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Managing the Risks of Business Risk Management: The Dark Side of Knowledge Management

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The massive financial losses by many financial institutions in 2007 deriving from the failure to accurately assess the risk of sub-prime mortgage loans is a sharp reminder of the difficulty of managing risk. The mistaken belief that tomorrow's risks can be accurately inferred from what happened yesterday still prevails at the heart of most business risk management programs. Effectively dealing with risk entails recognizing the cognitive obstacles that hamper accurate assessments of risk.

In 1994, ***Long-Term Capital Management*** (LTCM) was launched as a hedge fund by some of the brightest analysts and mathematicians ever to work in a financial firm. Some of them had been professors at distinguished universities. Two won the Nobel Prize in Economics. One was a central banker tipped to be the successor to Alan Greenspan. Among the fund's competitive weapons was a sophisticated system of business risk management. By 1998, it had amassed $134 billion in assets and had derivative contracts with major banks covering $1.4 trillion worth of exposure. In just four years, the firm had become the envy of Wall Street, earning returns of more than forty percent per year, with no losing stretches, no volatility–apparently no risk at all. Then in September 1998, the fund abruptly succumbed to a perfect storm of financial bad news that followed Russia's default on its ruble debt. In net terms, the fund had managed to lose 77 percent of its assets in a period when the ordinary stock market investor had been more than doubling his money.[1]

There are many reasons why LTCM collapsed, but principal among them was the belief that business risk models could forecast the limits of behavior. In fact, the models could tell what was reasonable or predictable based on the past. What the professors overlooked was that people, including traders, are not always reasonable. Yet the belief that tomorrow's risks can be inferred from what happened in the past still prevails at virtually every investment bank and trading desk. The basic mistake of LTCM and its stunning demise also betray the weakness at the very heart of most of today's business risk management programs: even the sharpest analysts can make major mistakes in assessing risk.

The importance of managing business risk

But let's back up a bit. Managing business risk is obviously important. Every day, the newspaper headlines report on the failure to deal effectively with risk – from the events of 9/11, the errors of intelligence in Iraq, the aftermath of Katrina, the side effects of Vioxx, to the continuing failures of sophisticated hedge funds, whose very *raison d'être* is to manage risk.

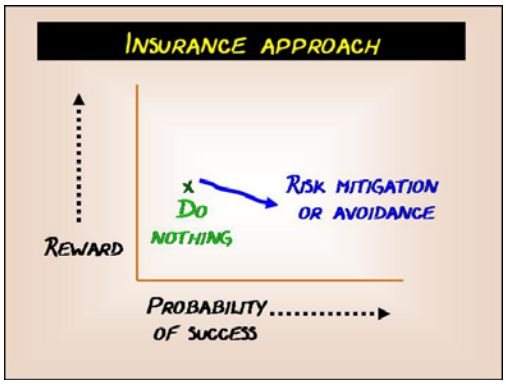
So it's not surprising that the impulse to try to understand and manage risk has once again come to fore. In business, the impulse has been strengthened by the passage of the Sarbanes-Oxley Act of 2002, after business scandals such as Enron and WorldCom, which reflected misleading accounts, fudged performance information, regulatory disclosures unsupported by evidence; uninformed assertions by senior executives about the existence of controls over financial reporting and compliance procedures; failure to protect the corporate asset base, and inattentive boards of directors.[2]

Even the sharpest analysts make major mistakes in assessing risk.

These issues have led organizations in the direction of ***enterprise risk management***, i.e. a structured, consistent and continuous process across the whole organization for identifying, assessing, deciding on responses and reporting on opportunities and threats that affect the achievement of its objectives. The approach reflects an effort to identify and manage risk across all aspects of the business from a strategic viewpoint.[3]

Although enterprise risk management is sometimes presented as a single approach, in practice, objectives vary, so that enterprise risk management is really a family of approaches:

- Enterprise risk management may be aimed principally at ***reducing risk***, by avoidance or mitigation. The rationale here is akin to ***insurance***: firms might have to invest more, and so are certain to have lower potential returns, but the business outcomes are more assured. In this approach, risk and reward are seen as likely tradeoffs.



- ***Turn risk into opportunity, i.e. reduce risk while adding value:*** In the same way that quality is no longer seen as necessarily involving a tradeoff between cost and quality – you can have higher quality ***and*** lower cost, as demonstrated by Toyota – so there is the possibility of turning risk management into opportunity, so as to lower risk ***and*** increase returns. (It may also be possible to reduce costs over the long term, while increasing costs in the short run.) The upside may be ***relative***, (i.e. you have lower costs in handling a risk than your competitors) or ***absolute*** (i.e. you turn a prospective loss into a financial gain).[4]
- Enterprise risk management may also be seen as generating a ***structured, consistent approach to managing risk*** across the whole organization, with an ability to aggregate risk across the organization. The use of a common vocabulary and a standardized approach in business risk management programs may enable the management to have a better understanding of the overall risks facing the organization. It can enable management to connect the product and business unit focus with the organization focus. It can also establish a comprehensive audit trail of decisions taken in relation to risk and to communicate more clearly with investors, analysts and regulators.
- ***Creating a culture of openness***. In many organizations, discussion of risk is perceived as counter-cultural, by undermining a "can-do" attitude: discussion of risk is discouraged unless the discussant already has a plan to handle the risk. One goal of business risk management programs can be to reverse this implicit censorship and create a culture of openness whereby complex systemic risks can be reviewed and alternative plans for handling them discussed.
- ***Identifying hitherto unperceived risk:*** Business risk management programs usually aspire to identify risks at the product and business unit and corporate level that have been overlooked in the past, when a more informal approach was in use.
- ***Expanding the repertoire of available options for dealing with risk:*** the culture of openness may enhance creativity and uncover innovative solutions not previously imagined.
- ***Enhancing the ability to cope with unanticipated risks***: Although business risk management programs aim at identifying and prioritizing risks, inevitably some unanticipated risks will materialize. Business risk management programs, by having created a culture of openness toward risk, may enable

staff to cope with these unanticipated risks more effectively than they otherwise might.

