay home for both work and play and increase their reliance on technology. This is driving a surge in demand for chip based products and solutions that power our hyper-connected society. Semiconductor companies and their customers are building up inventory as buyers place big bets on products they will need to serve their own growing markets.

Whereas COVID-19 devastated a number of other industries, it became a net catalyst for growth for semiconductor companies.



Lincoln Clark

Partner in Charge
Global Semiconductor practice
KPMG in the U.S.

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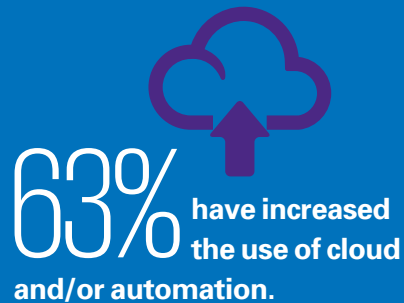
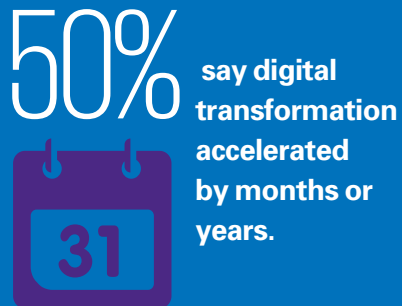
After the initial shock of COVID-19, surging technology demand helped global semiconductor companies stay strong amid unprecedented market disruption. The challenge for the industry going forward will be refocusing on long-term strategic priorities—such as digital transformation, inclusion and diversity, and climate change—that will enable them to thrive in the new business reality. ”

— **Jodi Shelton**
President
Global Semiconductor Alliance

Key findings

The impact of COVID-19

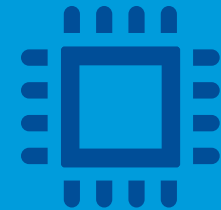
Semiconductor companies race to embrace digital technologies, but at a slower pace than other industries.



Growth products and applications

Smart tech packed with advanced chips will drive future revenue.

Wireless/5G, IoT, and automotive are the most important applications driving revenue over the next year.



Financial expectations

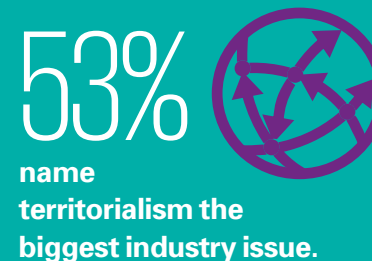
Optimism is on the rise as the industry recovers quickly from COVID-19.

Leaders expect revenue, profitability, capex, and R&D investment to increase.




Industry issues and strategic priorities

Nationalist trade environment challenges semiconductor companies.



Source: KPMG Global Semiconductor Industry Survey findings, 2021; n=156.

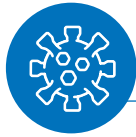


The impact of COVID-19

Key takeaways

- The semiconductor industry has weathered the pandemic better than most other industries, finishing 2020 with similar growth to pre-COVID-19 levels.
- Only 50 percent of semiconductor companies say COVID-19 accelerated their digital transformation, lagging other industries that used the pandemic as a catalyst for change.
- The top business change due to COVID-19 is the increased use of cloud and/or automation technologies, which are being used to support permanent work-from-anywhere models.





The impact of COVID-19

Industry experiences a roller coaster year

The semiconductor industry has proven resilient throughout the COVID-19 pandemic, surprising many industry watchers and again illustrating the world's increasing reliance on advanced technologies.

Most leading research firms predicted single digit growth for the industry prior to 2020 and even into the first few months of the year. Further opinions collected in the spring, when the pandemic had forced global businesses and societies to lockdown in large numbers, estimated industry-wide revenue to drop 5 to 10 percent year over year. After demonstrating strong resilience through the crisis, the industry finished 2020 with revenue growth of 6.5 percent.¹

As it turned out, the impacts of COVID-19 depended greatly on individual circumstances. The sector saw wild swings in performance on a company-by-company basis. Some smaller companies that were exposed to a hard hit customer or end market saw their sales drop significantly, while more diversified semiconductor companies saw their revenue soar.

Looking broadly across the ecosystem and towards the future, however, the picture is optimistic. Semiconductor companies' strong focus on business continuity and resiliency, due to traditionally long lead times for R&D and product development, appears to have put the sector in a strong position to respond to COVID-19 disruption. And future growth opportunities abound as all aspects of life—from work to education to healthcare to entertainment—will increasingly need the technologies and related cloud infrastructure that semiconductors enable.

¹World Semiconductor Trade Statistics (WSTS)

Digital transformation is accelerating, but pace lags other industries

COVID-19 forced many manufacturers and suppliers to update their systems and operating models due to remote workforces and the need to become more efficient and cost effective. Digital transformation encompasses coupling powerful new technologies such as AI, blockchain, IoT, automation and 5G with business model and organizational changes to help drive value and enable growth.

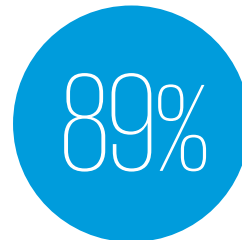
Fifty percent of respondents say COVID-19 has accelerated their companies' digital transformation progress by months or years. This may seem like an impressive number but across the global technology sector 89 percent of company leaders reported similar progress in digitizing their operations, as revealed in the [KPMG Technology Industry CEO Outlook](#) report. And across all industries, 81 percent of CEOs state their operational digital transformation efforts have accelerated by months or years per the [KPMG 2020 CEO Outlook](#) report. Further, as discussed in the strategic priorities section, only 33 percent of semiconductor leaders say digital transformation is a top three strategic priority.

