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## Competing in the 1990s

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*Technology is the ultimate competitor. To compete, firms must accelerate response times, shorten product cycles and payback periods, and stimulate better informed and trained workers. Like the great Titan Atlas, who supported the world on his shoulders, Technology provides the means.*

## COMPETING IN THE '90s

### IMPACT OF TECHNOLOGY

In the 1980s, markets were largely fenced off by geography, industry, and long-term supplier relationships. Then came the tidal wave of global competition that offered consumers greater choice and variety—and changed the rules of the game.

When the first wave hit, most companies believed price was the key competitive factor. They responded by cutting operating expenses and rationalizing operations and suppliers, moving offshore. America saw a decline in its manufacturing base. When the second wave hit, quality management and increased productivity became catch phrases. Employers struggled to create an innovative climate to get employees to buy in and man the lifeboats.

Employee creativity became a valued commodity. Some companies—3M, Xerox, Motorola, and Amoco—encouraged it and prospered. 3M is best known for its mandate that 25 percent of its annual sales must be from products not on the market five years ago. Meanwhile, the Big Three auto giants failed to recognize what the customer wanted—imports with the latest features and benefits—and would pay to get.

The third wave brought the need for faster response times to beat the competition. Changing customer needs demanded shorter product cycles, shorter payback periods, and better informed and trained workers. Technology became the ultimate competitor.

As the auto makers continued to rationalize their suppliers, small businesses sought to compete by "adding value" to their goods and services sold to the majors as well as by fencing off their niches.

Many companies found that technology could fence off market niches in global markets. Japan already knew this. For a total cash outlay of several billion dollars, post-war Japan acquired the cream of unprotected U.S. and European technology. Today, Japanese corporations practice technology management by filing worldwide patent applications. By protecting key technologies through patents, Japan can "cut-the-corners" when staking out markets.

## MANAGING IN THE FACE OF RAPID CHANGE

Business is subject to change. Change is brought about by recession, and social and technical innovation. Change creates new markets and service opportunities, or reforms established businesses by shaking out the weakest.

We need to know the rules of the game to compete in such a business climate but there are no rules. Without rules, we are faced with a risky situation, but we are also faced with an opportunity. Preparing a suitable, competitive strategy in emerging industries requires that we address and cope with both uncertainty and risk. The ability to perceive coming trends and the flexibility to take advantage of them are the tools needed to play the game.

These tools are so essential that Fortune 500 businesses maintain strategic planning groups to estimate the impact of social and technical innovation on the business. Some companies seek to develop and introduce new products and define opportunities to supplement current business. Other companies seek insurance against bigger companies stealing the markets they are about to establish.

But there are two uncertainties that all companies must confront. First and foremost is technical uncertainty. What product configuration is the best? Which production technology is the most cost effective? Alternative products and technology routes and risks to current business must be evaluated.

The second is strategic uncertainty. What is the right distribution strategy for getting the product to market? What is an economical size for a manufacturing facility? How should the product be packaged, marketed, and serviced? What are suitable raw material sources? Small production volume and new products combine to produce high costs initially. Texas Instruments took a handsome gamble on electronic calculators, assuming they could significantly reduce the learning curve, and they priced their product to meet a future market. The result of such a steep learning curve is that the initial high R&D and manufacturing costs can decline at an exponential rate.

The emerging phase of a new industry is characterized by embryonic companies and spin-offs. This spin-off phenomenon is spawned by perceived rapid personal growth opportunities—equity participation and the chance to run our own show. Therein lies the trap for those who fail to plan: how to deal with the short window of opportunities and how to transform the first time buyer into the repeat customer.

To succeed in an emerging industry requires a company to be the hammer and not a nail. The overriding plan must be to shape the structure of the industry. By judiciously setting product specifications, marketing approach, and a consistent price strategy, we can establish a strong long-term position for our firm. Success depends on consistent product quality, keeping ahead of copy cats, and presenting a united front to suppliers, customers, regulators, and the financial community.

Suppliers and distributors must be courted early in the game. As the market and industry grows, suppliers may well become more responsive to special needs for payment terms, service, and material delivery. Consequently, distributors may be willing to advertise and promote our products.

In real estate, they say that the three primary factors for a successful sale or deal are location, location, location. In emerging industries, the primary strategic factor is timing. Pioneering or early entry involves high risk, but may involve otherwise low entry costs and large returns. Early entry is appropriate when a firm can enhance its reputation as a pioneer, when a steep learning curve exists and customer loyalty in first time buyers can be established and when a commitment from finance distribution channels and raw material suppliers can be secured.

Early entry is not appropriate when the product doesn't match the market segment, when initial market entry costs such as customer education and regulatory approvals are high, when formidable competition is on the horizon or when continuing technological developments can make early investment obsolete.

The trick is to time our financing needs to take advantage of investors' love affair with the industry.

This trick isn't always mastered. Prepare for the possibility of high initial costs and market barriers to erode exponentially. The market goes down faster than it rises. This factor requires that we be flexible enough to defend our turf and have enough money to continue to do so. Remember marketing is 90 percent of the game, so do not rely solely on a unique product or a proprietary technology to create business awareness.

Coping with competitors may be difficult, both emotionally and financially. The latecomer will try to fill the market niche we have created. He will take advantage of our product development mistakes and capitalize on the subsequent economies of scale. If we have prudently courted our financiers, suppliers, and distributors early on, we can concentrate our resources on building company strength and in developing the industry in total—a bigger pie can satisfy more appetites. It may even serve our purpose better to encourage competition through licensing our technology. Not only will this strategy recover valuable cash, but it may open up new markets, provide market intelligence, and create additional product lines.