- ***Establishing risk management as a core competence:*** Risk assessment, which traditionally has come at the end of the planning process, might now appear at the beginning, thus turning enhanced risk management into a competitive advantage. For example, defense contractors who routinely bid on DOD government contracts by including certification of their formalized risk management processes. And LTCM's ability to raise $1.25 billion in initial financing–the largest startup ever–was based in part on their ability to convince investors that they had in place an effective risk management system. Although the system broke down in a crisis, its perceived existence clearly gave LTCM a competitive advantage in terms of raising money.

Six risks of business risk management

While these are all valuable objectives, what is often overlooked is that business risk management programs are themselves subject to a variety of risks.

First, there is the risk that ***risk management processes itself will be overly bureaucratic.*** Thus, the risks affecting any organization are theoretically infinite. Efforts to document on a continuous basis actions being taken to deal with such risks, aimed principally at creating audit trails to protect the management if things go wrong, can easily become form-filling routines with significant costs, without generating any real mitigation or prevention of risk. Such approaches may actually increase risk by killing the initiative and creativity and energy that is needed to deal with real risks.

Second, the introduction of business risk management programs focused on the big risks will often entail ***significant changes in behavior***. Getting people enthusiastically behind change programs is difficult at any time. When business risk management programs involve heavy bureaucracy, with few benefits for those who have to do the work of assessing risk, then grudging, unenthusiastic implementation is likely to be the result. In one firm, the introduction of risk management was likened to "a visit from the IRS." Where implementation of business risk management programs is grudging and unenthusiastic, the hoped-for benefits may never materialize.

Third, business risk management programs may ***establish an elaborate set of controls about tactical matters of relatively low significance***, while strategic risks that could have a devastating impact on the firm's future go insufficiently attended, such as where the organization fails to meet the changing expectations of customers, the marketplace, investors and stakeholders generally (AT&T); or where the firm's pace of innovation slows down (Gillette); or where the reputation the firm is undermined by isolated actions of senior management (WorldCom, Tyco); or where the brand of the organization erodes

(Levi's); or where the firm will become the target of NGOs for its social and environmental responsibility (Shell in the Brent Spar incident; Nike).

Fourth, ***business risk management programs may focus insufficiently on the upside of risk***. Even though formal definitions of risk management, such as the Integrated Framework published by Committee of Sponsoring Organizations of the Treadway Commission in September 2004, define risk as "the possibility of an event occurring that will have an impact on the achievement of objectives," thereby including the possibility of positive risks, the reality is that the common language sense of "risk" as "the chance of injury, damage, or loss"[5] is negative in tone. The Sarbanes-Oxley Act of 2002 is also largely focused on negative risks related to financial controls, accounts and audits. Thus there has been a tendency for risk management programs to be focused on negative risks, thus diverting attention from the upside of risk and significant business opportunities.

The question whether negative or positive risks are the more relevant depends on the situation of the individual enterprise at any particular time. For example, a firm like ***Tyco*** that had to restate its accounts several times and has several of its former senior officers under indictment for fraud might well decide that the immediate priority is to strengthen controls so as to reduce the overall level of risk that it is facing.[6] On the other hand, a firm with a strong record of financial accountability and control, like ***GE***, might decide that the biggest risk facing it would be the failure to generate organic growth, and so give priority to addressing this risk.[7]

Fifth, the existence of "robust risk management processes" provides no guarantee that risk is being effectively managed. Indeed, the very presence of such processes and routines may lead to ***managerial complacency***, so that significant unanticipated risks are given insufficient attention. Thus one reason why all the large banks placed confidence in LTCM was the existence of its risk management system. As Dan Napoli, the risk manager at Merrill Lynch said, "We had no idea they would have trouble–these people were known for risk management. They had taught it; they *designed* it… God knows, we were dealing with Nobel Prize winners!"[8] As a result, the banks didn't perform routine checks that they would otherwise have conducted.

Sixth, risk management programs and processes are often marred by ***an unwarranted faith in the ability of human beings to accurately assess risk***. In part, this relates to insufficient training in the available tools for assessing risk. But even with such training, human beings are subject to a series of cognitive biases that hamper accurate assessments of risk. These biases affect experts as well as laymen, so that the biases cannot be entirely removed simply by educating people about the subject matter at hand or recruiting sharper analysts. Research shows that the experience of LTCM is not unique: experts have the same difficulty as laymen in overcoming cognitive biases.[9]

The fact that risk management itself is subject to significant risks does not mean that one should not try to manage business risk. On the contrary, effective risk management remains fundamental to the sustainable business success. But getting the right kind of risk management needs to be grounded in an understanding of the cognitive obstacles to managing risk.

Cognitive obstacles to managing business risk

Underlying all the risks of risk management programs is the potential gap between actual and perceived risk. The risks that a company perceives itself facing are not necessarily the risks that it actually needs to protect against.

It's impossible to review the histories of business failure without thinking how obvious the risks were that these companies faced. In retrospect, it is extraordinary how blind these experienced, intelligent executives seemed to be to risks staring them in the face, and how inexplicable – in retrospect – that they did not take timely remedial action to deal with the risks.[10] In this respect, LTCM is not an exception: it is simply one more example in a very long series.

