

Chapter 2

Organizational Resilience: Theoretical Framework

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Abstract In this chapter, a general theoretical framework of the book is presented. The framework builds on various sources of literature and in particular on an organic view on economic and organizational development. Using the classical concepts of variation, selection and retention, organizational resilience is seen as the capacity of a company to over time become a selected variation in the marketplace. Furthermore, the framework builds on findings from complexity theory that highlights the centrality of unforeseen events and unanticipated consequences. Such events and consequences can be both positive and negative (serendipities as well as severe challenges). The chapter ends in a new model that emphasizes the importance for a resilient organization to find an adequate balance between reliability, efficiency and change capacity.

Keywords Evolutionary theory • Planned and unplanned change • Complexity • Serendipity • Variation • Selection • Retention • Sustainability

Why is the idea of organizational resilience new and different, as well as useful, in the study of companies and organizations? And how can we conceptualize the idea in a holistic way? Answers to these questions provide the conceptual basis for the research in this book that explores organizational resilience from the perspective of evolutionary theory.

2.1 The Evolutionary Approach: Explaining Change

It is not easy to spot market opportunities and take advantage of them in a way that defends a company's current and future position. These are complex, demanding, and not always successful processes. For example, of the top 30 companies listed

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on the Fortune 500 in 1970, only 11 companies were still Fortune 500 companies in 2014. In this 40-year period, 17 of the 30 companies had fallen out of the Fortune 500, either because other companies had acquired them or because their gross revenues were too small to qualify for the listing. Two companies (Bethlehem Steel and Eastman Kodak) were bankrupt.¹ If this pattern repeats in the next 40 years, we can expect new companies will likely replace many of today's Fortune 500 companies.

Organizational resilience, as described in Chap. 1, is based in the idea that economic development both follows and does not follow traceable patterns. Therefore, economic patterns, such as business cycles, are very difficult to predict with any great precision. Moreover, many economic events are so unusual that no amount of pattern watching could have foreseen their occurrence. To further illustrate this point, consider the developments in the telecommunications industry and how they have affected the Swedish company, Ericsson, one of the top players in this industry. Around the year 2000, Ericsson was among the highest valued companies in the world owing to the telecom bonanza. A few years later, when the entire industry was in deep recession, Ericsson emerged as the perhaps most successful telecom-system company compared to its prior competitors Siemens, Motorola, Nokia, Alcatel, Lucent, and Nortel. But few observers of the telecommunications industry could have predicted that within a decade a small and at that time little known Chinese company, Huawei Technologies, would emerge as the world's largest company in the telecommunications equipment and network market within 15 years.

Ericsson's future as an industry leader now depends on its ability to deal with the new competitive landscape in which most of its major competitors have merged their operations into a single company. Nokia and Siemens, as well as Alcatel and Lucent, merged. In 2015 Nokia-Siemens purchased Alcatel-Lucent. Although it is impossible to predict Ericsson's future, it seems inevitable that the company, 10 years hence, will likely be a very different company as far as its technology, products, employees and customers. In a bleak future scenario, Ericsson will cease to exist as an independent company and its operations be reduced dramatically. The company's survival depends on its ability to strengthen its resources, which requires establishing new business relationships and creating new capabilities. The evolutionary approach to organizational resilience can provide some understanding of what is required to achieve sustainability in a highly competitive and uncertain business climate.

The evolutionary approach to explaining change theorizes that human development—and, as this book proposes, economic development—evolved from environmental opportunities and limitations. Life on earth evolved hundreds of million years ago in the sea because the land was too warm and lacked oxygen. Gradually, as vegetation released more oxygen into the atmosphere and lowered the

¹Data were retrieved from <http://fortune.com/fortune500/> and http://archive.fortune.com/magazines/fortune/fortune500_archive/full/1970/.

percentage of carbon dioxide, the earth's temperature cooled. Terrestrial animals (small, slow, and herbaceous) evolved from aquatic animals. By natural selection, larger, faster, as well as predatory, animals evolved. Like new entrants in the world of commerce, new animal (and plant) species took advantage of the opportunities in the environmental market. For example, giraffes on the African Savannah browse on tree top leaves, fat and thick-furred polar bears survive the Arctic cold, and fertile rodents everywhere scamper, hide and reproduce (abundantly) in as few as 20 days. The voracious and prolific killer snail (also known as the assassin snail) is another example of environmental adaptability. Killer snails thrive in homeowners' gardens where they feast on prize plants. Because they can endure cold winters, reproduce rapidly, and have few natural enemies, there is little to slow their increase.

In organizational theory, the explanation of evolutionary change is based in theories about the competition for survival in the animal kingdom and other kinds of ecosystems. Companies compete with other companies in the same way that animal species compete with other animal species for limited resources. A company's survival depends on the availability of resources as well as on its ability to use those resources effectively. This is analogous to the natural world where animal survival depends on the ability to find digestible food that is sufficiently high in nutrient and energy content to maintain body heat and other biological functions. Companies, too, must husband their various resources—financial, technical, and social—if they are to survive in the niche they have chosen.

There are always companies willing to exploit openings when another company loses direction, veers too radically from its core competencies, or fails to generate sufficient survival resources. At the most fundamental level, a company must have customers willing to buy its products and services (at least, in the short term) at a price that equals cost, and ultimately (in the long term) at a price that exceeds cost. Frequently, products emerge and then disappear. Over the years, telegraph equipment, mechanical calculators, cassette players, "thick" television screens and film cameras have largely disappeared from the market. Some manufacturers have successfully managed rapid technological changes by adapting their products accordingly. However, less adaptable manufacturers have seen their factories and warehouses fill up with outdated, unsellable goods.