Be prepared to embrace the opportunities that emerging industries can offer. History is littered with companies that paid the price for denying social and technological change. Uncertainty, once tamed, can lead to riches.

## SEVEN DEADLY SINS OF TECHNOLOGY MISMANAGEMENT

Technology is one of the principal drivers of competition. Consider the impact of the transistor, computer, and fax machine on the manufacturing, industrial, and service sectors. When managed strategically, technology adds value to products and gives us an edge on our competitors. However the cost of mismanaging technology can be high.

Like religion's seven deadly sins that serve as warning signs along the road of life, there are also seven deadly sins of technology mismanagement: aimlessness, miserliness, unfaithfulness, vanity, arrogance, laziness and negligence. Ignoring these road signs can certainly have disastrous effects on the growth and survival of a business.

**AIMLESSNESS:** Quality management teaches us to communicate a shared vision to employees and customers—what business are we in? Regrettably, we often miss the more important questions of how are we going to get there and how will we know when we do.

We tend to write overall broad corporate business objectives independent of our technology needs and capabilities. Without identifying those needs and capabilities however, our broad objectives lack definition and become aimless.

Business strategy must define core business and technology needs, develop product-technology matrixes, identify how to obtain technology (inside or outside), and determine what resources are needed to acquire key technology. We must decide what strategic options (differentiation, marketing, licensing, joint ventures, consortia, spin-offs) technology can provide.

Core technology must respond to the strategy and the scope of our business operations. This technology must support product applications and markets. How can we get more mileage out of current product lines? Is it cheaper and less risky than developing new products? The need to develop new products can be overstressed and must be balanced against extending the life of the current product lines.

**MISERLINESS:** Budget for R&D is typically based on the previous years' performance. R&D and technology support funding is often the first to go in lean economic times. Funding is seldom adjusted to pursue new strategic opportunities or develop core technology. After earning the gold through technology, many businesses become miserly and hoard the riches. To stand out above the crowd, make a commitment to ensure that technology development is an integrated part of your overall business strategy.

When faced with a small or tight budget, set priorities to sustain key technology. Support what is most important and limit objectives for what is less important. Don't underestimate contributions from key employees in the process—nurture innovation.

**UNFAITHFULNESS:** Many businesses fail to commit consistently to developing technology. Any significant impact from this 'on again/off again' effort is diluted. Projects are aborted or delayed because the business is spending its time fire fighting.

Global competition requires us to run faster and smarter to stay ahead. There is wisdom and profit in concentrating our efforts in areas where we have staked out a competitive advantage. Commit to those core areas that are the foundation of our business irrespective of short-term profit projections.

**VANITY:** Most entrepreneurs want their contributions to stand out. Unfortunately, the desire to be creative often leads to an insular obsession at the expense of not thinking about the big picture. This leads to isolation from the rest of the business, minimal contribution, and a reduction to the classic fire-fighting role.

Share the vision for the business as a whole, encourage feedback from the business and technical sides of the house, and create channels to the outside to monitor the latest company and industry developments.

Look out for sacred cows. Maintaining old technology for technology's sake doesn't make good business sense. We can spend a lot of money maintaining technology that is no longer core to the business.

Challenge people. Encourage them to evaluate their skills continuously. Retrain them to deploy the latest technology. It's not enough to be different from the next guy, we also must offer something better to customers and employees alike in order to make a difference.

**Arrogance:** Most organizations, regardless of size, develop gatekeepers who stifle new developments and external linkages. Senior management can be particularly inhibiting when it comes to answering the key question: where will we get new technology to grow our business?

If the state of in-house technology has fallen behind the technology of our competitors, the business risk is critical. Internal core technology is rarely available instantaneously. There are always delays in getting people up-to-speed to incorporate technology into new or modified products.

Technological developments occur at such a rapid pace that the cost of keeping up is beyond the resources of most businesses. Successful businesses have finally begun to pursue strategic alliances. Alliances can help to acquire or exploit new developments. Alliance forms include licensing, industry consortia, supplier relationships, or joint R&D with private sector partners, universities, and government laboratories. We are learning to reduce the risk of new developments—while increasing our chances for success.

**LAZINESS:** Businesses that succeed in everything else often become lazy. They define and communicate mission, objective, and core technology, then fail to provide guidelines and policies for day-to-day decision making. Such policies empower employees to take action, be proactive, innovative, and garner the resources to make their respective

contributions. Our management structures should be flattened out to empower innovation and build core project teams.

Take a careful look at intellectual properties policies (patents, know-how, copyrights, etc.). These are the life blood of the firm and are sensitive, proprietary, confidential, and of great potential commercial value. Intellectual property must be developed and protected to help our business reach strategic objectives. Protection is achieved through appropriate staff, consultant, vendor, and corporate agreements.

**NEGLIGENCE:** Firms often neglect to use and integrate all the tools of technology management necessary to grow the business. These tools include strategic planning, R&D, management information systems, manufacturing engineering, intellectual property management, sales and marketing, and employee training. Use all of these tools with appropriate weight and timing.

If we regularly examine our technology management strategy, we can avoid these seven deadly sins. Our strategic objectives will have a much better chance of succeeding. A little technology soul-searching can be very satisfying and profitable for our businesses.