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How entrepreneurs can benefit from failure management[☆]

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BENEFITING FROM BUSINESS FAILURES

Can entrepreneurs benefit from failure? If so, more proactively, how can they use failure systematically? This paper studies this simple question. In order to answer the question, we begin introducing the existing ideas on failure that abounds in at least four categories: (1) *why* we learn from failure; (2) *how* we learn from failure; (3) *what* we learn from failure retrospectively; and (4) how we *use* failure prospectively. We then present detailed research questions designed to fill gaps in existing ideas on failure management.

Why We Learn from Failure

No matter how well organizations are managed, some failures are inevitable and even seemingly ubiquitous. According to the U.S. Census Bureau data, every year 470,000 businesses fail while a smaller number of businesses (400,000) newly start. Such high odds of entrepreneur failures are not so different across industries—no industry has more than a sixty percent survival rate after the first four years.

With business failures expected, the assertion that we can learn from failure is prevalent among numerous management scholars and practitioners. Simply put, failure teaches us what works and what does not. In other words, failures challenge underlying flaws in causality of organizational processes, and thereby lead to more accurate way of doing. Considering our bounded rationality, such learning from failure through experimental approach might be the only way to learn about causal relationships.

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As a result of such learning, organizational performances have often been improved by investigating and learning from failures. In detail, failures may help improve process reliability, reduce failure-related costs, and also improve the composition of the portfolio of projects through trial-and-error learning. So much prescriptive advice has been suggested to see failure as an important ingredient of the innovation process. In short, learning is more effective in failure than in success. While success can make decision makers remain where they are, failures can help renew their own strategic directions and practices.

How We Learn from Failure

Despite much evidence that we can learn from failure, the outcomes of learning from failure may vary according to different learning conditions. The learning conditions can be categorized in the following three ways: process of learning; facilitators of learning; and barriers of learning.

First, *process of learning* is crucial to successful learning from failure. This can be approached in the course or procedure of knowledge generation. Focusing on the procedure of knowledge generation, there are three stages of learning from failure: identifying failure; analyzing failure; deliberate experimentation. Besides such organizational processes of learning, the psychological and cognitive nature of learning from failure should be also considered because emotion is strongly involved in the process of recognizing and acknowledging failure.

Second, what are the *facilitators of learning* from failure? We can learn from failure by fostering an organizational system and culture that favors experimentation. Systemically, strategic management using formal planning system can be useful to deal with environment upheavals. From a cultural aspect, learning through failure or adversities can be achieved by being sensitive to warning signs of decline,

normalizing failure, or facilitating improvisation, i.e., developing heuristic contingency plans.

Third, *barriers of learning* are also an important part of learning from failure. For instance, there are four barriers to learning from failure: technical; social; individual; and organizational. In detail, failures of ‘learning from failure’ are frequently witnessed due to incorrect inferences from small samples or noisy cues, or bias in interpreting causes of failure.

What We Learn from Failure—A Retrospective View

Lessons from failure feature not only failure process but also attribution of the causes of failure. Attribution is an attempt to trace back to the causes of events in order to understand the present and manage the future through corrective measures. In short, what we learn from failure is mainly about causes of failure so as to correct errors and not to repeat the same failures in the future. Hence, examining causes of failure is basically retrospective because it focuses on the past or root of failed event.

Then, what cause failure? According to two factors—(1) if an action leading to failure is unguided or purposeful; (2) if the consequence of action is intended or not, there are four types of failure due to mechanical, accidental, intentional, and inadvertent causes. From other perspective as to causes of failure, failures can occur because of external or internal environments such as poor leadership, ignorance of organizational culture, unbalanced teamwork, or some unfit combination of leadership, capabilities and organizational design. As a provocative fact, entrepreneurs’ incompetence or lack of experience may be a much more influential cause of failure than neglect, fraud, or disaster.

On the other hand, biased attributions have been often witnessed in many areas and disciplines. For instance, people tend to attribute their own success to themselves or internal factors, and their own failure to external factors. Conversely, managers tend to attribute others’ success to external factors but their failure to internal factors.