With favourable market and environmental conditions, established companies expand, and new companies are founded. It is no coincidence that densely populated South Korea has one of the world's most extensive broadband networks. The commercial climate of South Korea is characterized by a technically minded population, a national government that supports the Internet, and a home-grown, technological sector. Because of the short distances between communities, it is far cheaper to build a broadband network in South Korea than, for example, in Australia, a country 75 times the geographic size of South Korea with only half as many inhabitants.

Of course, significant differences exist between animal life and commercial life. One of the most obvious differences, and the one most relevant for this book, is the fast pace and discontinuity of commercial change. Evolutionary change in the

animal kingdom takes far more time. In the absence of human intervention, such evolution often takes hundreds of thousands of years. In the world of commerce, evolutionary change—the result of plans, luck, or breaks from historic trends—is often very rapid. Nevertheless, given mankind’s impact on our planet, rapid changes in the world’s ecosystem are increasingly common.

2.1.1 Planned and Unplanned Change

There is a tendency in management and organizational theory to assume that organizational stability is the norm and that change is the exception. Stability, in this assumption, just “is”; altering the status quo requires special planning and action. In his classic model for planned change, Lewin (1951) described change as a three-step process: “thawing” the frozen state, “changing” to a new state and “freezing” the new state (unfreeze–change–freeze). According to this perspective, most organizational activities consist of stable behavioural patterns that, over time, managerial action institutionalizes.

An alternative perspective on change, which this book supports, regards change as a continual, inevitable process that can be managed only partially. Even organizations whose leaders resist change are often forced to make changes, some of which may be contrary to their values and convictions. Pressure from competitors, customers, creditors, owners and even employees is often more influential than top management’s plans for strategic action. In the political sphere, even in totalitarian, centralized states those in power may sometimes be unable to stop certain changes. In the company sphere, where leaders lack such absolute control, few people are willing to submit passively to another’s will, and any effort to exert authoritarian control may have unintended and unfavourable consequences. At one extreme, employees may openly resist change; at the other, they may exhibit lack of work motivation and commitment. Unilateral coercion in organizations is likely to result in futility or failure.

The idea that changes, including unplanned changes, occur *continually* does not mean that dramatic changes occur *constantly*. Moreover, a large amount of change effort (for instance, reorganizations) is often rather superficial because the organization’s dominant work practices remain the same. One explanation is that some change is only for “show”; the intent is to make the organization look good to outsiders (cf. Brunsson 1985). With such change, organization actors pretend to support change but secretly behave as they always have. Or, somewhat perversely, they slyly promote different changes than upper management supports. For instance, recently hired employees can introduce new values and ideas that, from a long-term perspective, may have a major influence on the organization. As an example, younger generations may exert their influence when they challenge older generations’ behaviours and norms in areas such as environmental issues, work hours flexibility, and participatory leadership.

The fact that organizations are subject to continuous change means they experience many small change events. Employees join and leave organizations, new ideas are proposed, minor organizational restructurings occur, new equipment and machinery are purchased, and customers come and go. In this view, the sum of these small changes determines organization strategy and policy (Mintzberg and Waters 1985). Top managers may plan and support some of these changes, but many changes, perhaps most, simply occur without their involvement or influence. What is perhaps most interesting is that the organization's employees often spark such unplanned changes that can contribute to an organization's renewal and resilience. They may see areas where strategic resources are needed for organizational resilience that top management does not. Human capital is typically very multidimensional.

2.1.2 Complexity and Predictability in Evolutionary Change

Another important aspect of evolutionary change, which applies to both ecologies and economies, is that its complexity increases with time, especially in areas of high population density. New knowledge is often developed in dense networks, ideas become innovations that are tested for the first time, and then these innovations spread around the globe. If an innovation is to develop fully and spread on its own, its innovators must have access to industrial and marketing know-how and proximity to important scientific institutions, financial institutions, affluent buyers and consumers, etc.

The principal driving force in economic evolutionary change is the interaction among the various actors that facilitates exchanges of past experiences/innovations and of new ideas/inventions. Today's automobile companies, for example, have advanced technologies and gadgetry not imagined when Henry Ford built his first Tin Lizzies. In the early twentieth century, automobiles had petrol-powered, four-cylinder engines, simple transmissions and basic styling. In this century, automobiles come in an enormous variety of models, colours and sizes. A large mining truck, for example, can transport 100 small Daimler Smart cars. The modern family car now has all kinds of safety features plus cruise control, electric motors, video systems, seat heaters and cup holders, just to mention a few popular innovations/gadgets.

Economic evolutionary change is difficult to predict because, by its very nature, it is discontinuous. Evolutionary trends are very difficult to identify or forecast (Harari 2014). When unexpected, and therefore unplanned for, events occur, many companies' goals and plans may seem outdated, even irrelevant. At such times, flexibility and manoeuvrability are called for. This economic unpredictability has parallels, as well as relationships, with political unpredictability. For example, in the 1980s few people thought China posed a major economic threat to Western companies; still fewer looked at China as a profitable business opportunity. Even into the 1990s, outsiders were sceptical of China's economic future. Would the

Chinese government continue to support market reforms? Would China return to a more traditional planned economy? Would China, like the former Soviet Union and the former Yugoslavia, ultimately fail with its economic and political structures? Such fundamental questions may be asked about the longevity of many recent economic and political developments. The Internet, mobile telephones, unmanned aircraft and the Euro are examples.

