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MANAGER'S TOOL KIT

New ventures require a new way to plan.

Discovery-Driven Planning

by Rita Gunther McGrath and Ian C. MacMillan

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Discovery-Driven Planning

The Idea in Brief

You're weighing a major strategic venture—a first-time alliance, a new market, an innovative product. Beware: business history is littered with stories about smart companies that hemorrhaged multiple millions from ventures gone bad.

Why such massive losses? Too many firms use conventional planning to manage their ventures, say McGrath and MacMillan. They make predictions about a venture's potential based on their established businesses. And they treat the assumptions underlying those predictions—"The product will sell itself," "We'll have no competitors"—as facts. By the time they realize a key assumption was flawed, it's too late to stanch the bleeding.

How to avoid this scenario? As your venture unfolds, use a disciplined process to systematically uncover, test, and (if necessary) revise the assumptions behind your venture's plan. You'll expose the make-or-break uncertainties common to ventures. And you'll address those uncertainties at the lowest possible cost—so you don't set your venture on the path to ruin.

The Idea in Practice

McGrath and MacMillan suggest this five-step process for successful venture planning:

1. Bake profitability into your venture's plan.

Instead of estimating the venture's revenues and then assuming profits will come, create a "reverse income statement" for the project: Determine the profit required to make the venture worthwhile—it should be at least 10%. Then calculate the revenues needed to deliver that profit.

2. Calculate allowable costs.

Lay out all the activities required to produce, sell, service, and deliver the new product or service to customers. Together, these activities comprise the venture's **allowable costs**. Ask, "If we subtract allowable costs from required revenues, will the venture deliver significant returns?" If not, it may not be worth the risk.

3. Identify your assumptions.

If you still think the venture *is* worth the risk, work with other managers on the venture team to list all the assumptions behind your profit, revenue, and allowable costs calculations. Use disagreement over assumptions to trigger discussion, and be open to adjusting your list.

▶ Example:
A company has determined that it needs to sell 250 million units of a proposed new product at a particular price to generate the revenue required to meet the venture's profit goal. It decides how many orders it'll need to sell the 250 million units, how many sales calls it'll take to secure those orders, how many salespeople will be required to make those calls, and how much this will cost in sales-force compensation.

4. Determine if the venture still makes sense.

Check your assumptions against your reverse income statement for the venture. Can you still make the required profit, given your latest estimates of revenues and allowable costs? If not, the venture should be scrapped.

5. Test assumptions at milestones.

If you've decided to move ahead with the venture, use milestone events to test—and, if necessary, further update—your assumptions. Postpone major commitments of resources until evidence from a previous milestone signals that taking the next step is justified.

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Business lore is full of stories about smart companies that incur huge losses when they enter unknown territory—new alliances, new markets, new products, new technologies. The Walt Disney Company's 1992 foray into Europe with its theme park had accumulated losses of more than $1 billion by 1994. Zapmail, a fax product, cost Federal Express Corporation $600 million before it was dropped. Polaroid lost $200 million when it ventured into instant movies. Why do such efforts often defeat even experienced, smart companies? One obvious answer is that strategic ventures are inherently risky: The probability of failure simply comes with the territory. But many failures could be prevented or their cost contained if senior managers approached innovative ventures with the right planning and control tools.

Discovery-driven planning is a practical tool that acknowledges the difference between planning for a new venture and planning for a more conventional line of business. Conventional planning operates on the premise that managers can extrapolate future results from a well-understood and predictable platform of past experience. One expects predictions to be accurate because they are based on solid knowledge rather than on assumptions. In platform-based planning, a venture's deviations from plan are a bad thing.

The platform-based approach may make sense for ongoing businesses, but it is sheer folly when applied to new ventures. By definition, new ventures call for a company to envision what is unknown, uncertain, and not yet obvious to the competition. The safe, reliable, predictable knowledge of the well-understood business has not yet emerged. Instead, managers must make do with assumptions about the possible futures on which new businesses are based. New ventures are undertaken with a high ratio of assumption to knowledge. With ongoing businesses, one expects the ratio to be the exact opposite. Because assumptions about the unknown generally turn out to be wrong, new ventures inevitably experience deviations—often huge ones—from their

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original planned targets. Indeed, new ventures frequently require fundamental redirection.