How We Use Failure—A Prospective View

In contrast to the retrospective approach to causes of failure, another approach more emphatically focuses on the beneficial impacts of failed events. It should be noted that the retrospective and prospective perspectives on failure are not mutually exclusive because both are closely related to each other as retrospective correction of the past is also used for prospective planning for the future. However, the two views are distinguishable because of their different foci on failure. In other words, the prospective view on failure (regardless of its causes) pays more attention to how we can use failure in search for new opportunities.

TOWARD FAILURE MANAGEMENT

As reviewed earlier, most prior ideas on failure have a gap to be filled: *How we can use failure prospectively and systematically*. In other words, the existing research, theories, and even practical advices on the use of failure do not

comprehensively explain prospective benefits from adversity within an integrated framework. Hence, the creative uses of failure are still left to hindsight or improvisation. However, systematic foresight on how we can take advantage of failure and adversity can be used not only as a theoretical framework but also as a heuristic for managerial and strategic decision making.

With this purpose in mind, this study provides a framework on ‘how to learn from failure’ in pursuit of ‘how to use failure prospectively’. In this sense, this paper develops a failure management framework for creative decision making in paradoxical situations at both the individual and organizational levels in search for new insight on causes of failure and also new opportunities thanks to failure.

This study took multiple steps to answer the following questions:

1. *How are the major concepts such as ‘failure’ and ‘failure management’ defined operationally?* We begin with operationally defining the basic concepts of success and failure. As a new management perspective that takes advantage of failure, the concept of failure management is also introduced.
2. *What are the types of failure and is there any benefit to managing them?* We examined numerous examples and analyzed many studies to uncover the dimensions, categories, and concepts of a failure management framework. Through an iterative process of grounded theory that included inductive and deductive reasoning, we eventually identified three types of failure and six purposes to use failure advantageously that provided 16 propositions of failure management.
3. *What distinguishes failure management from other related management tools such as risk management and crisis management?* In order to infer the theoretical and practical contributions of failure management, we address the unique characteristics of our failure management framework by comparing it to other related management tools such as risk management and crisis management which failure management is expected to complement.

A FRAMEWORK FOR FAILURE MANAGEMENT

Definitions and Concepts

Magnitude of event that is defined as failure can vary, for instance, in the forms of operational errors or mishaps, or catastrophe such as accidents, or plane crashes. Regardless of magnitude of failure, definition of failure may be in the eyes of beholder because there are usually various goals or references by which success or failure is judged. Setting an agreed-upon organization goal or reference point is especially difficult because of political and narrative nature of the distinction between success and failure.

But such dynamics of establishing official or formal goals to define success and failure is beyond this study. Rather, we judge success or failure as the outcome from a black box in which actions are compromised and negotiated to set, achieve, and evaluate a formal and fixed goal. Specifically, we operationally define success and failure as follows. (1) *Success* is ‘a state where reality is superior to the goal.’ (2)

Failure is ‘a state where reality is inferior to the goal.’ According to this operational definition, in this study the word ‘failure’ means not only complete loss or bankruptcy but also any adverse state such as frustration, conflict, or regret in which reality is worse than expectations. Finally, (3) *failure management* is defined as ‘the systematic ways to make the most from failure.’

As a result of the comprehensive sampling and analyses through grounded theory approach, two dimensions of a failure management framework were found. The first is the *types* of failure (and its side effects). According to the operational definition of failure (i.e., a state where reality falls short of the goal), there can be three different types of inferior reality in terms of internal/external resources or forces: *deficiency*, *excess*, and *inconsistency*. The second dimension we use is *purposes* to use failure. The first three purposes – *saving internal resources*, *reforming internal hazard*, and *learning new knowledge* – are the efforts to adapt the internal environment in the face of failure. The second four purposes – *learning new knowledge*, *discouraging external threats*, *attracting external supports*, and *complementing multiple forces* – are attempts to influence the external environment. Noteworthy is the fact that *learning* is shared by both internal and external adaptation because most learning from failure is shared by both internal and external stakeholders involved in the incident of failure.

