

The Semiconductor Industry: Pricing benchmark results

*Technology Institute
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At a glance

This study looks at the maturity of semiconductor companies that successfully implement pricing strategies.

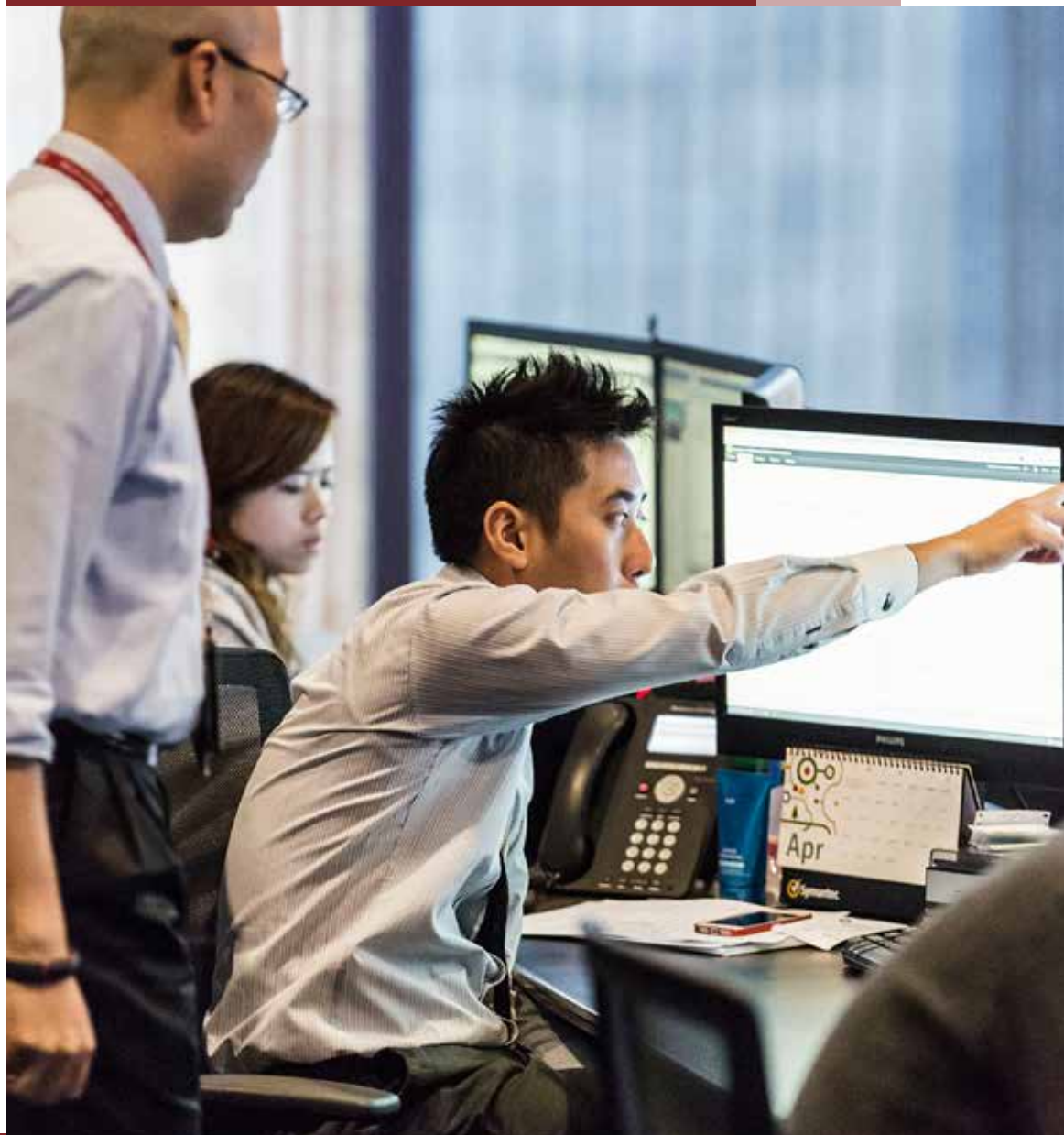


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About the semiconductor pricing survey

A total of 14 semiconductor firms participated in the semiconductor pricing benchmark survey. Majority of the companies we surveyed were fabless houses with annual revenues under \$2 Billion. Most of the surveyed companies are selling logic (ASIC, ASSP, FPGA) and analog devices, with Asia being the biggest ship-to sales region.

The table below provides the list of some of the common functions and the relating professionals who provided their inputs.

Business area	Position / Title
Sales	VP of Sales VP of OEM Sales
Sales Operations	Global Sales Ops & Channel Management Director WW Distribution Director of WW Channel Sales & Sales Ops
WW Business Operations (Pricing)	Director of WW Business Operations Senior Director, WW Pricing/Quoting Senior Director, Pricing Director of Pricing Senior Management of WW Pricing
Business Units	Senior Executive Vice President General Manager Senior Manager, Microcontrollers Senior Marketing Manager, Handheld Products
Finance	VP of Finance, Pricing

We would like to thank all participants for their time and assistance with this research.

The survey was conducted online through a secure survey with all company-specific data kept confidential. All data was compiled, aggregated, and presented in a manner that assures confidentiality.

Survey objectives and structure

The semiconductor market pricing survey was developed to understand overall pricing practices, maturity across the elements of pricing, and leading practices being used by the semiconductor industry leaders across organizations, processes, technologies, and analytics.

We also focused on the organizational responsibility differences in price setting to price execution as well as the techniques, processes and systems employed in transaction management and managing exceptions.

Based on these objectives the survey was structured along the five major areas:

1

*Pricing strategy
and price
formulation*

2

*Transaction
management*

3

*Performance
management
and data
analytics*

4

*Pricing
organization*

5

*Enabling
technology*

Key findings

Semiconductor companies are under increasing margin pressure due to growing competition, increasing new product development costs, and decreasing willingness of customers to pay more for enhanced features. Based on project experiences, PwC has

observed that when semiconductor companies have focused on pricing practices, they have experienced rapid, significant impact through increased revenues by 3%-8% and increased gross margin by 10%-20%.

In order to identify leading pricing practices within the semiconductor industry and to identify key challenges that prevent organizations from having effective and efficient pricing processes, PwC conducted a semiconductor industry pricing strategy survey.

Our survey findings indicate:

1

The maturity of pricing practices at most semiconductor companies is moderate, specifically in the development of pricing strategies, pricing lists/books, and use of pricing metrics

- Few companies have separate price books for regions and markets and forward looking price books rely heavily on cost projections
- Less than half of the surveyed companies have dedicated deals desks, which is a key leading practice leveraged by successful companies across the technology sector

2

Quote turn-around-time targets are not achieved and poor target performance is attributed to complexity of the quotes, inefficient systems and processes, and internal organization constraints

- Many organizations still cannot accurately track consumption to agreed-upon quote volume primarily due to the lack of end customer visibility and metrics

3

Price waterfalls are not actively used by the semiconductor pricing groups, but have shown to be a powerful mechanism to identify and close profitability leaks in other sectors

- Few companies track their pricing effectiveness with respect to growth and profitability of the organization, and even fewer companies currently track customer profitability

Overview of leading practices and challenges

1. Pricing strategy and price formulation

Pricing strategy requires companies to analyze their portfolios, overall business strategy and specific goals by products, segments, customers, etc., and then develop a pricing strategy that is based on a combination of value factors, competitive pricing, costs, and most importantly, helps achieve the stated product and corporate strategy goals and metrics.

We asked semiconductor companies to identify the entities (levels) involved in pricing strategy definition and the depth of their pricing strategy development. Not surprisingly, most of our respondents acknowledged that the pricing strategy is primarily set on a Business Unit or Product Line levels.

Only 21% of respondents set up their pricing strategies on an individual SKU level. Most companies (38%) set up their pricing strategies only on one level, the business unit.

