Model N

Semiconductor CFOs Focus on Gross Margin, Market Cap, and Revenue Recognition

A Model N White Paper

This white paper outlines the business challenges facing CFOs of semiconductor and component manufacturers and the implications on gross margins, market cap and revenue recognition.

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1. Executive Summary

Gross Margin, Market Cap, and Revenue Recognition are three tightly related areas that lie squarely in the sphere of influence and responsibilities of the Chief Financial Officer (CFO). In recent years more semiconductor and component manufacturers are acknowledging that margin improvement through cost reduction is delivering diminishing value while front-end processes in sales, pricing, contracts, and channel incentives can have an equal if not greater impact on improving gross margin. The direct impact of channel incentive processes on Sarbanes-Oxley compliance and Revenue Recognition is a top-of-mind issue for executive and financial management.

Senior managers' focus on cost reduction has been reflected in under-investments in sales processes, sales support tools, and sales financial systems. All the while, buyers, end customers, OEMs, distributors, manufacturing and stocking reps, and contract manufacturers have armed themselves with sophisticated global procurement systems designed to expose each and every weakness in pricing policies and exploit transactional gaps. This dramatically increases pricing pressures and makes it difficult to manage margin throughout the revenue life cycle.

A Yankee Group survey conducted in late 2006 with 59 semiconductor and component manufacturing companies revealed that 85% of the companies use the rudimentary functionality of ERP, legacy, or homegrown systems to manage their revenue life cycle. These companies often experience significant price erosion up to 2-3%, resulting in losses of $30 million on every $1B in sales.

An analysis of 70 publicly traded semiconductor companies demonstrates a non-linear relationship between gross margin and market cap, making the factors that directly impact gross margin — pricing, quoting, contract compliance and the payment of channel incentives — a prime area of focus for CEOs and CFOs. Additionally, the impact POS data management and reconciliation with debits has on recognizing deferred revenue is of paramount importance for 50% of the companies that participated in the Yankee Group survey.

Semiconductor and component manufacturer CFOs are taking center stage in initiating Revenue Management projects and demanding these projects present business and functional requirements that clearly demonstrate the ability to impact margin as one continuum — from opportunity to incentive payment. They are also insisting on industry experience and relevance to reduce the financial risk of such projects. A Yankee Group survey that analyzed 144 quarters of financial performance of nine semiconductor companies that implemented Revenue Management solutions demonstrated that these companies were able to increase gross margins year after year by an average of 2.4%, outpacing their competitors by an almost 3X gross margin annual improvement rate.

About Model N High Tech

Model N, the leader in Revenue Management Solutions, offers an integrated application suite for managing global pricing, quoting and contracts, and the channel revenue life cycle. We have helped our customers increase gross margins by 2-3% annually by reducing price erosion, improving quote-to-order conversion rates 10-15%, and by reducing channel incentive overpayments. Our Revenue Management Solutions are ***designed for*** and ***exclusively delivered to*** semiconductor and electronic component manufacturers. By enabling a seamless, end-to-end process, from creating visibility into opportunities and design registrations, to global pricing, to quoting and contracts, to managing channel incentive payments and reconciliation of POS data with debits, Model N's uniquely integrated approach improves visibility into demand, reduces margin erosion, increases quote conversion, and improves compliance with financial reporting requirements. Model N solutions are designed to complement and augment existing ERP systems such as SAP and Oracle. Customers include PMC-Sierra, IDT, Microchip, Micron, Micrel, ON Semiconductor, Pericom, FCI, Intersil, Cirrus Logic, Avago Technologies, Cypress Semiconductor and many others.