Why would one of the most innovative sectors apparently lag behind others in digital transformation? One argument is that the industry is already ahead of the broader market, with more advanced digital capabilities embedded into enterprises, so not every industry started from the same point. Or perhaps the great demand for semiconductor products due to COVID-19 offers an explanation. As producers of the critical components of in-demand technology products, semiconductor companies had to retrench during the early days of the pandemic and focus on immediate supply chain and other business continuity issues. This may have been done at the expense of longer-term digital optimization investments that have a longer payoff period.

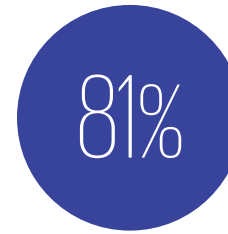
Industry leaders reporting their digital transformation has accelerated by months or years due to COVID-19



Semiconductor industry

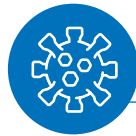


Technology industry



All industries

Sources: KPMG Global Semiconductor Industry Survey findings, 2021; n=156. KPMG 2020 CEO Outlook COVID-19 Special Edition; n=315.



The impact of COVID-19

COVID-19 prompts other long-term changes

In addition to enterprise-wide digital transformation, the organizational and operational changes required to compete in the new reality are significant. Traditional industry structures are too linear and inflexible to serve today's interconnected and customer-centric world.

As a result of the ongoing pandemic, semiconductor companies plan to implement a variety of other organizational and operational changes in an effort to ready their businesses for the future:

- Increasing the use of cloud and automation technologies
- Implementing permanent work-from-anywhere policies enabled by digital collaboration tools and video conferencing.

Enhancing how employees work across business functions is a key focus of operational investments. Semiconductor companies see an opportunity to leverage remote work models to drive greater productivity, particularly from

in-demand talent like engineers and data scientists that perhaps had less experience collaborating remotely in the old, geography-bound model. The survey findings show that the industry's back-office workers are most likely to work from home in the future, but even some R&D professionals will be afforded this opportunity.



COVID-19 has actually accelerated key drivers of growth in the semiconductor industry. Companies have been quick to react, recover and realign their businesses to new market needs, but opportunities still remain to further digitize operations.

— Lincoln Clark
Partner in Charge, Global Semiconductor practice, KPMG in the U.S.

Long-term changes implemented as a direct result of COVID-19

Increased use of cloud and/or automation technologies

63%

Permanent reduced travel policies due to video/collaboration technologies

56%

Permanent work-from-anywhere and/or flexible hours arrangements for some employees

55%

Revised continuity plans

47%

Increased geographical diversity of supply chain (including external foundry and OSAT partners)

31%

Source: KPMG Global Semiconductor Industry Survey findings, 2021; n=156.
Multiple responses allowed; percentages do not sum to 100%.

\$ Financial expectations

Key takeaways

- Semiconductor leaders expect company revenue, industry profitability, capital spending, and R&D investment to increase over the next year.
- While 63 percent of respondents expect to increase their workforce size over the next year, this figure is lower than last year (74 percent).
- Semiconductor companies are becoming increasingly efficient in aligning their R&D spending with market opportunities, but a large portion of the market still has room for improvement.



Financial expectations

Revenue and profitability outlook positive

Despite enduring the impacts of COVID-19 in 2020, most semiconductor companies maintain a positive growth outlook for the year to come.

Across all company sizes, 85 percent of survey respondents predict their companies' revenue will increase next year compared to the current year. These expectations are prevalent across all company sizes, indicating a healthy level of optimism about the industry's future. Smaller companies are particularly confident.

Seventy-nine percent of semiconductor leaders also predict industry-wide profitability to increase compared to last year. KPMG believes this is due to two primary factors:

- 1) More strategic spending
- 2) Increased demand driven by today's rapid technological innovation

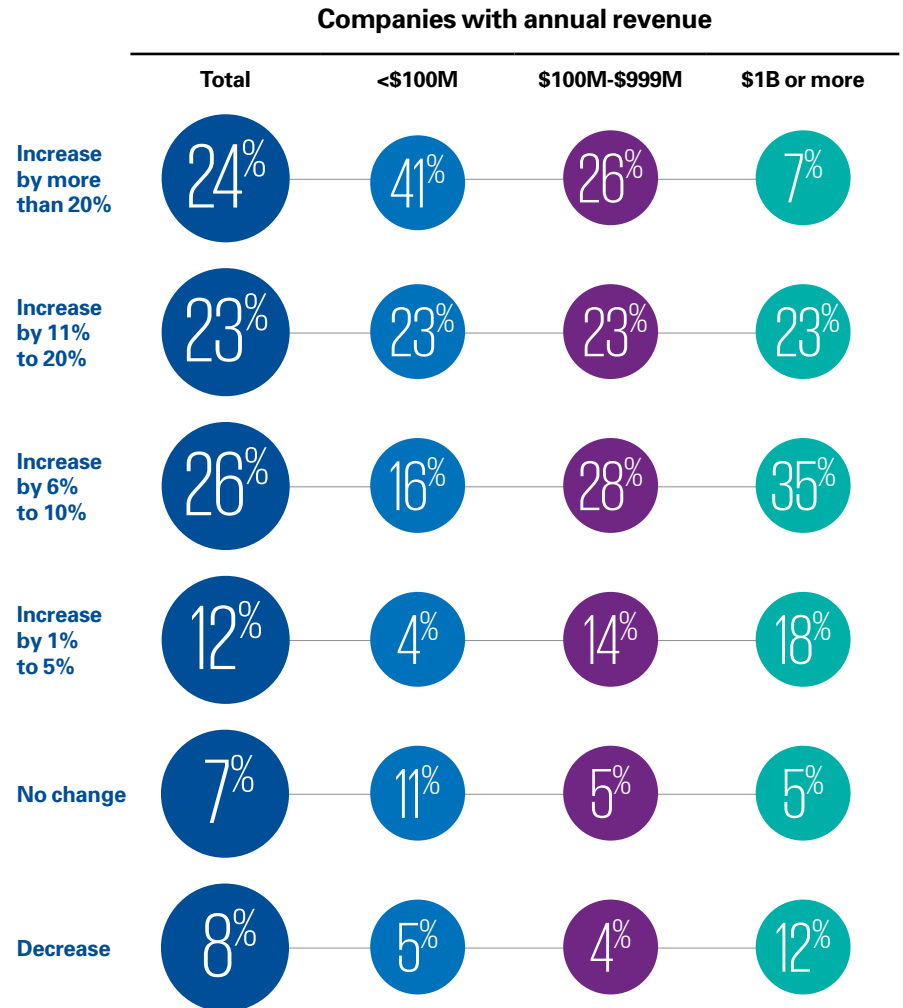
COVID-driven digital acceleration across both business and consumer markets is prompting customers to order certain semiconductor components ahead of time, as opposed to real-time inventory purchasing. Although an inventory correction may be coming down the road even if chip companies make no further cost reductions this year, they seem confident they will be able to generate increased profits based on pricing advantage alone. Respondents are so bullish on growth and profitability that nearly three quarters (73 percent) plan to increase capital spending in 2021, compared to only 59 percent the year prior.