Kahneman (2011), the 2002 recipient of the Nobel Prize in Economic Sciences, summarizes the research on decision-making in complex situations involving forecasts, predictions and selections in his book, *Thinking, Fast and Slow*. He demonstrates that predictions are often no better than random guesses, financial plans are often unrealised, and company leaders tend to exaggerate their decision-making expertise and control of future events. Predicting the future, for example, is akin to betting on horse races. A lucky few win, but most people are only occasional winners (at best) or compulsive losers (at worst). The few successful gamblers are often hailed as geniuses. Most gamblers, however, lose because they lack luck, skill and information, or a combination of these factors.

Given the unpredictability of economic evolutionary change, it is only in retrospect that evaluations of decisions are possible. Such after-the-fact evaluations, to mention only a few, include evaluations of the decision to hire new employees, to make additional investments in products/services and markets, and to issue additional company shares. In hindsight, it is possible to evaluate the success or failure of decisions. However, decision-makers have no way to gauge how future evaluators will judge their real-time decisions (Harari 2014).

2.1.3 Organizational Control and Complexity

As Alvesson (2013, p. 94 ff.) notes, exerting organizational control is a complicated and difficult endeavour—primarily because of unforeseen events beyond the actors' control and the unintended outcomes of actions. Very often a huge gap exists between plans for and the reality of reorganizations, implementation of new technologies, and new market entry. Such actions typically take much longer than planned. One important explanation is captured by the classic concept of *friction* that Carl von Clausewitz' (1832) proposed in his analysis of warfare. Friction can result from misunderstandings, resistance, bad luck, lack of knowledge/skills, unexpected events and, not least, wishful thinking by planners. Planners often underestimate the difficulties in the implementation of their plans, and small disturbances often create even more friction in a chain reaction pattern that makes the plans obsolete or even useless. There is also the danger that organizations do not learn from their mistakes, accidents, and poor results. In such cases, organizations continue their unreliable and hazardous practices (Buchanan 2011).

Achieving and maintaining organizational control from the evolutionary perspective points requires environmental feedback when companies try different things and respond to their external stimuli. In his longitudinal data acquired at 16

Scandinavian companies, Polesie (1991) describes the influence of internal/external political power struggles on the companies' strategies and actions, particularly in uncertain times when the way forward is unclear. He found that individual courage and imagination were two qualities lacking at the companies that did not survive. When companies face difficult challenges, they need to mobilize their various resources. Mastery of such challenges, in the best of circumstances, can lead to organizational learning that can be used when other challenges arise. Not infrequently, however, there is a mismatch between the challenges and the responses. Such is the case when solutions are tested and fail, creating even greater problems.

Researchers have proposed various control measures in order to deal with complexity. One popular method is the balanced scorecard (Kaplan and Norton 1992), which has virtues but can also lead to considerable time and effort spent in data collection. The data may or may not be useful for actual decision-making. Data, thus painstakingly collected, may be buried in what in reality is a "digital graveyard" because decision-makers have neither the time nor the ability to use the information. Moreover, advocates of certain administrative control measures are often met with passive or even active resistance (Andersson and Tengblad 2009). Still another problem is that control measures can be manipulated to make results look better than they are (Alvesson 2013). In such cases, outcomes only partially reflect reality.

Ralph Stacey has written several books about leadership and management in complex settings. He describes the limitations of formalized management techniques built on simple instrumental rationality and the unrealistic hope that future events can be anticipated and controlled. One such limitation in formalized management techniques is that "issues which are complex, ambiguous and uncertain are side-lined and covered over" (Stacey 2012, p. 115). To overcome such problems, Stacey presents the technique of reflexive inquiry that is characterized by spontaneity and improvisation in developing more appropriate responses to the complex challenges organizations increasingly face.

2.1.4 Organizational Innovation and Serendipity

Stacey's theories on reflexive inquiry and the dangers of formalized and instrumental tools of control have implications for innovation. Close and elaborate control of innovation can often be counterproductive. Efforts to streamline research and development by setting cost budgets, deadlines and narrow specifications may result in innovations that produce only marginal improvements on previous products. At the same time, innovations that may result in radical product improvements are often rejected for lack of time and money. Successful innovation, managed with sensible yet imaginative control measures, is a challenging work. The best innovations are the result, in many cases, of fortunate circumstances when products are reformulated and remanufactured in various ways.

In recent years, a new concept in the business literature—Serendipity Management—has become popular (Kakko and Inkinen 2009). The concept derives from the recognition of the weaknesses in “linear” planning, a concept similar to Stacey’s mechanistic approach. In this context, serendipity—the ability to make “fortunate (i.e., serendipitous) discoveries” accidentally—refers to management’s ability to exploit such discoveries. Serendipity Management has many parallels with the evolutionary perspective on organizational resilience (Välingkangas 2010, p. 17). Resilience, which is difficult to plan, requires fortuitous space for exploration and organizational learning that can support as well as transform established structures.

Opportunities for making fortunate discoveries depend in part on how relationships among company employees and managers have developed. A certain level of empowerment is most probably needed in order to develop a constructive relation (c.f. Wilkinson 1998).

Every company’s actions are influenced by its history, including past conduct in internal/external relationships. Thus development is controlled partially by the actions people at companies want to take and can take, and partially by the opinions of outside stakeholders, such as competitors, society and customers (Polesie 1990, p. 102).