We found that the three types of failure along with the six purposes to use failure can be combined into 16 potential benefits. In other words, there are 16 different ways organizations can respond to take advantage of adversity that comprehensively summarizes the propositions on the benefits of failure (see [Appendix A](#)). Each of these propositions can be defined, described, and supported by examples as follows.

Propositions

Proposition 1. *Failure (deficiency, excess, or inconsistency) can function as a test bed under extreme condition.*

Any type of failure provides extreme conditions in which certain variables’ characteristics or attributes can be tested and learned by either internal or external stakeholders. Simply put, failure teaches about what does and what does not work. For instance, Silicon Valley’s ‘FailCon’ (which means ‘failure conference’) has a new business model that helps entrepreneurs learn from failure. Apple’s success is based on Steve Jobs’ failures such as NeXT computer and iTunes phone which became the basis for the success of OS X (10) and iPhone, respectively. Encountering a big quality control problem in 2009, Domino Pizza dramatically grew after it issued a quick apology and undertook full-scale reform. Some premature SONY products such as its LED TV or PDA before the smartphone failed in terms of sales, but they played a role in familiarizing customers with such new devices and thereby increased their willingness to buy later. Immediately after Jaws Rice Cake, a restaurant chain in Korea, had many customer complaints in 2012 about an employee’s rude attitude, the CEO promptly posted an apology statement on its Webpage and promised a strict retraining of all employees. Such a swift and sincere

response drew customers’ attention and proved the restaurant’s trustworthiness.

Proposition 2. *Deficiency can help save resources by forgoing an inferior opportunity.*

A missed chance due to insufficient resources can actually help avoid chasing an inferior opportunity and thereby save resources. In general, late-movers have an advantage if they learn from the first mover’s trials and errors. For instance, in the early 1950s Lockheed participated in a new bomber development project launched by DAPRA but had to fund itself because it joined the project too late to get government grants. As a result, Lockheed was able to privatize all the technology developed in the middle of research that led to enormous profits from the new technology. More recently, although Samsung failed to set the world standard in a smart phone operating system (OS), by using Android it conserved and successfully reallocated resources to make more advanced communication devices.

Proposition 3. *Excess can help saving for a superior opportunity.*

Surplus resources can be used for new purposes or hidden assets can be reevaluated and released to exploit new opportunities. Recently, New York City brought new life to an abandoned railroad track as an oasis of the city. The re-created railroad named ‘the High Line’ became not only a public park but also a new venue for children education, community building, and local economic growth. Similarly, Tropical Islands Resort in Germany was once an obsolete airship hangar of a bankrupt company that was reused as a famous indoor beach resort. The ‘sharing economy’ exemplified by Uber taxi and Airbnb is a new way to make the most of excess assets by facilitating direct transactions among individuals. The Kimpo airport of South Korea, once its largest, had seen customers dwindle after a new airport opened nearby so it used the excess space for a new shopping place to draw new customers.

Proposition 4. *Inconsistency can help conserve resources and spread risk.*

Inconsistent patterns of resources or information can actually help reduce risk. For instance, diversifying products, customers, markets, suppliers, technologies, etc. are a hedge against unforeseen variability. Personnel policies that employ part-timers help employers save costs while also letting employees be flexible. When used appropriately, having a part-time workforce addresses such key staffing issues as covering hard-to-fill positions and helps recruit, retain, and engage valuable employees. In the best seller *Nudge*, the authors suggest ‘nudging’ to achieve non-forced compliance. They pointed out that, in the case of government, public relations subtly lead citizens in a certain direction, and although it does not guarantee consistent compliance of citizens as direct regulation does, it can be more efficient and effective because such indirect convincing of and communication with citizens can still help not only achieve guidance but also avert invading freedom of

citizens. The benefit of inconsistency can be also witnessed in group management. Ambiguity (i.e., inconsistent orientation) of an alliance's goal can help retain the members in the alliance because an ambiguously-defined common goal can be interpreted and advocated in many ways that fit each member's own goal.