2. Key Business Drivers for Revenue Management

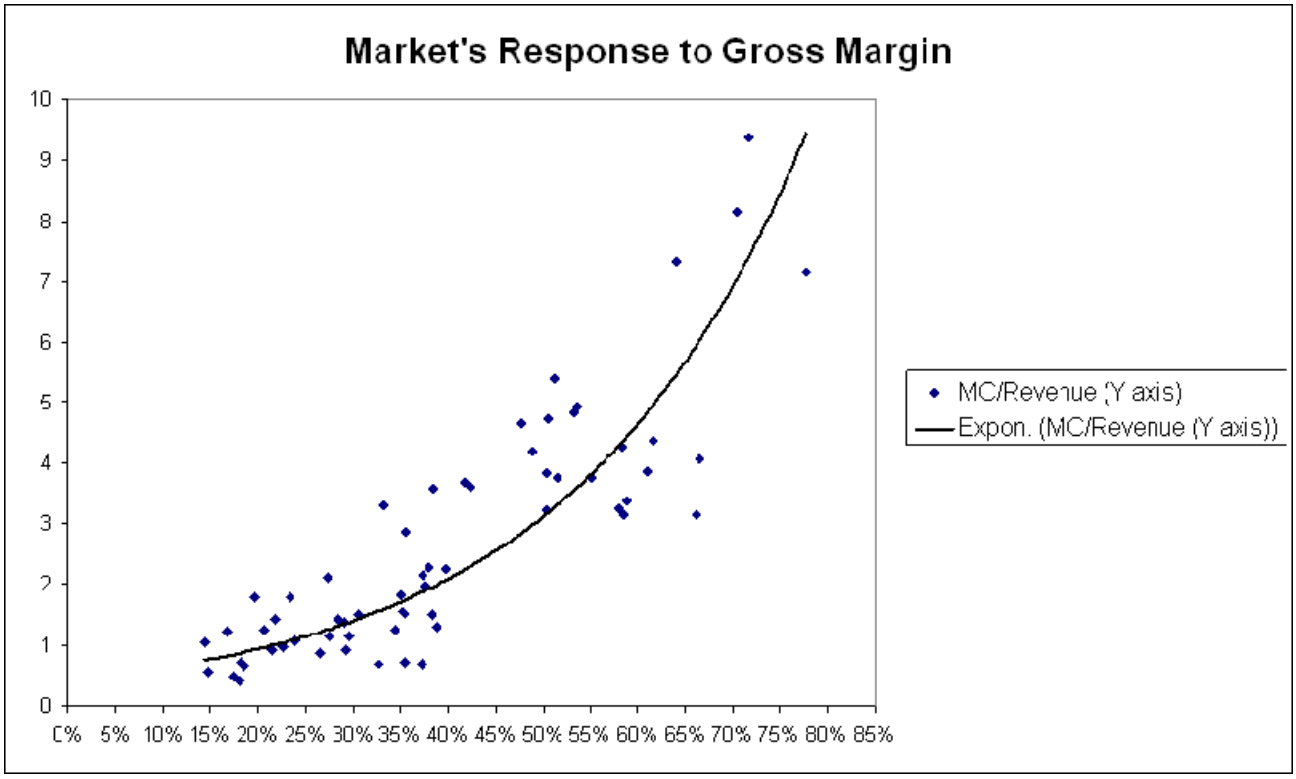
Non-linear Relationship between Gross Margin and Market Cap

Gross margin is a pivotal indicator of a semiconductor company's health and prospects. An analysis of 70 publicly traded semiconductor and component manufacturers in the US conducted in October 2007 demonstrated that the market is clearly favoring companies with 40% gross margin and above, rewarding them with 4X to 8X multipliers on revenue to determine their market cap (Figure 1). Companies operating below 40% gross margin are typically given 1X to 3X multipliers on their revenue.

This phenomenon, in part, has been a driver behind the wave of multi-billion dollar companies being taken private by private equity firms such as Baine Capital, Texas Pacific Group and KKR. The firms are investing in these companies and improving their financials and will no doubt will take them public again once they pass the 40% gross margin line.