Rather than trying to force startups into the planning methodologies for existing predictable and well-understood businesses, discovery-driven planning acknowledges that at the start of a new venture, little is known and much is assumed. When platform-based planning is used, assumptions underlying a plan are treated as facts—givens to be baked into the plan—rather than as best-guess estimates to be tested and questioned. Companies then forge ahead on the basis of those buried assumptions. In contrast, discovery-driven planning systematically converts assumptions into knowledge as a strategic venture unfolds. When new data are uncovered, they are incorporated into the evolving plan. The real potential of the venture is discovered as it develops—hence the term discovery-driven planning. The approach imposes disciplines different from, but no less precise than, the disciplines used in conventional planning.

Euro Disney and the Platform-Based Approach

Even the best companies can run into serious trouble if they don't recognize the assumptions buried in their plans. The Walt Disney Company, a 49% owner of Euro Disney (now called Disneyland Paris), is known as an astute manager of theme parks. Its success has not been confined to the United States: Tokyo Disneyland has been a financial and public relations success almost from its opening in 1983. Euro Disney is another story, however. By 1993, attendance approached 1 million visitors each month, making the park Europe's most popular paid tourist destination. Then why did it lose so much money?

In planning Euro Disney in 1986, Disney made projections that drew on its experience from its other parks. The company expected half of the revenue to come from admissions, the other half from hotels, food, and merchandise. Although by 1993, Euro Disney had succeeded in reaching its target of 11 million admissions, to do so it had been forced to drop adult ticket prices drastically. The average spending per visit was far below plan and added to the red ink.

The point is not to play Monday-morning quarterback with Disney's experience but to demonstrate an approach that could have revealed flawed assumptions and mitigated the resulting losses. The discipline of systematically identifying key assumptions would have highlighted the business plan's vulnerabilities. Let us look at each source of revenue in turn.

Admissions Price. In Japan and the United States, Disney found its price by raising it over time, letting early visitors go back home and talk up the park to their neighbors. But the planners of Euro Disney assumed that they could hit their target number of visitors even if they started out with an admission price of more than $40 per adult. A major recession in Europe and the determination of the French government to keep the franc strong exacerbated the problem and led to low attendance. Although companies cannot control macroeconomic events, they can highlight and test their pricing assumptions. Euro Disney's prices were very high compared with those of other theme attractions in Europe, such as the aqua palaces, which charged low entry fees and allowed visitors to build their own menus by paying for each attraction individually. By 1993, Euro Disney not only had been forced to make a sharp price reduction to secure its target visitors, it had also lost the benefits of early-stage word of mouth. The talking-up phenomenon is especially important in Europe, as Disney could have gauged from the way word of mouth had benefited Club Med.

Hotel Accommodations. Based on its experience in other markets, Disney assumed that people would stay an average of four days in the park's five hotels. The average stay in 1993 was only two days. Had the assumption been highlighted, it might have been challenged: Since Euro Disney opened with only 15 rides, compared with 45 at Disney World, people could do them all in a single day.

Food. Park visitors in the United States and Japan "graze" all day. At Euro Disney, the buried assumption was that Europeans would do the same. Euro Disney's restaurants, therefore, were designed for all-day streams of grazers. When floods of visitors tried to follow the European custom of dining at noon, Disney was unable to seat them. Angry visitors left the park to eat, and they conveyed their anger to their friends and neighbors back home.

Merchandise. Although Disney did forecast lower sales per visitor in Europe than in the United States and Japan, the company as-

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Discovery-driven planning recognizes that planning for a new venture involves envisioning the unknown.

sumed that Europeans would buy a similar mix of cloth goods and print items. Instead, Euro Disney fell short of plan when visitors bought a far smaller proportion of high-margin items such as T-shirts and hats than expected. Disney could have tested the buried assumption before forecasting sales: Disney's retail stores in European cities sell many fewer of the high-margin cloth items and far more of the low-margin print items.

Disney is not alone. Other companies have paid a significant price for pursuing platform-based ventures built on implicit assumptions that turn out to be faulty. Such ventures are usually undertaken without careful up-front identification and validation of those assumptions, which often are unconscious. We have repeatedly observed that the following four planning errors are characteristic of this approach:

Companies don't have hard data but, once a few key decisions are made, proceed as though their assumptions were facts. Euro Disney's implicit assumptions regarding the way visitors would use hotels and restaurants are good examples.