“

Many semiconductor manufacturers have significantly outperformed revenue and profitability expectations through 2020 and are forecasting continued growth in 2021. ”

— Lincoln Clark
Partner in Charge, Global Semiconductor practice, KPMG in the U.S.

Outlook for company revenue growth over the next year compared to the current year



Source: KPMG Global Semiconductor Industry Survey findings, 2021; n=156.



Financial expectations

Companies seek efficiencies

Semiconductor companies have experienced some COVID-driven cost-cutting this year, including headcount trimming and business travel reduction. Virtual work environments have forced semiconductor companies to become more creative and agile in how they get work done and now appear ready to make some of those changes permanent. Fewer respondents than last year plan to expand their workforces (63 percent compared to 74 percent). Physical location is no longer a limiting factor in new work models, allowing companies to derive greater productivity from existing workforces unconstrained by geography.

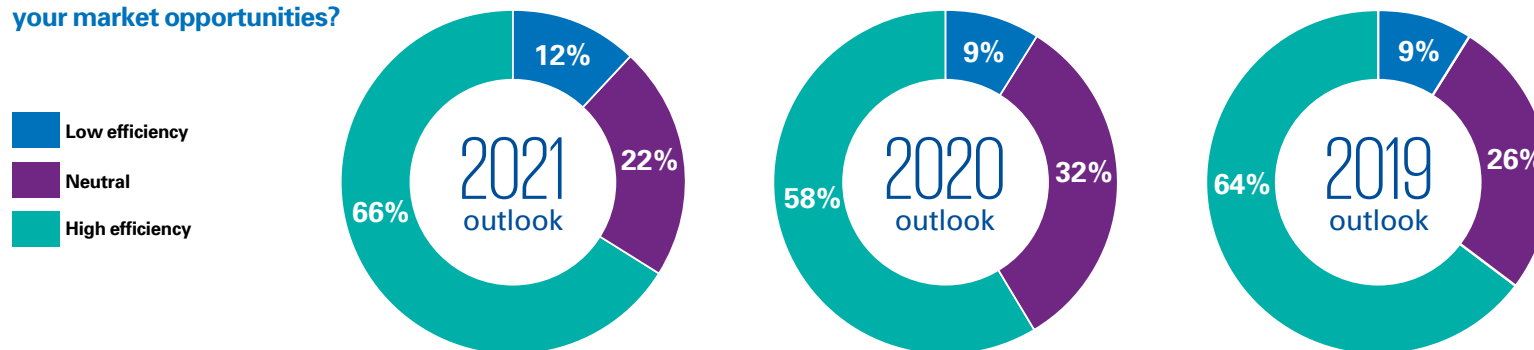
The industry also reports significant efficiency in R&D, a key driver of profitability growth. Two-thirds of respondents (66 percent) say their companies' R&D roadmap is well aligned with market opportunities. While this represents an encouraging figure, a significant opportunity remains for one third of industry players.

New work models and other adjustments to organizational structures may be the ticket to seizing these new opportunities. As the semiconductor industry moves towards providing services and solutions versus stand-alone chips, organizations that operate in a modular, integrated, and customer-centric way will be better able to generate relevant, profitable innovations. Specialized sales and support models, supported by new people, process and technology capabilities, will enable companies to understand customer needs at a deeper level and customize content and solutions accordingly.

Innovation investment is consistently a top line item on semiconductor budgets and it will remain so in 2021: 71 percent of companies will spend more on R&D next year in order to create strategic design wins and develop new products necessary to drive competitive advantages in diverse applications and end markets. Thirty-four percent of respondents from smaller companies expect to increase R&D spending 20 percent or more, compared to just 12 percent of mid-size companies and two percent of large enterprises.

Building out a diversified portfolio is difficult in any industry, and especially in an innovation-centric one like semiconductors. Once semiconductor companies achieve a certain size threshold they typically expand into multiple products, challenging their R&D focus and execution.

How efficiently is your R&D roadmap aligned with your market opportunities?



Source: KPMG Global Semiconductor Industry Survey findings, 2021 (n=156); 2020 (n=195); 2019 (n=149).

