Managing strategic risk in China's unpredictable automotive market

The saga of Tian River Motors

A Deloitte Research Global Manufacturing Study

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Foreword

China's rapidly-growing automotive market offers tremendous opportunities to domestic and foreign automakers, but because of its rapid evolution it also presents difficult challenges. Questions about everything from government policy and customer demand to oil prices and engine technology are without clear answers. Accordingly China's automotive market provides an excellent setting for considering the management of strategic risk – the danger of change so profound it threatens a company's basic approach to creating and capturing value. In his book *The Strategy Paradox* Michael Raynor of Deloitte Consulting LLP in the United States puts forward a new approach for addressing strategic risk that offers a means to strive for great achievement without courting catastrophe. This paper examines the application of the book's message to the promising yet perilous Chinese automotive market. However, the relevance of the key precepts extends beyond China, and beyond the automotive industry. This is an opportunity to explore new thinking about strategy, uncertainty, and corporate success, and we hope you find it worthwhile.

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Introduction: Seeking the inside lane

Today China is the number two automotive market in the world, with production of 7.3 million vehicles in 2006. Over 45 automakers are competing in China. Production has historically been targeted at the domestic market, where sales of passenger cars are growing at over 30 per cent annually. Currently multinational companies dominate the market through their joint ventures with Chinese companies, led by Volkswagen, General Motors, and Hyundai. However, Japanese manufacturers are gaining share, and domestic Chinese companies are expanding their own brands and producing ever more sophisticated vehicles. Some of these are already exported or produced abroad for other emerging markets and even developed markets.[1]

For many companies, success in China is a make-or-break proposition. What happens in China thus affects manufacturers not only in China but in every region of the world. The situation is complex – China's automotive market is not moving forward in a straight line, and new developments bring opportunities and threats alike. Dramatic new strategic responses are required, yet so much uncertainty obscures what comes next that any plan is fraught with risk. Executing a strategy properly is always difficult, and there is definitely the challenge of dealing with operational and financial risk. But here the topic is strategic risk – the danger of choosing the wrong strategy.

In this connection it is disquieting to consider that the requirements of breakthrough success demand implementing strategy in ways that make it impossible to adapt should the future not turn out as expected. And given the degree of uncertainty, guessing wrong is not only possible but likely. Such is the strategy paradox: Strategies with the best chance of a big payoff also carry the highest odds of failure.

That is a central message of *The Strategy Paradox,* a book by Michael Raynor of Deloitte Consulting LLP in the United States.[2] However, the book goes on to propose a new way of thinking about strategy and uncertainty that offers valuable guidance to automotive manufacturers seeking profitable growth in China's demanding market.

This paper illustrates how the book's principles apply in the context of the Chinese automotive market. It focuses on an invented company called Tian River Motors (TRM). The fictitious TRM is owned by a provincial government, and makes cars, light trucks, and light vans for the Chinese domestic market. The following pages tell the story of TRM's quest for a way to seek greatness without courting catastrophe. Along the way TRM's experiences highlight the elements of an approach for linking bold commitments with methods for managing uncertainty, thereby breaking the strategy paradox.[3]

Examples of Chinese government policies affecting automakers

From Policies on the Development of the Automotive Industry, issued in 2004 by the National Development and Reform Commission:

Preamble: China's automotive industry will be a pillar of the national economy by 2010.

Articles 4, 6: Several large-scale, internationally competitive Chinese automakers will form and strive to be among the world's top 500 multinationals by 2010. Large-scale automakers are those with over 15 per cent of the domestic market in sales value or market share.

Articles 8, 9: Automakers are to promote the commercialization of energy-saving and environmentally friendly technologies, including electric vehicles, hybrid vehicles, diesel technology for sedans, alcohol fuel, natural gas, hydrogen, and other new types of cars and fuels.

Article 10: By 2010 the fuel efficiency of new types of passenger vehicles will increase 15 per cent over 2003 levels by 2010.

Articles 13, 16: Strategic reorganizations will foster a new industry structure dominated by large-scale automakers. Combinations of large domestic and foreign automakers are encouraged as a means of increasing scope of operations consistent with the globalization of the automobile industry.

Article 17: Chinese automakers that can't operate profitably should shift to making specialty vehicles or components, or sell out to another automaker.

Article 24: Chinese automakers should develop their own intellectual property rights, improve brand recognition, and protect their brand image.

Article 47: New auto-manufacturing plants must be substantial. A company building a new factory must spend a stipulated minimum amount, must show that it will have the capacity to meet minimum production levels, and must invest no less than a stipulated amount in an R&D facility.

Articles 48, 49: Foreign investors can own more than 50 per cent of an automobile joint venture only if the JV builds vehicles for export in an export processing zone.

Article 61: Consumers will be encouraged to buy fuel-efficient, low-emission cars that consume new forms of fuel and are powered by new types of engine technology.

TRM's plight: Stuck in the middle of the pack

Tian River Motors has an undistinguished record. While not a laggard in the Chinese automotive market, it's not a leader, either. TRM has trouble competing against Chinese-foreign joint ventures, and it's not able to outperform the numerous other small and medium-sized independent Chinese automakers. With the Chinese government advocating industry consolidation and imposing new requirements, TRM is in danger of being absorbed by a more energetic rival. Uneasy about the company's prospects, the TRM board names a new president. Based on what he finds after taking office, the president decides drastic measures are called for if TRM is to excel in this increasingly competitive business.

Safe and sane won't propel TRM into the lead

The president assigns several division heads to develop a strategy that will energize the company. Their initial effort is cautious and bland. The strategy calls for TRM to upgrade and expand all aspects of its business – design, production, distribution, service. The group also suggests that the company investigate mergers with other Chinese automakers and seek a global original equipment manufacturer (OEM) as a joint venture partner.