One of the reasons for these continuing failures is the illusion that risk management ensures that objective, scientific management is brought to bear on hazard management. The fact is that people apprehend reality in two fundamentally different ways. The ***intuitive mode*** is effortless, rapid, automatic, associative, narrative, experiential, tinged with emotion, and difficult to control or modify. By contrast, the ***reasoning mode*** is effortful, slower, analytic, deliberative, verbal, logical, calculating, potentially rule-governed, flexible, and amenable to redirection. Despite the emergence of scientific and statistical tools for measuring risk, intuitive thinking is still the predominant method by which human beings evaluate risk.[11] This isn't necessarily a bad thing: in the simple tasks of everyday life, risk is handled quickly, efficiently and automatically by the intuitive mode of thinking. However the intuitive mode of assessing risk tends to be invisible to the intuitor and hence impervious to learning, so that errors are perpetuated. When it comes to the more complex task of running a business and assessing multiple risks, the gap between intuitive assessments of risk and actual probability can be significant.

Thus business risk management is complicated by a variety of biases that human beings exhibit in dealing intuitively with uncertainty, including the following:[12]

- ***The simplification bias***: Complex systems are difficult to grasp in their entirety, with many different interconnected factors determining what happens. In order to make sense of such overwhelming complexity, human beings tend to simplify and pick on one or two elements as being the drivers.[13]

This is a particular problem for formal risk management processes that tend to "slice and dice" risk into its component pieces and to prepare organizational "risk maps," which can ***obscure the hidden connections between apparently disparate risks***. As Dietrich Dorner points out in *The Logic of Failure*, "To deal with a system as if it were a bundle of unrelated individual systems is, on the one hand, the method that saves the most cognitive energy. On the other hand, it is the method that guarantees neglect of side effects and repercussions and therefore guarantees failure."[14]

Thus LTCM's risk management system included a risk aggregator that simplified its complex portfolio by summarizing the fund's exposure to each individual market. According to the map, the portfolio looked highly diversified, but it was diversification in form, rather than in substance. In essence, the fund had made the same bet on lower-rated securities in every conceivable permutation and market. In a global credit crunch, all of LTCM's trades ran into the same problem of being unable to liquidate their asset without a significant loss. Moreover, in a global credit crunch, all banks were in the same kind of trouble and acted to protect their own positions, as well as to take advantage of competitors, thereby aggravating the situation of a fund in trouble, such as LTCM. Moreover the managers of LTCM had tended to act in a high-handed manner to the rest of Wall Street, so that they had little social capital to draw on when they found themselves in a crisis. LTCM failed to see the hidden connections between their apparently unconnected risks.

- ***The frequency bias***: One of the fundamental aspects of human cognition is that the more often a particular routine achieves a successful outcome in a particular context, the more likely people assume that success is assured and that remote risks will not occur.[15] The reality is that where random risks are involved, the opposite is true: the probability of the risk occurring increases over time. Thus through the end of 1997, the managers at LTCM had experienced three straight years of profits of more than forty percent per year. Unlike the usual fund, there had been practically no volatility on a month-by-month basis: no down periods, just straight linear profit. The regularity of their success led to them to think that the future would follow the same pattern. It was difficult for them to imagine a set of events that would not only deviate from the pattern of the past but also bring the fund to the point of collapse.
- ***The black swan bias***: People tend to discount the possibility of non-linear risks, e.g. the appearance of a black swan when prior experience had indicated that all swans are white. A "black swan" is an outlier, an event that lies beyond the realm of normal expectations, and tends to be discounted. Where the magnitude of the impact is great, people may be unwilling to "think the unthinkable." In fact, its very unexpectedness sometimes helps create the conditions for it to occur. Had a terrorist attack been a conceivable risk on September 10, 2001, it might not have happened. Jet fighters would have been on alert to intercept hijacked planes, airplanes would have had locks

on their cockpit doors, airports would have carefully checked all passenger luggage. None of which happened, until after 9/11. [16]

The difficulty of learning about the possibility of black swan events is compounded by the fact that they don't repeat. We learn from the discovery of a black swan that black swans are possible, but that doesn't prepare us for, say, a platypus or a taipan. We might learn from 9/11 that terrorists may use planes as weapons of terrorism, but not necessarily that they will next attack trains. "Black swan" events by definition do not repeat themselves. So we cannot learn from them easily.[17]

Moreover events involving human beings tend to be inherently more unpredictable than inanimate events. LTCM's algorithms had shown that it was highly unlikely that it could lose more than $35 million on any single day; however, in August 1998, it managed to lose $553 million in a single day.[18] Statistically speaking, the events that caused such losses were many standard deviations from the mean: if markets operated like random, inanimate events, we should expect that such events simply could not occur. In fact, similar events occurred the very next year, in 1999.[19] In financial markets, if price changes were strictly normal, on the average for any stock, an observation more than five standard deviations from the mean should be observed about once every seven thousand years: in fact, such observations occur about once every three to four years.[20] Events involving human beings do not follow a standard bell curve: they have "fat tails." There are significantly more incidents at the extremes than with the standard bell curve with a Gaussian distribution. When human beings are involved, we have to expect the unexpected – something LTCM failed to do.