Proposition 5. *Deficiency can help improve effectiveness and efficiency.*

Having insufficient resources can eliminate harmful or needless redundancy. One reason is that it rallies the troops. For instance, Komatsu entered the U.S. market in 1967 with its rallying cry of 'Maru-C' that roughly translated into English as 'Encircle Caterpillar!' the largest bulldozer maker. Similarly, during the widely known Cola Wars Pepsi had the mission to 'Beat Coke.' Even after a business succeeds, it is quite worth proactively managing it by deliberately tightening its belt so that its success does not unwittingly encourage hubris. For instance, many industrial experts believe that Samsung's successive feats in business is due to its 'consistent sense of crisis' that forces constant vigilance and innovation. In fact, when Samsung earned the largest profits in its history in the first quarter of 2013, rather than celebrate this feat it emphasized the sense of crisis in the face of a turbulent global market. A new business introduced in the book *Nudge*, stickk.com, helps commit members to a specific action by forcing them to deposit some money that can be retrieved only after they achieve their agreed-upon resolutions.

Proposition 6. *Excess can help stimulate innovation.*

Trying to resolve a problem of 'embarrassment of riches' can actually be an impetus for innovation. A stretch goal, also called BHAG for 'Big Hairy Audacious Goals' because they are seemingly impossible to achieve, can be beneficial for organizational performance by facilitating the use of slack resources, spurring creativity and innovation, prompting new product development, and tightening the budget belt. A BHAG, which requires confidence, enhances team spirit and creates visionary goals by stressing high commitment and working outside of a comfort zone. In *Built to Last*, Collins and Porras argue that 'Good Enough Never Is'. They also reject the idea of a 'finish line' and define a visionary company as one that is never satisfied with its results. For instance, Louis Vuitton eyeglass frames had to invent something new and unique to outdo the imitations and counterfeiting of other manufacturers.

Proposition 7. *Inconsistency can help challenge the status quo and avert bias.*

An unstable environment helps maintain creativity and preparedness by preventing individuals from being stuck in inertia. In management, the beneficial impacts of inconsistency are often suggested as follows: imbalance between clients' demands and revenue growth prompts companies to devise a wide range of strategies, conflict can be a seed for developing new knowledge, and destabilizing conditions help changes to emerge. The emergence of disruptive technology that drove the watch market to turbulence actually helped traditional mechanical watch manufacturers

newly re-discover their market niche where it turned out there were quite a few customers who still prefer and cherish mechanical watches.

Proposition 8. *Deficiency can help reduce risk or external threats.*

Deficient resources can allay opponents' willingness or capacity for depredation. Before Steve Jobs' premature death, iPhone 4S had been much criticized but Apple succeeded in deflecting such criticism and having Steve's death eclipse iPhone 4S problems. As a result, the sale of iPhone 4S actually exploded after his death. In 2012, Toyota pessimistically announced that it would sell less than ten million cars for that year which was much smaller than expected. But many industry analysts speculated that low-balling its sales estimate was an attempt to avert U.S. manufacturers' checks against Toyota.

Proposition 9. *Opponents' excess resources can help deepen their inertia or over-commitment.*

Companies can go on the counter-offense by taking advantage of their opponents' excess momentum and the corresponding inertia or over-commitment. Take a martial art, judo, for instance. A heavier opponent can be thrown more easily by Judo using an opponent's weight and force against him or her. In business competition, just like judo, companies can beat rivals by taking advantage of the opponent's excess momentum and the corresponding inertia or over-commitment. Such principle of 'judo strategy' to use an opponent's inertia and over-investment was also recommended by the ancient Chinese warfare lessons in *The Art of War*.