The president finds the strategy too cautious. It seems like doing what TRM or similar competitors are already doing, only more so. When he challenges them, the division heads respond by citing the problems, risks, and uncertainties facing TRM. They protest they would like to see TRM adopt a bolder plan, but fear that a more daring approach would only raise the chances of failure.

Insight from *The Strategy Paradox*:
The division heads are doing what managers often do to balance risk and reward. They shy away from extremes – they don't aim at offering the lowest-price product, nor the highest-quality product; they choose a strategy that has elements of both. They stay the middle of the road and avoid betting the company on a bold strategy that will fail catastrophically if things don't work out as planned. The problem is that this won't produce the kind of break-out performance the TRM president desires, and that TRM needs.

A new and daring plan with a big upside

The president argues that committing to a clear-cut strategy is essential to permit consistent action internally and present a straightforward value proposition to customers. He tells the planners to focus only on what will allow TRM to win big, and demands a more courageous approach. This frees the division heads to define the kind of extreme, go-for-broke strategy that offers the greatest chance of extraordinary results.

Insight from *The Strategy Paradox*:
The president has taken an important step. By ordering the division heads to focus on a bold strategy that will differentiate TRM, he has concentrated their attention where it belongs. Defining and executing strategy. These are all-absorbing tasks. When executing the strategy the division heads will doubtless have to cope with serious obstacles and challenges. But what if future conditions are so different from what they expected that the strategy is nullified? The responsibility for dealing with that belongs elsewhere. Where is something addressed farther on – for the moment the point is that the division heads should focus on deciding what to do and how to do it. Excessive caution prevails when strategists fret about whether another strategy might turn out to be better.

Responding to the president's assignment, the division heads throw out the original plan and come up with a new one, which they call "Operation Overtake." It proposes a five-year program for overhauling TRM. Although there are specific plans for each division, the fundamental idea is to win by offering cheap, fuel-efficient vehicles in China and other developing countries. First-time car-buyers, small businesses, government agencies, and other cost-conscious customers will be able to afford such vehicles, and the division heads figure continued economic development means the market for them will grow steadily.

Operation Overtake requires a total reinvention of existing TRM design, production, and distribution processes. It will also require absorbing other players in the Chinese automotive industry.

The division heads recognize that others are already working on vehicles that are economical yet appealing. Nevertheless, they think that with a more radical focus on this market TRM can beat Chinese and Indian rivals at designing, building, and selling such vehicles. As for foreign OEMs, the division heads think their effectiveness is limited by their inability to shed conventional industry practices and cost structures. Despite their undeniable lead in resources and technology, the foreign OEMs will be hampered by their legacy mindset.

Operation Overtake calls for focusing on petrol-fueled internal combustion engines, but the issue of engine technology is contentious. Several of the division heads are convinced petrol's days are numbered, and they argue vigorously that TRM will regret it if alternative fuels are not a central feature of the new strategy. They foresee China and other developing countries becoming more committed to replacing petrofuels due to growing concerns about pollution, global warming, and energy security.

The majority of the division heads think otherwise. They doubt that buyers want alternative technologies. They believe that in coming years China and other developing countries will avoid policies that mandate dramatic changes in vehicle engines rather than risk curtailing economic growth. They are convinced the main environmental initiatives will entail directives to increase vehicle fuel efficiency and use more biofuels. With respect to the latter, they anticipate that the proportions of biofuels to be mandated won't be high enough to require significant engine modifications. They doubt any alternative fuels will become commercially viable within five years.

The pro-petrol managers outvote the alternative fuel advocates. However, the clash over engine technology is not the end of it so far as this aspect of the strategy is concerned.

Insight from *The Strategy Paradox*:
This is the kind of audacious, no-compromise strategy that many business books recommend, i.e., moving out to one end of the strategy continuum. In this case TRM has chosen the cost leadership extreme rather than the product differentiation extreme, but the point is to go to one end or the other rather than huddling in the middle. Moreover, TRM's strategy involves committing to investments that competitors will have difficulty replicating. A pure, high-commitment strategy provides clarity both for customers and for the organization implementing it.

Highlights of operation overtake

- TRM will strive for cost leadership. The company will offer cheap yet appealing vehicles that will attract households in the middle class that is expanding rapidly thanks to the increasingly market-driven economies of China and other developing countries. TRM will also sell to small businesses and government agencies, which will likewise be cost-conscious customers.
- TRM will abandon its models that are aimed at wealthier customers. The division heads believe TRM has little hope of beating foreign OEMs in selling to upscale customers, since they have such a commanding lead in that contest. Further, they want TRM to have a single-minded commitment to cost leadership.
- Rather than trying to reduce costs by revising conventional approaches, TRM will start with a blank piece of paper and reinvent every aspect of vehicle design, production, and distribution.
- TRM will focus on increasing the efficiency of petrol-powered vehicles by making them lighter via high-tech materials and electronics. The corporate office will sponsor R&D in these areas. TRM will not aggressively pursue R&D into alternate fuels, based on the assumption government policy won't require them and given the uncertainty about which if any will prove economically viable in the next five years.
- Although it will rely heavily on help from local universities and research centers, TRM will retain Western design and engineering companies, and recruit executives from abroad to assume key posts within the company.
- Meanwhile, TRM will acquire selected Chinese auto manufacturers and multiple Chinese parts and component manufacturers. This will allow the company to gain mass and financial clout, and will make it possible to achieve the close coordination needed to experiment with new designs, materials, gear, and manufacturing methods.
- Absorbing companies linked to local governments will also give TRM entrée to more and more bulk buyers of vehicles. TRM will enhance its ability to achieve economies of scale by emphasizing fleet sales to local and national government agencies as well as state-owned enterprises (SOEs).
- TRM will go global, initially exporting vehicles to Asia, Russia, Eastern Europe, the Middle East, and Latin America, but then pushing on into Europe and North America.
- Over the next five years this strategy will convert TRM from an also-ran to a force to be reckoned with in the global automotive market, consistent with the Chinese government's goals for the nation's automotive industry.