Companies have all the hard data they need to check assumptions but fail to see the implications. After making assumptions based on a subset of the available data, they proceed without ever testing those assumptions. Federal Express based Zapmail on the assumption that there would be a substantial demand for four-hour delivery of documents faxed from FedEx center to FedEx center. What went unchallenged was the implicit assumption that customers would not be able to afford their own fax machines before long. If that assumption had been unearthed, FedEx would have been more likely to take into account the plunging prices and increasing sales of fax machines for the office and, later, for the home.

Companies possess all the data necessary to determine that a real opportunity exists but make implicit and inappropriate assumptions about their ability to implement their plan. Exxon lost $200 million on its office automation business by implicitly assuming that it could build a direct sales and service support capability to compete head-to-head with IBM and Xerox.

Companies start off with the right data, but they implicitly assume a static environment and thus fail to notice until too late that a key variable has changed. Polaroid lost $200 million from Polavision instant movies by assuming that a three minute cassette costing $7 would compete effectively against a half-hour videotape costing $20. Polaroid implicitly assumed that the high cost of equipment for videotaping and playback would remain prohibitive for most consumers. Meanwhile, companies pursuing those technologies steadily drove down costs. (See the exhibit "Some Dangerous Implicit Assumptions.")

Discovery-Driven Planning: An Illustrative Case

Discovery-driven planning offers a systematic way to uncover the dangerous implicit assumptions that would otherwise slip unnoticed and thus unchallenged into the plan. The process imposes a strict discipline that is captured in four related documents: a *reverse income statement,* which models the basic economics of the business; *pro forma operations specs,* which lay out the operations needed to run the business; a *key assumptions checklist,* which is used to ensure that assumptions are checked; and a *milestone planning chart,* which specifies the assumptions to be tested at each project milestone. As the venture unfolds and new data are uncovered, each of the documents is updated.

To demonstrate how this tool works, we will apply it retrospectively to Kao Corporation's highly successful entry into the floppy disk business in 1988. We deliberately draw on no inside information about Kao or its planning process but instead use the kind of limited public knowledge that often is all that any company would have at the start of a new venture.

The Company. Japan's Kao Corporation was a successful supplier of surfactants to the magnetic-media (floppy disk) industry. In 1981, the company began to study the potential for becoming a player in floppy disks by leveraging the surfactant technology it had developed in its core businesses, soap and cosmetics. Kao's managers realized that they had learned enough process knowledge from their floppy disk customers to supplement their own skills in surface chemistry. They believed they could produce floppy disks at a much lower cost and higher quality than other companies offered at that time. Kao's

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surfactant competencies were particularly valuable because the quality of the floppy disk's surface is crucial for its reliability. For a company in a mature industry, the opportunity to move current product into a growth industry was highly attractive.

The Market. By the end of 1986, the demand for floppy disks was 500 million in the United States, 100 million in Europe, and 50 million in Japan, with growth estimated at 40% per year, compounded. This meant that by 1993, the global market would be approaching 3 billion disks, of which about a third would be in the original equipment manufacturer (OEM) market, namely such big-volume purchasers of disks as IBM, Apple, and Microsoft, which use disks to distribute their software. OEM industry prices were expected to be about 180 yen per disk by 1993. Quality and reliability have always been important product characteristics for OEMs such as software houses because defective disks have a devastating impact on customers' perceptions of the company's overall quality.

The Reverse Income Statement. Discovery-driven planning starts with the bottom line. For Kao, back when it began to consider its options, the question was whether the floppy disk venture had the potential to enhance the company's competitive position and financial performance significantly. If not, why should Kao incur the risk and uncertainty of a major strategic venture?

Here, we impose the first discipline, which is to plan the venture using a reverse income statement, which runs from the bottom line up. (See the exhibit, "First, Start with a Reverse Income Statement." The four exhibits referred to in the article are located in the sidebar, "How Kao Might Have Tackled its New Venture.") Instead of starting with estimates of revenues and working down the income statement to derive profits, we start with *required profits*. We then work our way up the profit and loss to determine how much revenue it will take to deliver the level of profits we require and how much cost can be allowed. The underlying philosophy is to impose revenue and cost disciplines by baking profitability into the plan at the outset: Required profits equal necessary revenues minus allowable costs.