As Figure 1 clearly demonstrates, there is a non-linear relationship between gross margin and market cap. Even a small negative movement of 2-4% in gross margin can decrease a company's market cap from a 6X multiplier to a 4X multiplier of revenue. Only companies that have been able to optimize costs and simultaneously manage their revenue life cycle and pricing have been able to drive margins higher and truly increase shareholder value.

Figure 1: The non-linear relationship between gross margin and market cap (MC: market cap)



Sample Case Study 1 below illustrates the non-linear relationship between gross margin and market cap The comparison is of two competing companies with competing product lines selling into the same markets.

	Company A	Company B
Revenue	$1.1B	$1.7B
Gross Margin	**62%**	**35%**
Market Cap	**$7.7B**	**$2.5B**
Multiplier	**7X**	**1.5X**
Revenue Management	Live 2 years with a revenue management solution	ERP only
Organization & Process	Fully developed sales operations organization and streamlined processes between, sales, sales ops and marketing	No Sales Ops function No clear ownership over margin or pricing

The example above shows two comparable companies. Even though company B has more than half a billion dollars more in sales and operates in the same markets offering competing products, its market cap is over $5B lower than its smaller competitor. This example illustrates the non-linear relationship between gross margin and market cap. While gross margin was 1.7X greater for the smaller company, its market cap was more than 3X greater than the larger competitor.

While some of the issues plaguing company B are related to cost structure, most issues revolve around Revenue Management and include:

- **No sales operations:** no function designed to support and manage sales operations including process and tools. Without people and tools, performance cannot be measured and improved.
- **No clear ownership over pricing:** regionally driven pricing with no central control, guidance, and tools other than rudimentary ERP capabilities
- **Manual design registration processes:** making it difficult for distribution work with suppliers and to enforce margin agreements on transactions automatically
- **Weak opportunity tracking:** inability to effectively understand where to focus resources and what opportunities across the channel are for the same end customer, leading to internal bidding wars costing hundreds of thousands per transaction
- **Ineffectual global price management:** poor ability to consistently execute pricing globally and across all channels, leading to price and margin erosion
- **Manual quoting:** lack of automated quoting processes, which negatively impacts quote-to-order conversions and the ability to tie quotes automatically back to opportunities and registrations. Without automated systems, there is limited visibility into where wins and losses are occurring and why
- **Weak POS and debit reconciliation:** a combination of partially manual process and partially homegrown solutions are bolted on to the ERP system, which is not effectively capturing data inconsistencies that can lead to channel incentive overpayment and financial reporting issues.

Some companies who have enjoyed high margins (above 60%) have been faced with a different, but related, challenge — they have stopped growing. Being stuck in neutral with little or no growth is a problem that affects companies of all sizes, ranging from <$100M up to $2B. Many of these stagnating companies have been able to build a successful and often profitable business mainly due to high quality and highly differentiated products. These companies are aware of the non-linear relationship between gross margin and market cap and have been concerned that if they attempt to grow through product line diversification, gross margins and subsequently, market cap, will suffer.

Companies who decide they must grow and maintain their margins have to take into account that as the business grows so will transaction volume and channel complexity. Therefore, they must have processes and systems in place that will allow them to effectively protect margin on each transaction.

Channel Revenue Recognition

POS data reported by various channels must be validated against debits, end customer name, part number, and pricing. Exceptions must be reconciled or rejected. Multiple data format and data errors make this manual reconciliation process resource-intensive and error prone, which can **lead to partner overpayments (credits) of up to 10% and higher risk of non compliance with Sarbanes-Oxley (SOX)**.

With revenue recognition practices moving towards a POS model (and away from a POP model), there are more stringent SOX compliance requirements. Semiconductor and electronic component manufacturing companies that conduct any amount of business through channel partners are now required to enforce tighter auditable controls over POS and debit reconciliation as they **directly impact financial reporting**.