TRM's board points out the downside

The downside of Operation Overtake is not lost on the TRM board. Presented with a daring plan, the directors are fearful. They have numerous objections. What one agrees with another disputes. The president forces the board to go over the plan and provide detailed explanations of the issues that create concern. He emerges with a varied and in some cases inconsistent list of things that could go wrong:

- If economic growth is robust, increasingly well-off buyers may bypass cheap vehicles of the type the strategy contemplates and focus their attention on more feature-laden models from established brands.
- An economic slowdown could retard the proliferation of middle-class households and new businesses in China and in other developing countries, thereby reducing the number of buyers the strategy targets.
- Growing protectionism could bring restrictions on TRM's access to foreign automotive markets, foreign technology advice, and foreign executive talent.
- If liberalization flowers in China, the national government and local governments might become less inclined to assist Chinese companies, leaving TRM more exposed to competition from foreign OEMs.
- Should the government integrate China more completely into the international economy, it could adopt emissions and safety requirements that conform to Western standards, thus raising the bar for TRM and others hoping to compete at the low end of developing markets.
- Should fossil fuels encounter difficulty due to dramatic developments involving energy security, sufficiency of reserves, pollution, or global warming, petroleum technology would be the wrong bet.
- Given the amount of alternative fuel R&D underway it is not out of the question that surprising progress might occur and alter the economics of fuel technology much sooner than anyone thinks today.

Reflecting upon the session later, the president decides ruefully that the board was right in pointing out just how dependent Operation Overtake is on a certain set of conditions. Implicitly if not explicitly, any strategy rests on a complex array of assumptions about the world in which it is implemented. If some of them turn out to be wrong, the wheels come off. The president has come up with a bold plan, but he concedes he hasn't addressed the question of how to manage the strategic risk that comes with it.

Insight from *The Strategy Paradox*:
The directors are performing the role that boards should: They are taking the long view, and evaluating the trade-offs between risk and opportunity. In essence they are saying to the president: "In our fiduciary role, we can't approve this plan. We can't say for sure which of the threats we've identified might materialize, but there's a real possibility one or more could emerge and wreck the company. Either develop a less extreme strategy or find ways to manage the risks." Their concerns are well-founded. A landmark study at the Richard Ivey School of Business in Canada shows that although highly successful companies typically adopt a bold strategy, companies doing so are also more prone to bankruptcy. The notion that high returns are linked to high risk is familiar in finance but hasn't been acknowledged in strategy literature. This is the strategy paradox: Strategies with the greatest possibility of remarkable success also have the greatest possibility of spectacular failure.

Reacting to risk: Unsatisfactory methods

The president summons the other members of the senior executive group to a meeting and acquaints them with the situation. He and the senior executives decide they don't want to return to the division heads' original bland, cautious strategy. That won't be enough to get TRM into the lead. They see no realistic alternative to Operation Overtake, so they must figure out how to manage the associated risks.

Insight from *The Strategy Paradox*:
The president and the other senior executives have accepted the responsibility that corresponds to their level in the company hierarchy. Because the division heads' all-consuming job is to devise and execute the strategy, they cannot manage the risks the strategy faces. Because the directors lack familiarity with the details of the business, they are not well-suited to creating the best risk-mitigation approach. The senior management cadre has the right combination of business knowledge and long-range perspective for the task.

As the senior executive group discusses how to proceed, the CFO argues that the board's reaction reflects a rejection of the division heads' views on the future of the automotive industry. He thinks the remedy is to revise the strategy based on a more credible vision of how the industry will evolve. He contends the board will go along when presented with a strategy that rests on better market projections and forecasts.

The president disagrees. He responds that the CFO is missing the significance of what has taken place. Although the board identified potential adverse developments the strategy failed to address, that didn't imply there is some other vision of the future that would be satisfactory. The directors themselves disagreed over which aspects of Operation Overtake were valid and which were not. The challenge is not to come up with a strategy based on a superior understanding of what the future holds with which all will agree. Everybody has an opinion about the future but nobody knows for sure.

Insight from *The Strategy Paradox*:
There is no doubt about the power of a strategy that is pegged to correct assumptions about the future. But there is also no certainty about what lies ahead. Track records are meaningless, the accuracy of predictions is impossible to assess, and events are subject to randomness. Therefore trying to do a better job of predicting is futile. Betting on a particular set of assumptions about the future is just that – a bet.

The CFO bounces back. If the future is so uncertain that nobody can predict effectively, why try to figure out now how to address all the things that might happen? Why not pursue Operation Overtake and adapt the strategy if and when that becomes necessary down the road?

The president rebuffs this idea as well. Although TRM *might* prove quicker than its rivals to spot the onset of new conditions and make the required adjustments, he wonders about the organization's proficiency in that regard. Also, he is uncomfortable with the idea of returning to the board and saying the company will deal with any problems if and when they arise. He wants to find more substantive ways to address the directors' concerns.

Insight from *The Strategy Paradox*:
The president's skepticism is appropriate. Adaptation can work, but only when a company matches its pace of change to that of the business environment. Yet factors such as the entry of a new competitor or the advent of a new technology can alter the market too fast for any company's ability to adjust. Or change may happen so slowly it goes unnoticed until it's too late. Adaptation is a solution with limited value.