- ***Bias towards overconfidence***: People, particularly experts, tend to be overconfident in their own abilities and knowledge, particularly in areas where they have some knowledge and control. However, increasing levels of confidence frequently show no correlation with greater success. For instance, studies show that men consistently overestimate their own abilities as a leader, and their ability to get along with others. Investors frequently trade on information they believe to be superior and relevant, when in fact it is not and is fully discounted by the market. Money managers, advisors, and investors are consistently overconfident in their ability to outperform the market; however, most fail to do so, even if they have short periods of success.[21] Overconfidence is a particular problem for experts, who, in becoming aware of gaps between "the official rules" and "how things really work," may fail to realize lacunae in their own expertise. It is a potentially sensitive marker of potential future trouble for industries with heavy reliance on new products, processes and technology, such as the pharmaceutical industry. It can also be a serious problem for computerized safety systems, which can generate a false sense of infallibility. It is all too easy to believe, like LTCM, that computerized algorithms represent reality, rather than a simulation of what has happened in the past.

- ***The touchy-feely bias***: People have a tendency to overvalue things they've actually "touched" or selected personally. Thus analysts who visit a company develop more confidence in their stock picking skill in relation to that company, although there is no evidence to support this confidence.[22] The experts at LTCM had great confidence in their risk management system, precisely because they had built it and used it for years with great success: their familiarity with it lulled them into thinking it was infallible.
- ***The measurement bias:*** The mantra that we can only manage what we can measure can lead to a bias that we only pay attention to what we can easily measure, whereas risks that cannot be easily measured may be ignored. For instance, political risks may be more elusive than economic risks and so receive insufficient attention. Political risk analysis requires grappling not just with broad, easily measured trends but also with nuances of society and even quirks of personality. And those hard-to-quantify factors must constantly be pieced into an ongoing narrative within historical and regional contexts.[23] Thus the experts at LTCM were expert at assessing the risks of specific transactions, but missed the hidden interconnections between risks that could not be easily measured.
- ***The ballistic bias***: A cannon ball behaves ballistically. Once it is fired, we have no further influence over it. The course it takes is determined solely by the laws of physics. While human beings have the capacity to learn, and adjust their conduct, their behavior should not in principle be ballistic, The reality is, however, that people tend to keep doing what they have been doing, regardless of the need for adjustment. Thus a relatively small percentage of the population consumes the vast majority of the health-care budget for diseases that are very well known and by and large behavioral. These people are sick because of how they choose to live their lives, not because of environmental or genetic factors beyond their control: i.e. too much smoking, drinking, eating, and stress, and not enough exercise. Using conventional approaches to learning, 90 percent of patients don't change their lifestyle and are fairly soon back in surgery, intensive care, or the morgue. The amount of money at stake is large: about 600,000 people have bypasses every year in the United States, and 1.3 million heart patients have angioplasties -- all at a total cost of around $30 billion. Unless you can change the passion to learn to live more sensibly, people continue ballistically with the behavior that got them into trouble in the first place.[24] Experts are not exempt from the phenomenon. At a time when it was difficult to find opportunities to invest, LTCM returned capital to its investors, and increased its debt leverage, thus increasing its vulnerability to a downturn, despite the obvious warning signs of pending economic problems.
- ***The groupthink bias***: i.e. a mode of thinking that people engage in when they are deeply involved in a cohesive group, when the members' strivings for unanimity

override their motivation to realistically appraise alternative courses of action.[25] The management culture at LTCM exhibited most of the symptoms of groupthink, including: illusions of invulnerability and a sense of its own superiority; collective rationalization and stereotyping of outsiders as fools, and the ignoring of contrary data, suppression of alternative viewpoints, and shielding the leadership from dissent. Regular, formal risk management sessions were held, but only a narrow circle of partners had the overall picture of risk facing the organization. Huddled in their bunker in Greenwich, the LTCM partners themselves did not hide their disdainful attitude to the rest of Wall Street, and deliberately insulated themselves from outside review. Nor did the partners share the overall risk picture with their own staff, thereby further protecting themselves from contrary viewpoints. Bolstered by their early successes, they knew that they were right.

- ***"Group Polarization" biases***: Group polarization effects have been demonstrated to exaggerate the inclinations of group members after a discussion. In the ***Cautious Shift***, the group shifts to being more conservative than solo individuals would usually be.[26] By contrast, in the ***Risky Shift***, the decision group becomes more radical and willing to take a risk. The decision makes a group gamble more than an individual often would when making the same decision. Group polarization occurs because some risk takers are more powerful and persuasive in a group situation; or because member responsibility is diffused as there is a degree of anonymity; as a result, the group may not rationally and systematically process decisions based on full information and the views of all members; or because individuals try to anticipate the group's perspective, seeing the issue in terms of being members (in) or marginalized (out). [27] In the case of LTCM, the decision to return capital to investors at the end of 1997 when opportunities for investing were becoming harder to find – capital that could perhaps have averted the collapse in mid-1998 – is an illustration of a group of highly intelligent experts succumbing to the Risky Shift.

Reducing the risk of risk management programs

What can be done to reduce the risk of risk management? Some steps are relatively easy. Others are very difficult.

A. AVOID BUREAUCRACY

The risks facing any organization are infinite, and the bureaucracy that risk management programs can generate can also be infinite. Comprehensive records of all risk decisions may be a joy to auditors, but they can easily become merely form-filling routines that have significant costs, reciting what everyone already knows, without generating any real protection against significant risk, then they are net drag on the organization.

Most business risk management programs start out with excessive paperwork. In the light of experience, it is usually possible to streamline the recording of decisions and get more focus on the substance of detecting, preventing or mitigating risks. Continued effort is needed to get the right balance between doing and documenting.

Continued effort is needed to get the right balance between doing and documenting.