Chart 1: Level of pricing strategy development

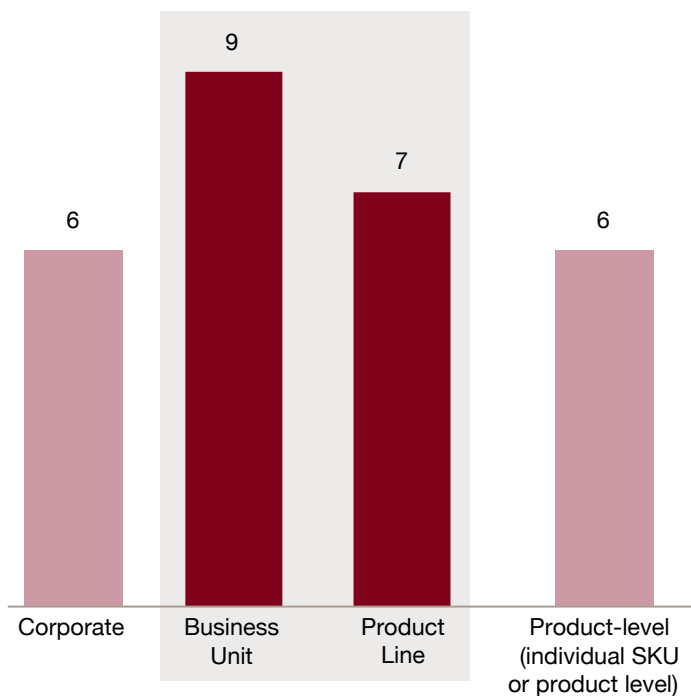
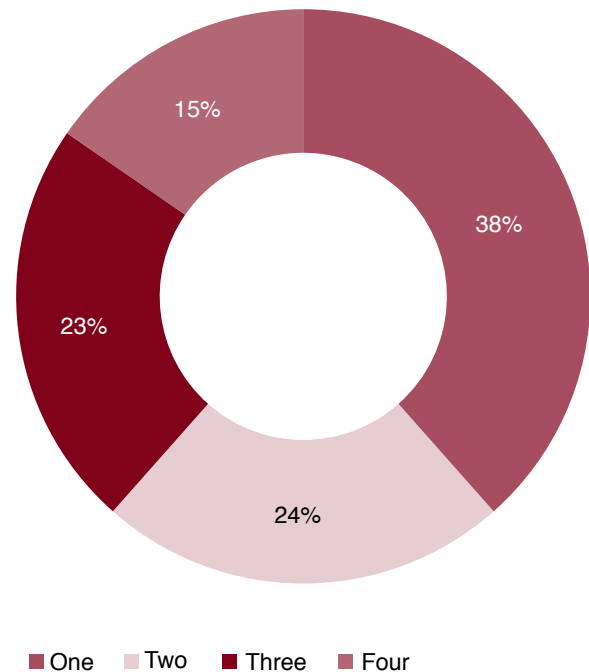
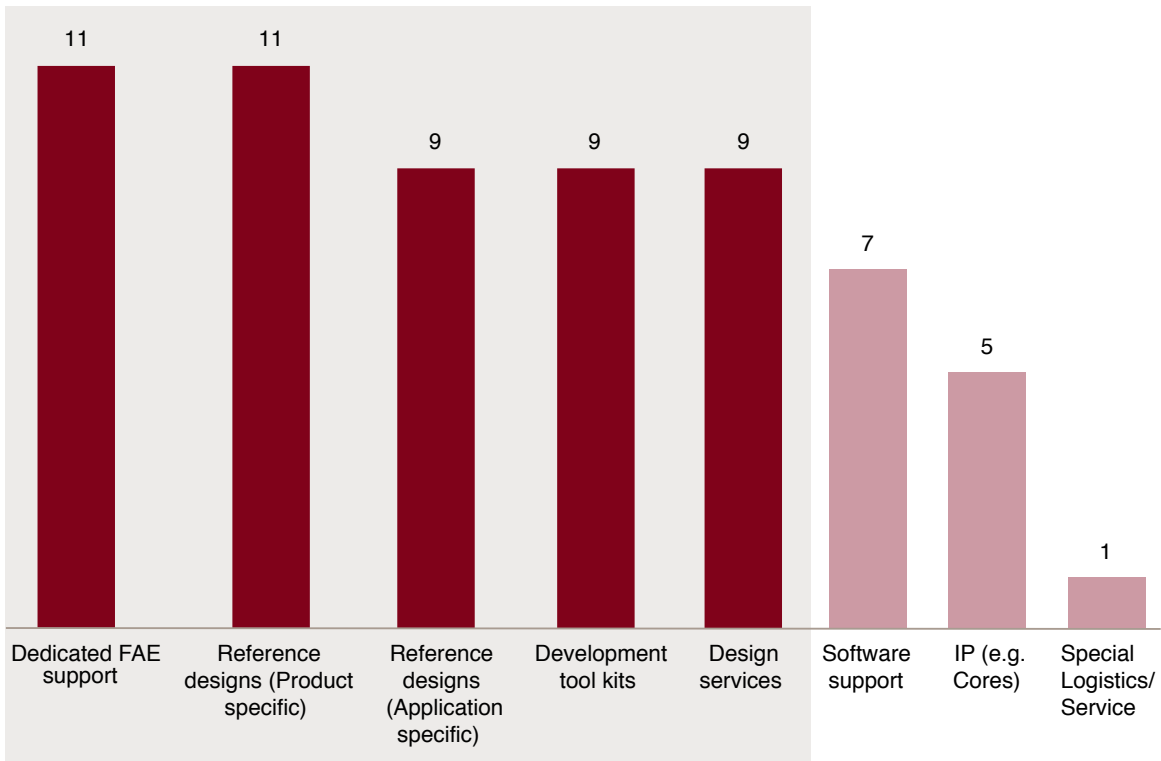


Chart 2: Depth of pricing strategy development



“Value-Added Services” are key drivers for price formulation. They are critical in maintaining higher prices for customer-specific price books and negotiating with strategic customers. We also asked our survey respondents, “What is the most significant value-added service that gets included in your pricing strategy for a product portfolio, region or specific customer?”

Chart 3: Value-added services provided to strategic and key customers



Most semiconductor companies recognize services such as dedicated FAE (field application engineering) support, reference designs, and other development and design services as critical value-adds impacting the pricing strategy and the resulting price formulation.

Price book creation, updates, and segmentation

Price formulation is a combination of various internal and external factors and all these factors should be incorporated in the creation as well as updates of the price books.

When we asked companies about the pricing approaches used to develop price books, 93% of the survey responses included ‘value’ in developing the pricing strategy. However, when asked about the sub-factors used in future price book development, most survey respondents identified ‘projected costs’ as the most frequently used factor in determining future price books.

Chart 4: Major factors used to develop price books

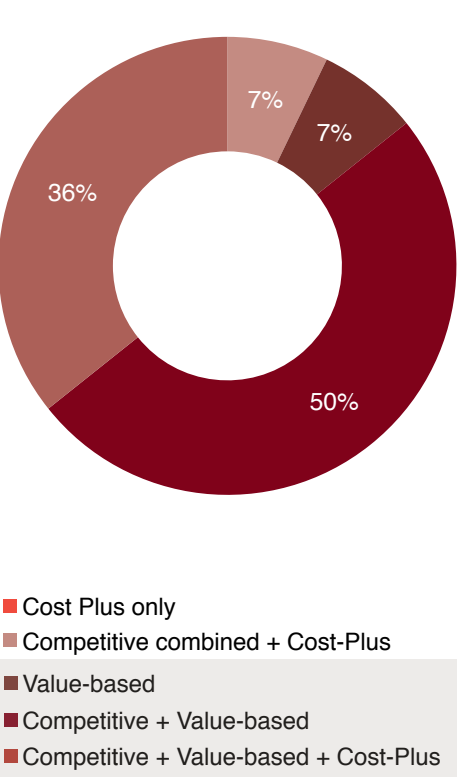
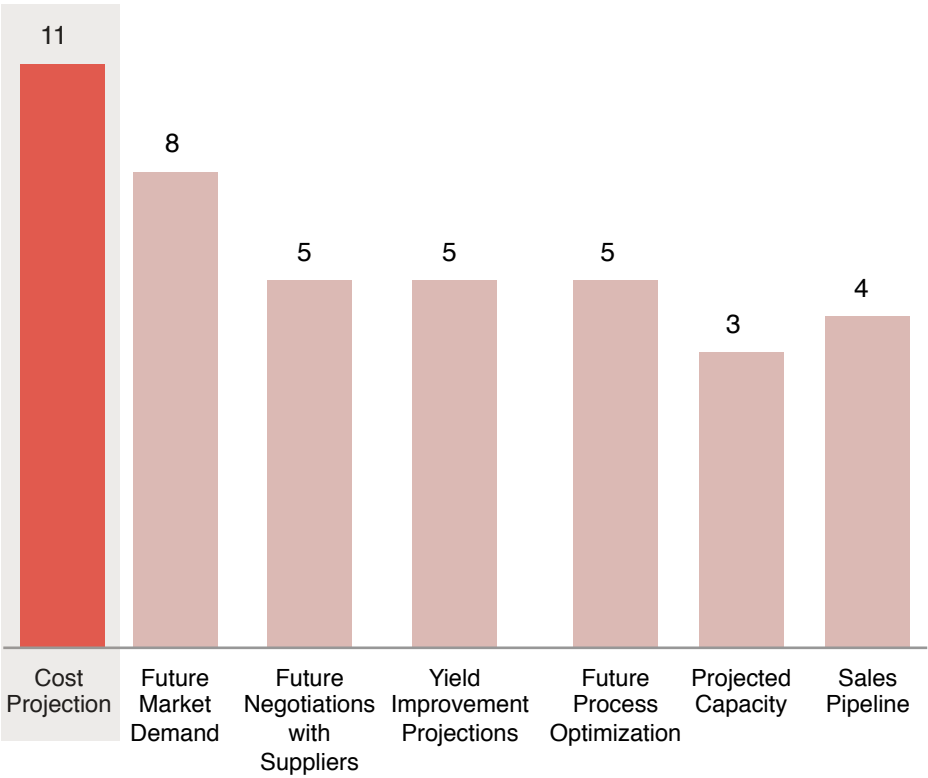


Chart 5: Sub-factors used in future price book development



Sixty-two percent of the surveyed companies use both 'Resale' and 'Distribution' costs when setting prices to the channel. Regular updates to price books are also not a common practice applied by most semiconductor companies.

Market segmentation, regional price lists, and VPAs (volume purchasing agreements) are essential to drive geographic and customer specific behavior across a portfolio of products. Specific product and service attributes can allow companies to defend the market price books.

When asked regarding setting the list price book based on market segment or region, 31% of surveyed companies responded that they have regional price lists, but only 14% have market segment price lists. Over 75% of the companies are only setting their price books (regional and market) from a global price book.