Using scenarios to bracket the array of possibilities

If there are problems with both predicting better and adapting as the need arises, what *should* TRM do to address the risks associated with Operation Overtake? The president believes he and the executives won't be able to answer that question so long as they are working from the list of issues the board raised. Addressing each of those in turn seems like an ad hoc, disjointed approach. He feels the need for more structure.

The president decides the group should develop a set of scenarios that better organizes the conflicting views about the business environment TRM will face. This will at least provide a more orderly definition of the different assumptions the strategy should take into account. He names a task force of senior executives, division heads, and staff people to work on the scenarios.

The task force begins by reviewing the board's objections. This analysis indicates the directors' qualms focused on three areas: The role of market forces (v. government intervention) in the Chinese automotive industry, customer demand, and the viability of petro-fuels.

Using those three factors as the framework, the task force defines a set of eight scenarios. One of them matches the assumptions on which Operation Overtake is based. It features capitalism and competition but with substantial government involvement, robust economic development, and little incentive to abandon petrol. They name this scenario "Smooth Acceleration."

The task force selects three other scenarios as best capturing the issues cited by the directors: These "counter scenarios" are "Rough Road" (protectionism, recession, interventionist government policy, oil shortages); "Team Sport" (regional blocs, technocratic government policy, increased natural gas availability); and "High Performance" (intense environmental consciousness, but in the context of a wealthy, open, global economy).

Insight from *The Strategy Paradox*:
Scenario-building provides a way to proceed when there are divisions among the key decisionmakers as to what assumptions should drive strategy (as in the TRM case). So long as each scenario has an approximately equal number of supporters the process can go forward. Further, each scenario should present a distinctly different future business environment, not merely a variation on a common theme.

This exercise confirms that the boards' reservations were well-founded. Although the original version of Operation Overtake would be a winner in the Smooth Acceleration scenario, it would be unsuitable to various degrees in the three counter scenarios. If conditions of the type depicted in one of those scenarios emerged, TRM would need to drive Operation Overtake in for a pit stop to make radical adjustments. Otherwise rivals with strategies better-suited to the new conditions would have a big advantage.

Exhibit 1. The full set of eight scenarios

	Key variables		
Scenarios	Role of market forces	Customer demand	Petro-fuel viability
Smooth Acceleration	Major	Strong	High
High Performance	Major	Strong	Low
Running on Fumes	Major	Weak	High
Pricey Petrol	Major	Weak	Low
Team Sport	Minor	Strong	High
Parking Permit Required	Minor	Strong	Low
Stalled Out	Minor	Weak	High
Rough Road	Minor	Weak	Low

The subset of four scenarios

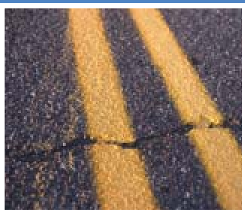
Smooth Acceleration (the basis for Operation Overtake)

Beijing conclusively proves the merits of its brand of state-guided capitalism. Private enterprise flourishes and competition is vigorous, yet the central government remains influential in key economic sectors and decisions. The mix works well. Economic development continues and China is increasingly integrated into the burgeoning global economy. Efforts to reduce pollution and global warming mainly involve symbolic or limited measures, and there is no successor to the Kyoto Protocol. Oil production benefits from infusions of capital and technology as peace breaks out in the Middle East. The reign of the petrol-based internal combustion engine faces no serious threats.

Team Sport

The world divides into rival economic alliances. China leads an Asia bloc that competes with blocs based in Europe and the Americas. Within the Asia bloc auto trade is relatively open, but elsewhere products made in China face resistance. Government becomes more assertive and centralized. Beijing expects the auto industry to work together according to government instructions. Domestic auto demand is strong. The economy thrives on the success of a government-driven initiative to develop China's hinterlands. Big gas deposits are found in western China, reducing Asia's dependence on imported Mideast energy. Natural gas becomes much more competitive with petrol and diesel fuel.

Rough Road



High oil prices due to political upheavals in the Middle East knock the wheels off economies worldwide. Oil deliveries are so reduced and sporadic that prices stay relatively high even as demand tapers downward. China's economic development suffers, and auto demand is weak. Government policy shifts from liberalization to protecting jobs at home. Chinese companies gain shelter from foreign competition, but their access to foreign markets is curtailed in return. Chinese automakers face stringent fuel-efficiency mandates, as well as measures to limit driving and promote public transit. Conditions favor biofuels because they can be produced domestically and their production creates agricultural jobs.

High Performance

Free and open competition rages in the Chinese auto sector. Government wants the market to pick winners among privatized Chinese companies, foreign automakers, and joint ventures. The rewards are great – China's economy develops rapidly, and the proliferating middle class households are tech-savvy, avid consumers. Demand is strong abroad as well. Import barriers are low due to continuing global liberalization, but competition is fierce in every major market. Public concern over the environment escalates as economic development leads to increased emissions. With higher incomes consumers will pay more to help save the planet, which boosts the viability of comparatively expensive technologies such as electricity from hydrogen fuel cells.

Strategies to answer the "What if?" question

The issue then becomes what TRM can do should events in the automotive market resemble those portrayed in any of the three counter scenarios. In other words, what adjustments should TRM make during the pit stop that would be required under these circumstances?

To answer that, the task force looks at each counter scenario and defines the strategy TRM would adopt if it found itself dealing with those conditions. In essence the group asks, "If we found ourselves in a world that looks like Rough Road, (or Team Sport, or High Performance) how would we win?"