At Kao in 1988, management might have started with these figures: net sales, about 500 billion yen; income before taxes, about 40 billion yen; and return on sales (ROS), 7.5%. Given such figures, how big must the floppy disk opportunity be to justify Kao's attention? Every company will set its own hurdles. We believe that a strategic venture should have the potential to enhance total profits by at least 10%. Moreover, to compensate for the increased risk, it should deliver greater profitability than reinvesting in the existing businesses would. Again, for purposes of illustration, assume that Kao demands a risk premium of 33% greater profitability. Since Kao's return on sales is 7.5%, it will require 10%.

If we use the Kao data, we find that the required profit for the floppy disk venture would be 4 billion yen (10% × 40 billion). To deliver 4 billion yen in profit with a 10% return on sales implies a business with 40 billion yen in sales.

Assuming that, despite its superior quality, Kao will have to price competitively to gain share as a new entrant, it should set a target price of 160 yen per disk. That translates into unit sales of 250 million disks (40 billion yen in sales divided by 160 yen per disk). By imposing these simple performance measures at the start (1988), we quickly establish both the scale and scope of the venture: Kao would need to capture 25% of the total world OEM market (25% of 1 billion disks) by 1993. Given what is known about the size of the market, Kao clearly must be prepared to compete globally from the outset, making major commitments not only to manufacturing but also to selling.

Continuing up the profit and loss, we next calculate allowable costs: If Kao is to capture

Some Dangerous Implicit Assumptions

1. Customers will buy our product because we think it's a good product.

2. Customers will buy our product because it's technically superior.

3. Customers will agree with our perception that the product is "great."

4. Customers run no risk in buying from us instead of continuing to buy from their past suppliers.

5. The product will sell itself.

6. Distributors are desperate to stock and service the product.

7. We can develop the product on time and on budget.

8. We will have no trouble attracting the right staff.

9. Competitors will respond rationally.

10. We can insulate our product from competition.

11. We will be able to hold down prices while gaining share rapidly.

12. The rest of our company will gladly support our strategy and provide help as needed.

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10% margin on a price of 160 yen per disk, the total cost to manufacture, sell, and distribute the disks worldwide cannot exceed 144 yen per disk. The reverse income statement makes clear immediately that the challenge for the floppy disk venture will be to keep a lid on expenses.

The Pro Forma Operations Specs and the Assumptions Checklist. The second discipline in the process is to construct pro forma operations specs laying out the activities required to produce, sell, service, and deliver the product or service to the customer. Together, those activities comprise the venture's allowable costs. At first, the operations specs can be modeled on a simple spreadsheet without investing in more than a few telephone calls or on-line searches to get basic data. If an idea holds together, it is possible to identify and test underlying assumptions, constantly fleshing out and correcting the model in light of new information. When a company uses this cumulative approach, major flaws in the business concept soon become obvious, and poor concepts can be abandoned long before significant investments are made.

We believe it is essential to use industry standards for building a realistic picture of what the business has to look like to be competitive. Every industry has its own pressures—which determine normal rates of return in that industry—as well as standard performance measures such as asset-to-sales ratios, industry profit margins, plant utilization, and so on. In a globally competitive environment, no sane manager should expect to escape the competitive discipline that is captured and measured in industry standards. These standards are readily available from investment analysts and business information services. In countries with information sources that are less well developed than those in the United States, key industry parameters are still used by investment bankers and, more specifically, by those commercial bankers who specialize in loans to the particular industry. For those getting into a new industry, the best approach is to adapt standards from similar industries.

Note that we do not begin with an elaborate analysis of product or service attributes or an in-depth market study. That comes later. Initially, we are simply trying to capture the venture's embedded assumptions. The basic discipline is to spell out clearly and realistically where the venture will have to match existing industry standards and in what one or two places managers expect to excel and how they expect to do so.

How Kao Might Have Tackled its New Venture: Discovery-Driven Planning in Action

The goal here is to determine the value of success quickly. If the venture can't deliver significant returns, it may not be worth the risk.

