

This section is about global changes—why they are bigger, come more often, and are becoming more difficult to predict. It's also about what companies have done, and are doing, in order to take advantage of the opportunities and avoid the threats embedded in these ever accelerating changes.

Certain changes are products of shifting technologies. One established technology is replaced by something new. We've seen this before. Steam engines were replaced by internal combustion engines and electricity, electricity grew into electronics, landlines are being replaced by mobile telephones, and newspapers and paper books are increasingly being supplied as digital files for tablets and e-book readers. These changes also affect how people live their lives. Even when they are staying home with their sick child, they are now expected to be accessible by phone and to answer your e-mail. Some experience this as a source of stress, while others find greater freedom. Most of us experience both these feelings as a result of the changes that follow in the wake of innovations.

When something new appears, whether a technological solution or a change in social norms, things generally start manageably. As the innovation gains adherents, development accelerates, and finally, when the change has become widespread, the rate of change tapers off. Subsequently, a new innovation appears, and the process begins again. We often depict this process as an S-curve. The transition between one technological curve and another is an indication of innovation. I call this a *phase transition*. When a phase transition occurs, it creates opportunities for companies that are able to innovate. For those who are not able to manage this, the phase transition signals the start of a process of decline.

Researchers who have studied such processes¹ explain that the more people or companies quickly adopt the innovation, the steeper the S-curve becomes. In addition, the greater the diversity in age, cultural affiliation, and other qualities

¹ The pioneers are located at the Santa Fe Institute in the United States, as well as in France, the UK, Belgium, and Chile, where qualified research is being carried out related to research that concerns complex adaptive systems.

among those who adopt the innovation, the more powerful the change is and the sooner the next phase transition will occur. Today's mobile phones with their touch screens, Wi-Fi connectivity, and capacity to stream music have little in common with the rather clumsy mobile phones first launched a few decades ago. Mobile telephony is an example of a technology that has changed people's lives in a multitude of ways in so many places around the globe.

The pace of external changes is accelerating as ever-larger groups of people and companies adopt advances in ever-shorter spans of time *and* as the diversity among those adopting these advances grows. This means that the S-curves become steeper, and the life cycles of technical solutions and new products become shorter. As a result of this shift, larger numbers of companies are required to handle *continuous innovation*, an ability that also demands speed and scalability.

2.1 Continuous Innovation

Innovation is a broader concept than R&D. Innovations affect every part of a company. 'The Organisation for Economic Co-operation and Development' (OECD) describes four types of innovations²: product innovations, process innovations, marketing innovations, and organizational innovations.

A company is *innovative* when it possesses the ability to change its business or management model, as well as to develop and implement new products that respond to expressed and unexpressed customer needs. A customer can be a company or an individual. But employees, owners, suppliers, and the public sector can also be stakeholders that may well determine a company's success or failure. A company that is continuously innovative can manage to constantly change its business and management models and to develop new products. Companies that never fail may be refusing to take risks, and this can be a sign of limited innovation capabilities. On the other hand, the ability to learn from one's mistakes can be a sign of good Innovation Capabilities.

Continuous innovation requires a holistic approach to leadership and organization. It entails creating the basis for an innovative climate and innovative interaction between people. If we wish to increase the Innovation Capabilities of a company or other organization, we need to increase our understanding of how each part of the innovation process can be coordinated within the framework of a *company system for continuous innovation*.

As the pace of external change accelerates, the need for continuous innovation grows.

² The OECD's definition of *innovation* is "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" (Oslo Manual by the OECD 1997).

2.2 System Effects: We Don't Know Exactly What's Happening

Most of us have at some point been sitting with colleagues discussing a problem that none of the participants seems able to solve. Then someone comes up with an idea. It might not be a particularly good one, but it stimulates someone else to come up with a different idea that may still not be good enough. Finally, the group arrives at a satisfactory solution. No one is able to explain where the final idea came from, but we know now that our creative abilities are at work. The innovation is a system effect—the product of complex interplay between individuals and other components in a system, whether that system is a company, a region, or an entire country. When talking about a company, the term *company system* can be appropriate. As we cannot predict exactly how various components of a system will interact, we develop a company system through trial and error. We must be aware that things may not get things right the first time, and instead we must try various solutions and learn from these experiences in order to better succeed at our next attempt.

When the properties of the whole are greater than the sum of the properties of its parts, system effects appear. We discover these later, but we cannot predict with accuracy just what these effects will be.

We usually distinguish between linear thinking (cause and effect) and systems thinking. Continuous innovation is based on systems thinking.