Semiconductor Industry Confidence Index

The KPMG Semiconductor Industry Confidence Index measures and tracks semiconductor executives' confidence in the industry. We calculate the confidence score from survey respondents' one-year outlooks for their companies' annual change in revenue, workforce size, capital spending, R&D spending, and industry operating profitability.

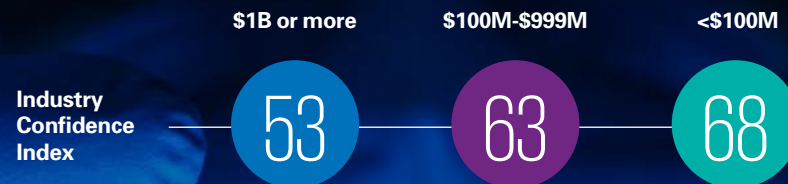
This year's confidence index rose two points year-over-year (61 versus 59), following a general upward trend in the findings. Overall the industry is considerably optimistic; the index has only scored higher than 61 twice in the 15 years that KPMG has calculated it. Yet there is disparity in confidence level based on company size.

Overall index scores



Bigger companies express a more muted outlook, perhaps weighed down by large workforces and operating budgets. Smaller companies still executing on a startup model are much more positive, especially when it comes to expected revenue and workforce growth. Complex external factors may be less of a threat to small companies focused on a single product or market. Midmarket companies fall somewhere in between. They are nimble enough to adapt to demand changes and market volatility, but still exposed to some challenges of added scale.

Companies with annual revenue



Index components



Source: KPMG Global Semiconductor Industry Survey findings, 2021; n=156.



Growth products & applications

Key takeaways

- Wireless communications (including 5G) and IoT are tied as the most important applications driving semiconductor revenue over the next year.
- Despite assumptions of a COVID-induced decline, automotive applications rank as the third most important driver of semiconductor revenue over the next year, ahead of other applications like cloud computing, data centers, artificial intelligence, and consumer electronics.
- Consistent with the application rankings, sensors/MEMS are the product category that represents the largest growth opportunity over the next year.





Growth products & applications

Sensors/MEMS are the leading product category

Despite unprecedented social and economic disruption brought on by an unexpected global pandemic, the prime semiconductor opportunity areas (products and applications) are largely unchanged from last year's survey.

From a product perspective, survey respondents view most categories with increased growth potential. Sensors/MEMS were selected as the number one growth product, retaining the top spot this year. Analog/RF/Mixed signal was ranked second, followed by the GPU/MCU/MPU category. Technology penetration in consumer, enterprise, and industrial devices, together with mainstream adoption of IoT and 5G technology, continue to drive significant growth in revenue and investments. Automotive is another category that is driving the growth of these products as all levels of assisted-driving and autonomous vehicles are increasing the use of these components.

Analog/RF/Mixed signal, a critical component for power management, will also continue to be a key revenue producer. With many employees and students working virtually, it's no wonder that among revenue-driving applications, wireless devices and personal computers saw an uptick in importance year-over-year. As technology becomes an increasingly integral part of our daily lives, each additional laptop, tablet, cellphone, and personal computer sold needs strong battery life. Analog is the product required to manage it.

Microprocessors (including GPU/MCU/MPU) repeats as the third-ranked growth product, and its importance jumped the highest year-over-year relative to other products. Corporations are rearchitecting technology infrastructure to support compute-intensive use cases and workforce virtualization by investing in GPU purchases to power cloud, server, and data center technologies.

Products representing growth opportunity for the semiconductor industry over the next year

(Averages on a 1 to 5 scale with 1=Low growth opportunity and 5=High growth opportunity.)

	2021 Outlook	2020 Outlook
Sensors/MEMS	3.8	3.7
Analog/RF/Mixed Signal	3.7	3.5
Microprocessors (GPU/MCU/MPU)	3.6	3.2
Optoelectronics	3.3	3.1
Memory (Flash, DRAM)	3.3	3.0
Other Logic	3.0	2.8
Discretes	2.9	2.6

Source: KPMG Global Semiconductor Industry Survey findings, 2021 (n=156); 2020 (n=195).



Growth products & applications

Wireless, IoT, and automotive applications driving growth

Wireless communications and IoT, the two leading applications in the prior year survey, are tied as the most important applications driving semiconductor revenue over the next year. COVID-19 is spurring even greater interest and uptake of 5G communications by consumers and businesses, which now have greater need for high speed wireless bandwidth. Survey respondents say COVID-19 has increased customer integration of key technologies into their products, such as IoT and 5G. The buildout of 5G networks and infrastructure, which started well before COVID-19, is now driving new IoT use cases and creating the need for more powerful sensors and software to sync them up.

Seventy-two percent of industry leaders believe 5G will become a significant driver of industry revenue within the next two years. In last year's survey, only 50 percent felt this way.

Despite the economic downturn and work-from-home mandates caused by COVID-19, the automotive sector retained its importance for the upcoming year, remaining the third-leading application expected to drive semiconductor revenue.

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Respondents expect the growth opportunity for every semiconductor product category to increase in 2021 as the new reality drives demand for numerous kinds of connected technologies requiring a vast array of chip components. ”

— Scott Jones

Principal, Global Semiconductor practice, KPMG in the U.S.

Timeframe for 5G technology to become a significant driver of semiconductor industry revenue growth

Less than one year

19%

1-2 years from now

53%

3-4 years from now

25%

5 years or longer from now

3%

Source: KPMG Global Semiconductor Industry Survey findings, 2021; n=156.