In company management, it is essential to strike the right balance between discretion and control. This means those in control need to understand the short- and long-term effects of their control measures. Achieving effective control is more than a matter of regulating employee dress/behaviour, of adopting modern communication tools, of assuming impressive titles, of awarding high salaries to a select few, of imitating ideas from popular management books (see, e.g. Chap. 4) and of adopting trendy management fads (cf. Kahneman 2011).

2.2 Three Central Processes in the Evolutionary Approach: Variation, Selection and Retention

Three processes, derived from ecology, are central to the evolutionary approach (e.g. Aldrich 1999). These processes—variation, selection and retention—are useful in explaining how business systems, which are characterized by partially independent actors in interaction with other actors, compete for scarce resources.

2.2.1 Variation

Variation refers to differences that occur as a result of planned changes, initiatives, and random or unforeseen events. One can say that variation in systems in which there is human interaction and involvement is something of a natural law.

A significant portion of variation is the result of the diverse cultural, political, economic and climatic conditions of communities and regions. In the world of commerce, variation may appear in new products, changes in production methods, restructured work organization or new customer–supplier relationships. Thus, variation is a central process for companies as they try to seize new opportunities. Such companies employ people who are often highly imaginative in devising ways to solve problems innovatively and unconventionally.

Not all variation in business is successful. Quite a lot of variation in fact ends in technical and commercial failure. The classic example is the failure of Edsel, Ford Motor Company’s automobile model that was introduced in the late 1950s.² Variation does not attract customers when the variation is too insignificant, too extreme, and/or poorly commercialized.

2.2.2 *Selection*

Selection refers to how variations are chosen. Without variation alternatives, there can be no selection. There must be options for selection. For example, if the moon has no housing accommodations, then one cannot choose between living on the earth and living on the moon.

Selection is a continual process in which the choice is not only among activities but also among the best times to make the choice. Selection may occur in the “market” or, as in the Ford Edsel example, within the organization. For example, if a company needs to standardize its payroll system across all operations, it must choose between selecting a new system for the entire company and maintaining previous systems. Or if a company offers an alternative product/service, at minimum it must create a new website or modify an old website and hire new marketing, managerial and production employees. In the absence of significant indications of interest from the consumer public, variations can create a substantial economic burden for companies. Therefore, most variations are not selected, primarily for reasons of cost. Another common reason for not selecting an alternative variation for a product/service is insufficient demand. Many start-up companies that offer a competitive alternative simply fail to generate enough demand to be profitable.

2.2.3 *Retention*

Retention, which generally implies the capacity of upholding something, refers to how the selected variation is maintained over time. However, few products or services remain so satisfactory that they cannot be modified, sometimes improved, with new features or with changes to existing features.

²An amusing example of consumer fickleness: the Edsel is now a collector’s item.

A well-known example comes from The Coca-Cola Company (Coca-Cola), the manufacturer of some of the world's most successful products. The company has frequently sought to maintain its market position by changing its formulas and products. In 1982, Coca-Cola successfully replaced its diet cola, Tab, with Coca-Cola Light. The company has since introduced many other variations of the original product including Coca-Cola C2, Coca-Cola Cherry, Coca-Cola Vanilla and Coca-Cola Zero. With each variation, the company uses "Coca-Cola" in the name and retains the familiar script logo and red colour on its cans and bottles. We caution, however, the effort to maintain a product/service can sometimes fail rather spectacularly. For example, in 1985, in response to stiff competition from PepsiCo, Coca-Cola introduced a formula change with "New Coke". However, many customers, who resented the change, began a very public campaign to reintroduce the original formula. Eventually the company, with considerable embarrassment, did so, successfully rebranding the former and original product as "Coca-Cola Classic".

Companies with high retention often have strong brands. Thus, they are better positioned to resist the pressure for change and to withstand competitive price wars than companies with weaker brands. For example, Rolex and other Swiss watch manufacturers have survived the Asian competition better than other Western European watchmakers. In fact, of the Swiss watchmakers' annual turnover of more than 10 billion Euros, most sales in recent years are to Asian customers! (<http://www.fhs.ch/en/history.php>). This example highlights how essential it is to build and maintain a loyal customer base by providing high quality service and adding innovative additional features (e.g. luxury watches with perpetual calendars, world time functions, and precious jewels). Equally important, a company must develop its brand identity to maintain its market niche.

A company that has good retention capability is organizationally resilient. A company may benefit from the reluctance of customers to change brands even if they think other brands are better and cheaper. Customers are often slow to accept new technologies and to crossover geographic and cultural barriers. However, the resilient company will not rely on such customer inertia for protection.

Company stagnation, or inertia, can take different forms. Because of *insight inertia*, companies may not respond quickly enough when customers' tastes and buying habits change or when competitors enter their markets (Hedberg and Ericsson 1978). Often, in the latter situation, companies may not notice a change has taken place, or they may underestimate the importance of the change. A classic example comes from the automotive sector. "The Big Three" automobile manufacturers in the United States (General Motors, Ford, and Chrysler) did not see Japanese car manufacturers as a threat in the 1950s and 1960s when cars made in Japan were first sold in the US market.