Chart 6: Type of channel price books used

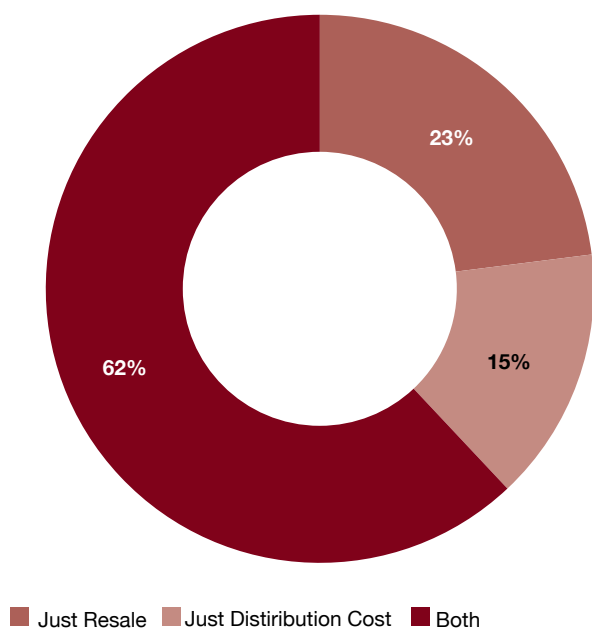
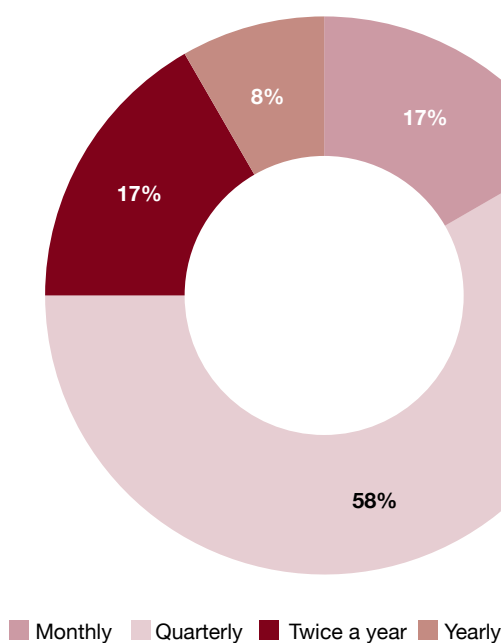


Chart 7: Frequency for price book updates



Only 17% of the surveyed companies update their price books on monthly basis and only 58% update their price books on a quarterly basis.

2. Transaction management

Transaction management demands that organizations consider “real” costs to create reasonable discounting thresholds and floors, defining and appropriately pricing bundles of products and services, and determining the number of approval levels within the company for various types of sales.

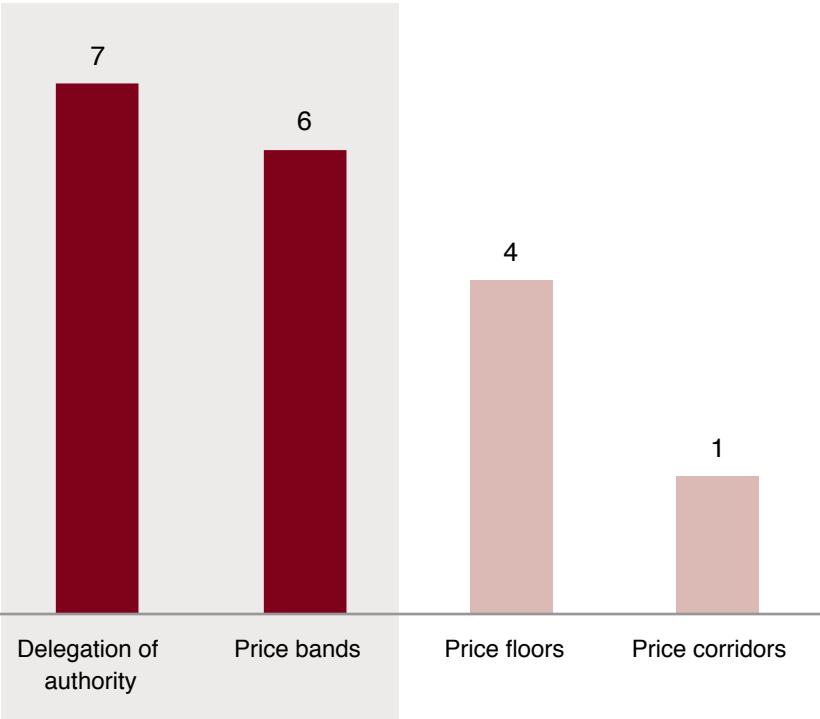
Deal flow segmentation should be based on a set of business rules and clearly defined pricing and discounting policies to minimize approval overhead and speed up decision-making. Companies should define a set of business rules that help determine high, low and no touch deals, how the transactions are managed and who manages them, who is responsible for

the Volume Purchasing Agreement (VPA) negotiations within your company and how often are the VPAs negotiated. There should be clearly defined accountability and escalation paths for approvals and well defined business cases should be used for high-value deals to facilitate approvals.

Price variability

Our survey response shows that *price variability when quoting is largely managed by delegation of authority and price band*, with delegation of authority varying by authority levels in the sales and deals desk organizations. We also noticed that price corridors are less used in semiconductor companies as most price books are broad-based across vertical markets. Most respondents (73%) do use automated workflow systems for their approval processes.

Chart 8: Managing price variability when quoting to customers



Quote cycle time

Based on the survey results we see that, *on average, 51% of quotes find their way to deals desk or product management, which suggests a high number of deals requiring high and low touch. Quote turnaround time (TAT) targets are usually missed due to complexity of quotes for non-standard deals but also systems inefficiencies and internal resource constraints.* Other factors impacting quote TAT are time-zone differences, lack of customer/competitive intelligence, management/approver availability, incomplete data from the field, and outside-of-system quotes.

Chart 9: Actual vs. Target quote cycle times

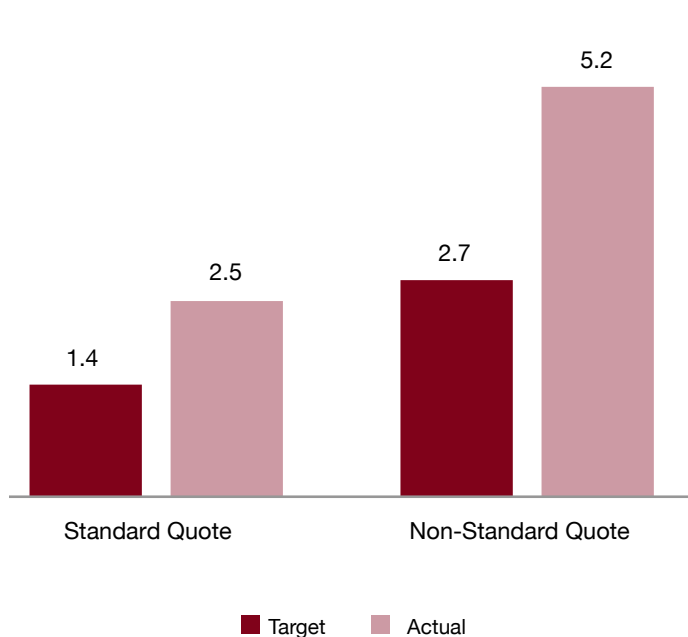
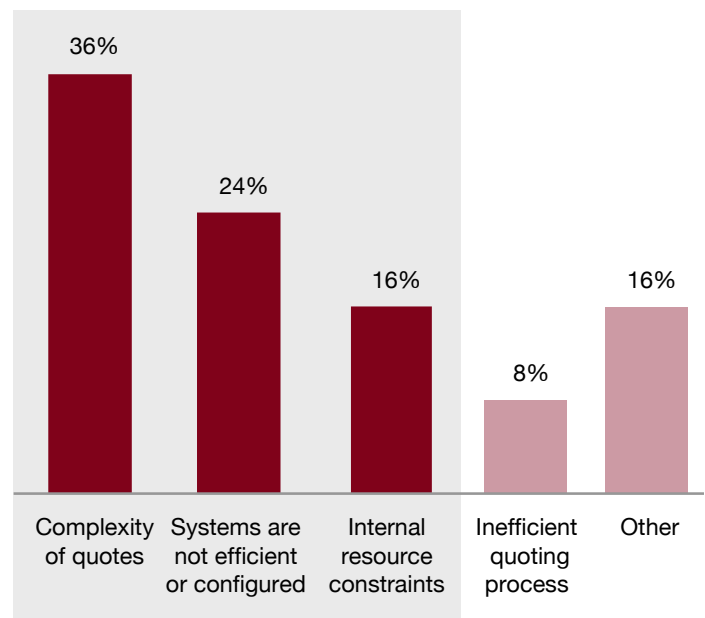


Chart 10: Top reasons for missing quote TAT targets



Tracking Consumption to Quotes and Achieving Compliance

Consumption volume to quote should be a key part of the negotiation with the customers – the deals desk and analytics teams can provide quarterly consumption reports to sales. As VPAs can be measured and behavior with the specific customer can be adjusted far quicker than a broader set of customers, our survey results show that the compliance for VPAs is much higher (72%) as compared with the compliance to standard quotes (60%). Successful VPA negotiations are based on a unified account strategy and collaboration between sales and deals desk.

We also asked our survey respondents to identify some of the ways used to maximize compliance and we learned that back-end rebates, multi-volume quotes, negotiating-on-renewal, and step pricing are some of the common themes used industry-wide.

Achieving compliance to the quoted volume is a challenge faced by many semiconductor companies. Lack of end customer visibility, disparate or inefficient systems or lack of key business processes are cited as some of the common reasons for lack of compliance to quotes.