The spread of a technological or management innovation is affected by four primary factors³: the innovation and its characteristics—, the communication channels used, the time involved, and the social system. The social system consists of individuals and organizational units that relate to each other in an effort to realize a common objective. History, norms, and opinion leaders in the social system are important to the process of circulating an innovation.

2.3 The Company Model of the Future: A Paradox

When a theory says one thing, and common sense based on one's own experiences says something else, the result is a *paradox*.

In order to maintain, and preferably improve, profitability, companies must decrease costs or create new income. Productivity is a measure of what we get from current resources.⁴ Budgetary discipline, cost control, and constant vigilance to discover and eliminate unnecessary costs are core activities in the daily production of goods and services. At the same time, if we are to continue to compete in the future, we need to develop new products and services that provide new income.

³ Rogers (2003).

⁴ The definition is from *Drivkrafter för produktivitet och välbefinnande*. A government report by the Productivity delegation, SOU 1991:82.

Experience and common sense indicate that it can be very difficult to combine these two objectives—efficient production, on one hand, and the continuous creation of new value streams through innovations, on the other, in the same business. In other words, it's hard to be a penny pincher regarding costs and at the same time conduct future-centric experiments that devour resources with no guarantee that the results will create new value. Reality, however, teaches us something different. Innovative companies, such as 3M, Apple, W. L. Gore, Google, and many others have accomplished this apparently difficult, if not impossible, task. These companies have succeeded in joining various forms of logic that many see as incompatible, such as large-scale operations and flexibility, effective control and individual freedom, a focus on today's business and a commitment to the future. By their ability to combine these ostensibly incompatible forms of logic, these companies have created the conditions necessary for both productivity and innovation.

Nevertheless, when the experience of executives leads them to one conclusion and external examples indicate something different, most executives prefer to rely on their own experience. "Forced to choose between getting what we want and maintaining second order constancy, we may choose not to get what we want," Chris Argyris⁵ concluded many years ago.

Research about continuous innovation seeks answers to the question not only how one innovates continuously but also how this can be done parallel to conducting and improving the daily operations (production) in a manner that will promote quality and be cost effective.

2.4 Innovation Research

An interesting insight in management and innovation research is that a company's ability to innovate is explained more by how that company is managed and organized than by its technological skill.⁶ I therefore first highlight the importance of management innovations to Innovation Capabilities and continue by describing the six management principles that support and provide the necessary conditions for continuous innovation.

⁵"When our theories-in-use prove ineffective in maintaining the constancy of our governing variables we may find it necessary to change our theories-in-use. But we try to avoid such change because we wish to keep our theories-in-use constant. Forced to choose between getting what we want and maintaining second order constancy we may choose not to get what we want." (Argyris 1976).

⁶Tushman and O'Reilly (2007).

2.4.1 Management Innovations and Innovation Capabilities

Regardless of how good a company is at developing new products and applications, these can hardly yield any results without an environment that promotes innovations. Thus we can see that management innovations, like technological expertise, are important in generating innovations. Henry Ford's assembly line was a management innovation and provided the stimulus for a number of technological innovations. A half-century later, the semiconductor industry not only revolutionized technological development but also led to management innovations in both the private and the public sectors.

Thus, management innovations and technological innovations work in tandem in a dynamic manner, affecting each other and leading to greater effects by mutual influence than they would if only one of these was affecting the other.

Researchers have also found that the nature of a company's organization influences not only its Innovation Capabilities but also its propensity to adopt innovations from external sources.⁷ We can thus see why management innovations are important for both a company's Innovation Capabilities and its long-term sustainable success.

2.4.2 The Company System's Importance to Innovation Capabilities

A system is a collection of components with certain properties and with certain connections among the components, as well as among the characteristics of those components.⁸ A company system has organizational components, and these affect one another and structure the characteristics of the system.

Organizational components include issues such as whether decision-making authority is centralized or decentralized, whether the norms allow mistakes or demand that everything be "right the first time," whether the atmosphere is formal or informal, whether information flows freely and is accessible to everyone whose work requires it or is reserved for the few, whether supervisors give orders or coach, whether cooperation between individuals and units is encouraged, and whether internal competition is the order of the day. All these characteristics of an organization constitute the company system.

There is not much research regarding the company system's importance for Innovation Capabilities. The innovation research that does exist focuses mainly on the process or project level or on individual components, such as company culture and leadership,⁹ which have been studied separately. As a result, knowledge of one component of the system is often isolated from knowledge of other components.

⁷ Kimberley and Evanisko (1981), pp. 689–713; Damanpour (1987), pp. 675–688.