Manoeuvrability inertia describes companies' delay in adapting their behaviours and activities when they become aware of changing conditions. It often takes a long time for companies to translate words to actions. There may be many reasons: insufficient cooperation between departments, functions and employees, lack of expertise and knowledge or poor customer contacts. Both insight inertia and manoeuvrability inertia can negatively affect retention capability, leading to weakened organizational resilience (Björkegren 1984; Hedberg and Ericsson 1978).

2.3 Using Variation, Selection and Retention Strategically

The concepts of variation, selection and retention are easy to understand. Because they are linked logically, they are suitable analytical concepts when we try to understand organizational resilience. Used strategically, the concepts are particularly useful in an organization's marketing programmes. Next we pose some important questions related to the three concepts.

2.3.1 *Variation*

In what way are an organization's products and services unique? Do these products and services differ from those of competitors as far as technical performance, design, service, reliability and credit terms?

How can an organization increase the uniqueness of its products and services and thereby provide new qualities for customers?

What may be the effect on consumer behaviour if competitors add some new variation to their products or services?

How can an organization compete with a competitor's new variation in a product or service? What countermeasures are possible?

2.3.2 *Selection*

How do customers choose vendors of products and services?

Which vendor qualities are most important to customers?

In what ways do promotional strategies such as marketing programmes, discounts, warranties, credit terms and good service influence customers when they choose vendors?

Which new customers or customer segments are worth pursuing?

2.3.3 *Retention*

How satisfied and loyal are the organization's customers?

Is it possible at an early stage to detect signals that important customers are considering changing their suppliers?

How can dissatisfied customers be retained?

What effect do changes in customers' buying patterns and competitors' responses to those changes have on an organization's retention capability?

2.4 Disturbances and Crises: A Part of Organizational Reality

It is not unusual to see organizations, when they follow their organizational guidelines and policies, manage disturbances passively and ineffectively. Such mismanagement generally deepens the crisis. A prime example is the recent failure of business leaders and politicians to manage the severe financial problems that had accumulated over many years. For example, General Motors Company's debt was so great that it had to seek bankruptcy protection in 2009. In the first decade of the twenty-first century, several European countries, notably Greece, have faced severe income/expenditure problems that, in some cases, required them to seek bailouts from the European Union, the European Central Bank, and the International Monetary Fund. Similarly, the inability of some companies to repay their loans is creating problems in the Chinese credit market. The unpredictable consequences of this situation are worrying.

Other crises that have called for organizational resilience are the earth's many natural disasters in recent years—earthquakes, storms and floods as well as periods of extreme drought. For example, the 2011 earthquake and tsunami that struck Japan, with damage to the Fukushima Daiichi nuclear power plant, resulted in over 15,000 deaths and horrendous environmental and structural destruction. Another result was increasing criticism of nuclear power as an energy source. Still another example of a human and environmental disaster was the 2010 oil spill in the Gulf of Mexico. Chapter 5 explores this disaster from the perspective of the failure of risk management in a sensitive ecosystem.

Companies naturally try to avoid crisis situations, but this is not a simple task. Even very competent and well-managed companies can be surprised by very serious events, especially natural catastrophes. Companies need resources to use as buffers against such events. These resource buffers may include low levels of debt, a history of strong profitability, good customer relationships, loyal employees and expert technical competences. Some adverse, unexpected events—such as the loss of a large customer, an increase in interest rates, declining product prices, etc.—need not create an acute crisis. If the company has resource buffers, it may be able to deal with the disruption without a crisis. Consider an analogy to a ship. Flooding in one watertight compartment will not sink a seaworthy ship because it has bulkheads that separate the compartments. However, if the bulkhead seal fails, and the water floods other compartments, then the ship is in danger of sinking. Companies also need safe organizational bulkheads.

If a company's products are vulnerable in one way or another, even noncore component supply problems, routine mechanical breakdowns or accidents in the supply chain can have dramatic consequences. A recognized example is Ericsson (see Chaps. 7 and 8), which lost its position as the world's largest mobile phone manufacturer when a fire damaged a subcontractor plant where advanced microchips were manufactured. Ericsson's main competitor, Nokia, reacted very quickly to this news and "commandeered" all the spare capacity for manufacturing these

key components (Sheffi 2005). Without immediate alternative suppliers, Ericsson lost billions of dollars and its premier world position in the manufacture and sale of cell phone handsets.

2.4.1 Positive Aspects of Disturbances and Crises

There are many examples in which organizational crises have been handled effectively. In such crises, when things are not going well or environmental conditions change, wise leaders will make long-term changes that use organizational learning, strengthen employee morale and create conditions that spur innovation.

A well-known example comes from the history of Apple Inc. In the mid-1990s, when the company was experiencing severe problems and was thought to be bordering on bankruptcy, Steve Jobs, the company's co-founder, was reinstated as CEO. On his return, Jobs revived the company's original spirit of risk taking and innovation. He cancelled a series of unprofitable projects, using the freed-up funds for new projects. With products such as iTunes, iPod and iPhone, Apple Inc. returned to profitability and strong cash flows. (When this book was written, Apple Inc. was the world's largest company in terms of market value.) The company had reinvented itself. Had Apple Inc. not experienced such grave managerial and operational problems, it is unlikely Jobs would have been rehired (even at his \$1/year salary!). Because of the crisis, radical change was required and implemented.

Another example comes from Sweden. In the early 1990s, when Sweden was in a deep financial crisis, the national government responded with sweeping economic measures that resulted in a balanced budget, decreased government spending and low inflation. In the crisis, the government strengthened its budgetary discipline, took ownership of the largest banks and reduced the rate of inflation. Thus, in the aftermath of the 2008 global financial crisis, Sweden's economy fared better than the European economy as a whole, thanks to these reforms. Given the unpopularity in some quarters of the actions the Swedish government took in the 1990s, without such a crisis, the reforms would probably not be approved by the parliament/voters.