B. INTRODUCE RISK MANAGEMENT PERSUASIVELY

Enthusiastic implementation is key to getting good results from business risk management programs. However business risk management programs often entail substantial changes in behavior, for which it is often difficult to get enthusiastic buy-in, no matter what the subject. To ensure an enthusiastic launch of business risk management, some steps can be taken:

- ***Streamline paperwork***: Make sure that the paperwork of the risk management program has been streamlined to the extent possible.
- ***Show benefits to participants***: Top management may be attracted to risk management as way of understanding the portfolio of risks it is undertaking. However launching programs that add work for hard pressed staff in order to enhance corporate management, without offering benefits to those staff, is one sure way getting a business risk management program off to a slow start. Identifying benefits to participants and communicating them can be a key element in getting buy-in.
- ***Use narrative to communicate the program***: Use narrative to communicate the importance of the program to participants. Thus a story about someone similar to the audience can help communicate its benefits.

  For example, a story about a project manager who had hedged the risk of building a factory to meet rapidly growing demand, by designing the factory so as to be easily fungible and marketable in case demand did not develop, can help convince newcomers to risk management that the process has benefits for them.

C. FOCUS ON THE BIG RISKS, NOT THE OBVIOUS RISKS

Business risk management programs need to avoid an excessive focus on controls for tactical matters of relatively low significance, while paying insufficient attention to the bigger risks that affect long term sustainability, such as the the failure to innovate and create top-line growth.

- Thus while the the pharmaceutical industry is appropriately concerned about negative risk in the wake of the Vioxx lawsuits against **Merck**, an even larger risk for big pharma may be that the pipelines of new drugs of the big

pharmaceutical companies have been running dry. For instance, Merck, which devotes three billion dollars a year and ten thousand people to the research and development of new drugs, produced just four new drugs since 2000. Big pharma may need to rethink, radically, the way they do R. & D.[28]

- Similarly, **P&G** transformed the way it went about innovation and opened itself up to outside innovation. But the transformation was not achieved by some low-level ***process*** or risk management ***routine***: it entailed strong leadership at the top to effect a fundamental shift in the way the company approached innovation.

D. LOOK FOR THE UPSIDE OF UNCERTAINTY

Gven the widespread focus of risk management on the *negative* risk in terms of setbacks that hamper the implementation of existing strategies and programs, special emphasis will usually be needed to ensure that the upside of risk, i.e. risk perceived as opportunity, to get its day in court.

- The gain may be ***relative*** to earlier costs or competitors: e.g. Honeywell's success in lowering insurance rates by bundling insurance across multiple risks.[29]
- Or it may be ***absolute***, e.g. a decision to increase production of a drug facing patent expiration beyond what is needed up to the expiration date might enable overall larger profits if generic manufacturers are unable to gear up in time, without increasing costs because, even if the generic manufacturers do gear up in time, the larger production could be sold to generic manufacturers.
- And it may involve ***systemic changes***. Thus a company like ***GE***, with a strong record of both performance and financial controls, has decided that it needs to encourage more risk taking. The skills Jack Welch prized -- cost-cutting, efficiency, the continual improvement of operations – can't deliver the level of growth that GE needs for the future – 8 percent instead of 5 percent over the past decade. To achieve it, systematic encouragement of risk taking is being introduced.[30]
- One should also be alert to the possibility of ***turning short-term losses into long-run gains.*** Thus ***Johnson & Johnson's*** rapid response to its Tylenol tampering incidents ended up not only mitigating the problem, but eventually building the Tylenol brand. By coming out and saying that it cared about its customers, it put forth the values that were critical to the company. Thus deft handling of crises can turn setbacks into an opportunities.

E. LOOK FOR THE HIDDEN CONNECTIONS BETWEEN UNCONNECTED RISKS

Portfolio thinking has encouraged businesses to put their eggs into different baskets as a sound way of lowering risk. However, continuing scrutiny is needed to assess the hidden linkages between apparently unconnected risks. Thus the airline industry might have been able to cope with a 9/11 or a massive rise in the price of fuel or the SARS epidemic in Asia, but when all three happened at the same time, most airlines were unprepared for the impact.[31] Firms also need to take account of the possibility that the disparate risks shown on organizational "risk maps" obscure hidden causal connections which can cause all risks to materialize at the same time, as in the case of LTCM.

F. FIGHT COGNITIVE BIASES

Business risk management programs and processes are unlikely to produce accurate assessments of risk unless they take into account the intuitive way in human beings approach risk and the ineradicable biases inherent in risk assessments.

The example of LTCM is used here, not to show that the managers of that fund were less astute than they were reputed to be. It is aimed at showing that if people as bright and sophisticated in risk management as the managers of LTCM could make those mistakes, what hope is there for ordinarily mortals in making decisions about risk? Cognitive biases are stubborn, intractable problems that are not easily solved.

Merely being aware of the existence of cognitive biases is not enough to counteract them.

An important step in coping with cognitive biases is to realize that ***merely being aware of their existence is not enough to counteract them***, since all human beings–even experts–have defense mechanisms which tend to rationalize earlier errors, particularly those made by intuitive thinking. Systematic training in the nature and extent of cognitive biases has been shown to have little improvement in actual performance in handling complex problems. Equipped with a lot of shiny new concepts, trainees are able to talk better about what they were doing. But gains in eloquence make no mark on performance.[32]

Moreover, in the case of complex systems, ***real life experience usually does not help us to get better in assessing risk***. This is because the lag time between the decision and the awareness of error is often one of years, or even decades, so that people learn too slowly, if at all.