⁸ Professor Eric Rhenman, a pioneer in systems thinking, first presented this definition.

⁹ O'Connor (2008), pp. 313–330.

Each of these studies aims to increase understanding, within a defined area, of the significance of various characteristics within a given organization component. It can therefore be difficult to summarize the importance of the innovative abilities of all these components, working together and reinforcing each other to produce positive or negative system effects. There is thus a challenge inherent in analyzing company systems in their entirety. The system is more important for innovation than the sum of its individual parts is. The holistic approach does justice to the organic nature of Innovation Capabilities. In Part II, we will see how Google's organizational components work together dynamically to utilize and develop innovative ability.

At this point, I present a summary of the management principles seen as characterizing successful companies in rapidly changing industries. Although these six management principles are described separately, when they are made to work together, they give rise to an ability to deliver long-term and sustainable quality and productivity in daily production, and they promote continuous innovation strength.

2.5 Six Management Principles

The following are the six management principles that various clusters of researchers have identified as crucial in explaining the ability of successful companies to engage in continuous innovation:

- *Dynamic capabilities.* The company's ability to integrate, develop, and reconfigure internal and external competencies in order to meet rapidly changing surroundings.
- *A continuously changing organization.* If you delay taking action until problems arise, you will act too late. Instead of waiting and springing into action *after* needs become pressing, a company should ensure that its organization is permeated with a proactive approach to change.
- *A people-centric approach.* One fundamental principle found in companies with continuous Innovation Capabilities is that they are people-centric, focusing on the individual and liberating his or her innovative power. This principle is based on a belief that people want to be creative¹⁰ and that a company must provide them with a setting in which they can express their creativity.
- *An ambidextrous organization.* Continuous innovation must combine two different forms of organizational logic within the same organization. These are *daily production*, which works best with a conventional planning-and-control approach, and *innovation*, which requires greater freedom, flexibility, and a more open attitude toward experimentation. An ambidextrous organization must successfully handle and utilize the energy inherent in the contrast between these two forms of logic.

¹⁰ Høyrup (2008).

- *An open organization that networks with its surroundings.* A company can be more or less open to integration with its surroundings. If we describe a company as a system, some companies are more closed systems with clear borders that separate them from the world beyond. Other companies have permeable limits and have a constant and conscious exchange of information with their surroundings. Long-term survival requires that companies develop into more open networking systems.
- *A systems approach* to work differs from the conventional linear way of working in two major ways. First, we begin with a holistic view of the system. The system has a number of components that mutually affect one another. This mutual and dynamic influence contributes to the entire system's developing new characteristics that can be difficult to predict. Second, those using the systems approach are aware that these new characteristics can be positive, negative or a combination of the two. This creates a demand for additional measures, such as decreasing the fallout from unexpected negative system effects.

These six management principles can be viewed as fundamental principles or orthodoxies on which a company's management model for continuous innovation should be based. I now describe the background of these six management principles in greater detail.

2.5.1 Dynamic Capabilities

Companies must develop in order to survive. Penrose's¹¹ growth theory, first expounded in 1959, became the basis of what is called "resource-based theory." It explains that a company's competitive advantages are based on its access to a number of specific resources or "core competencies" (Prahalad and Hamel, 1990). It was later discovered that these core competencies could obstruct the company's long-term ability to compete when external changes accelerate and the value of the core competencies depreciates. Thus, there is a risk that what was previously a driving force for growth and development may later become an impediment to innovation.¹²

Ensuring that a company's value-creating resources retain their value requires the business to be insulated from external change. A few decades ago, monopolies, licenses, advantages of scale, and government regulations prevented competitors from entering a given market.¹³ Many of these obstacles are now gone, and it is therefore more difficult for companies to retain long-term competitiveness with the same portfolio of core competencies. A more dynamic model is needed.

¹¹ Penrose (1959).

¹² Leonard-Barton (1992), pp. 111–125.

¹³ Professor Niall Ferguson at Harvard explains that Sweden's growth, which has been more favorable than economic trends in southern Europe, is the result of Sweden's adopting deregulation—of former monopolies, for example—faster and more effectively than other countries have done. DN 130702.