Revenue Recognition Implications

Some companies have transitioned completely towards a POS revenue recognition model; others manage different models across different regions, often practicing revenue recognition based on sell-through in the US and POP in Asia. Today, almost 50% of the companies in the semiconductor industry are applying one or more changes to try and consolidate these processes. When recognizing channel revenue, companies must accrue liabilities that may arise from return rights and the various incentives that channels may claim. Failure to manage this data consistently and accurately can lead to both over-accruing, which effectively reduces revenue numbers or under-accruing, which may lead to **revenue restatements**. When relying on POS data to determine how much deferred revenue can be recognized, there is a large dependency on POS data accuracy. Unfortunately, this data is rarely “clean” and requires labor-intensive manual manipulation that is error prone and requires a full audit trail that needs to be examined as often as every 90 days.

SOX Compliance

The intent of the Sarbanes-Oxley Act of 2002 is to protect investors by improving the accuracy and reliability of corporate disclosures. The SOX Act created new standards for corporate accountability, as well as new penalties for acts of wrongdoing. The key components of SOX are formalizing and strengthening internal checks and balances within corporations and instituting levels of control and sign-off to ensure that financial reporting exercises full disclosure and corporate governance is conducted with full transparency.

When companies talk about SOX compliance today, usually they are referring to Section 404 of the Act, which requires executive management to document, evaluate, and annually report on the design and operational effectiveness of internal controls for financial reporting. Section 302 requires the **CEO and CFO to personally certify** company financial statements. Section 302 relates not only to the process of recognizing deferred revenue as described above but also to every payment approval made by the company.

For every credit claim against a debit transaction made by a channel, using POS data as proof must be processed and approved in a consistent way that can be audited. First companies must overcome the data inconsistencies between raw POS data and debit records and then manage the adjudication process of claims that do not easily reconcile. Whether rejected or approved, a company must track why was a record rejected or approved, by who and when. This issue extends beyond compliance and has real business implications. If the process is manual, labor-intensive and error prone leading to:

- **Channel Incentive Overpayments:** Reconciling hundreds and often thousands of line item transactions consistently and flawlessly is virtually impossible considering the numerous ways POS data can contain errors that will not match debit records. Some companies have accepted the fact that inaccuracies will occur and simply pay out claims with no verification. Some companies have hired external auditors to analyze channel data. These auditors typically discover millions of dollars

in overpayments and then collect finder fees of 15-30% on the recovered revenue. The Yankee Groups Survey of 59 semiconductor and component manufacturers revealed that 50% of companies estimate they overpay channels by at least 10%. This directly impacts a company's gross margin.

- **Reduced Partner Satisfaction:** When channels submit credit claims they expect to get paid as soon as possible. Long waiting periods for POS and debit data to be reconciled and incorrect payments negatively impact partner satisfaction and increase the perception that it is difficult to conduct business with this manufacturer.

3. Current State of Revenue Management in Semiconductor

Price Erosion, Discounts, Channel Overpayments Outweigh Value of Cost Reduction Initiatives

Many semiconductor companies are managed by professionals with technical backgrounds that believe prices can only fall and that the road to profitability heavily depends on reducing manufacturing and operational costs. While there are many proven strategies for reducing costs through faster design cycles and improving manufacturing efficiencies, fabless investments, and supply-chain efficiencies, most have reached the point of diminishing returns.

With a natural tendency to view their company as a product manufacturer rather than a seller of the product they build, senior semiconductor and component manufacturing managers continue to focus much of their attention on reducing costs and improving efficiencies. Adopting a seller's mentality requires a significant shift in self-perception that many companies find extremely difficult to do.

As companies continue to under-invest in sales processes, support tools, and financial systems, their buyers, end customers, OEMs, distributors, manufacturing and stocking reps, and contract manufacturers have armed themselves with sophisticated global procurement systems designed to exploit any and every weakness in pricing policies and transactional processes. This dramatically increases pricing pressures and makes it difficult to manage margin throughout the revenue life cycle. The Yankee Group survey of 59 semiconductor and component manufacturing companies revealed that 85% of companies use the rudimentary functionality of ERP and/or legacy or homegrown systems to manage their revenue life cycle. Deploying such commodity or patchwork systems for critical business processes almost always results in significant price erosion (2-3%).