Growth products & applications

Automakers are increasingly important semiconductor customers even though not every semiconductor company participates in the market due to its complex safety and quality requirements. As automakers develop more advanced connected, electric, and self-driving vehicles, and a reliable self-driving infrastructure is enabled by 5G, artificial intelligence, and cloud developments, they are poised to remain prominent buyers of semiconductor products for years to come.

“The connected and autonomous vehicles of the future are effectively supercomputers on wheels requiring dramatically higher chip content and driving greater convergence of the automotive and semiconductor industries,” says Gary Silberg, KPMG Global Automotive Sector Leader. He continues, “Even today the importance of semiconductors cannot be overstated as production shortages are shutting auto plants all over the world. In tomorrow’s world these remarkable integrated circuits will be even more strategically important.”

Other findings to note are the rise in year-over-year importance of personal computers and medical devices, a direct reflection of the impact of COVID-19.

Applications driving semiconductor company revenue over the next year

(Averages on a 1 to 5 scale with 1=Not at all important and 5=Very important.)



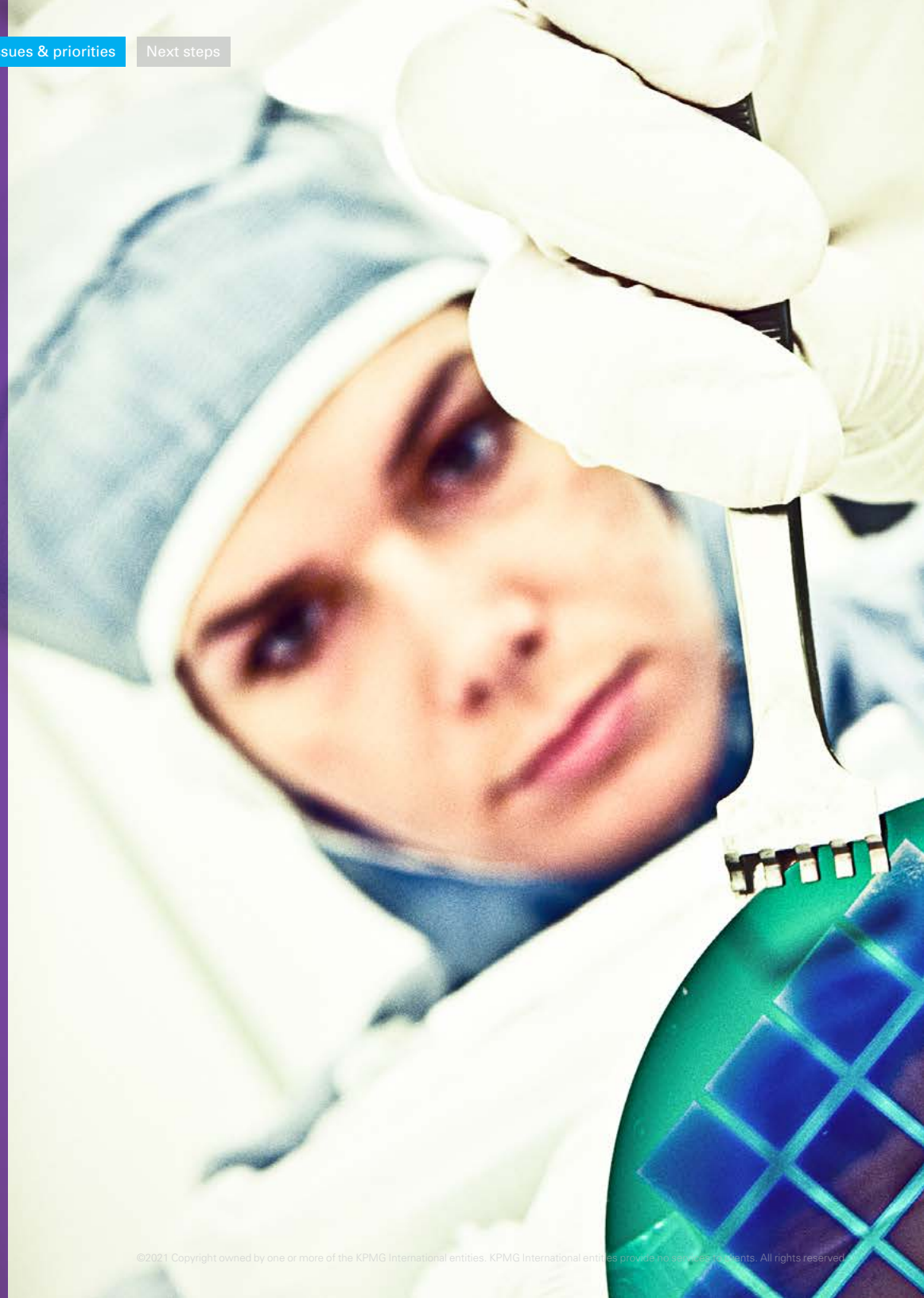
Source: KPMG Global Semiconductor Industry Survey findings, 2021 (n=156); 2020 (n=195); 2019 (n=149).



Industry issues & strategic priorities

Key takeaways

- Territorialism, supply chain risk, and talent risk are the top three industry issues, and exactly match the top three threats to growth identified by leaders in the overall technology sector.
- Growth, talent management, and supply chain resilience are the top strategic priorities, reflecting a long-term mentality.
- Increasing inclusion and diversity, reducing carbon footprints, and formalizing ESG reporting are very much on the leadership agenda, yet very few respondents name them one of their top three strategic priorities.