Companies that succeed on the global market react early, engage in rapid and flexible product development, and manage to reconfigure internal and external resources. Researchers such as Teece¹⁴ have called this source of competitive advantages “dynamic capabilities.” Together, these are defined as *a company’s ability to integrate, develop, and reconfigure internal and external competencies in order to meet rapidly changing surroundings*; in other words, dynamic capability is the capacity to constantly review external factors and quickly adapt the company to meet new challenges. *Dynamic* refers to external changes. ‘*Capabilities*’ is an umbrella term for competence, strength, speed, and other properties that together create the ability to utilize the opportunities that are present in every change. In this case, capabilities relate to management’s ability to integrate, develop, and reallocate internal and external expertise and resources in an effort to adapt to a changing environment, and its ability to create new values in that environment. Dynamic capabilities orient a company in the direction of ongoing integration, reorganization, and a modernization of resources and expertise, so that it is able to respond to challenges in its surroundings and maintain or adapt existing competitive advantages and develop new ones. Dynamic capabilities are a characteristic of a company’s various processes, a conditioned and stable pattern in collective actions.¹⁵ Companies differ with regard to dynamic capability in that they expressly or implicitly emphasize to different degrees the strategic importance of changes in the future. Companies that focus on change and whose management has accepted the premise that the company will be changing continuously will most likely achieve greater profitability than companies whose managements have a more conservative attitude toward the future. Change-centric companies more effectively adapt themselves and use new knowledge they have acquired.

The dynamic capabilities of companies can be expected to differ between companies operating in environments with differing magnitudes and frequencies of change. Depending on the changeability of a market, dynamic capabilities may shift from being detailed and analytical with stable processes and predictable results to being simple and experimental with uncertain processes and unpredictable results.¹⁶ Dynamic capabilities are based on three skills¹⁷:

- Sensing and shaping opportunities and threats
- Seizing opportunities
- Maintaining competitiveness by combining, protecting, and where necessary, reallocating company resources

Dynamic capabilities should permeate the entire organization. This principle ties together the skill of the management at utilizing opportunities, handling threats and combining and reconfiguring company and shared resources with other special assets. It provides opportunities to meet new customer needs and maintains and

¹⁴ Teece et al. (1997), pp. 509–533.

¹⁵ Zollo and Winter (2002), pp. 339–351.

¹⁶ Brown and Eisenhardt (1997), pp. 1–34.

¹⁷ Teece (2007), pp. 1319–1350.

enhances the company's ability to develop. In doing so, it also creates long-term value for customers, employees, and investors. Maintaining dynamic capabilities requires the management team to practice entrepreneurship¹⁸; Management needs to perceive problems and trends, direct and redirect resources, and change organizational structure and systems so the management team can develop and utilize technological opportunities based on customer needs.

Summary A company and its management model must be based on the principle of *dynamic capabilities* in order to ensure continuous innovation and long-term development. Dynamic capabilities comprise *the company's ability to integrate, develop, and reconfigure internal and external competencies in order to meet rapidly changing surroundings*. Dynamic capabilities are affected by the management's orientation and way of acting. There is a conditioned and stable pattern in collective actions. By being aware of the importance of dynamic capabilities, a company can build them into the processes it designs. The more rapidly the company's industry is changing, the more important dynamic capabilities become.

2.5.2 A Continuously Changing Organization

Companies that operate in rapidly changing environments need to continuously and proactively change their organization.¹⁹ It is not enough to change things when the need arises, as in the case of sudden reorganizations. The business must constantly be involved in a continuous and proactive process of change. Put more simply, the company must always be prepared.

2.5.2.1 On the Border Between Order and Chaos

Companies must not become locked into too much orderliness but at the same time should not become too chaotic. Change happens in the borderlands between order and chaos.²⁰ This concept includes the complex, uncontrollable but nevertheless adjustable condition we call self-organization, which arises where there is a certain structure that is not so inflexible as to impede change. If everyone knows what the objective is but the itinerary allows for flexibility, individuals, working alone and in

¹⁸ *Entrepreneurship* can be defined as the ability to identify opportunities and create resources to take advantage of these opportunities. Entrepreneurship causes something to change direction. New perspectives are discovered and developed. An entrepreneur creates new business operations and organizes the market in a new way. According to the neoclassical theory of Joseph Schumpeter, an entrepreneur causes *creative destruction* on the market by disturbing the balance between supply and demand. The result is the appearance of a chaotic market, and the entrepreneur becomes a person who creates demand on a market.

¹⁹ Brown and Eisenhardt (1997), pp. 1–34.

²⁰ Ibid.

groups, can decide how to act in light of what happens. This involves self-organizing. In a centrally governed organization in which the management has directed in detail *how* people should act, problems arise if reality fails to unfold according to the data on which the management decisions were based.