Proposition 10. *Inconsistency can help discourage threat through instability.*

An unstable condition or inconsistent and unreliable information can help remove undesirable or ineffective activity, behavior, or threat that is vulnerable to a changing environment. Behavioral economists have described such impact of inconsistency on human relations. For instance, inconsistent information in a message can confuse observers or recipients, causing them to blunder. Many nonprofit organizations actually use their tenuous financial situations as an excuse to have their ineffective board members resign voluntarily. Peace First (formerly Peace Games) had become conflicted over two inconsistent missions—developing college student volunteers and serving school kids. But in this wavering situation, it dropped its old mission and instead developed a new one to embrace more young adult volunteers and partners to work with schools to build safe, effective climates where children learn how to be engaged and active citizens. The organization now strives to teach students to become problem-solvers who will create social change. Another non-profit, Trinity Alliance in Albany, New York, faced an inconsistent management environment that served to stimulate and shake up its staff with some inactive and underperforming members departing.

Proposition 11. *Deficiency can help induce external help.*

Insufficient resources can prompt the willingness of reciprocal help and attention from stakeholders. A recent human resource management study showed that employees with deficient capability tend to feel indebted and work harder than those with sufficient capabilities who can rather easily become complacent. Stephen Hawking confessed that his disorder helped his book sell more. Similarly, reverse psychology marketing arouses customers' curiosity with intentionally deficient information and 'Today only!' advertising that give the 'appearance of limitation' that incite a run on stores. A Japanese hotel used a provocative advertisement 'we are a cheapie' which attracted customers looking for a low-end product with low quality and low price. On the other extreme, some luxurious department stores adopt so-called 'secret marketing' that informs only a few prestigious customers of new product information. Such tactics help maintain the luxurious image of their business and also draw more attention from those who feel isolated from the marketing. Limited items are also often used as a powerful means of advertisement because scarcity implies prestigious value. Tim Cook, Steve Jobs' successor, took over a highly-successful Apple yet decided to shift its focus to low-end products such as the iPad mini in order to attract a wider range of customers.

Proposition 12. *Excess can help draw attention or meet new demands.*

Things that are outrageous or edgy can help generate new interest but sometimes require slack resources. For instance, Samsung used Apple's lawsuits against it as an opportunity for buzz marketing. Such conflicts between Apple and Samsung made the general public recognize Samsung as a powerful competitor of Apple. Take another famous anecdote about the birth of Ivory Soap, supposedly invented by an engineer who mistakenly instilled too much air into soap in the production process. The result of such excess air bubbles was a soap that could float, which attracted new customers who preferred a lighter soap. Having a monopoly in a new product market can fail to interest customers because they hesitate to buy unique and untested products; rather, competing with additional manufacturers can familiarize customers with that item. On the other hand, you can sometimes draw more customers in fashion or luxury markets with higher prices for those engaging in 'conspicuous consumption.'

Proposition 13. *Inconsistency can help stimulate or vitalize support.*

An unstable environment can be used to stimulate or vitalize some targets that support organizations. From a network point of view, turbulent environments can stimulate cooperation. The Kitchener-Waterloo region of Canada and the Oulu region of Finland experienced surplus human resources due to, respectively, Blackberry's and Nokia's many layoffs that actually helped to stimulate

the regional economy by launching many technology ventures.

Proposition 14. *Deficiency can help get and nurture complementary forces.*

Insufficient resources can help make room for other compensating resources or opportunities to grow and eventually prosper together. From an ecological point of view, some sacrifices are rather conducive to the sustainability of the overall environment and system. For instance, Japanese Keiretsu and Korean Chaebol business groups are known to cooperate to create shared value. These networks have averted collapse by accepting some short-term losses (i. e., profit-sharing) by forging long-term symbiosis between the conglomerates and the small- and medium-size contractors. Similarly, many neighboring competitors, especially in the restaurant business, do not compete themselves out of business because the marketing benefits of such a 'cluster' in attracting more customers to the area exceeds possible losses. In 2014, electric car manufacturer Tesla Motors decided to share its patents with other automobile producers in order to nurture the technological and market basis of electric cars. Such generous action also served to advertise Tesla's confidence about its technological competitiveness and leadership.