Chart 11: Challenges to achieving 100% compliance

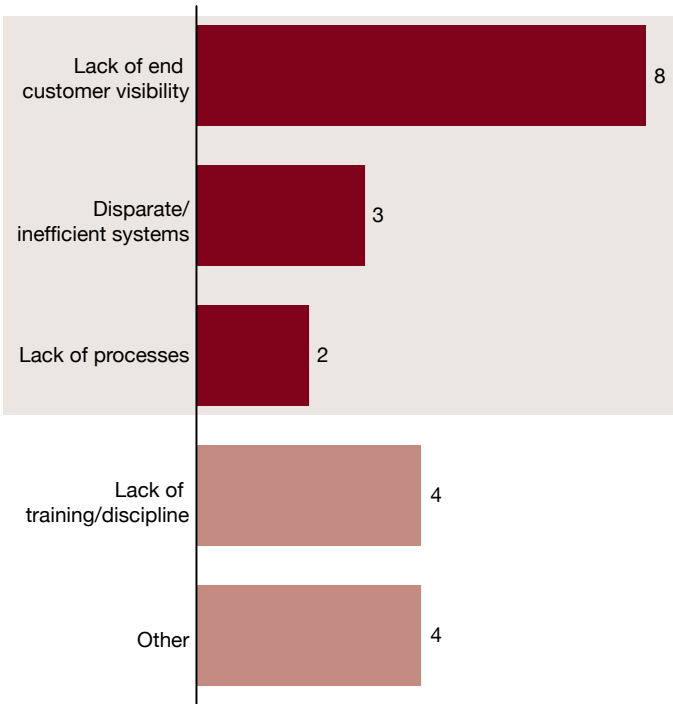
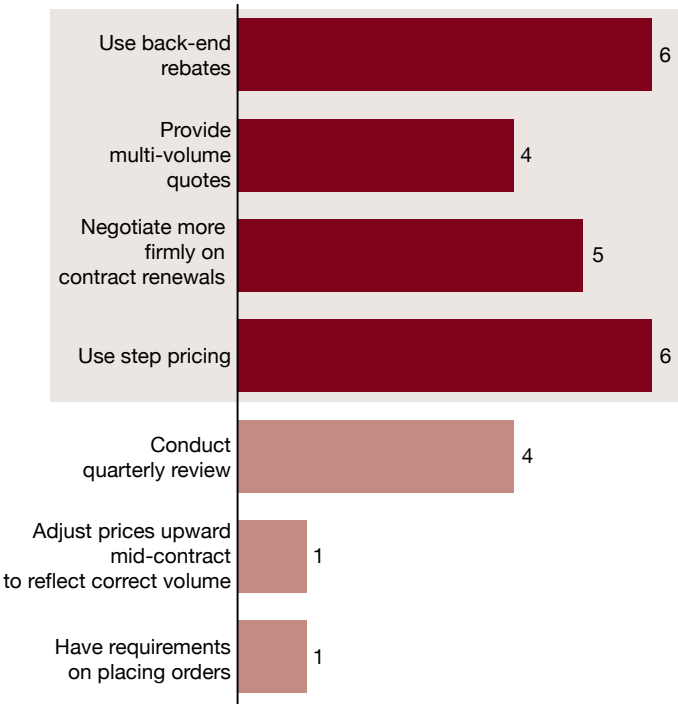


Chart 12: Ways of maximizing compliance



Product Discounts

‘Discounts’ are one of the oldest and most effective strategies used to increase sales and retain customers across all industries. In order to understand the percentage of business given at discount and common drivers for discounts, we

asked our survey respondents for criteria used for account segmentation and application of discounts. *‘Customer revenue to our organization’ and ‘Customer growth potential’ are the two top most criteria used to segment account tiers and most discount strategies are driven by volume, customer specific criteria and design registration.*

Chart 13: Criteria used to segment account tiers

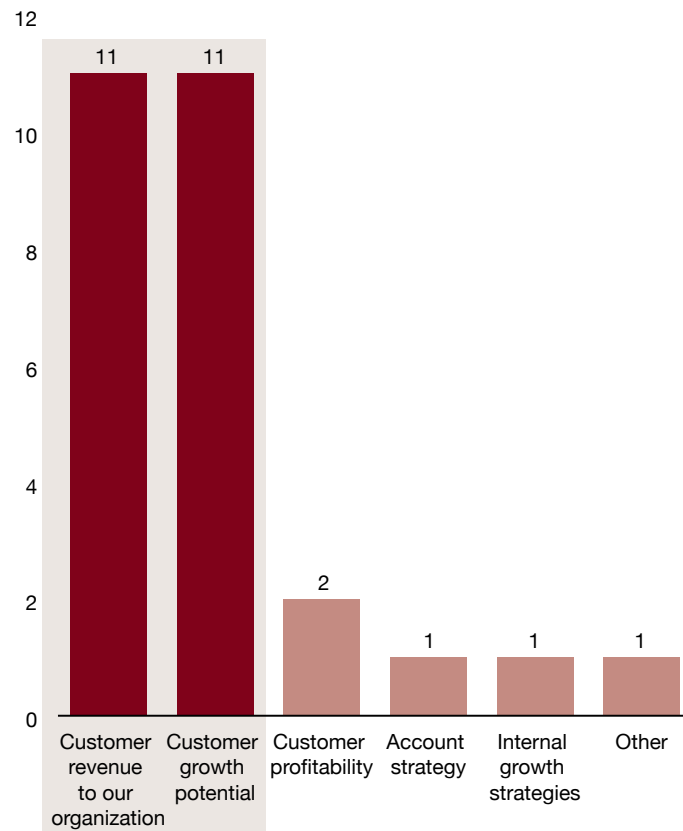
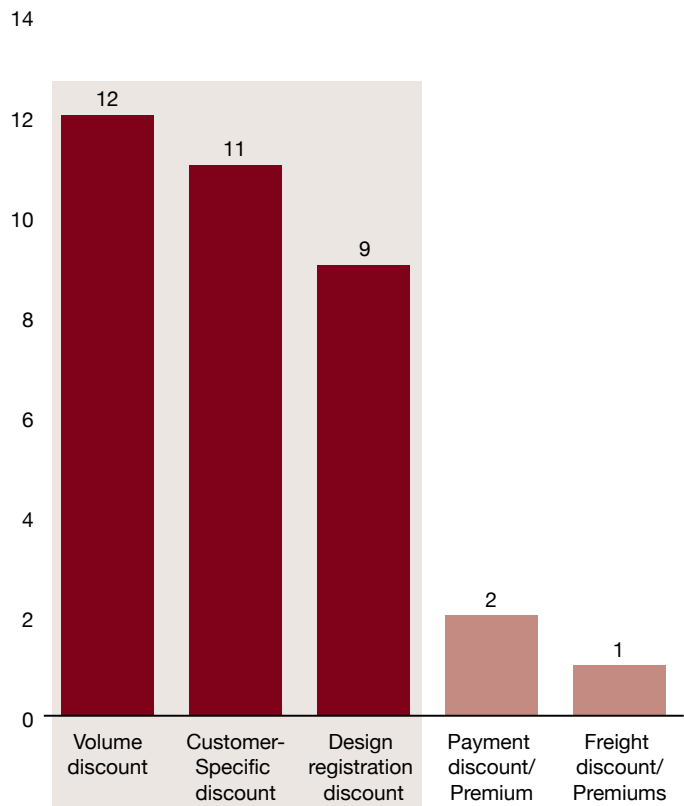


Chart 14: Discounts applied to pricing



We also asked our survey respondents, “What percentage of your business is quoted/sold at list prices?,” and most interestingly, we learned that “commodity” products are mostly sold close to list price vs. significant discounted pricing for “differentiated” products.

Visibility on why discounts are given to a customer helps improve behavior, but only 50% of companies surveyed responded having complete visibility to the discounts given to the customers.

Some of the other common observations were:

- Customers mostly ask for discounts ranging from 10% to 20%
- Most sales force authority is for discounts under 25%, allowing organizations to address most customer requests in the field
- Companies usually give 10% additional discounts off US sell prices in Asia, but provide no additional discounts in Europe

Rebates are also an excellent and successful way for delivering “discounts” and thus driving sales. *Sixty-seven percent of the companies surveyed use rebates for channel partners as well as end customers. Thirty-eight percent of companies surveyed identified backend rebates as an effective means for driving sales.*

Chart 15: Use rebates for customers and partners

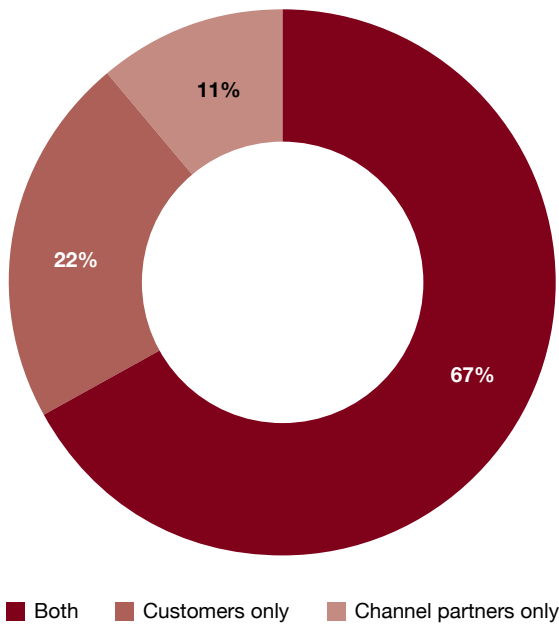
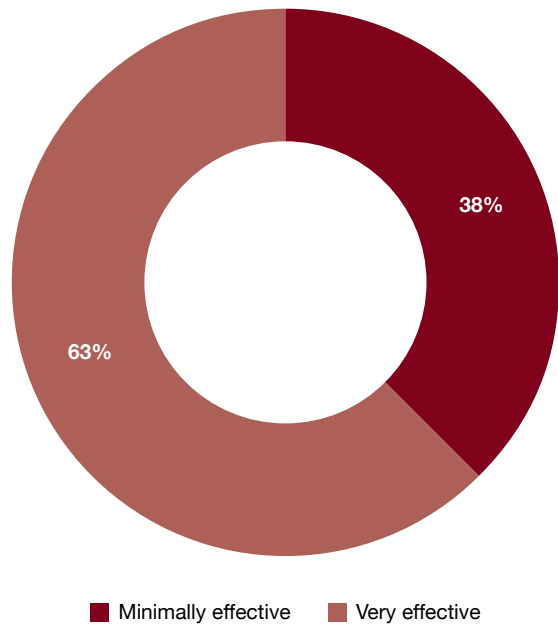


Chart 16: Effectiveness of backend rebates



Opportunity tracking and management

To determine the leading practices in opportunity tracking and management, we asked companies regarding their design registration programs, their ability to track designs and the incentives provided through such programs.