There is in fact no easy or sure way of overcoming cognitive biases. Determined and persistent effort over a significant period of time with an array of tools can however lead to gains:

- It is obviously important to do the basics, and use statisticians and data to get the ***best rational take on probabilities***, based on past experience, while recognizing that this is only a first step: past experience is no guarantee of the future. Expert

judgments can also be supplemented with the techniques that draw on the "the wisdom of crowds:" large numbers of people, ***acting independently***, are engaged to assess probabilities.[33] Managers also need to wrestle with the data, continually re-assessing its significance and reliability, focusing discussion on areas of ***doubt*** and ***uncertainty***, and paying particular attention to ***anomalies*** and ***dissenting viewpoints***. In high risk situations, such as in managing nuclear power plants, formal procedures for recording dissenting professional opinions are advisable.

- The problem of the time-lag in learning from real-life experience can be addressed by engaging in repeated ***role playing and simulations*** of complex situations. Research shows that role-playing can yield more accurate future stories than the forecasts of experts.[34] Simulations can provide much more frequent feedback than real-life experience, and when supported by coaching, can help participants take corrective action to remedy their cognitive biases.[35]
- Using ***narrative techniques to understand the nuances and interconnections*** of apparently unconnected risks and to imagine new risks, particularly using ***pre-mortems***. Once people have developed a plan, there is a tendency to feel too confident in it. In a pre-mortem, planners are asked to imagine that their plan has been carried out and that it has failed. By breaking the emotional attachment people have to the plan's success, people are able to take on the challenge of showing their creativity and competence by identifying possible sources of breakdown.[36]
- ***Systematic learning from mistakes***: risk-related decisions and their effectiveness need to be systematically tracked over time, and training put in place to correct for known biases.
- ***Fight groupthink***. The very existence of "robust risk management processes" may lead to managerial complacency, so that significant unanticipated risks are neglected. Avoiding groupthink isn't easy, but some steps include:
    - Encouraging open discussion, having group leaders solicit and receive feedback/criticism from others; and get outsiders involved in the discussion.
    - Helping the group to take regular time-out breaks to give individuals room to re-think, re-formulate, gather further data and re-present.
    - Assessing group's internal dynamics for misleading tendencies, by appointing group members with the explicit function of evaluating group processes and contributions of other members. Such steps can help flag phenomena that may be unduly weighing decisions – such as the ultra dominant individual who stifles debate, or competition among

participants. Signs of arrogance often indicate that a surprise is on the way.

- ***Be prepared for "black swan" events:*** Organizations need to be prepared for unanticipated risks. Thus after all known risks have been planned for, they need to be prepared for some that haven't been anticipated. In addition to the totally unexpected event, firms need to think about the possibility of "the perfect storm" – when a set of known risks comes together at the same time. After all planned-for contingencies have been allowed for, allowance must be made for something out totally unexpected, of the blue. While specific plans cannot be formulated, steps can be taken to enhance the capability to deal with the unexpected. There is a need for a capability to deal with totally unexpected events.
    - ***Develop a capability to swarm:*** The military has learned that top-down centralized decision-making is not as resilient in dealing with uncertain battlefield conditions as decentralized units on the ground, which can deal with risks and seize opportunities as the situation evolves.[37] The same tactic can be applied in commercial settings. For instance, when Toyota group had a catastrophic failure when one of its factories that manufactured a particular safety component burned to the ground. The company had no reserves and wouldn't be able to rebuild the factory for at least six months. They had been churning out 15,000 cars a day, and their production dropped to zero in three days. The Toyota staff went into a frenzy of completely decentralized activity. Two hundred different companies collaborated to form six entirely independent production systems using none of the specialized equipment designed to build these component parts. They improvised things from all over the place, and within a week production was up and running – a phenomenal recovery from a disaster.[38]
    - ***Invest in redundancy***: It's also important to be willing to pay for redundancy, particularly in communications. A super-efficient, just-in-time game-plan, with no slack built in, may be good for getting results in smooth seas, but when the going gets rough, survival may depend on having extra capacity and backup. In the aftermath of both 9/11 and Katrina, cell-phones failed, greatly hampering communications. Putting in place backup systems can help cope with the unexpected.[39]

Conclusion

Risk management can be seen as a new way to handle uncertainty, a new strategic perspective influenced by a new appreciation to interrelationships, complexity, and context. Managing risk however requires a higher level of understanding of what risk is, to what extent it can be managed and the pitfalls that lie in the wake of such an effort, in

order to get the right balance between control and expansiveness, between process and creativity, between over-zealousness and insufficient attention.

Risk management can emphasize control, routines, procedures, documentation, isolation, centrality, explicitness and obedience. Or it can emphasize people, context, process, nuance, interconnectedness, creativity, collaboration, diversity, tacitness, flexibility and initiative.

To the extent that risk management reflects only the former emphasis, it is likely to disappoint. To the extent it reflects a proper balance, then it can be an exciting, energizing move that can make a major contribution to business success.

Annexes

Annex 1: What is risk management?