Companies are finding themselves in a Catch-22; investing millions of dollars to reduce costs so that they can drop their prices further or saving 3% in cost so they can offer a 5% discount. A McKinsey Research survey of more than 2,000 companies has demonstrated that a 1% improvement to cost structure delivers a 4% increase in gross margin while a 1% improvement to pricing delivers an 11% increase in gross margin.

Price Pressures Cannot be Entirely Overcome through IP

Some companies feel they are immune to price pressure thanks to highly proprietary product lines and or "sole-source" solutions. However, this is a false assumption. Price pressures are always present, whether they result from design target price commitments or competition. Based upon interactions with more than 50 semiconductor companies over the past two years, it is this author's experience that a quick sanity check helps assess whether price pressures exist and what their impact may be. It is a simple fact that unless a company is winning 100% of the business it is bidding on, there is some business it is not winning. Lost business either was cancelled or won by another company. If the answer is the latter, then there is competition and price pressure is a factor.

Price Erosion is not an Immutable Law

A big challenge for marketers and pricing managers is internally communicating that price can be improved, which seems to contradict the common wisdom that price is always market driven. True, the laws of supply and demand do have an impact on price. However, price pressures are also driven by other players in the value chain that wish to increase their margins at the expense of their suppliers. This type of pressure can be better controlled.

Managers must internalize that price improvement does not automatically equal price increase; it just means that prices don't have to drop so low, so quickly. Controlling this process has a material impact on margin.

Sample Case Study 2: ON Semiconductor Eliminates Price Erosion

Arizona-based ON Semiconductor is a $1.6B company that was spun-off from Motorola and taken public in the late '90s. The company has a product line mix of 70% commodity and 30% proprietary. ON was experiencing difficulties in tracking demand, allocating resources to the most lucrative opportunities, and managing its pricing effectively. Often, pricing negotiations started from the lowest possible point. The company invested in processes and tools that allowed its sales and field application engineers to focus on qualified opportunities early in the sales cycle, increasing their design wins. At the same time, ON recognized that opportunities and design registrations are the gateway to transactions. Through its investment in the Model N Revenue Management suite, the company was able to increase quote-to-order conversion by 15% and reduce price erosion, resulting in an annual savings of more than $20 million.

By deploying an integrated revenue management solution, ON Semiconductor was able to focus its resources on better qualified opportunities and then transact effectively on those deals. The company's gross margin has more than doubled since it went public, going from 18% to the more than 40% — no small achievement for a company with a product mix that leans towards commodity parts.

4. Root Causes for Margin Erosion

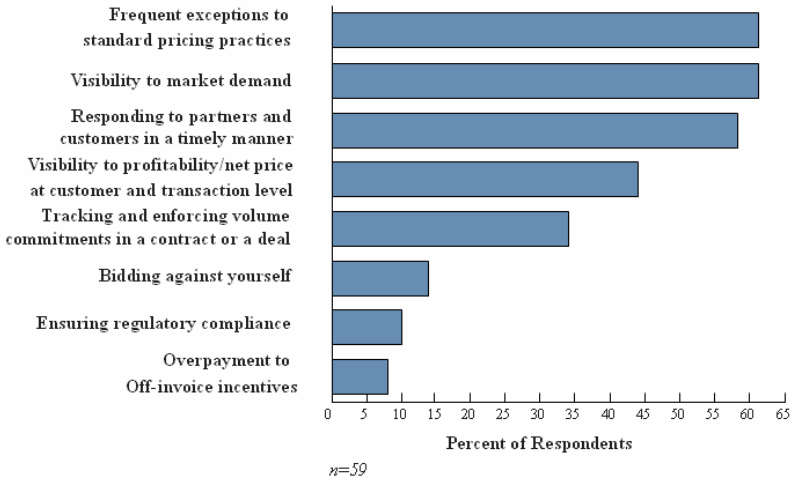
Yankee Group conducted research to begin a benchmark study on high-technology organizations' best-in-class revenue management processes. The initial study began with the aforementioned industry survey of 59 semiconductor and component manufacturing companies in October 2006.