Industry issues & strategic priorities

Territorialism dominates industry issues

Over the next three years, industry leaders believe that territorialism—including cross-border regulation, tariffs, new trade agreements, and national security policies—will be the biggest issue facing semiconductor companies by a large margin. More than half (53 percent) of respondents rank it as a top three concern, up 16 points from the prior year survey. Respondents are more anxious about trade deal renegotiations, tariffs, and the nationalization of semiconductor technologies than other issues.

Nationalistic technology and trade policies—particularly by the world's two biggest economies, the U.S. and China—add cost pressure and supply chain complexity throughout the semiconductor ecosystem. Tariffs on imported or exported components increase manufacturing costs, spurring companies to explore various tariff mitigation strategies. They similarly create logistical and compliance challenges.

Supply chain disruption also saw a jump in the rankings. Managing rising trade and tariff costs continues to occupy the semiconductor agenda, with some manufacturers making significant changes to re-optimize the supply chain, such as sourcing chip content from different geographies.

COVID-19 is a key contributing factor, although less damaging to the industry supply chain than many anticipated. During the initial lockdown period, global manufacturers experienced some temporary problems; however, there were few lasting supply bottlenecks and component availability did not suffer drastically. With mature, established, global supply chains, semiconductor companies typically have better resiliency to disruption than other industries, and that largely proved out during COVID-19.

Talent risk, virtually tied for the top industry issue last year, fell to third place. While still an important concern, perhaps the new work-from-anywhere paradigm helps provide an explanation. Sixty-four percent of tech company CEOs in the [KPMG Technology Industry CEO Outlook](#) report stated that remote working has widened their potential talent pool, making it easier to source required talent.

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Territorialism, supply chain risk, and talent risk are the exact same top three threats to growth identified by leaders in the overall technology sector in the [KPMG Technology Industry CEO Outlook](#).

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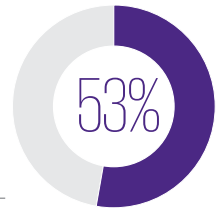
— Chris Gentle

Partner, Global Semiconductor practice, KPMG in the U.S.

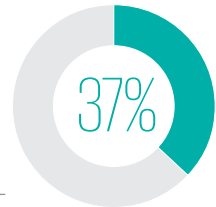
Top issues facing the semiconductor industry over the next three years

Territorialism/nationalism

(cross border regulation, tariffs, new trade and/or national security policies)

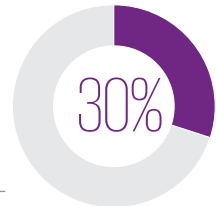


Supply chain disruption

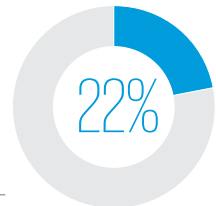


Talent risk

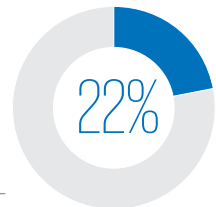
(not enough skilled workers, war for talent)



Cyber security



Lack of standards and regulations in new end markets like IoT, autonomous vehicles, 5G, artificial intelligence



Source: KPMG Global Semiconductor Industry Survey findings, 2021; n=156. Multiple responses allowed; percentages do not sum to 100%. Partial list of responses shown.



Industry issues & strategic priorities

Strategic priorities reflect long-term mentality

As the industry moves further into 2021, semiconductor businesses are firmly focused on the future. Executing on growth initiatives (including diversifying and expanding R&D) is far and away the biggest strategic priority for semiconductor companies over the next three years. It was selected as a top three in importance by 68 percent of respondents. The industry demonstrated a high level of resilience to get through 2020 intact; now companies are ready to take strategic action to sharpen long-term competitiveness.

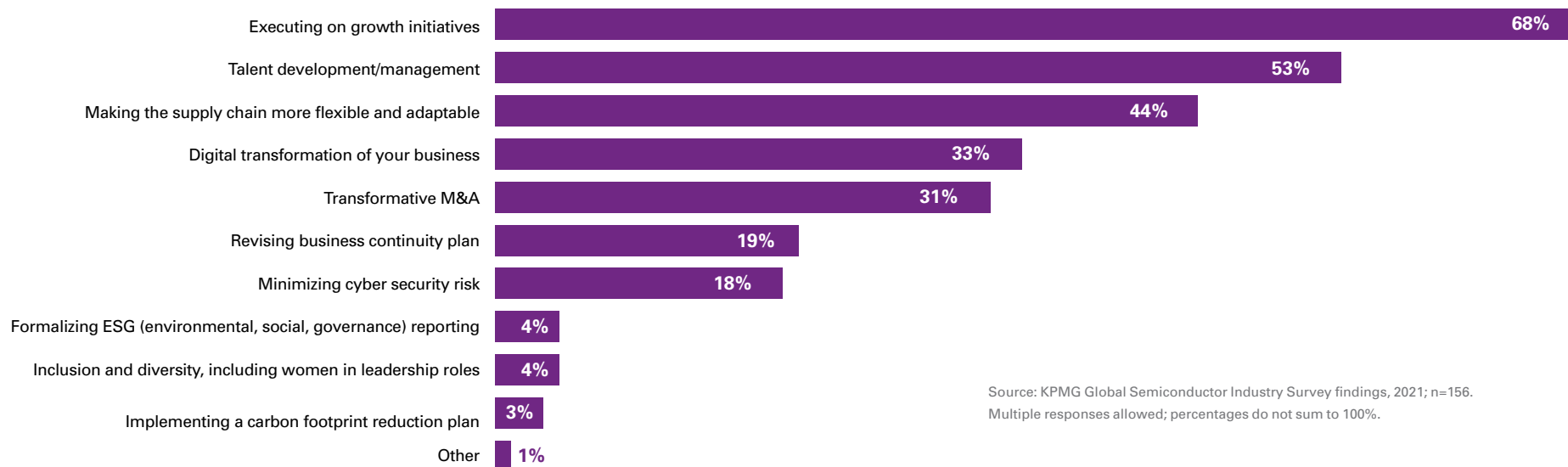
Developing and managing talent rose 13 points in the rankings year-over-year. With a shortage of technically skilled workers already existing, the worldwide demand for more innovative technology products and solutions in the wake of COVID-19 will only exacerbate the problem. Embracing new work models may be one way for semiconductor companies to address the talent issue. Having experimented with virtual work during COVID-19, some companies have indicated plans to offer some level of permanent work-from-anywhere options in order to cast a wider talent net, improve collaboration across distances, and boost productivity.