When this activity is complete, the task force has four strategies to consider: The one for Smooth Acceleration (Operation Overtake) and one for each of the three counter scenarios. Lining up the four strategies, the task force sees that certain initiatives appear in all of them, while others appear in only one or two scenarios.

For example, every strategy includes acquiring other Chinese manufacturers and suppliers. Likewise, every strategy includes using new designs, materials, and electronics to improve fuel efficiency. However, fuel system economics vary from one scenario to the next. Although petrol is invincible in Smooth Acceleration, it is constrained in Rough Road – in that scenario the best bet would be biofuels requiring engine modifications. The conditions prevailing in Team Sport favor fuels based on natural gas, and hydrogen fuel cells gain viability in High Performance.

Insight from *The Strategy Paradox*:
The initiatives in Operation Overtake that show up in the strategies for the counter scenarios can be designated as "core" elements of the strategy. Because the assets and capabilities they require will be valuable no matter what, TRM can make the necessary investments without hesitation. The others are the "contingent" elements of the strategy. These are the initiatives that are crucial in the context of one scenario but irrelevant or harmful in the context of another. A shift to biofuels would be right in Rough Road but less compelling in High Performance, for example.

Preparing for what *might* happen: Mission impossible?

With the scenarios completed and the strategy for each defined, the president meets with the senior executive group. The good news is that the scenarios provide a panoramic view of all the market conditions TRM might face, and the strategies impart an understanding of what TRM would need to do in each set of circumstances. The group now has before it the means to address the issues that perturbed the board.

The bad news is that the executives don't see how they can put all this to use. Betting on one scenario is essentially what the board rejected when it questioned Operation Overtake. The president has ruled out the idea of simply waiting to see what develops and relying on the company's ability to adapt. Clearly TRM can't afford to pursue Operation Overtake while simultaneously preparing for all three of the other scenarios.

The executives consider devising a "robust" strategy that would be viable in any of the four scenarios. However, the group decides this would be merely a different version of the division heads' original middle-of-the-road strategy, with the attendant disadvantages. At best it would ensure TRM's survival in every scenario but guarantee exceptional growth and profits in none.

The portfolio of options solution

Flashing forward, the executives arrive at a solution that resembles assembling a portfolio of financial options. Rather than gearing up to meet every eventuality, TRM will make investments that give the company access to the assets and capabilities it will need for each counter scenario, but without committing totally to purchase and develop them. For a limited expenditure the company will acquire enough of a claim on the required resources to have a presence in the relevant space. And it will be able to increase its commitment if the future course of events makes that desirable. But it will retain enough leeway so that it can exit with limited cost if not. The next section relates how this solution came about.

Insight from *The Strategy Paradox*:
As is true of financial options, the interests TRM proposes to accumulate will confer the right, but not the obligation, to invest further if it so chooses. However, these are "real" options rather than financial options. The idea is to equip the company with the means to address risks to its strategy. The cost will be less than that of total commitment, but more than simply accepting the risk (which would cost nothing, although the risks would remain unmitigated). What price to pay for this type of contingent investment depends on the value the company assigns to gaining the pertinent degree of protection against the relevant risk compared to other uses for the capital.

Options in action: Alternatives to petrol

The real options solution emerges as the TRM executives discuss fuel systems. Given that petrol would be challenged by a different alternative in each of the counter scenarios, they grapple with the problem of how TRM can prepare for three substitute technologies. It wouldn't be feasible for each division to conduct R&D on three alternative fuels. Nor could the corporate office take this on. The cost would be far too great even if the company weren't already planning extensive R&D efforts related to materials and electronics.

Three observations provide inspiration:

- TRM has a ready supply of managers eager to accept on the job of commercializing alternative fuels – the division heads who wanted the company's strategy to include alternative fuels in the first place.
- The three alternative fuels that figure in the counter scenarios lend themselves to applications in the taxi, truck, and bus markets. For taxis, electricity; for trucks, biodiesel; for buses, natural gas.
- Taxi, truck, and bus fleet operations are good for testing and commercializing new fuel systems. Fleets in China are large, and fleet vehicles travel long distances in short periods of time. Cities are natural locations for alternative fuel experiments since they suffer from high pollution, and in city driving vehicles don't need to meet demanding acceleration and top speed standards. Fueling station trials can be conducted using facilities sited in fleet yards. Sales to government and SOE fleets are already part of TRM's strategy.

Putting these considerations together, the executives hatch a plan. They decide that TRM's taxi business will be split off as a separate division that will concentrate on commercializing some version of electric power. What about the other three alternative fuels? As part of its expansion program, TRM will acquire truck and bus businesses, which will focus upon biofuels and natural gas respectively. Each of these divisions will be headed by one of TRM's alternative fuel advocates.

Meanwhile, the car business will continue to use petrol, and will pursue opportunities to develop advanced versions of petrol technology.

The executives' intention is that this arrangement will keep TRM at the forefront of experimentation with improved fuel systems. As alternative fuel advocates, the heads of the taxi, truck, and bus businesses will insist upon extreme commitment from their organizations to ensure that the fuel they're championing will win in the end. Not only will each division compete with their counterparts at other automakers, there will be interdivisional rivalry as well.

As the executives see it, a corporate R&D unit would tend to view efforts to perfect alternative fuels as interesting science. There will be greater urgency if individual fuels are linked to different divisions; this will make the quest for progress more emotionally charged. The taxi, truck, and bus divisions will want their respective alternative fuel to be the one that eclipses petrol and other potential substitutes, while the car division will strive to fend off all challengers. "Bragging rights" and even careers will depend upon who prevails. The company's strategy will now have a race within a race, and TRM is likely to be well-positioned regardless of which fuel wins out over time.