Analyzing the issues that respondents consider their top challenges, Exhibit 1 illustrates that companies are still struggling to understand the real demand for their products. Companies must balance responsiveness to customers to win business at better margins. They also have to react to market conditions and competitive pressure with special pricing while systematically enforcing pricing policies to maximize overall margin.

Exhibit 1

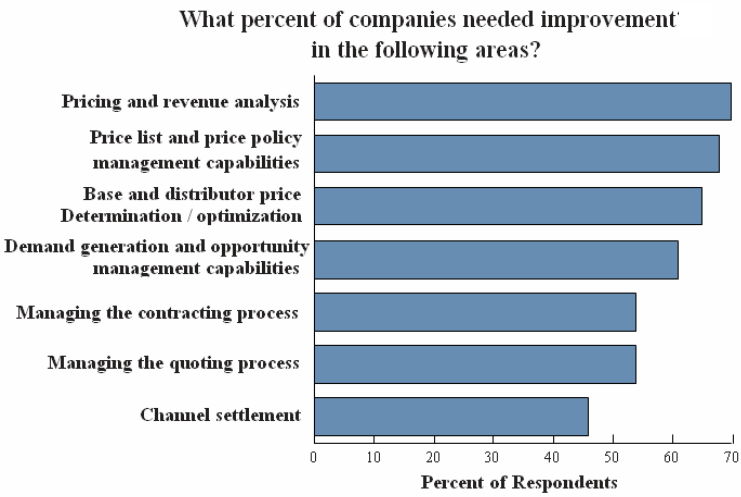
Top Critical Pricing and Revenue Management Challenges

Source: Yankee Group, 2006



The survey findings clearly indicate a desire among respondents for improved revenue and price management strategies (see Exhibit 2). A majority of respondents felt strongly that their company needed improvements across the entire revenue life cycle, from ongoing analysis (70%), price setting and policies (68%), and demand/opportunity tracking and quoting (61%) to contracts (54%) and settlement (46%).

Exhibit 2
Respondents' Concerns for Improvement
Source: Yankee Group, 2006



The current state of the industry, as captured in the benchmark survey, highlights the concerns semiconductor and component manufacturers have regarding maximizing the profitability of their business. These concerns are derived from the reality that companies are losing 2-4% of gross margin every year due to:

- **Visibility into demand:** The global nature of the industry makes it extremely difficult for a manufacturer to track all opportunities and registrations across the globe and across all channels. Companies may find different regions competing against each other within the company or through different channels for the same business. Apart from the reduced efficiency of such a process, the measurable impact is price erosion when a company bids against itself.

- **Inconsistent price execution:** Pricing can be driven by different factors, including volume, territory, direct contracts, market price programs, channel contracts, step pricing, future pricing, and margin agreements based on registrations. Without dedicated tools it is virtually impossible to consistently resolve the correct pricing for 100% of the transaction around the globe regardless if it is an internal sales organization or a manufacturing representative.

- **High volume of special price processes:** According to two independent surveys conducted in the last 12 months by Yankee Group and Accenture that covered close to 100 companies, at least 50-60% of all deals are closed outside standard pricing guidelines through "special pricing" processes that either prolong the quote cycle or create more work for small group of people. The special pricing deals make it impossible to consistently deliver optimized pricing designed to win the deal while protecting as much margin as possible.