We learned that 92% of companies surveyed use design registration programs as a means to boost sales, but only 67% have the ability to track those designs through all levels of distribution and manufacturing. Back-end rebates and front-end discounts are the two commonly used incentives provided through design registration programs.

‘Design wins’ are another common tool used by companies to lock-in customers, which includes tracking and step-by-step winning of the design opportunity. *Sales and Marketing are the two most commonly present functions during design-win reviews.* But in order to appropriately use design-wins as a means to improve pricing strategy and resulting sales, pricing teams should also equally participate in opportunity management reviews with sales and marketing.

Most companies ensure effectiveness of design-win programs based on the traditional mechanism of tracking numbers of win/loss and associated reasons but very few manage and review the pricing strategy to ensure the design win. Participation of the pricing team in the design-win program can also increase the effectiveness of such programs by aligning the pricing strategy with the design-win program goals.

Chart 17: Functions present at design win review

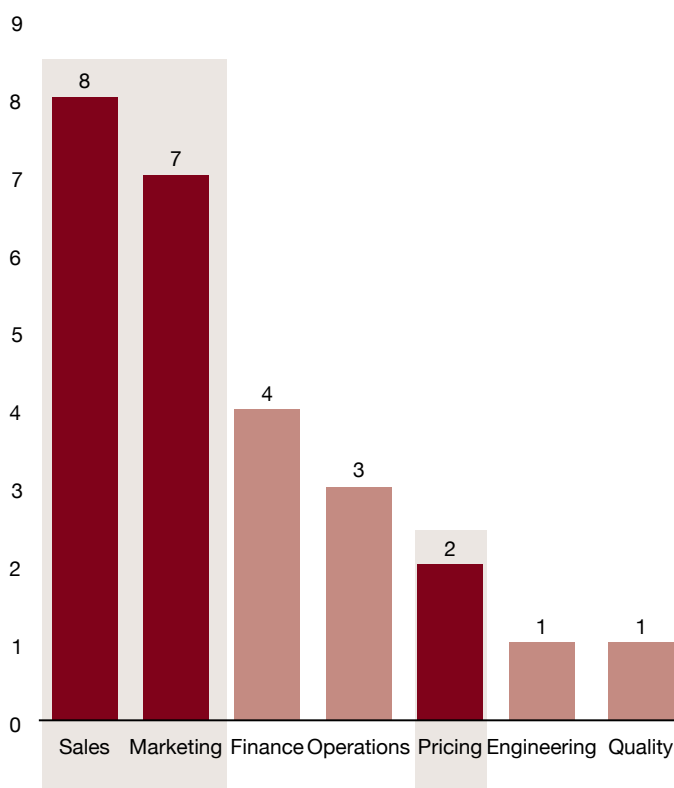
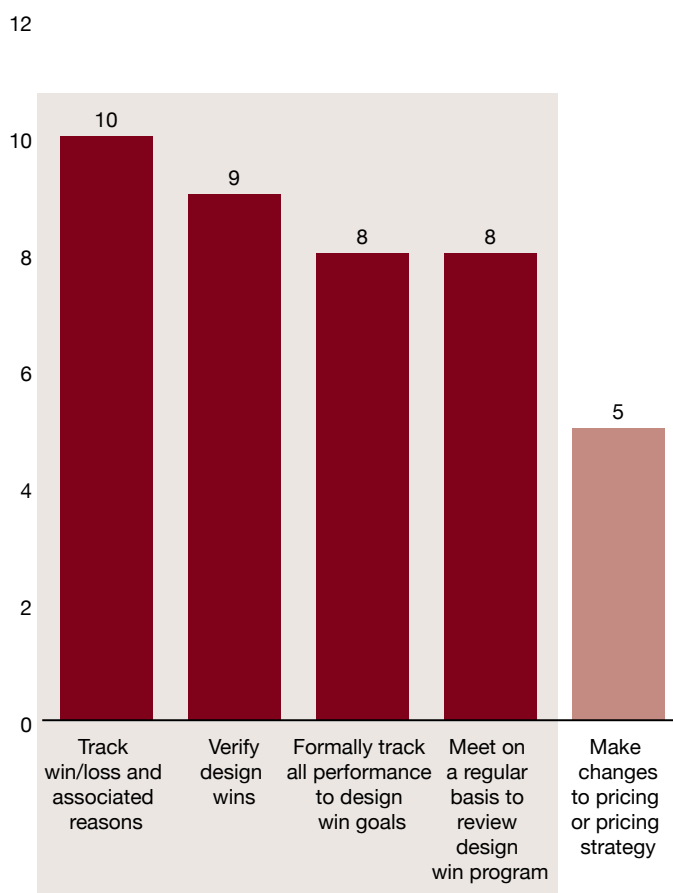


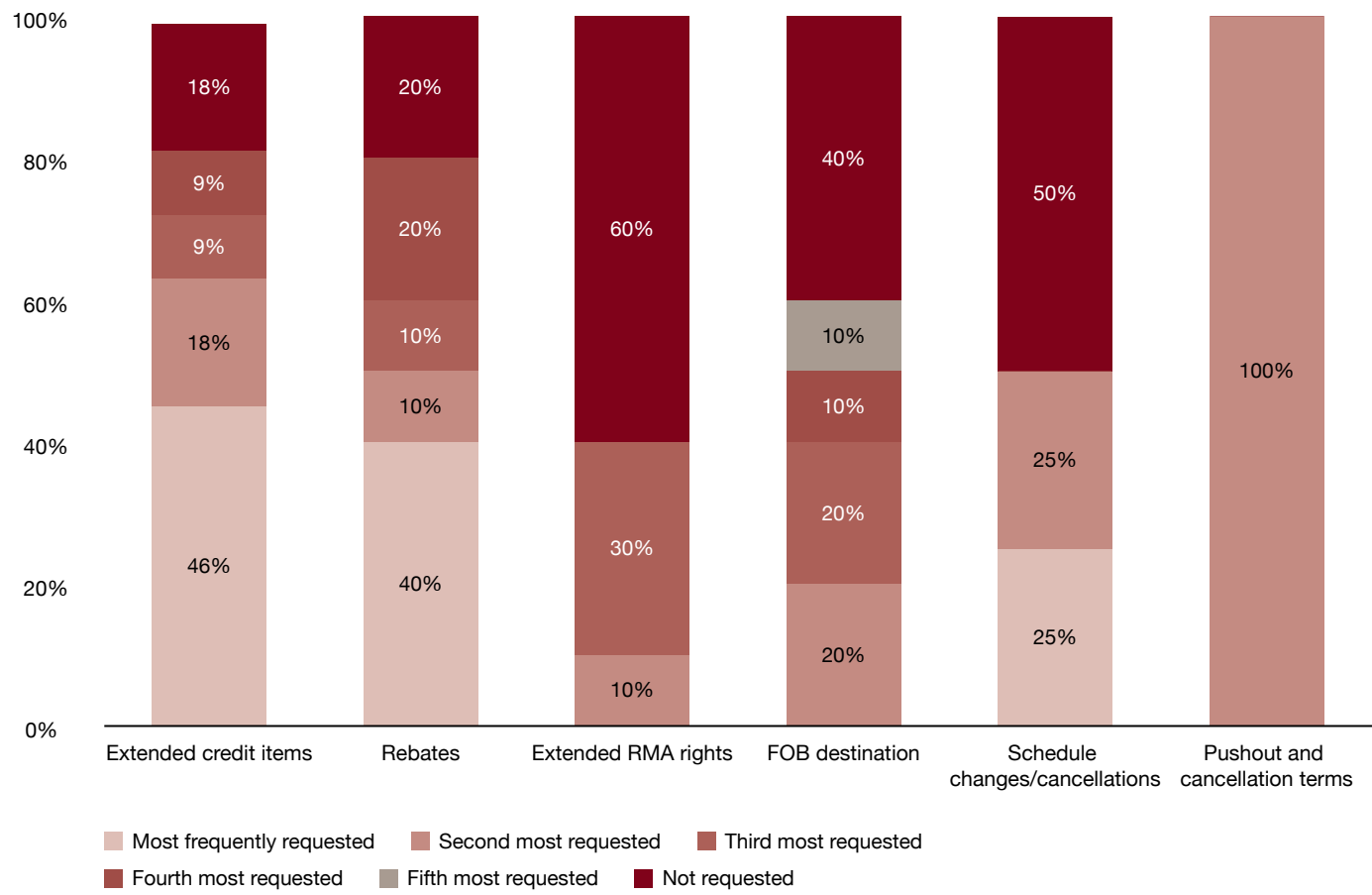
Chart 18: Mechanism to ensure design win effectiveness



Contracts terms and conditions

Profitability is impacted not only by prices but also by non-standard contract terms and conditions. *Our survey revealed that key contract terms (beyond prices) that impact profitability are credit, rebates, and penalties.* Therefore it is essential to conduct holistic profit analytics for strategic customers every 1-2 years.