However, a triumph for one fuel and one division will be a victory for the entire organization. If a particular fuel emerges as the clear favorite, TRM will transfer the victorious technology from the pertinent division to the others. Of course, it is not certain that one fuel will prevail across the board. It could turn out that different fuels are best for different applications. But in that case the same approach would apply, e.g., if a type of biofuel is best for fleet operations, the taxi, truck, and bus divisions would all adopt that fuel, while the car division would stick with petrol.

The senior executives agree they may need to intervene upon occasion to maintain the transferability of fuels across divisions, e.g., if a division considers actions that would serve its needs but take the technology in a direction that would make it less compatible with the requirements of other divisions. Likewise, the corporate office will determine if it is time to declare one fuel the winner and to convert other divisions to that fuel. In options terms, the president and other senior executives will decide whether to preserve, exercise, and abandon options. Clearly, though, they will need to work with division heads to explain and justify any decisions that may initially seem arbitrary and disadvantageous from the division's perspective.

Thus this is not a conventional diversification play whereby TRM seeks to ensure that one of its divisions will be a winner even if the others fall behind; investors can hedge strategic risk that way themselves. The approach the executives visualize involves enabling each division to alter its strategy if market conditions diverge from those required for its success. As a division seeks to maximize a given fuel, the other divisions are creating strategic options for it by developing other fuels, one of which might turn out to be a better choice. The aim is to create value by reducing the strategic risks each division faces and increasing the universe of strategic opportunities it can pursue.

From the vantage point of the corporation, TRM has avoided either committing to one fuel or drastically inflating its costs to fully fund an R&D program for each of several fuels. It is spending a reasonable amount on several contenders while retaining sufficient flexibility to share the benefits of any breakthroughs across the entire organization.

There is one other dimension to the plan, which is that TRM will draw upon government R&D resources to augment its own efforts in the area of alternative fuels. The Chinese government has made automotive technology innovations a priority. Agencies at the national and local levels have undertaken a variety of R&D initiatives. Many research centers and universities have programs and facilities along these lines, and loans, tax exemptions, and other benefits are available to help get experimental vehicles onto the streets. The TRM executives are under no illusions about the effort that will be required to qualify for assistance and work with the multiple entities involved, but they believe the divisions can make good use of the resources if they pursue this avenue energetically.

Insight from *The Strategy Paradox*:
TRM will in effect have a portfolio of options on multiple fuel systems over the next five to 10 years. The plan requires that each division focus more on R&D than it otherwise would, and that will add costs and divert attention from today's threats and opportunities. However, the trade-off will be reduced by relying on government for a portion of the funding and other resources. Is it possible a fuel other than the four TRM has selected will win? Yes, but TRM will have covered a broad segment of the most plausible contenders. In perspective, the key point is that TRM will gain the means to mitigate the risk that new circumstances will cause its growth engine to stall. With its divisions racing to achieve leadership in four major fuels segments, and with the ability to transfer technologies across divisions, the company will be better equipped than its rivals should future developments alter fuel system economics.

Options in action: Alternatives to government support

The senior executives turn to another issue, which is the possibility that the Chinese government will accelerate liberalization and thereby deprive TRM of various supports and protections the strategy assumes will be available. Under those conditions – depicted in the High Performance scenario – TRM would be much more exposed to the play of market forces, a relatively small fish highly vulnerable to competition from foreign OEMs.

For a while the executives discuss reverting to the OEM joint venture that figured in the initial plan. However, they fear that linking up with an OEM would not only jeopardize their independence but also interfere with their ability to reinvent the car business as they anticipate doing – they remain skeptical that any global OEM will agree to truly drastic innovations.

Ultimately they decide the best solution is to establish relationships with foreign sources of capital. These could be in Europe, North America, Japan, the Middle East, or elsewhere. They could be private equity funds, large car dealerships, entrepreneurs, investment funds, or financial institutions.

It would be possible to defer this to some future point when a pressing need becomes apparent. Lining up financing can be done within a matter of months. However, the TRM executives believe that in a raw competitive environment such as the one depicted in High Performance they would want to deal with entities they trust and that understand their business. Although they have had limited contact with foreign organizations, they are aware of the problems that can arise due to differing values and practices. Accordingly they assume that developing relationships of the type they have in mind will require significant time.

Initially the emphasis would be on obtaining funds for technology R&D. However, opening up channels to foreign financiers would equip TRM with alternatives should future events overtake existing arrangements. If the company were to need a major and continuing infusion of capital there would undoubtedly be difficult issues to negotiate, including the possibility of a role in the company's management. Nevertheless, the executives think TRM would be better off facing those decisions with organizations it has been cultivating than it would be if it lacked these potential allies, or if it were yoked to an OEM.

Insight from *The Strategy Paradox*:
As with the divisions' R&D activities, the pursuit of financing sources abroad will exceed the level of effort TRM would expend were it not trying to mitigate the risk of a strategic skid due to adverse developments in the business environment. In this area the excess can be justified as the cost of obtaining options on alternate sources of support should government aid decline.

Back to the board: Defining the right risk-return profile

The president returns to the board and presents Operation Overtake as amended. In brief he contends that this version has two powerful benefits: It retains the bold character that creates the chance of achieving extraordinary results, but it features a portfolio of real options that can be exercised if external developments threaten to nullify the original strategy.

He acquaints the directors with the options on alternative fuel systems, sources of financing, and other resources TRM might need. He also discloses the risks for which he and the other senior executives have found no mitigation. With respect to those he proposes that the company simply accept the risk, assuming that if adverse developments occur management will come up with effective responses.

He concludes by emphasizing that what he has presented is only a set of proposals. The board is responsible for managing strategic uncertainty and must make its own decisions about what will best serve the interests of TRM and its various constituencies.