Yet another example of how crises provoke action comes from the Second World War. Following the devastating and humiliating losses at Pearl Harbor and in the Philippines, the United States mobilized its industrial resources, as well as the will of its people, to help defeat the Axis powers. Without these crises, it would have been difficult to overcome the isolationist reluctance of the United States to engage in yet another foreign war.

Moreover, an organization may have unproductive assets and innovative potential that are not fully used until a crisis occurs. It is not unheard of that

management may create a crisis mentality among employees intended to stimulate and legitimize change. In these situations, such crises can be used to demonstrate and strengthen organizational resilience.

A final example of such a managed crisis comes from Ericsson again. After a period of explosive growth in the 1990s, Ericsson saw a sharp reduction in its mobile phone orders, in large part because consumers found them less attractive than competitors' phones. In the years 2001–2003, among other things, the company had to reduce the number of its employees by half and sell additional shares. In the years 2004–2007, when the crisis finally was over, Ericsson exceeded its pre-crisis profit levels. As the result of the crisis, Ericsson became a more effective and agile company. See Table 2.1 for Ericsson's financial results between 1998 and 2007.

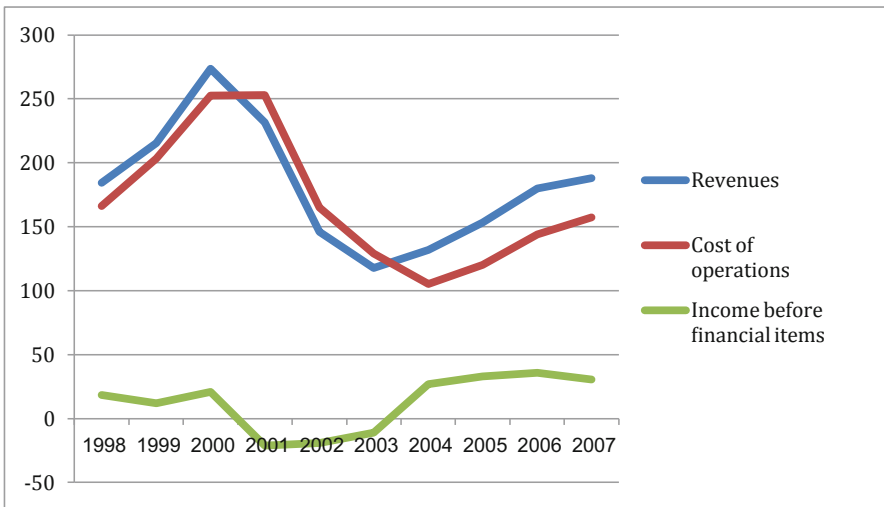


Table 2.1 Financial results: Ericsson 1998–2007

Billions: Swedish crowns	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Revenues	184.4	215.4	273.6	231.8	145.8	117.8	132	153.2	179.8	187.8
Cost of operations	166.2	203.3	252.6	253.1	164.8	129	105.3	120.1	143.9	157.2
Income before financial items	18.2	12.1	21	-21.3	-19	-11.2	26.7	33.1	35.9	30.6

2.5 Sustainability and Organizational Resilience

In recent years, sustainability has become an important business dimension. The sustainability perspective—which highlights the environmental, economic, and social effects an organization has on its surroundings—concerns the use of finite resources, such as fossil fuels, and the contributions to environmental pollution, such as greenhouse gas emissions. Sustainability and organizational resilience are linked concepts because the sustainable use of natural resources contributes to organizational resilience, and vice versa. Several technical resilience resources, such as production technology and supply chains (see Chaps. 3 and 8), often have a significant environmental effect. Company sustainability policies and decisions have far-reaching influences on all life, present and future.

However, there are differences between sustainability and organizational resilience. An organization's resilience depends mainly on many factors other than its environmental influence. For example, it is not assured that investments that increase a company's environmental commitment will increase its resilience when various disturbances and unexpected events occur. An example is the enormous loss the Swedish power company, Vattenfall, sustained after it acquired the Dutch power company, Nuon, with its natural gas plants. A few years later, Vattenfall's 2009 investment (more than 10 billion Euros) was written down by some 40% of the original purchase price. Most commentators thought these write-downs were insufficient. The ambition to be a leader in environmentally friendly energy production has so far been detrimental for the company's resilience.

It is an unfortunate reality that while most consumers and companies claim they favour measures that will result in a cleaner and safer environment, they are most often reluctant to pay for the increased cost of such measures. This is particularly the situation with the cost of electricity produced by natural gas (or nuclear power) versus the cost produced by coal. Therefore, we suggest that sustainability issues should be discussed in the context of technical and social resources as well as financial resources. How much influence, for example, do customers and others have on a company's sustainability management? Because a company's coworkers are its ambassadors, a good start is to anchor the concept of sustainability within the company itself.

Related issues deal with how companies can introduce sustainability in their production and supply chains, how companies can present themselves as environmentally aware and how companies' sustainability measures affect employee safety, rights and compensation. These issues must be managed in ways such that customers are willing to accept somewhat higher product/service prices as trade-offs for the sustainability measures.