One crucial decision for management is thus distinguishing between what needs to be firmly laid down and what should be left open for employees to decide in light of the prevailing factors. The *border between order and chaos* provides two opportunities.²¹

First, *freedom to improvise* within the company. The management team and the employees utilize clear objectives, priorities, and guidelines for the organization. They find new solutions while consistently delivering excellent products at the right time and within budgetary constraints. This *planned improvisation* is based on three conditions:

- A learning culture in which supervisors and employees can adapt operations when conditions change
- A semistructured organization in which deliveries, times, and prioritizations are monitored
- Efficient communication of information that is easily accessible to everyone who needs it at the time they need it

Second, *taking advantage of synergy effects by striving for cooperation* with other units in the company.

2.5.2.2 Time-Axis Thinking

In a continuously changing organization, one must consider different time horizons simultaneously: history, the present, and the future.²² Being conscious of the entire time axis without locking themselves into one of the time horizons is an important feature of continuously changing organizations. Time-axis thinking has two perspectives:

- A retrospective examination of previous experiences (experience recycling) in order to find experiences that can be of value for the future
- Experimentation to find various ways of obtaining knowledge and facilitating flexibility at a reasonable cost. Identifying many alternative solutions and facilitating learning are important.

2.5.2.3 Choosing What to Adapt to in Real Time

Many events are sudden. Being a continuously changing organization means consciously choosing which events to adapt to²³ and deciding how to adapt. Is this an opportunity we should take advantage of, a threat that must be dealt with, or simply an event we can allow to pass without taking any action? Not every event is relevant to every company. Which ones should we take notice of, and how should

²¹ Ibid.

²² Ibid.

²³ Ibid.

we relate to them? Choosing what to adapt to entails linking changes to operations so we accept them and continue to develop without unnecessary disturbances.

2.5.2.4 Three Different Leadership Roles

In a continuously changing organization, there are at least three different leadership roles.²⁴ The first of these relates to the business unit. The strategy for this unit must be an ability to handle innovation and production at the same time. The second role concerns synchronization on the middle level, where it is necessary to continuously reallocate among different deals and projects in order to take advantage of new business opportunities. The third role, at the level of top management, is to compile, decide, and communicate objectives and prioritizations for the company.

Finally, two requirements must be satisfied in order for visions and strategies to work as unifying guiding lights for the entire company:

- The overarching objectives must be described so that every person can understand that various parts of the common picture (vision,²⁵ mission, and strategies) support each other.
- These objectives should be communicated to all employees so that they can use them as a basis for their own independent decisions. A person who has such an ability to communicate is able both to see contexts and patterns and to formulate these so that the picture becomes understandable, meaningful, and manageable for every employee.²⁶

Summary Being a continuously changing company requires both internal flexibility and the ability to take into consideration different time perspectives simultaneously. The need to be continuously changing is affected by the speed and magnitude of external changes. Consequently, the company needs to develop a *culture* that is always prepared for changes and a *semistructured organization* that can maintain a balance in the borderlands between order and chaos; set and maintain objectives and prioritizations, as well as guidelines that employees can

²⁴ Ibid.

²⁵ There are examples of companies that have needed to implement a major change within a short time. In such a case, the mission can be expressed as a *strategic intention*. This strategic intention is meant to serve as a shared focal point for rallying the company's strength. When Komatsu entered into competition with Caterpillar, a company many times larger, the strategic intention was expressed in the phrase *Encircle Caterpillar*; Canon's successful raid against Xerox, the giant in the industry, was focused with the help of the slogan *Beat Xerox*. When Robert Townsend took the helm of Avis, a company that had experienced 13 consecutive years of loss, the strategic intention was *Let's get back in the black*. Profitability returned after 6 months. See further Hamel and Prahalad (1994).

²⁶ In extensive research regarding negative stress at work, it has been found that the same conditions that lead to injuries in many individuals leave others unaffected or even make them stronger. The difference between the two groups is the stronger individual's sense of coherence in stressful situations. This ability makes the situation *comprehensible, meaningful, and manageable*. People who lack a sense of coherence and therefore fall victim to negative stress can develop this ability with the help of educational measures. See further Antonovsky (2005).

use instead of fixed rules and instructions; and experiment and improvise with on-time deliveries and real-time communication.

In addition, the organization needs leadership with differing abilities: to design local strategies and lead for both productivity and innovation in day-to-day leadership, to conduct strategic synchronization and reallocation on the middle level, and to synthesize and reallocate, make, and articulate overarching decisions.