The board reviews the strategy and considers the risk mitigation mechanisms the senior executive group has created. Several directors voice concern about the effectiveness of the plan and the danger that management will be unable to pull it off without threatening the company's survival. However, the directors have become increasingly sensitized to the threats inherent in either continuing on the present course or adopting a cautious strategy. Ultimately they decide that the president is right: Operation Overtake as amended balances a suitably dramatic solution with appropriate measures to address the unavoidable risks. As for the risks that aren't hedged, the board agrees that no options are apparent and under the circumstances it makes sense to accept them.

TRM clearly has to take drastic action. The proposed strategy could enable the company to shift into higher gear and emerge as a contender for industry leadership, even if market conditions change while the transformation is underway. The board authorizes the president to implement the plan.

Conclusion: Strategic risk and the TRM story

The fictitious saga of Tian River Motors and its Operation Overtake illustrates the application of the principles presented in *The Strategy Paradox*. Woven into the story are important points about the methods companies can use to more effectively manage strategic risk. A summary of the book's highlights accentuates the relevance of TRM's experience.

Winning big requires committing to an extreme strategy

Companies that win big typically adhere to a bold strategy – a "pure" strategy that falls close to one extreme or the other on the continuum between cost leadership and product differentiation. Further, the strategy satisfies customers in ways competitors will have difficulty copying. That means developing unique assets or capabilities, which in turn requires sustained investments and intense experimentation. In short, uncommon results require committing without reservation to a vision of what customers will want down the road when a new and unconventional offering is finally up and running. TRM's Operation Overtake exemplifies a high-profile, high-commitment strategy.

But commitment exposes a company to unpredictable changes

Implicit in the formula for standout performance is being right about market dynamics years or even decades over the horizon. A company pursuing an extreme strategy bets that its assumptions will align with the nature and interaction of a broad range of future circumstances – the state of technology, resource availability, the economy, the environment, regulatory policy, and so on. Unfortunately, research on various types of forecasting reveals that we humans do a poor job of anticipating the future. Nobody can predict accurately with sufficient precision and consistency to justify confidence that the conditions required for success will be in place when needed. TRM's board rejected the original version of Operation Overtake because it saw the vulnerability inherent in being so dependent on the existence of a particular set of future circumstances.

And adaptation has limited applicability

If it isn't possible to predict with certainty, why not rely on adaptability? For adaptability to work, a firm must change at the same rate as the business environment. Yet as a practical matter most organizations find it difficult to adjust quickly in response to fast-breaking change – and this is all the more true for a company that has committed to an extreme strategy. Slow change makes it seem as if incremental adjustments are sufficient, which won't be true if a fundamental shift is underway that demands a more thorough transformation – and typically that phenomenon isn't perceived until it's too late. Compounding the problem is the fact that most competitive environments are characterized by different rates of change in different segments, creating the impossible task of adapting at different rates at the same time. TRM's president was correct in deciding that the company shouldn't bank on being agile or nimble.

Commitment v. uncertainty creates the strategy paradox

These considerations add up to a daunting picture. Winning requires a pure, high-commitment strategy, but it's impossible to be sure the essential market conditions will be in place, and it's unrealistic to count on adapting to any market changes. The severity of the problem is confirmed by the Ivey Business School study showing that although companies adopting an extreme strategy on average do very well, they also often go bankrupt. This is the previously-unrecognized flip side of the precept that extreme strategies produce extraordinary rewards, and it creates the strategy paradox: The same behaviors and characteristics that maximize a company's probability of remarkable success also maximize its probability of spectacular failure. TRM's problem was resolving the strategy paradox so it could pursue Operation Overtake while mitigating the associated risks.

The middle-of-the-road solution sacrifices upside exposure

Many companies react to the strategy paradox by seeking to avoid strategic risk. They congregate in the middle of the continuum between cost leadership and product differentiation. A hybrid strategy is less exposed to uncertainties about future market dynamics and thus offers a greater chance of survival. However, a company going this route sacrifices its chance to earn higher returns. Its customers are more likely to be confused by its value proposition, its people are more likely to lack clarity of purpose when making business decisions, and its competitors are more likely to attack both its flanks. A middle-of-the-road company survives but doesn't prosper. TRM's division heads initially chose a middle-of-the road strategy, but the president insisted that something more courageous be developed so the company would have a chance to break out of the pack. However, he had no ready response when the board objected to the lack of recourse should things not go as planned.

Needed: A means to manage strategic uncertainty

This situation calls for a solution that seems like the equivalent of squaring the circle – a way to pursue a pure, high-commitment strategy while retaining the ability to switch strategies if need be. That solution is available through the combination of two frameworks: Requisite Uncertainty and Strategic Flexibility. The TRM story illustrated the application of these two frameworks as the different levels of the organization sought an appropriate balance between strategic commitment and strategic risk.

Requisite Uncertainty: Allocating responsibility for strategy

Requisite Uncertainty involves the allocation of responsibility for dealing with various aspects of strategy based on the interrelated factors of time horizon and degree of strategic uncertainty:

Middle management chooses strategic commitments

With a time horizon of two to five years, middle managers face a significant amount of strategic uncertainty and yet must decide what strategy their organizations should adopt. Their job is to set the company on a definite course that offers the greatest potential for profitable growth. Middle managers seek to avoid obvious traps and dead ends, but they cannot become so concerned about uncertainties that they are deterred from formulating a pure, high-commitment strategy. This is what TRM's division heads did when they devised Operation Overtake.