Chart 19: Top 5 non-standard terms/conditions frequently requested by customers



3. Performance management and data analytics

Performance management, a key component of robust pricing processes, delivers the best results when a company has ample holistic and real-time analytics to inform its application portfolio and pricing model. Corporate dashboards that include pricing performance across products and vertical segments, key pricing metrics and customer retention rates allow vendors to track what is and isn't working.

Performance dashboards and scorecards help refine decisions and align with corporate goals (e.g., win/loss, price realization, segment-based revenue-GM scatter plots, price /volume curves, cost-to-acquire, cost-to-serve across product-line, regions, market segment, and customer tiers). Sharing performance reports with cross

functional teams helps improve understanding of business impact and changes needed in light of competition and market conditions.

Tracking price realization, exceptions and quote cycle time can also help the process flow for deal management.

Our survey results show that companies are currently tracking performance primarily on product attribute. Extending these to include customer-specific metrics can enhance the visibility of actual pocket margin.

Chart 20: Metrics: Revenue, gross margin, and contribution margin

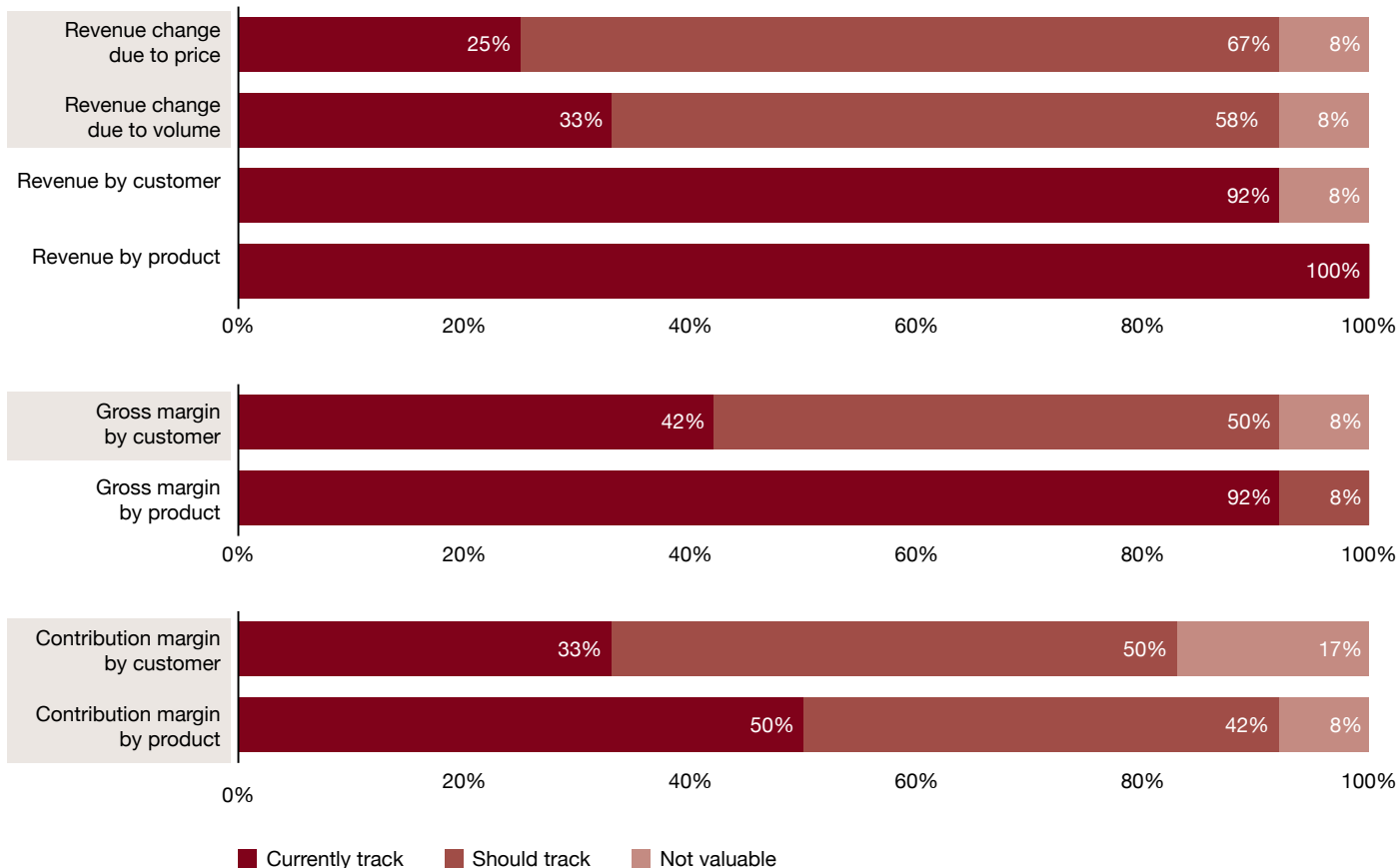


Chart 21: Metrics: Design win/loss, quote cycle time, volume compliance

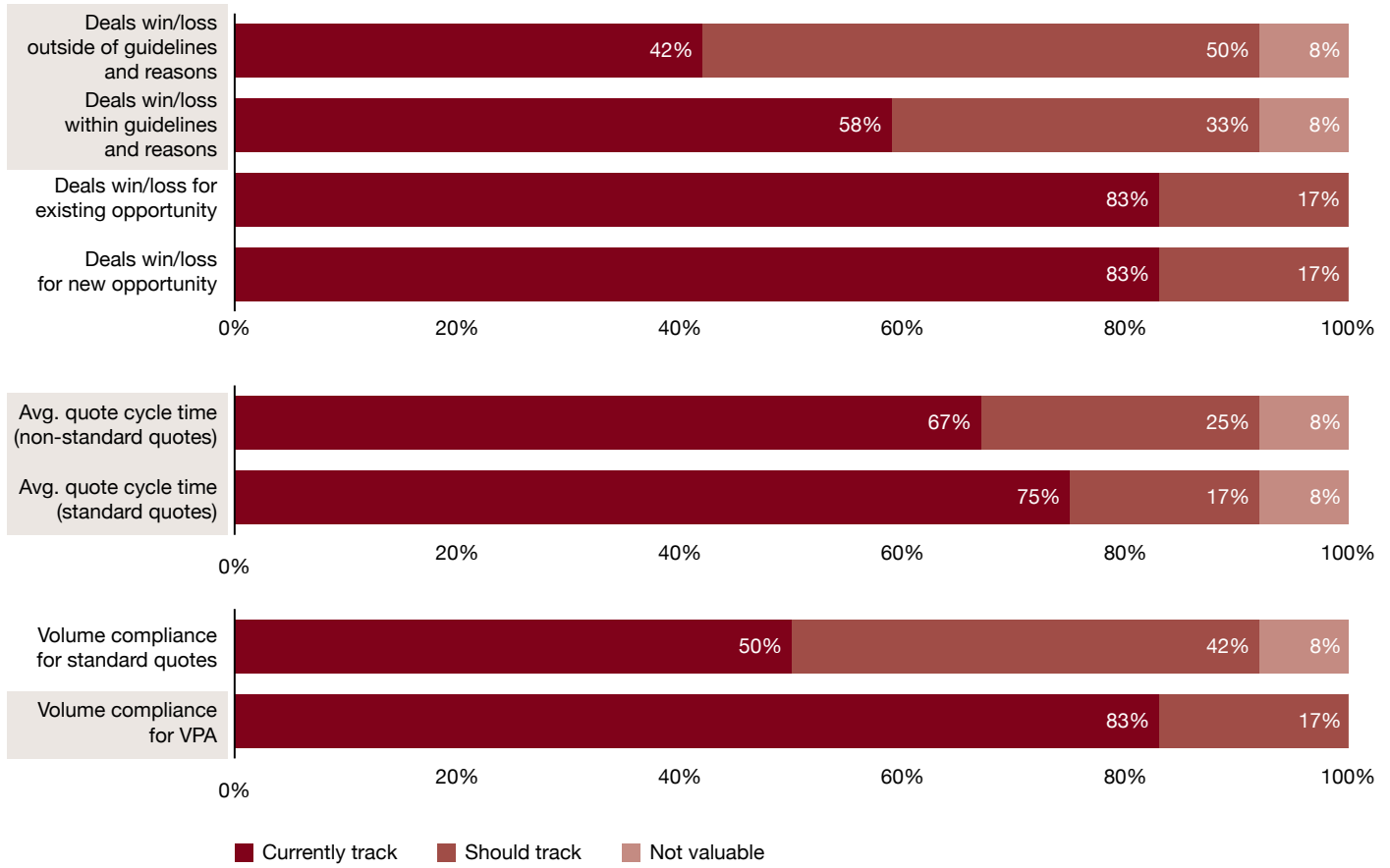
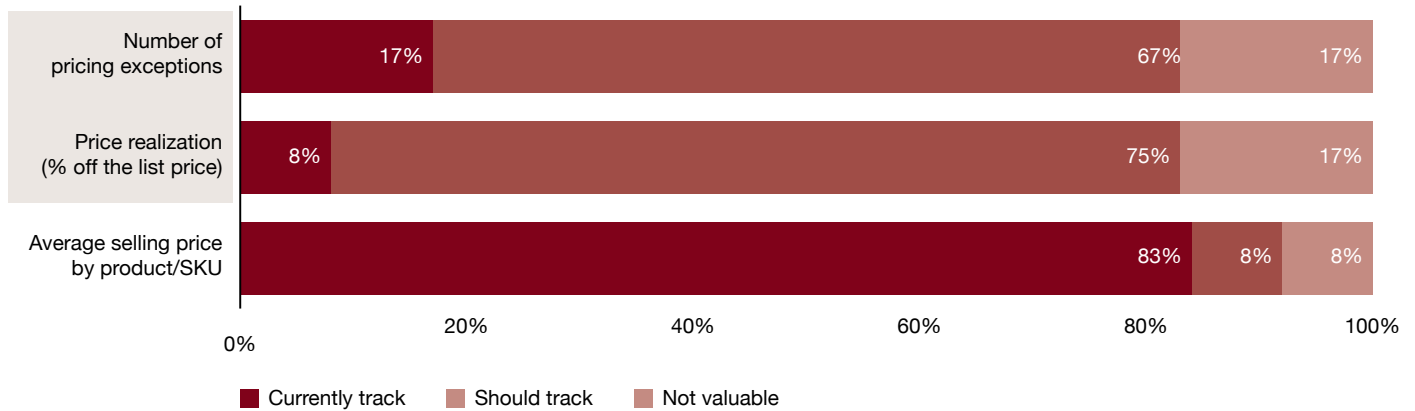