Another difference between sustainability and resilience is sustainability's stronger association with preserving and maintaining historic conditions (Zolli and Healey 2012). The resilient company is change-oriented, change capable and willing to challenge the status quo. Radical change is sometimes a must for corporate survival.

2.6 Resilience as High Reliability and Risk Management

An overarching theme in this book is that organizational resilience has broader implications than a focus on the management of real, and often very serious, problems and risks related to natural disasters, equipment failures, accidents and disruptions in logistics flows and IT systems. Thus, in its conclusion, the chapter looks at the research on the High Reliability Organization (HRO) and Resilience Engineering.

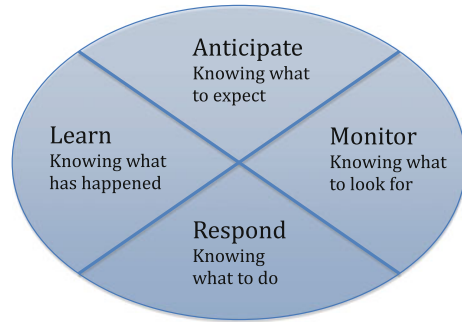
The HRO, as a concept, describes the kind of organization capable of avoiding catastrophic events (or, at least, minimizing their effects) such as nuclear accidents, airplane crashes and chemical and toxic emission leaks. HROs exist in environments where the risk of such serious incidents or disasters is a daily concern. Therefore, HROs prepare for such risks with a variety of organizational measures. They provide employees with continuous training, implement effective reward systems, conduct frequent process audits and adopt a continuous improvement management philosophy (Source: Wikipedia, “High Reliability Organization”). HROs also promote risk awareness at every level and decentralize responsibility for risk management to these levels. In this way, trained, experienced and resourceful managers and employees of the HRO are ready to respond quickly and efficiently (Weick and Sutcliffe 2001). Such responses often include actions that do not conform to standard procedures. The ability to perform—performability—is more useful in a crisis than the current dominant emphasis on responsibility in which the focus is on the person or persons in charge who are blamed for errors (Buchanan 2011; Czarniawska 2009, 2013). For additional commentary on the HRO, see Chaps. 5 and 10.

Resilience Engineering is a concept that is closely related to the HRO concept. Resilience Engineering, which is associated with new ideas on safety management, emphasizes dynamic flexibility in responses to unpredictable accidents and risks. As an example, an airplane pilot may have to take innovative rather than established measures to avoid a crash. Or companies may have to improvise impromptu crisis management responses on short notice when accidents or serious disturbances occur. Because it is impossible to anticipate or prepare for all risks and unfolding events, in this perspective, resilience means to “be both prepared, and prepared to be unprepared” (Paries 2011, p. 26).

Resilience engineering focuses on four resilience abilities that are essential for maintaining resilience of sociotechnical systems: the abilities to *monitor*, to *anticipate*, to *respond* and to *learn*. If an organization has these abilities, it is much better equipped to analyse and solve problems in a structured and practical way, and even more important it has the capacity to learn from experience and improve the functioning of the system itself. See Fig. 2.1.

In writing about the dimension of learning, Kayes (2015) points to the lack of appropriate organization learning as a major cause of severe accidents, corporate failures and faulty policies. This book presents several explanations for the breakdown of learning:

Fig. 2.1 Four dimensions of the resilient organization (adapted from Hollnagel et al. 2011)



- Group-thinking: People dare not express their opinions for fear of losing face if they are wrong or having a deviant opinion.
- Positive thinking: Leaders are often overly optimistic about the future and their ability to foresee, lead and control future outcomes (see The Skandia Case in Chap. 1 for an illustration).
- Rigid adherence to goals: It may be counterproductive to stick to goals for instance when environmental changes make them unrealistic (see The Skandia Case in Chap. 1).
- Strong performance pressures: The effort to achieve certain financial results may leave organizations vulnerable to shocks and oblivious to safety concerns (see The BP Case in Chap. 5).
- Practices of “rational” decision-making: Traditional practices of decision-making can make organizations unwilling to make adjustments of decisions when unexpected outcomes occur.
- Power and dominant norms: Subordinates may conceal or downplay information that may be perceived as negative because of fear of reprisals.

In order to avoid breakdowns in organizational learning, Kayes (2015) argues that companies should be prepared for worst case scenarios, should apply contrarian thinking (i.e. by stimulating people to think differently and to express their concerns) and should see decision-making as a continuous process informed by experimental learning. According to Kayes, companies that work systematically to avoid hazards by using a systematic safety and risk management have a good chance of maintaining long-term resilience.

2.6.1 Risk Management the Safety-I, Safety-II Model

Good risk management of both foreseeable and unforeseeable risks means having enough resources available when needed. This means that safety measures and margins must be built into technical systems. It is far easier, cheaper and safer to add a sprinkler system to a building that can extinguish small fires than to deal with

a major fire and its consequences. The temptation, in risk management, however, is always to save on costs, hoping for the best. Such short-term thinking lies behind many very serious catastrophes that might have been avoided. Recent examples are the Gulf of Mexico oil spill (see Chap. 5), the Bhopal gas tragedy, and the Challenger and Columbia space shuttle disasters.