First, Start with a Reverse Income Statement

Total Figures
Required profits to add 10% to total profits = 4 billion yen
Necessary revenues to deliver 10% sales margin = 40 billion yen
Allowable costs to deliver 10% sales margin = 36 billion yen

Per Unit Figures
Required unit sales at 160 yen per unit = 250 million units
Necessary percentage of world market share of OEM unit sales = 25%
Allowable costs per unit for 10% sales margin = 144 yen

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Kao's managers in 1988 might have considered performance standards for the floppy disk industry. Because there would be no reason to believe that Kao could use standard production equipment any better than established competitors could, it would want to plan to match industry performance on measures relating to equipment use. Kao would ascertain, for example, that the effective production capacity per line was 25 disks per minute in the industry; and the effective life of production equipment was three years. Kao's advantage was in surface chemistry and surface physics, which could improve quality and reduce the cost of materials, thus improving margins. When Kao planned its materials cost, it would want to turn that advantage into a specific challenge for manufacturing: Beat the industry standard for materials cost by 25%. The formal framing of operational challenges is an important step in discovery-driven planning. In our experience, people who are good in design and operations can be galvanized by clearly articulated challenges. That was the case at Canon, for example, when Keizo Yamaji challenged the engineers to develop a personal copier that required minimal service and cost less than $1,000, and the Canon engineers rose to the occasion.

A company can test the initial assumptions against experience with similar situations, the

Second, Lay Out All the Activities Needed to Run the Venture

Pro Forma Operations Specs

1. Sales

Required disk sales = 250 million disks
Average order size (Assumption 8) = 10,000 disks
Orders required (250 million/10,000) = 25,000

Number of calls to make a sale (Assumption 9) = 4
Sales calls required (4 x 25,000) = 100,000 per year

Calls per day per salesperson (Assumption 10) = 2
Annual salesperson days (100,000/2) = 50,000
Sales force for 250 days per year (Assumption 11)
50,000 salesperson days/250 = 200 people

Salary per salesperson = 10 million yen (Assumption 12)
Total sales-force salary cost (10 million yen x 200) = 2 billion yen

2. Manufacturing

Quality specification of disk surface: 50% fewer flaws than best competitor (Assumption 15)

Annual production capacity per line = 25 per minute x 1440 minutes per day x 348 days (Assumption 16) = 12.5 million disks
Production lines needed (250 million disks/12.5 million disks per line) = 20 lines

Production staffing (30 per line [Assumption 17] x 20 lines) = 600 workers

Salary per worker = 5 million yen (Assumption 18)
Total production salaries (600 x 5 million yen) = 3 billion yen

Materials costs per disk = 20 yen (Assumption 19)
Total materials cost (20 x 250 million disks) = 5 billion yen
Packaging per 10 disks = 40 yen (Assumption 20)
Total packaging costs (40 x 25 million packages) = 1 billion yen

3. Shipping

Containers needed per order of 10,000 disks = 1 (Assumption 13)
Shipping cost per container = 100,000 yen (Assumption 14)
Total shipping costs (25,000 orders x 100,000 yen) = 2.5 billion yen

4. Equipment and Depreciation

Fixed asset investment to sales = 1:1 (Assumption 5) = 40 billion yen
Equipment life = 3 years (Assumption 7)
Annual depreciation (40 billion yen/3 years) = 13.3 billion yen

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Keeping a checklist is an important discipline to ensure that each assumption is flagged and tested as a venture unfolds.

Third, Track All Assumptions

Assumption	Measurement
1. Profit margin	10% of sales
2. Revenues	40 billion yen
3. Unit selling price	160 yen
4. 1993 world OEM market	1 billion disks
5. Fixed asset investment to sales	1:1
6. Effective production capacity per line	25 disks per minute
7. Effective life of equipment	3 years
8. Average OEM order size	10,000 disks
9. Sales calls per OEM order	4 calls per order
10. Sales calls per salesperson per day	2 calls per day
11. Selling days per year	250 days
12. Annual salespersonís salary	10 million yen
13. Containers required per order	1 container
14. Shipping cost per container	100,000 yen
15. Quality level needed to get customers to switch: % fewer flaws per disk than top competitor	50%
16. Production days per year	348 days
17. Workers per production line per day (10 per line for 3 shifts)	30 per line
18. Annual manufacturing workerís salary	5 million yen
19. Materials costs per disk	20 yen
20. Packaging costs per 10 disks	40 yen
21. Allowable administration costs (See revised reverse income statement, below)	9.2 billion yen

Now, with better data, one can see if the entire business proposition hangs together.