- **Weak tracking of customer compliance with contracts:** In many cases, companies agree to give up-front discounts against future fulfillment of a high volume deal. As much as 10-15% of a contract's value is never realized as customers do not always meet their commitments. Nevertheless, they get away with the discount, which represent pure value loss to the manufacturer.

- **Channel incentive overpayment:** For companies conducting business through channels, reconciling POS with debits to manage channel credit claims and incentive payments is highly manual. POS data, even if delivered via EDI or RosettaNet, often does not match up to the information the manufacturer has and manual

adjudication is required, which prolongs the pay cycle for channel partners and introduces an increased risk of error. Several companies who hired third-party auditors found they typically overpay channels as much as 10%. For companies that recognize revenue based on POS data, this is a major point of concern that may put the integrity of their revenue statements into question.

5. CFOs Take Control of the Revenue Life Cycle

Over the past few years, 15-20% of semiconductor and component manufacturers have purchased and implemented Revenue Management solutions that augment their standard ERP and/or legacy systems with business processes and software designed **specifically for their industry**. By 2009, it is expected that more than 35-40% of semiconductor and component manufacturers will have implemented Revenue Management solutions. The key drivers behind this trend are executives (primarily CFOs) who have recognized the direct correlation between gross margin and market cap and that controlling manufacturing and operational costs alone will not suffice.

CFOs are called upon to sign off and approve millions in capital spend on sales force automation initiatives, CRM, price management, channel management, and other forms of isolated investments. While these investments may offer some return, they often do not present a comprehensive, end-to-end, holistic solution to managing revenue. Sixty-five percent of pure-play CRM initiatives fail, primarily due to low user adoption; generic solutions that do not fit the unique requirements of semiconductor industry often have limited value to end users. Most Price Management initiatives gain limited support and are viewed as a pet project too academic to truly achieve measurable value. Channel initiatives are often small, under funded and lead to homegrown solutions or limited outsourced solutions. Most homegrown ERP based projects have fallen short of delivering the desired value and almost always cost significantly more than projected.

The problem with such investments is the common reliance on tools not designed for the industry, which results in significant customization and processes that **do not treat revenue as one continuum**. Revenue and margin are really managed from early stages of price setting through demand creation (opportunities and design registrations), deal negotiations (quote, contracts, and special pricing) and actualizing revenue after paying incentives such as commissions and channel incentives.

When managed in an "over-the-wall" fashion, as illustrated in Figure 2 below, the revenue life cycle becomes disconnected. The personnel who manage pricing are not the personnel who track opportunities and design registrations; the personnel who track registrations are not those who handle contracts; and the personnel who manage contracts are not the personnel who manage commissions and POS reconciliation with debits. Managing revenue through disconnected processes and systems will inevitably cause margin to erode.

Figure 2

Since CFOs are the ones called upon to approve budgets for each isolated initiative — and gross margin, market cap, and revenue recognition are their responsibility — many have been becoming proactive initiating Revenue Management projects. They are mandating that such projects present business and functional requirements that clearly demonstrate the ability to impact margin as one continuum — from opportunity to incentive payment — and are insisting on industry experience and relevance to reduce the financial risk of such projects.

A Yankee Group survey that analyzed 144 quarters of financial performance of nine semiconductor companies that implemented Revenue Management solutions demonstrated that these companies were able to **increase gross margins year after year by an average of 2.4%, outpacing their competitors** by an almost 3X gross margin improvement rate, which positively impacted market cap growth.

Defining Revenue Management for Semiconductor and Component Manufacturers

Revenue Management offers a holistic and strategic approach to managing the entire revenue life cycle, from planned revenue through negotiated revenue to actualized revenue. Planned revenue refers to the processes of price strategy, price planning and setting, and margin objectives. Negotiated revenue addresses the processes of mapping demand visibility and registrations to margin agreements, quoting, price negotiations, and contract compliance. Actualized revenue applies to the processes of managing incentive payments to channels and reconciling POS data that can be reliably used in support of revenue recognition decisions. The technology that supports Revenue Management is a unified platform focused on transactions that integrates people, processes, and data across the extended enterprise and regions. Revenue Management solutions allow companies to align business processes and individual execution through a transactional system that extends and complements existing legacy investments to manage the core processes that impact price, margin, and revenue recognition.