2.5.3 A People-Centric Approach

A fundamental principle of companies with continuous Innovation Capabilities is the belief in *releasing the inherent innovative powers of its employees*,²⁷ which in turn is based on the belief that individuals want to be creative.²⁸ Innovations are born of passion and are driven by an individual's inner motivation. For this reason, it is important to allow employees to do what they have a passion for doing and or even find fellow employees with the same passion, as well as to understand what motivates the individual employee. The company should be organized as a river system with unencumbered movement.²⁹ This will flow faster than one filled with obstacles and diluted into tributaries. Companies like this create simple and well-focused structures and routines only where these are necessary or meaningful. They want to give people the freedom to make their own decisions and avoid placing obstacles in their way. Innovative organizations have enough efficient structure to avoid chaos and provide enough freedom and flexibility to support innovation and continuous change.

The management plays a major role in employees' enthusiasm for innovation.³⁰ Innovations can arise anywhere in a company but cannot survive without the encouragement and support of management.³¹ A company with the capacity for continuous innovation has a management that emphasizes the importance of innovation and continuous change and that encourages positive energy among its employees through creative stimulation with challenging visions and missions. For most people, awareness that one's work is contributing to a higher or noble purpose and is in some way making the world a better place is a source of personal stimulation and increased commitment. Gary Hamel³² stresses the importance of a company's assuming a clear responsibility for society and the environment, as this helps create an opportunity for a more sustainable business model. Such a model, in

²⁷ The research in this section is primarily based on management and organization research, as well as on research regarding innovation culture.

²⁸ Høyrup (2008).

²⁹ Tidd and Bessant (2009), p. 135.

³⁰ Dallenbach et al. (2002).

³¹ Leifer et al. (2000).

³² Hamel (2009).

turn, creates a more noble purpose for the company and thus involves the employees to a greater degree.

Innovative companies often have a strong, shared vision³³ that is vitalizing, attractive, realistic, and credible so that every employee is motivated and can use the vision as a guide in daily work. In an innovative company, we also find that management uses soft forms of control, such as values, guidelines, and peer assessments. Certain researchers assert that modern society is facing a paradigm shift regarding control³⁴ and must move toward gentler forms of control mechanisms. A company's general strategy should include delegating authority to those who are closest to a problem or an opportunity and who therefore often know the most about how to solve the problem or take advantage of the opportunity. In order for employees to make good decisions, they need access to relevant information. This requires more extensive transparency in relevant areas and less secrecy than previous models have offered.³⁵

There is a clear correlation between the way management exercises leadership and treats the employees, on one hand, and the performance of the organization, on the other. This correlation is a positive one and is self-reinforcing over time.³⁶ People are the most important asset in the current economy. Certain CEOs, such as Richard Branson at Virgin, maintain that employees are more important than customers, as satisfied employees create satisfied customers. Releasing the energy that exists in every person requires leadership with special qualities. Inspiring and supportive leadership encourages the development of high-performing, well-functioning teams. The management team communicates visions and explains prioritizations but leaves the choice of how to perform the work to the employees themselves. Managers lead by reaching an agreement with each employee about the goals that are to be achieved. Leaders of innovative groups³⁷ have shown themselves to be both creative and disciplined. They are able to accept uncertainty and risk, and they handle failures constructively. They also exhibit passion and enthusiasm. These leaders are curious and willing to actively seek out new ideas both within the company and from external sources. They also possess the courage to stop projects that do not meet expectations, they attract innovators, and they are good at building successful teams. They are modest and respectful, reward, involve, emphasize teamwork, communicate, and motivate. In addition, they have broad-based experience, as well as in-depth technological expertise in their areas.

Finally, companies with innovation cultures³⁸ emphasize trust and openness within their organizations. They create challenges and actively involve the

³³ The definition of *vision* as a vitalizing, attractive, realistic, and credible picture of the future of a business is inspired by Nanus (1992).

³⁴ Birkinshaw (2010), pp. 1–10.

³⁵ Hamel (2009).

³⁶ Tidd and Bessant (2009), p. 135.

³⁷ Bel (2010).

³⁸ Isaksen and Tidd (2006).

employees. They support and give latitude to new ideas, allow conflict and debate on factual issues, accept risk taking, and give employees great freedom in choosing how to perform tasks. All these are characteristics that the company culture encourages and reinforces.

Summary In order for a company to succeed with continuous innovation, those in the organization should believe in and be able to free up the innovative power that is found in each employee. This fundamental principle derives strength from all components of the company system, such as culture, leadership, and organizational structure.

2.5.4 Ambidextrous Organization

2.5.4.1 Balancing Production and Innovation

One major problem in many companies is that the business is not innovative enough. However, if the tables were turned such that companies focused on innovations while prominent manufacturers were allowed to lose their skill in manufacturing, we would have moved from the frying pan into the fire, figuratively speaking. Companies need to both conduct and improve their daily operations while also engaging in continuous innovation efforts. Companies that survive long term can manage both of these challenges.