The corporate level creates options to mitigate strategic risks

Dealing with strategic risks is the job of senior executives. They focus on the five-to-10-year timeframe. Within that span there is lots of strategic uncertainty – much can change and the potential responses are many and varied. Because senior executives look farther out they are more likely to see not only issues that could arise within a few years, but longer-term trends and developments as well, e.g., conditions that might take a decade to arrive in full force but which could gain sufficient traction within five years to require a switch to a new strategy . The senior executives' job is to create options for dealing with the alternate futures – they develop corporate strategy as distinguished from competitive strategy. TRM's senior executives played this role when they surveyed the range of plausible futures and came up with ways to equip the company with workable responses should Operation Overtake be jeopardized by market trends inconsistent with the plan.

Functional managers deliver as directed

At the lowest level of the hierarchy, functional managers focus on the short term, a span in which there is no uncertainty about strategy because the commitments inherent in implementing a strategy can't be altered in within a matter of months. Functional managers are charged with running the play that has been called, and seek to learn from trial and error what tactics are most effective in delivering the desired results. In the TRM story this principle was illustrated by the way in which the senior executives foresaw that the divisions would pursue their alternative fuel R&D assignments. From the perspective of functional managers down in the taxi division making electricity commercially viable would be understood as a do-or-die mission. That mindset would ensure that if electric power became central to a shift in strategy TRM's version of it would be well along and highly competitive.

The board balances shareholder returns with corporate survival

Like senior executives, directors are concerned with the long term. However, the board's fiduciary duties run not only to shareholders but also to the corporation as an institution. Thus directors provide a check on management by balancing concerns about shareholder returns with an interest in the company's survival; they define the company's appropriate level of risk exposure. The TRM board's actions illustrated these principles in action – the board initially called for more risk mitigation. When presented with a revised plan it found the mitigation mechanisms appropriate and agreed that certain risks could be accepted without unduly threatening the company's survival.

Strategic Flexibility: Toolkit for managing strategic uncertainty

Strategic Flexibility is a set of processes each level of the organization uses to address the uncertainties it faces and deliver on its commitments:

Scenarios capture divergent views of what the future may hold

Scenarios depict the range of plausible future market conditions within which an organization might have to operate. They are based on variables that are most relevant to the company's strategic issues and frame decidedly different future states. Each scenario may have champions and skeptics among the senior executive group, but the average probability rating for each scenario should be roughly equal. This phenomenon of equally likely odds underscores the point that scenarios should preserve rather than dispel disagreement. Scenarios are not a means for reaching consensus on the most likely future – the whole idea is to avoid unjustified confidence about what lies ahead. The four scenarios the TRM executive group created embodied dramatically different views as to how the next decade might look for the Chinese automotive industry.

A strategy for each scenario reveals what might be needed

Once a strategy for each scenario is developed that answers defines how the company would win if it found itself in that particular business environment it can then be decomposed into its constituent elements. Those elements that show up in the strategies for all or most scenarios are considered core, while those that are valuable only in one or a few scenarios are considered contingent. In the TRM example, every strategy involved using new designs, materials, and electronics to improve fuel efficiency and thus that element was core. Because the strategy for each scenario called for a different fuel system, those elements were contingent.

Investing in resources that might be needed – or might not

By committing to the core elements and taking options on the contingent ones, the corporate office creates the ability to implement the most appropriate strategy regardless of which future ultimately materializes. Real options can be obtained via acquisition, partial equity stakes, and joint ventures. A portfolio of real options reduces the strategic risk a company faces and increases the universe of strategic opportunities it can pursue. To the extent a company balances the cost of real options with their risk-mitigating and opportunity-enhancing value, shareholders will enjoy a higher risk-adjusted return than companies that do not engage in strategic diversification. TRM's plan to buy truck and bus businesses that would develop different alternative fuels illustrate the creation of real options on strategies for circumstances in which leadership in commercializing biodiesel or natural gas fuel systems would be essential.

Managing options requires cooperation between management levels

Resources senior executives see as options are crucial segments of the businesses divisional and functional managers run. The corporate office must strike a careful balance. If an investment with material strategic option value is granted too much freedom, it can evolve in ways that make the ultimate exercise of the option impossible. Too little autonomy, on the other hand, could undermine the viability of the option as a stand-alone investment, making it prohibitively costly to maintain or abandon. This was illustrated in the TRM story when the president and senior executives observed that they might need to intervene if a division contemplated action that would affect the ability to transfer fuel technology to other divisions. But they also acknowledged they would need to do so with appropriate recognition of the different perspectives involved.

Applying the insights contained in the TRM story

By the end of the story Tian River Motors had reached an enviable state – it was equipped to achieve the results it desired at a level of risk it chose. This was enabled by its approach to managing strategic uncertainty. Since hierarchical levels are defined by the time horizons to be considered when making decisions, thinking about the future is necessarily the responsibility of senior management. And since the future is unavoidably unclear, senior management's role is to manage uncertainty. Requisite Uncertainty and Strategic Flexibility provide the theoretical foundation and practical toolkit required to fulfill that responsibility. The relevance of these precepts extends beyond China, and for that matter beyond the automotive industry. The ideas presented *The Strategy Paradox* allow any company to adopt a bold, high-payoff strategy keyed to a particular vision of how the future will play out, yet maintain alternate plans and the resources to go with them in case it becomes necessary to make a U-turn.

Endnotes

[1] Automotive News, 2007 Guide to China's Auto Market, May 14, 2007.

[2] *The Strategy Paradox: Why Committing to Success Leads to Failure (and What to Do About It)*, Currency/Doubleday, 2007.

[3] This paper builds on a presentation delivered during the Deloitte Seminar at the November 2006 Automotive News China Conference in Beijing. The seminar was organized by the Deloitte Global Manufacturing Industry Group.

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