Chart 22: Metrics: Average selling price, price realization, pricing exceptions

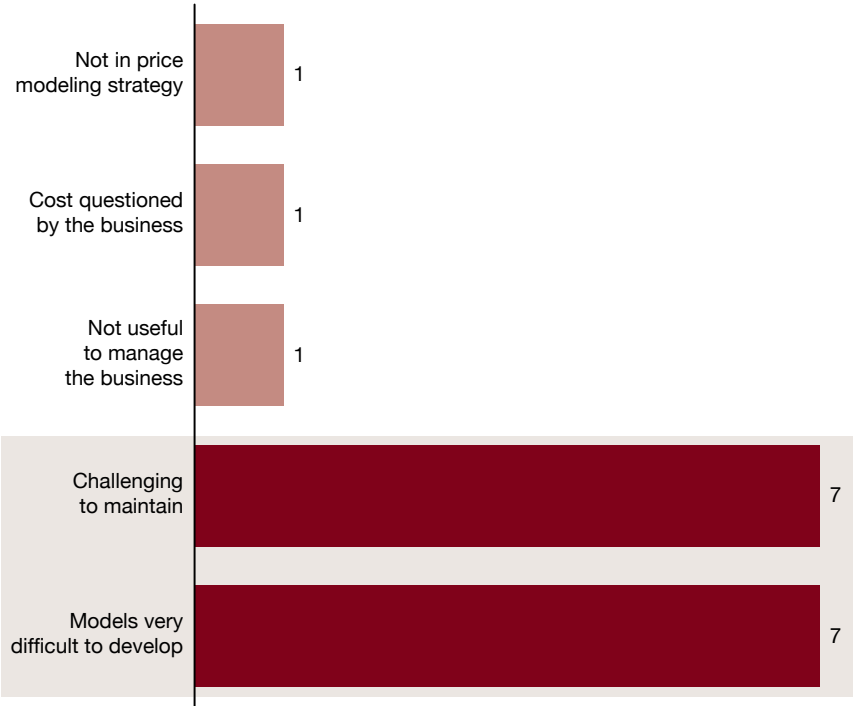


Price waterfalls

Price waterfalls are powerful mechanisms to identify and close profitability leaks. Price waterfalls are very popular and widely used in the industrial/manufacturing sectors.

However, none of the companies surveyed use price waterfall methodologies, with 90% citing that they are too complicated to develop and maintain. (A depiction of PwC Price Waterfall implementation framework is provided later in this report.)

Chart 23: Reasons for not maintaining and using price waterfall models in pricing functions



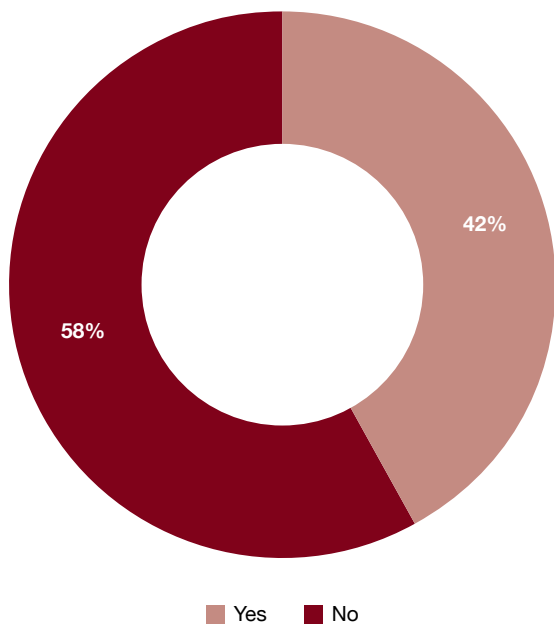
4. Organization

New product development pricing and any major adjustments to existing product pricing should be developed with support from multiple organizations, but driven by a primary organization. Typically, companies should have a pricing committee for approving pricing strategy and setting prices.

Deals desks

Deals desks are a powerful organization that not only help execute the low-touch and high-touch deals efficiently with standard business rules, but can also provide analytics and drive business cases for high-touch, strategic deals through executive approvals. *However, our survey results showed that currently less than a half companies (42% of the surveyed) employ deals desks.*

Chart 24: “Do you use a deals desk?”



This raises an interesting question: ‘If companies don’t have deals desks, how do they manage coordination across business units? Is there an opportunity to significantly improve deal execution by setting up a corporate level deal desk?’

Organization’s visibility

The visibility of the opportunity between field and factory teams can make it collaborative and prevent surprises—e.g., at a specific stage in opportunity management and due to key attributes being used by the customer, the quoted price can move. Developing business cases for high-touch strategic deals jointly between sales, product management, and deals desk results in holistic scenarios for executive staff review.

In the end, compensation which is linked to visible metrics for deals desks, sales operations, sales, etc. helps drive the intended behavior. Seventy-five percent of the surveyed companies responded that they can effectively track deals in both the Field and Factory.

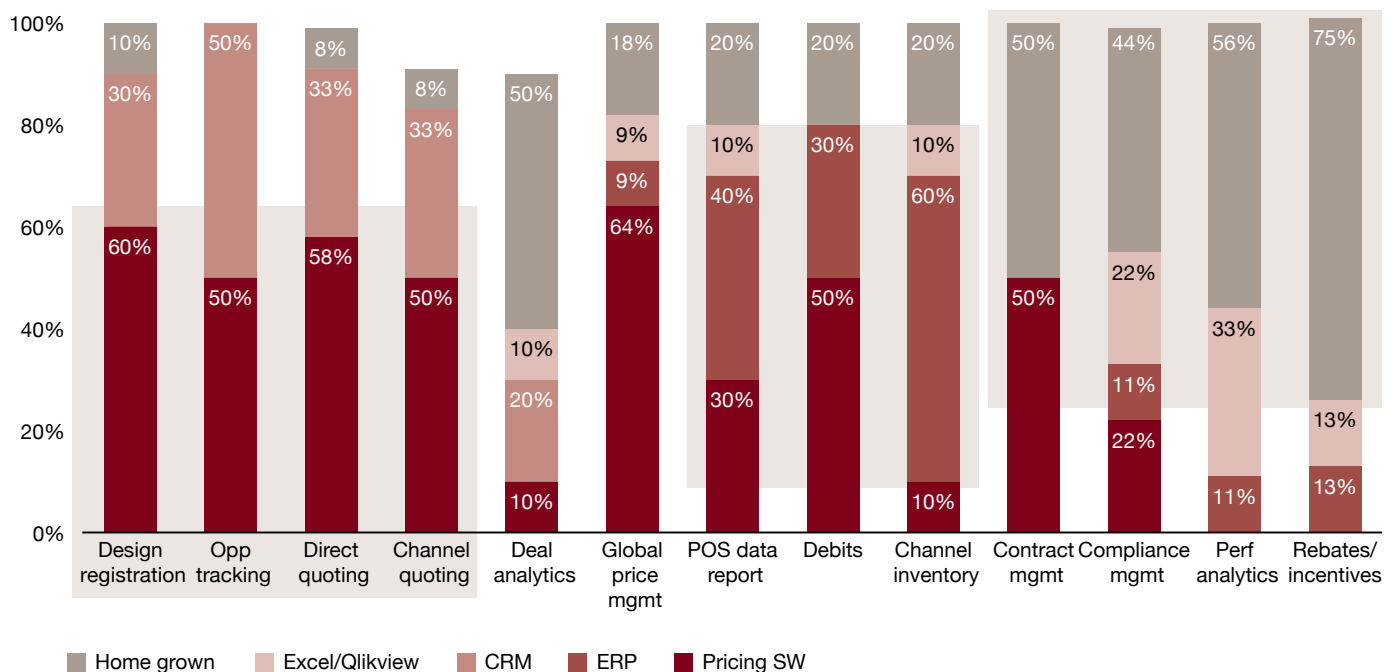
5. Technology

Most technology companies are marrying sales or opportunity management and quoting or price management together in holistic systems. Analytics and dashboards from this integrated system can provide powerful complete and historic details on a variety of data (customer, market, region, product, etc.).