Fourth, Revise the Reverse Income Statement

Required margin	10% return on sales
Required profit	4 billion yen
Necessary revenues	40 billion yen
Allowable costs	36 billion yen
Sales-force salaries	2.0 billion yen
Manufacturing salaries	3.0 billion yen
Disk materials	5.0 billion yen
Packaging	1.0 billion yen
Shipping	2.5 billion yen
Depreciation	13.3 billion yen
Allowable administration and overhead costs	9.2 billion yen (Assumption 21)
Per-unit figures	
Selling price	160 yen
Total costs	144 yen
Disk materials costs	20 yen

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Finally, Plan to Test Assumptions at Milestones

Milestone event—namely, the completion of:	Assumptions to be tested
1. Initial data search and preliminary feasibility analysis	4: 1993 world OEM market 8: Average OEM order size 9: Sales calls per OEM order 10: Sales calls per salesperson per day 11: Salespeople needed for 250 selling days per year 12: Annual salespersonís salary 13: Containers required per order 14: Shipping cost per container 16: Production days per year 18: Annual manufacturing workerís salary
2. Prototype batches produced	15: Quality to get customers to switch 19: Materials costs per disk
3. Technical testing by customers	3: Unit selling price 15: Quality to get customers to switch
4. Subcontracted production	19: Materials costs per disk
5. Sales of subcontracted production	1: Profit margin 2: Revenues 3: Unit selling price 8: Average OEM order size 9: Sales calls per OEM order 10: Sales calls per salesperson per day 12: Annual salespersonís salary 15: Quality to get customers to switch
6. Purchase of an existing plant	5: Fixed asset investment to sales 7: Effective life of equipment
7. Pilot production at purchased plant	6: Effective production capacity per line 16: Production days per year 17: Workers per production line per day 18: Annual manufacturing workerís salary 19: Materials costs per disk 20: Packaging costs per 10 disks
8. Competitor reaction	1: Profit margin 2: Revenues 3: Unit selling price
9. Product redesign	19: Materials costs per disk 20: Packaging costs per 10 disks
10. Major repricing analysis	1: Profit margin 2: Revenues 3: Unit selling price 4: 1993 world OEM market
11. Plant redesign	5: Fixed asset investment to sales 6: Effective production capacity per line 19: Materials costs per disk

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advice of experts in the industry, or published information sources. The point is not to demand the highest degree of accuracy but to build a reasonable model of the economics and logistics of the venture and to assess the order of magnitude of the challenges. Later, the company can analyze where the plan is most sensitive to wrong assumptions and do more formal checks. Consultants to the industry—bankers, suppliers, potential customers, and distributors—often can provide low-cost and surprisingly accurate information.

The company must build a picture of the activities that are needed to carry out the business and the costs. Hence in the pro forma operations specs, we ask how many orders are needed to deliver 250 million units in sales; then how many sales calls it will take to secure those orders; then how many salespeople it will take to make the sales calls, given the fact that they are selling to a global OEM market; then how much it will cost in sales-force compensation. (See the exhibit "Second, Lay Out All the Activities Needed to Run the Venture" located on the sidebar "How Kao Might Have Tackled its New Venture.") Each assumption can be checked, at first somewhat roughly and then with increasing precision. Readers might disagree with our first-cut estimates. That is fine—so might Kao Corporation. Reasonable disagreement triggers discussion and, perhaps, adjustments to the spreadsheet. The evolving document is doing its job if it becomes the catalyst for such discussion.

Companies can learn to spot when they're making unconscious assumptions.

The third discipline of discovery-driven planning is to compile an assumption checklist to ensure that each assumption is flagged, discussed, and checked as the venture unfolds. (See the exhibit "Third, Track All Assumptions.")

The entire process is looped back into a revised reverse income statement, in which one can see if the entire business proposition hangs together. (See the exhibit, "Fourth, Revise the Reverse Income Statement.") If it doesn't, the process must be repeated until the performance requirements and industry standards can be met; otherwise, the venture should be scrapped.

Milestone Planning. Conventional planning approaches tend to focus managers on meeting plan, usually an impossible goal for a venture rife with assumptions. It is also counterproductive—insistence on meeting plan actually prevents learning. Managers can formally plan to learn by using milestone events to test assumptions.