Proposition 15. *Excess can help check, eclipse, or unite against a threat.*

It has been said that 'The enemy of my enemy is my friend.' A hostile environment can prompt collaboration among competitors, opponents, or even strangers when confronting a common threat. For instance, the U.S. and U.K. decided to ally with the Soviet Union during WWII because both recognized the need to defeat a common enemy, Nazi Germany. 'Dumping' is similar to an arms race because while it hurts short-term profits it ultimately defeats competitors. DIMBY ('Definitely in My Backyard') can also be explained by this logic since people are sometimes willing to attract unpleasant facilities to their community in order to prevent other more unpleasant facilities from being built. In 2012, Samsung welcomed the Korean government's restrictions on cell phone manufacturers' subsidies to customers because it would enervate a more vulnerable LG.

Proposition 16. *Inconsistency can help offset another inconsistency with an opposite pattern.*

A loss due to oscillation can be compensated for by using another oscillation that has the opposite pattern. For instance, inherent risks of carrying an item that has seasonal sales (e.g., ski goods) can be averted by carrying another item with the opposite seasonal sales (e.g., tennis goods) yet serves the same customer base. Infosys, a global information technology company, has employed a 'Global Delivery Model' (GDM) to take advantage of the time lag between multiple offices in different countries to provide seamless 24-h service to customers.

FAILURE MANAGEMENT VS. OTHER MANAGEMENT TOOLS

Besides the propositions of failure management stated above, why is it necessary to use a new concept of ‘failure management’ in the first place? In order to clarify the unique characteristics of failure management, the relationship between three management tools – risk management, crisis management, and failure management – can be summarized in Fig. 1 that shows various types of problems to be addressed in decision making.

All of these management tools are based on quite different goals and philosophies. Risk management is to review and revise errors with a retrospective view in order to predict and prevent them, and crisis management is to control and contain present failures. In other words, risk management and crisis management are *retrospective efforts to avert adversity* by analyzing the causes of failure, continuing to pursue the existing goal, and trying to survive in spite of failure.

On the contrary, *failure management is rather prospective* that cherishes adversity by re-evaluating failure, exploring new goals or means, and examining various strategic options to improve because of adversity. Such different features of each management tool do not imply that they are mutually exclusive in practice. Failure management can help risk management expand investment portfolios while also helping crisis management improve contingency planning by providing the systematic frameworks to find paradoxical impacts of failure worth managing.

CONCLUSION

Given risk now or in the future, what can entrepreneurs do? They can try to either reduce the possibility of failure retrospectively or capture new opportunities created by failure prospectively. But such a prospective approach to failure has been vaguely dealt with. Without an understanding of the systematic patterns of the benefits of failure, its paradoxical impacts would still be managed impromptu. So, this paper extends existing ideas of the prospective use of failures and thereby presents a framework for organizations to benefit from failure more reliably.

However, we cannot always benefit from failure. Of course, we are more familiar with failures that have no benefit. That is why each of the 16 propositions of failure management we propose in this paper were expressed with the words ‘can help’. In other words, failure alone is not a sufficient condition for the corresponding paradoxical benefits. Seeing an opportunity is one thing, but actually exploiting it is another. Failures can be beneficial only when they are treated in a certain way. So the failure management propositions are at least the collections of the necessary but insufficient conditions for the benefits of failure.

We hope that the propositions and frameworks presented in this paper become the bases of future studies that will explore whether and how failure management can be practically used in actual organizational settings. In this spirit, we suggest the research questions for such future studies be about the drivers, strategic options, procedures, and preparedness of failure management.