An ambidextrous person is just as skillful with the left hand as with the right. In English, an organization that can “do it all” is referred to as an *ambidextrous organization*.³⁹

A company’s ability to create conditions favoring a long-term business success is based on being good at both production and innovation. There are examples of various models that can be used to manage this challenge.

Certain commentators are of the opinion that production and innovation must be carried on in isolation from each other (i.e., the “mainstream” and the “newstream” must be kept separated), while others feel that the mainstream and newstream must be kept within the same organization.

Increasing numbers of business environments are developing toward greater changeability and unpredictability. It therefore makes sense to investigate the conditions under which production and innovation can coexist in an organization. The accelerating pace of change means that speed is becoming ever more important. Consequently, internal research labs will most likely be combined with outsourcing innovations and involving all employees in innovations.

Leading innovation companies expect, support, and reward innovations, regardless of the source of the initiatives and ideas. These companies view innovations as

³⁹ Tushman and O’Reilly (1997); Benner and Tushman (2003), pp. 238–256.

a mechanism to both develop new knowledge and competitive advantages and to stimulate continuous improvement in production.

Companies need innovative efforts to balance the conservative forces that oppose continuous change. Consequently, management must conscientiously work to support ambidextrous organizations. This will enable the company to maintain efficient products and continuous improvement while also experimenting and engaging in continuous change. This, however, will require ambidextrous executives and managers who can deal with production and innovation simultaneously and develop the company culture to promote an ambidextrous organization.

It has proved difficult to realize these intentions in practical terms, especially in connection with technological shifts. There are various reasons why executives with experience operating an efficient business according to the old rules feel it is difficult to change their position. One such reason is the inertia that often accompanies historical success and old “tried and true” habits. There are companies that have previously “done everything right,” listening to their major customers and focusing on their most important businesses and technology areas. These companies can find themselves in danger when the threat comes from new technology and increased demand from groups of customers who were previously peripheral. In addition, they face difficulty predicting the market potential of something in its early stages. These could be signs that a major phase transition is about to occur.⁴⁰

When a company or an entire industry encounters a major phase transition, one must often begin from scratch in an effort to find solutions to the major and crucial problem of how to satisfy new needs. Beginning from scratch requires avoiding building on the company’s known solutions and recruiting management staff who represent a new way of thinking. It may well be that this can be done within the core business or through a looser connection to mainstream operations. Sometimes one must accept that the traditional market is on the way to extinction and that one may need to “kill off one’s darlings.”

Several examples show that it is in fact possible, using an ambidextrous organization, to have both efficient production and continuous innovation: consider Google, W. L. Gore, and 3M. There is also convincing evidence that ambidextrous companies succeed very well. However, to manage this strategic bifurcation, the management team and local managers must develop their ability to function within

⁴⁰ A well-known major phase transition in Sweden was the transition from precision mechanics to electronics in adding machines that affected the Facit company. Electronics could satisfy not only existing needs but also many new customer needs, but Facit had neither mastered this new technology nor understood the needs of its customers. Facit was the expert in precision mechanics, so it had two choices. It could either try to find new markets for precision mechanical products, or it could develop expertise in electronics. The company hired a group of Swedish engineers who in the early 1950s had placed themselves on the global cutting edge for electronic data processing on the Swedish Board for Computing Machinery. They were very much focused on innovation, but the management of Facit wanted them to manufacture more computing machines of the same type as those they had already developed. These engineers were world-class innovators, but the management at Facit wanted to make them production engineers. It simply did not work.

the system-thinking framework. The management and other executives must clearly demonstrate what the ambidextrous concept means through a continuing dialog with “both sides” internally.⁴¹ The management thus plays an important role in launching the ambidextrous approach throughout the company.

Summary In order to ensure a company’s long-term survival, the organization must support both ongoing production and innovation-related activities as two parallel missions within the same company. The accelerating pace of external changes supports the advisability of conducting both missions in the same organization, even though many can attest that this may not be easy.