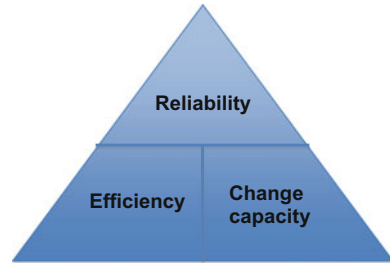
Thus, when such catastrophes occur, the failure is typically attributed to some breakdown in the organization. Despite the likely, if partial, truth of this conclusion, it is probable that a kind of narrow-minded trade-off thinking was behind the decision to prioritize cost over safety. However, in making trade-offs, the possibly detrimental consequences on efficiency and productivity cannot be ignored. For example, a freight delivery company that rigorously enforces safety measures (e.g. safe loading/unloading procedures, driver training rules, hours-of-service limits) may find itself at a competitive disadvantage with other, less safety-minded companies.

Hollnagel (2014) labels two important concepts in Resilience Engineering as Safety-I and Safety-II responses. A Safety-I response concerns risk elimination of errors in technical and human systems. Most safety instructions follow the logic of Safety-I responses. Yet situations exist in which an automatic and pre-determined response will not produce the best outcome. While such situations are rare and unexpected, they can still have an important effect on human lives and invested capital. In such situations, if skills and expertise are available, a Safety-II response is called for. In Safety-II situations, human actors should carefully monitor conditions and act proactively using their knowledge and expertise.

A combination of Safety-I and Safety-II responses is recommended. Employees should be trained to respond to situations that have not been anticipated by the Safety-I responses. In using Safety-II responses, organizations may not only achieve better outcomes than those achieved by Safety-I responses, but they may also learn how to improve the Safety-I responses. The philosophy of Safety-II thinking is similar to the perspective taken in this book that emphasizes preparation by organizations so that they can deal with complex, uncertain and often adverse situations.

Resilience Engineering has also developed another useful concept in this context: “the efficiency-thoroughness trade-off”—the ETTO Principle (Hollnagel 2009). This principle posits that it is impossible to maximize both efficiency and thoroughness simultaneously. A narrow focus on efficiency or on thoroughness—one at the expense of the other—is an unfortunate decision because it means the preparation for an activity (or risk) requires more resources than the management of it, and vice versa. Although it is quite normal at times to sacrifice thoroughness for efficiency, according to the ETTO Principle, organizations should balance the requirements of efficiency against the demands for thoroughness. This is another way of looking at the balance between cost and safety. Organizations that strive for resilience are well advised to consider this balance carefully.

Fig. 2.2 The REC model
(author's model)



2.7 Conclusions: A Capability-Oriented Model for Organizational Resilience

The chapter, which takes a holistic approach to organizational resilience, also deals with risk and crisis management. The concepts of variation, selection and retention help us understand how and why new companies originate, grow and prosper. These concepts are also useful in explaining why other companies stagnate, gradually fade away or simply vanish. Through seizing and developing market opportunities in a complex interaction of variation, selection and retention, a company can achieve the essential organizational resilience this book describes.

Predicting the future is best left to fortune-tellers with their crystal balls. Business leaders, who have no such clairvoyant powers, are better off preparing rapid and effective responses to possible and imaginable (as well as nearly unimaginable) events and crises—since they cannot know when, or if, such events and crises will occur. Because unintended consequences are common, leaders necessarily require some humility as they prepare and integrate their financial, technical and social resources in readiness for such situations. Figure 2.2 depicts an equilateral triangle,—The REC model—with the three qualities of the resilient organization: namely, reliability, efficiency and change capacity.

In the model, *Reliability* refers to operational safety, well-functioning risk management, and quality in products, services and customer care (i.e. everything that causes customers and other stakeholders to *rely* on an organization).

In the model, *Efficiency* refers to productivity and to positive economic exchanges with the environment that producers, customers and others find beneficial. In other words, *Efficiency* describes an organization's ability to create value such that stakeholders' expectations are met.

In the model, *Change capacity* refers to flexibility and innovation. A flexible organization responds relatively quickly to changes in customer demand and preferences. An innovative organization can renew itself by developing new products and services and internal processes in the effort to position itself as an industry leader.

We claim these three qualities are essential for the resilient organization. Without reliability, stakeholders will not trust the organization and there are risks of severe breakdowns and accidents. Without efficiency, the organization will suffer

financial problems and resource depletion. Without change capacity, the organization will be unable to respond to fluctuations in customer demand, to the introduction of new technology and to other environmental changes. However, the appropriate balance of these qualities varies from organization to organization, from industry to industry and also over time (business cycles, technological development). While some organizations should focus strongly on reliability (HROs), others should emphasize efficiency stronger, and still others should emphasize change capacity.³ We will return to a discussion of this issue in Chap. 14 in which we draw conclusions based on the evidence from the empirical chapters.

2.8 Discussion Questions

1. Describe some business examples in which time and cost constraints may have negative implications for product reliability and safety. Specifically, what was involved in the trade-off thinking in these examples?
2. What are the implications of using the biological and ecological concepts of variation, selection and retention in the analysis of organizations, companies and industry sectors? Are these implications useful in understanding how these entities originate, develop, thrive and/or decline? Why or why not?
3. What might be the organizational and managerial consequences if the concepts of uncertainty and unpredictability are given more central attention? Support your answer with examples.

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³Related to the cases in this book we suggest the hospital in Chap. 10 should focus relatively stronger on reliability, the supplier in Chap. 9 on efficiency and the fashion company in Chap. 11 on change capacity.

The Resilience Framework

Organizing for Sustained Viability

Tengblad, S.; Oudhuis, M. (Eds.)

2018, XXI, 264 p. 19 illus., 6 illus. in color., Hardcover

ISBN: 978-981-10-5313-9