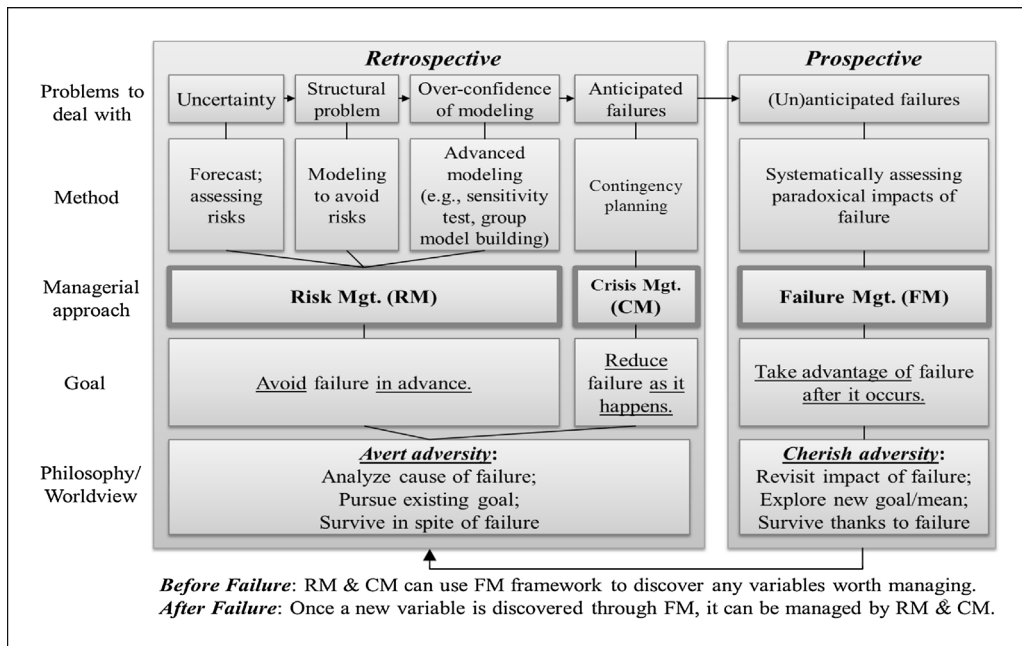


Figure 1 Failure Management Framework for Prospective Decision Making

APPENDIX A. FAILURE MANAGEMENT PROPOSITIONS

Types of failure (and their side effects)	Purposes to use failure (i.e., benefits of failure)					
	Internal adaptation			External adaptation		
	<i>Saving</i> (internal resources)	<i>Reforming</i> (internal hazards)	<i>Learning</i> (new knowledge)	<i>Discouraging</i> (external threats)	<i>Attracting</i> (external supports)	<i>Complementing</i> (multiple forces)
<i>Deficiency</i>	<i>#2: Forgo inferior opportunity and save resources.</i> Example: Samsung using Android for its smart phone operating system	<i>#5: Improve effectiveness and efficiency.</i> Example: Komatsu's 'Maru-C' rallying cry and Pepsi's mission to 'Beat Coke'	<i>#1: Failure (deficiency, excess, or inconsistency) can function as a test bed under extreme condition.</i> Example: Silicon Valley's 'FailCon'	<i>#8: Reduce risk or threat.</i> Example: Toyota's pessimistic forecast	<i>#11: Induce external help.</i> Example: Japanese hotel advertising 'We are a cheapie.'	<i>#14: Get and nurture complementary forces.</i> Example: Japanese Keiretsu and Korean Chaebol
<i>Excess</i>	<i>#3: Save surplus for superior opportunity.</i> Example: Uber taxi and Airbnb	<i>#6: Stimulate innovation.</i> Example: BHAG		<i>#9: Deepen opponents' inertia or over-commitment.</i> Example: Judo strategy	<i>#12: Draw attention or meet new demands.</i> Example: Ivory Soap	<i>#15: Check, eclipse, or unite against threat.</i> Example: Samsung welcoming government's regulation
<i>Inconsistency</i>	<i>#4: Conserve resources and spread risk.</i> Example: diversification	<i>#7: Challenge status quo and avert bias.</i> Example: mechanical watch market re-discovered due to disruptive technology		<i>#10: Discourage threat through instability.</i> Example: Peace First's changed mission	<i>#13: Stimulate or vitalize support.</i> Example: Canada's Kitchener-Waterloo and Finland's Oulu	<i>#16: Offset another inconsistency with opposite pattern.</i> Example: Infosys 'Global Delivery Model'

Note: Propositions #1–#16 are numbered in the cells.



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