The word risk derives from the early Italian word "*risicare*", which means 'to dare'. It speaks to the idea of choices, decisions that may carry downsides, but are made in order to reap a possible gain.[40]

In primitive times, the future was seen as depending on the whims of the gods. "Managing risk" was handled by listening to oracles, or participation in religious ceremonies with rites such as examining the entrails of slaughtered beasts. Prior to 1650, in the West, the concept of "accident" simply did not exist. There was no room for chance in a universe governed by ominipotent gods.[41]

With the Enlightenment came the view that most events had natural causes, along with the concept of an "accident," which marked the boundary of rational explanation. Such events as train crashes or illnesses or natural disasters were seen as inexplicable accidents and randomly distributed.[42]

In the middle of the 20th Century, there was a further shift, and accidents came to be seen as the outcome of complex sets of risk factors. Events that had previously been seen as inevitable and random were now perceived as subject to prevention or at least mitigation. Out of this thinking emerged the idea of formal risk management, where an accident is seen as the failure of systems or individual to take the necessary steps to prevent or mitigate misfortune.[43] In harnessing the power of probabilistic ways of viewing the world, we return to a state where all misfortunes and setbacks have causes for which some person or agency is perceived to be in some sense culpable.[44] In a similar vein, managers of organizations are now routinely expected to anticipate misfortunes and setbacks and to take steps to prevent or mitigate them.

ENTERPRISE RISK MANAGEMENT

According to the COSO Integrated Framework for Enterprise Risk Management**,** "The underlying premise of enterprise risk management is that every entity exists to provide value for its stakeholders. All entities face uncertainty, and the challenge for management is to determine how much uncertainty to accept as it strives to grow stakeholder value. Uncertainty presents both risk and opportunity, with the potential to erode or enhance value. Enterprise risk management enables management to effectively deal with uncertainty and associated risk and opportunity, enhancing the capacity to build value."[45]

"Enterprise risk management" is defined as "a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives."

According to the Integrated Framework, "Value is maximized when management sets strategy and objectives to strike an optimal balance between growth and return goals and related risks, and efficiently and effectively deploys resources in pursuit of the entity's objectives. Enterprise risk management encompasses:

- *Aligning risk appetite and strategy* – Management considers the entity's risk appetite in evaluating strategic alternatives, setting related objectives, and developing mechanisms to manage related risks.
- *Enhancing risk response decisions* – Enterprise risk management provides the rigor to identify and select among alternative risk responses – risk avoidance, reduction, sharing, and acceptance.
- *Reducing operational surprises and losses* – Entities gain enhanced capability to identify potential events and establish responses, reducing surprises and associated costs or losses.
- *Identifying and managing multiple and cross-enterprise risks* – Every enterprise faces a myriad of risks affecting different parts of the organization, and enterprise risk management facilitates effective response to the interrelated impacts, and integrated responses to multiple risks.
- *Seizing opportunities* – By considering a full range of potential events, management is positioned to identify and proactively realize opportunities.
- *Improving deployment of capital* – Obtaining robust risk information allows management to effectively assess overall capital needs and enhance capital allocation."[46]

THE POSITIVE AND NEGATIVE ASPECTS OF RISK

The Integrated Framework considers both the upside and downside of risk. "Events can have negative impact, positive impact, or both. Events with a negative impact represent risks, which can prevent value creation or erode existing value. Events with positive impact may offset negative impacts or represent opportunities. Opportunities are the possibility that an event will occur and positively affect the achievement of objectives, supporting value creation or preservation. Management channels opportunities back to its strategy or objective-setting processes, formulating plans to seize the opportunities."[47]

MAIN COMPONENTS OF RISK MANAGEMENT

The main steps to be taken to systematically manage strategic risk comprise:[48]

- Identify and assess the risks, in the seven main categories of strategic risk—industry, technology, brand, competitor, customer, project, and stagnation—as well as the risks that may be specific to the particular industry or business model. For each type, consider severity, probability, timing, changing probability over time.
- Map the risks so profile can be seen at a glance.
- Quantify the risks, using a common currency— such as cash flow at risk, earnings at risk, economic capital at risk, or market value at risk.
- Identify the potential upside for each risk. What could happen if a key risk is reversed?
- Develop risk mitigation action plans, often using multi-function teams.
- Adjust capital decisions accordingly. First, business units and certain major projects that face greater levels of risk may warrant a higher cost of capital. Second, the company may need to change its capital structure depending on the way the risk level of the overall portfolio is changing over time.

RISK IS IN PART A SOCIAL AND PSYCHOLOGICAL CONSTRUCT

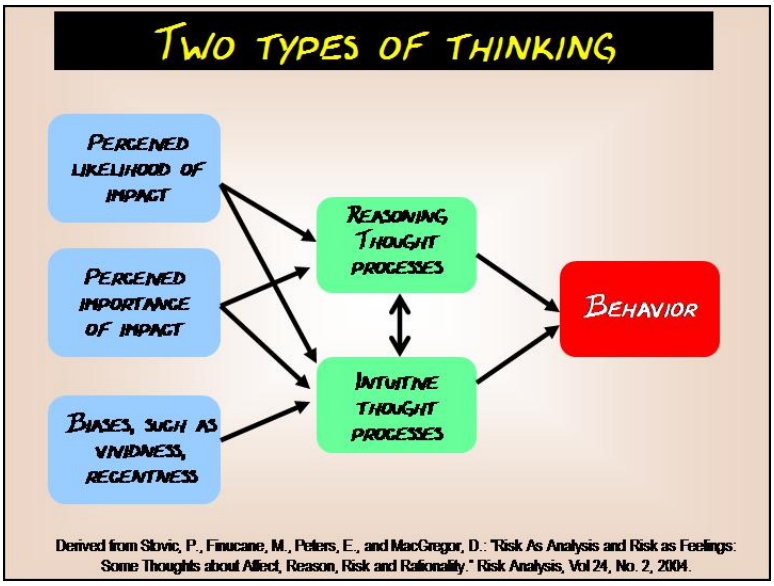
Although the business literature, such as COSO's Integrated Framework, typically discusses risk as a matter of objective reality, social science indicates that risk is in part a social and psychological construct. As the history of risk shows, for a risk to exist, it must be identified as such. Without human attention, it is not a risk in the modern sense of the word. Risk is a measurement, including the likelihood and extent of loss. Attention and judgment thus in a sense create the risk. Modern risk management classifies, selects and responds, by bringing attention to bear on a danger or opportunity and gives it meaning and technical precision.[49]