Respondents' strategic priorities also show a strong focus on enhancing business continuity. Making the supply chain more flexible and adaptable to geopolitical changes and other disruptions came in as the industry's third most important priority by a significant margin. Data insights are a critical component of enhanced supply chain resiliency. Using technology and applications to collect granular data and metrics at all points of the supply chain enables semiconductor companies to make faster, data-driven decisions.

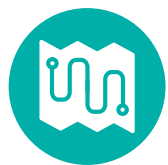
Digital transformation—a major component of business resilience due to COVID-19—ranks fourth. While this represents a jump of 20 points year-over-year, only one-third of respondents named it a top three strategic priority. Similarly, 50 percent of respondents said COVID-19 has accelerated their companies' digital transformation—a significant number but still lagging behind other tech sectors and other industries.

Finally, increasing inclusion and diversity, reducing carbon footprints, and formalizing ESG practices and reporting are all very much on the CEO and board agendas in the technology industry. However, very few semiconductor respondents named them a top three strategic priority. This suggests that companies remain focused on the most immediate challenges of operating a crucial business during a global pandemic.

Top strategic priorities over the next 3 years



Source: KPMG Global Semiconductor Industry Survey findings, 2021; n=156.
Multiple responses allowed; percentages do not sum to 100%.



Next steps

Here are just a few actions that semiconductor leaders should consider regarding some of the topics discussed in this outlook:

Digital transformation

- **Prioritize investments** – What technology investments are viable, measurable, and have the strongest business case?
- **Take a broad view** – Businesses can't look at emerging technology in a vacuum. The ability to quickly implement platforms that combine digital technologies is the real differentiator. A narrow approach won't drive meaningful change or achieve the resilience needed for success.
- **Adapt the organization** – Transformations combining multiple emerging technologies are harder to achieve than isolated deployments of single technologies, and organizational changes must accompany them.

Portfolio and capital allocation

Applying active portfolio management techniques will allow semiconductor companies to determine if product lines are generating the necessary returns for shareholders and if R&D investments are an efficient use of capital.

- **Assess** – Critically assess investments, organizational setup, and product roadmaps versus strategic objectives and against the competitive landscape to ensure differentiation that will drive shareholder value.
- **Focus** – Deploy resources where the portfolio is best positioned to win.
- **Buy or partner** – Explore strategic acquisitions or partnerships to fill gaps in the portfolio and reduce time to market for delivering high value products instead of deploying R&D to create non-differentiated or "me too" solutions.
- **Monitor** – Continue to evaluate the portfolio and capital allocation to optimize between organic and inorganic alternatives.

Supply chain resiliency

The supply chain model of the future will emphasize a multidimensional framework to meet evolving customer and market demands. The following are specific competencies that organizations will need to develop for the new supply chain operating model.

- **Enabling** data-driven decision-making by collecting granular data and metrics at all value points of the supply chain.
- **Incorporating** tax optimization into the footprint analysis.
- **Defining** micro supply chains and applying true segmentation to deliver greater value versus a "one size fits all" supply chain.
- **Ensuring** segmented vertical integration.
- **Determining** if the inventory strategy should be "just in time" versus heavier assets-on-hand.