Revenue Management solutions offer a closed loop platform that connects opportunity and registration information, to pricing rules, margin agreements, quotes, contracts, debits, and POS records. Key benefits of Revenue Management solutions include:

- Improved visibility into demand by resolving duplicate opportunities and connecting POS and contract fulfillment back to opportunities and registrations
- Reduced price erosion by avoiding sales conflicts
- Improved margins through effective price execution and enforcement across all channels and regions
- Improved top-line revenue by improving quote to order conversion through faster turn around time
- Reduced channel incentives overpayment by accurately reconciling POS with debit data
- Reduced risk of noncompliance with SOX and revenue recognition practices through consistent and controlled adjudication of transactions and a full audit trail of all automated and manual decisions

6. Conclusion

A fast growing number of forward thinking CEOs and CFOs have been making Revenue Management an integral part of their strategy of how to grow their business more profitably. Companies such as Microchip, ON Semiconductor, Micron, Linear Technology, PMC-Sierra, Cypress Semiconductor, Avago Technologies, Cirrus Logic, and IDT have already adopted Model N Revenue Management solutions to manage their entire revenue life cycle. These organizations have averaged 2-3% in year-over-year gross margin growth while improving quote-to-order conversion by 10-15% and reducing risks related to financial reporting regulations. By the end of 2008 it is expected that 25% of semiconductor and component manufacturers in the U.S. will have made investments to achieve the same goals and help set them apart from their competitors.

Model N High Tech Revenue Management solutions are used by more than 32,000 people in 50 countries. Model N customers have implemented these solutions in a way that allows distribution partners such as Avnet, Arrow, Future, Nu Horizons and 400 other manufacturing reps and stocking reps to directly upload design registration information and POS and inventory data, as well as self serve on quotes and prices. The system is accessed on a daily basis by 16,000 users in the distribution community.

Semiconductor and electronic component manufacturers that have implemented Model N High Tech Revenue Management solutions have typically been able to annually improve gross margin by 2-3%, improve quote to order conversion by 10-15%, and quote cycles by 50% or more.

In November 2006, ON Semiconductor announced that after three years of deploying Model N Revenue Management solutions, the company was able to conservatively assess that Model N was helping it save $20 million annually through reduced price erosion and improve quote-to-order conversation rates by 15%.

After being live on Model N solutions for two years, Microchip Technology presented a case study in March 2007 that showed its Revenue Management deployment dramatically improved visibility into demand, increased quote volume by 70%, and reduced quote cycle times by 50% and The company's margin improvement as a result of reduced price erosion funded a 25% increase in their direct sales force.

About Model N High Tech

Model N, the leader in Revenue Management Solutions, offers an integrated application suite for managing global pricing, quoting and contracts, and the channel revenue life cycle. The company has helped its customers increase gross margins by 2-3% annually by reducing price erosion, improving quote-to-order conversion rates, and reducing overpayments to channel partners. Model N Revenue Management Solutions are designed for and exclusively delivered to semiconductor and electronic component manufacturers. By enabling a seamless, end-to-end process from creating visibility into opportunities and design registrations, to global pricing, to quoting and contracts, to managing channel incentive payments and reconciliation of POS data with debits, Model N's uniquely integrated approach improves visibility into demand, reduces margin erosion, increases quote conversion, and improves compliance with financial reporting requirements. Model N solutions are designed to complement and augment existing ERP systems such as SAP and Oracle. Customers include PMC-Sierra, IDT, Microchip, Micron, Micrel, ON Semiconductor, Pericom, FCI, Intersil, and many others.