Survey findings regarding common technology practices used for opportunity management are:

- Pricing software is mainly used for Design Registration, Opportunity Tracking, Quoting, Price Management, Debits, and Contract Management
- Excel /Qlikview is used for Performance Analytics and Compliance Management
- CRM is used for Opportunity Tracking and sometimes for Quoting and Design Registration
- ERP is used mainly for POS Data Reporting, Channel Inventories, and sometime for Debits
- Home Grown systems are used for Deal Analytics, Contract Management, Compliance Management, Performance Analytics, Rebates/Incentives

Chart 25: Technology used across the opportunity life-cycle, including pricing management



Conclusion

PwC's Semiconductor pricing survey indicates that the current maturity of semiconductor companies in establishing and executing pricing strategies to achieve corporate goals and drive profitability is significantly low. Lack of rigorous pricing management is impacting both the top and bottom line performance.

The table below summarizes some of the common gaps in pricing management practices that we have observed in the semiconductor industry and the resulting impact.

As shown, pricing strategy development and optimal price setting can help improve revenue and margins through better understanding your customers, competitors, positioning of your products in the market place, what drives value to customers, and what drives cost to serve.

Gaps in pricing management practices	... lead to problematic symptoms with serious, detrimental results
Sales reps are not incentivized to quote above field minimums	Realized prices gravitate toward the field minimums	True value of products not established in marketplace leading to loss of revenue and margin dollars
Quote to consumption is not tracked and step pricing is not a consideration	Customers pay high-volume prices for low-volume purchases	Revenue and margin dollars are not realized and the problem customers become repeat offenders
No set guidelines exist for authorization-level quoting	Inappropriate or excessive discounts occur, discounts vary by person authorizing	Revenue and margin dollars are left on the table, customer expectations are set for continued low pricing
Systems aren't integrated and lack functionality, extensive manual effort is required to manage quoting and invoicing	Pricing errors occur across the lead-to-invoicing flow	Compliance issues may result in customers having negative experience and revenue and margin may be accidentally lost
Escalation paths are unclear, roles and responsibilities are not clearly understood	Excessive quote turnaround times	Customers give up and move on to the next supplier and could be lost for life
Deal analytics aren't routinely used or are severely lacking	Difficulty managing negative margin deals or customers	Bottom-line negatively impacted, problem customers become repeat offenders

PwC’s pricing management framework

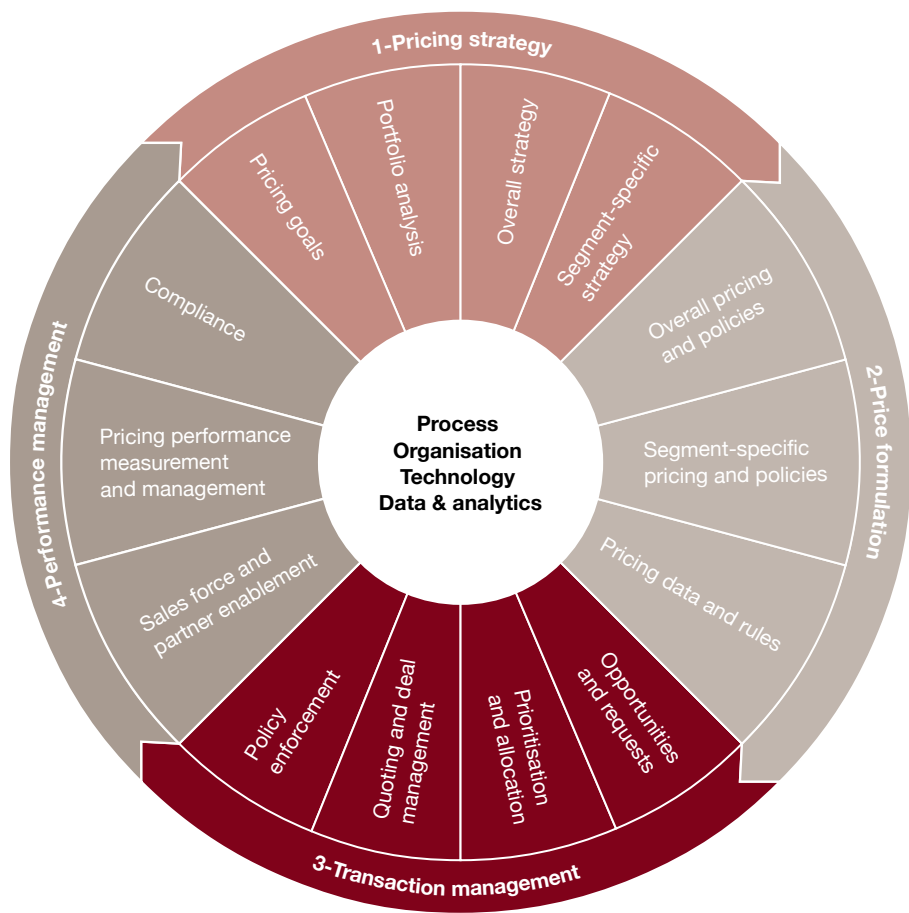
PwC has developed a thorough Pricing Framework that focuses on elements that drive pricing maturity and impact financial results.

Pricing excellence is achieved by a dynamic, proactive process of optimizing the price of goods and services based on understanding what customer’s value, predicting what the customer is willing to pay, and aligning various functional areas (finance, R&D, sales, marketing, etc.) to ensure products meet customer needs at an attractive price.

This strategic process should take place within a framework that includes pricing strategy, price formulation, transaction management and managing performance.

When an organization monitors all four of the above depicted elements on an ongoing basis, it can adjust its pricing and product offerings as it gathers competitive data on new business models, bundles and specific wins and losses. Companies can also use this data to clarify target markets and use models, help prevent multiple business models and product lines from cannibalizing each other and develop innovative approaches to customer service.

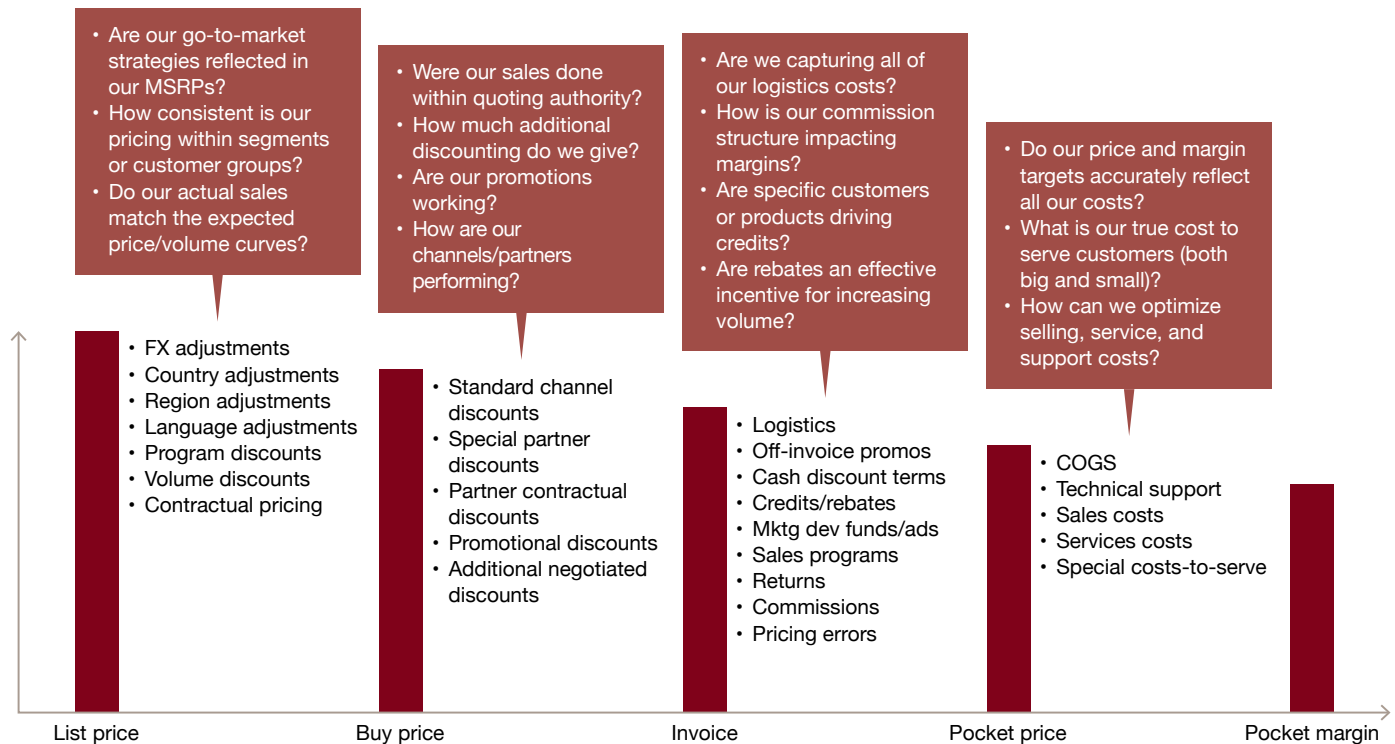
Chart 26: PwC’s pricing management framework



PwC's pricing waterfall methodology

Price waterfalls show levers to systematically manage prices from list to invoice, and understand costs-to-serve. Successful implementation of pricing waterfall helps efficiently manage pricing /discounting and impact the deal approval flow. It also provides clarity on deals (high touch, low touch, no touch) and approval workflow for negotiated discounts.

Chart 27: PwC's pricing waterfall



PwC can help

From growing competition to decreasing willingness of customers to pay more for enhanced features, semiconductor companies are faced with the challenge of developing an efficient and effective pricing strategy. For a deeper discussion on PwC's pricing management consulting services, please contact one of our leaders:

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Let's talk

Please reach out to any of our technology leaders to discuss this or other challenges. We're here to help.

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