The significance of a risk depends not only the probability of an event and the probable magnitude of its outcome, but also on the value that is set on the outcome. Such an assessment is value-laden. Different individuals and different communities might judge a risk more or less seriously because they value the consequences differently – they value differentially what is being harmed and who is doing the harm.[50]

THE ROLE OF EMOTION IN RISK

Social science has discovered that human beings think about risk in two different modes. On the one hand, there is a formal, logical, analytic, numeric style of ***reasoning***. On the other, there is a type of thinking that is ***intuitive***, automatic, natural, non-verbal, narrative, and experiential.[51] The latter approach is affect-laden rather than formally logical like the

analytic system. It involves more rapid processing and the encoding of reality in images and metaphors rather than abstract symbols and numbers. It operates by by using more rapid pathways based on context and similarity rather than the conscious use of logic and evidence. [52]



While intuitive thinking about risk was initially dismissed in the 1970s as "merely emotional," cognitive research has shown that there is much useful interplay between emotion and cognition. Intuitive thinking helps us get around the world efficiently. Emotion is needed to make decisions: without emotion, people lack judgmental efficiency.[53] Intuition, suffused with emotion, helps us navigate a complex world, pointing out things we should quickly focus on in order to speed up action. Emotions can also create and shape beliefs, amplifying or altering them and making them resistant to change. They guide attention, just as beliefs backed up by emotion direct attention towards belief-relevant information.[54]

Intuitive thinking about risk can merge with formal and numeric appraisals. But the two approaches can also diverge. Cognitive evaluations may focus on assessments of likelihood and cost, but intuition may distort these judgments by factors such as the vividness with which consequences can be imagined, mood and the recentness of prior experience with the event. Emotions can then directly influence judgment or behavior. Furthermore, when cognition and affect diverge there is a tendency for feelings to hold sway; our evolutionary makeup strongly influences fear responses and threat appraisal.[55]

IMPLICATIONS FOR BUSINESS RISK MANAGEMENT

Where business risk management programs assume that risk is being assessed rationally, objectively and accurately, it is almost certain to over-estimate the reliability of risk

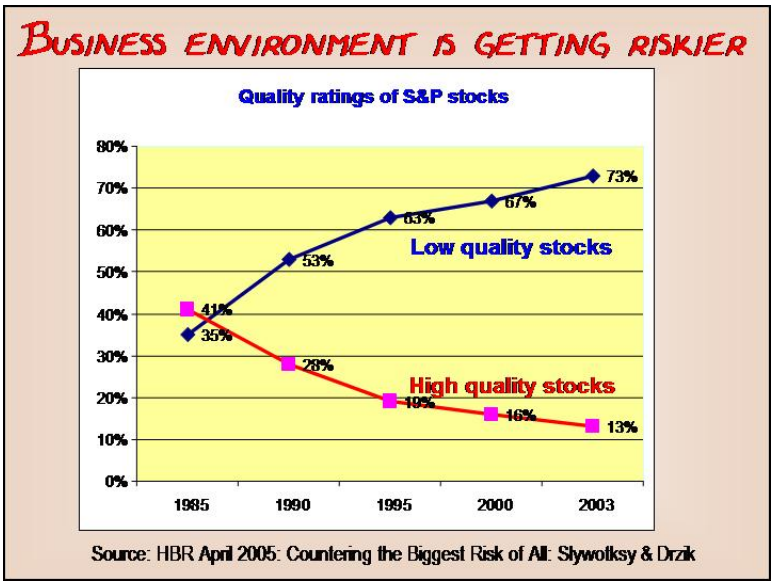
judgments that are made. Business risk management programs need to be reinforced so as to cope with the well-researched human tendency to succumb to a variety of cognitive biases, including the simplification bias, the frequency bias, the black swan bias, the overconfidence bias, the touchy-feely bias, the ballistic bias, groupthink and group polarization.

A serious approach to business risk management should therefore include a recognition of the intuitive aspect of risk assessment, an identification of the well-researched biases to which it is subject, steps aimed at the detection of these biases in the risk assessments that are made, systematic comparisons of risk assessments made and actual results, and steady improvement over time of the accuracy of risk assessments.

Annex 2: Is risk increasing?

The world is perceived as becoming riskier for a variety of reasons:

- ***Accelerating pace of change***: Just as a hundred years ago, electificiation transformed the world, we now living in a period where computers and the internet are transforming every aspect of our society. Once again, the world is being remade before our very eyes, forcing us to re-think how we work, how we learn, how we do commerce, how we build buildings, and in effect how we live.
- ***Globalization*** means that not even the largest and best established corporation is safe from the perils of competition: today, no one is safe.
- ***Increasing complexity***: In a simple world, small changes have small effects. In a complex world, small changes can have massive and unforeseeable effects. E.g. Chernobyl.
- ***Decreasing success in dealing with risk***: Some studies indicate that the commercial world is getting riskier:



- ***Enhanced hubris***: although no formal measures of hubris are available, it is sometimes suggested that the remarkable modern ability to manage the physical world through an array of sophisticated management techniques has led to overconfidence that we can handle the human world with the same mastery.

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