Milestone planning is by now a familiar technique for monitoring the progress of new ventures. The basic idea, as described by Zenas Block and Ian C. MacMillan in the book *Corporate Venturing* (Harvard Business School Press, 1993), is to postpone major commitments of resources until the evidence from the previous milestone event signals that the risk of taking the next step is justified. What we are proposing here is an expanded use of the tool to support the discipline of transforming assumptions into knowledge.

Going back to what Kao might have been thinking in 1988, recall that the floppy disk venture would require a 40-billion-yen investment in fixed assets alone. Before investing such a large sum, Kao would certainly have wanted to find ways to test the most critical assumptions underlying the three major challenges of the venture:

- capturing 25% global market share with a 20-yen-per-disk discount and superior quality;
- maintaining at least the same asset productivity as the average competitor and producing a floppy disk at 90% of the estimated total costs of existing competitors; and
- using superior raw materials and applied surface technology to produce superior-quality disks for 20 yen per unit instead of the industry standard of 27 yen per unit.

For serious challenges like those, it may be worth spending resources to create specific milestone events to test the assumptions before launching a 40-billion-yen venture. For instance, Kao might subcontract prototype production so that sophisticated OEM customers could conduct technical tests on the proposed disk. If the prototypes survive the tests, then, rather than rest on the assumption that it can capture significant business at the target price, Kao might subcontract production of a large batch of floppy disks for resale to customers. It could thus test the appetite of the OEM market for price discounting from a newcomer.

Similarly, for testing its ability to cope with the second and third challenges once the Kao prototype has been developed, it might be worthwhile to buy out a small existing floppy disk manufacturer and apply the technology in an established plant rather than try to start up a greenfield operation. Once

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Kao can demonstrate its ability to produce disks at the required quality and cost in the small plant, it can move ahead with its own full-scale plants.

Deliberate assumption-testing milestones are depicted in the exhibit "Finally, Plan to Test Assumptions at Milestones," which also shows some of the other typical milestones that occur in most major ventures. The assumptions that should be tested at each milestone are listed with appropriate numbers from the assumption checklist.

In practice, it is wise to designate a *keeper of the assumptions*—someone whose formal task is to ensure that assumptions are checked and updated as each milestone is reached and that the revised assumptions are incorporated into successive iterations of the four discovery-driven planning documents. Without a specific person dedicated to following up, it is highly unlikely that individuals, up to their armpits in project pressures, will be able to coordinate the updating independently.

Discovery-driven planning is a powerful tool for any significant strategic undertaking that is fraught with uncertainty—new-product or market ventures, technology development, joint ventures, strategic alliances, even major systems redevelopment. Unlike platform-based planning, in which much is known, discovery-driven planning forces managers to articulate what they don't know, and it forces a discipline for learning. As a planning tool, it thus raises the visibility of the make-or-break uncertainties common to new ventures and helps managers address them at the lowest possible cost.

The authors wish to thank Shiuchi Matsuda of Waseda University's Entrepreneurial Research Unit for providing case material on Kao's floppy disk venture.

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Discovery-Driven Planning

Further Reading

ARTICLES

Why Business Models Matter
by Joan Magretta
Harvard Business Review
May 2002
Product no. 9985

How to check your assumptions before deciding whether to invest in a venture? Develop a sound business model for the venture. Powerful business models tell a logical story about who the venture's customers are, what they value, and how you'll make money providing them that value.

For example, eBay's business model combined a compelling narrative with major profit potential. This on-line business couldn't be done offline and still provide value to collectors, bargain hunters, and small-business people. Its narrow scope of activities also creates a highly profitable cost structure: sellers and buyers—not eBay—handle payment and shipping logistics.

Milestones for Successful Venture Planning
by Zenas Block and Ian C. MacMillan
Harvard Business Review
October 1985
Product no. 85503

This classic article helps you establish venture milestones based not on arbitrary dates but on completion of key activities. The authors suggest 10 milestones important in a new venture. These milestones include completion of concept and product testing, completion of prototype, first financing, completion of initial plant tests, and market testing. The remaining milestones are production start-up, bellwether sale (your first substantial sale to an expected major account), first action by a competitor, first redesign or redirection, and first significant price change. By carefully evaluating these milestones, you can avoid ill-advised—and costly—investments. You can also test and revise your assumptions along the way—the key to discovery-driven planning.

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