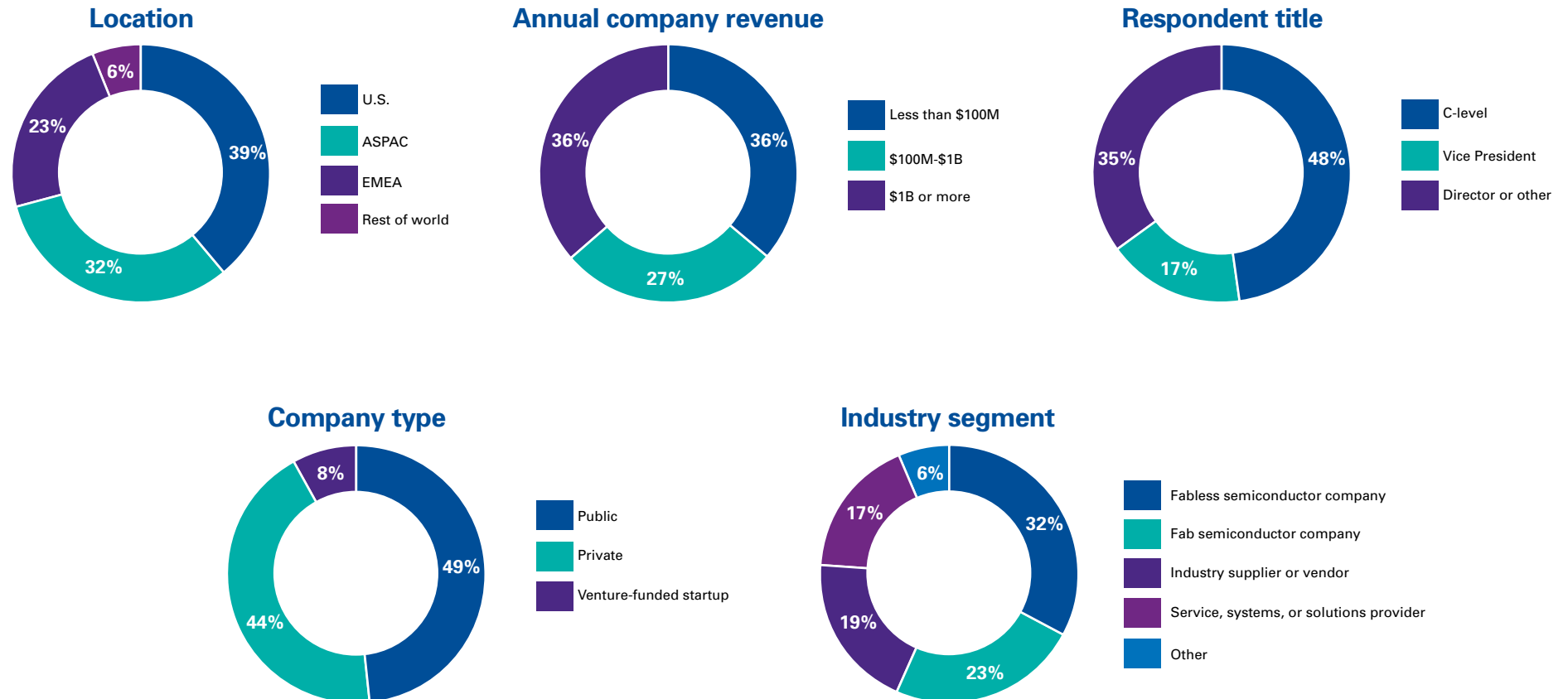
Tariff mitigation

- **Explore onshore sourcing options** as well as dual origin and multiorigin strategies. These offer the flexibility to deliver into various markets from differing locations, depending on current tariff, free trade, and geographical factors.
- **Review the many available methods to mitigate or recover** new tariff costs. These involve, among others, tariff exclusions and re-classifications, customs valuation planning, and duty deferral and drawback programs.
- **Integrate scenario planning and enterprise risk assessment** into day-to-day operations. This will help to proactively evaluate the potential impact of geopolitical events and quickly implement contingency plans.

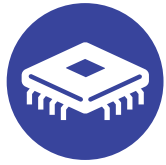


Research methodology

The research in the report is drawn from a web-based survey of 156 senior executives from global semiconductor companies, conducted in the fourth quarter of 2020 by KPMG and the Global Semiconductor Alliance. In this report, percentages may not sum to 100 percent due to rounding, unless otherwise noted. Respondent demographics are as follows:



Source: KPMG Global Semiconductor Industry Survey findings, 2021; n=156.



About KPMG and the GSA

KPMG Global Semiconductor practice

Technology touches virtually every aspect of our daily lives, especially now that much of the business world has entered the work-from-anywhere paradigm. The semiconductor industry is leading the way in this digitized and connected world. The KPMG Global Semiconductor practice is here to help semiconductor companies navigate this new world. KPMG firms across the globe work with semiconductor clients of all sizes to look beyond today's pressing business challenges and anticipate the strategic choices that can best position them for both short- and long-term success. For more information, please visit kpmg.com/semiconductors.

KPMG Global Strategy Group

KPMG's Global Strategy Group works with private, public, and not-for-profit organizations to develop and implement strategy from "innovation to results," helping clients achieve their goals and objectives. KPMG's Global Strategy professionals develop insights and ideas to address organizational challenges such as growth, operating strategy, cost, deals, and transformation. Learn more at kpmg.com/strategy.

KPMG Digital Transformation services

[KPMG Digital Transformation](#) helps organizations navigate uncertainty and prepare for what's ahead by coupling powerful new technologies with business model and organizational changes that can help deliver value from investments. KPMG professionals strive to meet clients where they are so they can survive disruption, capitalize on changes in societal dynamics and customer behavior, and plot a course toward long-term resiliency.

KPMG Supply Chain and Operations services

Organizations are asking mission-critical questions pertaining to supplier and operations risk that have arisen in the COVID-19 environment. [KPMG Supply Chain and Operations](#) professionals help clients address the issues of today from crisis response planning, to rapid diagnostics of supply and demand risks, to scenario analysis and contingency planning, to integration of tax planning.

KPMG Trade & Customs services

The [KPMG Trade & Customs \(T&C\) services](#) can assist companies identify cost-savings opportunities around the world and manage compliance risks associated with supply chains and global trade operations. KPMG T&C professionals include former officials from customs and export authorities around the world; industry professionals, customs brokers, certified export and customs specialists; professionals with advanced degrees in business, economics, and law; and experienced trade technologists.

Global Semiconductor Alliance (GSA)

The [GSA](#) is where leaders meet to establish efficient, profitable, and sustainable semiconductor and high technology global ecosystems encompassing semiconductors, software, solutions, systems, and services. It is a leading industry organization that provides a unique, neutral platform for collaboration, where global executives interface and innovate with peers, partners, and customers to accelerate industry growth and maximize return on invested and intellectual capital. GSA has an impressive global footprint representing over 25 countries and 250 corporate members comprising top companies in the semiconductor industry. The global membership ranges from the most exciting emerging companies to industry stalwarts and technology leaders—representing 70 percent of industry revenues.



About the authors



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KPMG professionals can provide insights for specific sectors of the semiconductor industry as well as other industries including telecommunications, automotive, software, hardware, electronics, and cloud computing companies. Contact us for more information.

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