2.5.5 An Open Organization That Networks with Its Surroundings

Researchers agree that companies need to have contacts and exchange of experiences with external actors as a condition for continuous innovation. “Firms that fail to exploit ... external R&D may be at a severe competitive disadvantage.”⁴²

A company can be open to a greater or lesser extent to exchanging information and products and to engaging in cooperation with those in its surroundings. Systems that are closed have definite borders and easily become victims of entropy. Closed systems are worn down and finally disappear. When a company launches a series of programs to cut costs, it may be a sign that the company is no longer able to supply sufficient new value to earn the income it needs. This means that the business is being worn down through entropy. A company’s profit is the company’s income minus its expenses. When profit declines, action must be taken. Focusing on expenses and thereby cutting costs (primarily personnel) is often viewed as the quickest means and is therefore commonly chosen. However, many companies have quickly regained their profit level by mobilizing their personnel instead.⁴³

⁴¹ Interview July 2013, Geoff Hollingworth, AT&T Foundry.

⁴² Rosenburg and Steinmueller (1988), pp. 229–234.

⁴³ One such example is the Sears department store company, with 300,000 employees. In the course of 1 year, Sears succeeded in turning around the worst loss in the company’s 111-year history to achieve the most profitable result in the company’s 112-year history without laying off any employees. Another example is Avis, where Robert Townsend in the 1960s turned a series of 13 years of losses into acceptable profitability within 6 months with the help of a “strategic intention”: *Let’s get back in the black*. No one was allowed to write this intention down. Instead, it was communicated by each supervisor to the employees, along with a question: How can you contribute in your job? In the 1970s, SAAB’s aircraft division lowered its administrative costs in the course of a few months using a similar working model. The group management demanded a cost reduction through layoffs in a Swedish manufacturing company. The head of a unit asked to be allowed to implement an improvement in profitability without any layoffs. He was given the green light by management, and had 20 % more success than his colleagues who had laid off

A closed company most often focuses on cutting costs, and some companies have managed to survive on the market for many years using various types of austerity measures. Gradually, however, all of this cost cutting will impair the quality of the company's products and services and eventually lead to the company's demise.

Open systems have more permeable boundaries and move through a process known as *emergence*.⁴⁴ A company must be an open system if it is to survive over the long term. An open system searches beyond itself for innovations that can increase revenues.

In open systems, managers and employees connect with the company's surroundings. When technological development speeds up and competition becomes intense, the company needs to use these links even more to supplement its own expertise. Under these conditions, it can be difficult for a company to keep up with developments in all relevant areas. Networks and alliances with customers, suppliers, start-ups, universities, and government agencies, and sometimes even with competitors, can serve as crucial resources for a company's innovations.

Jack Welch observed, "If the rate of change on the outside exceeds the rate of change on the inside, the end is near." Management and the board should decide whether the company's Innovation Capabilities is sufficient and whether increased openness to the outside world would increase that ability. How can the company benefit from new external technology and networks in an effort to further develop its ability to change, to be proactive, and to innovate?

Openness and networking with regard to the External Surroundings was placed on management agendas in 2003 with the introduction of the *open innovation* concept presented by Henry Chesbrough.⁴⁵ According to Chesbrough, there are several reasons why companies need to become more open. First, there are now powerful ways to bypass conventional limitations and benefit from ideas originating outside the organization. Second, not all the smart people are in one company; they are found spread out in many different companies and institutions. Third, innovations that arise as a result of collaboration between various fields of endeavor, disciplines, and organizations are becoming more common. Fourth, time to market is becoming progressively shorter, as are product life cycles. As a result, companies must shorten the time required for product development. Becoming better and discovering and adopting ideas from outside sources and integrating them into our company's own development process helps us keep pace. Succeeding at increasing openness requires that we question some conventional nostrums such as: in order to benefit from R&D we have to discover, develop, and deliver everything ourselves. Instead we should think: external R&D can create a great

personnel. Many examples show that it is possible to significantly improve profitability within a short time by mobilizing all employees.

⁴⁴ In a complex system, the whole's characteristics are greater than the sum of the parts' characteristics. This is known as *emergence*. Complex systems are emergent. In other words, they have the ability to develop new characteristics to adapt to changes in their surroundings.

⁴⁵ Chesbrough (2003).

deal of value but we need our own R&D in order to claim some portion of that value.

Summary In order to maintain relative Innovation Capabilities, companies and their organizations must become more open to the flow of ideas and innovations from the outside world. One relevant question is whether a company is sufficiently open to outside ideas and innovations, and another is which channels can be used in order to benefit more quickly and effectively from innovations originating elsewhere. By managing and balancing the need for openness, a company can likely not only improve its potential to shorten the time to market but can also gain access to talented people and learn about interesting technological development taking place at the interface between different fields. This will give the company a better chance of maintaining its relative Innovation Capabilities. A company maintains its relative Innovation Capabilities when it keeps pace with changes in its surroundings.

2.5.6 A Systems Approach

Certain researchers⁴⁶ assert that companies must move from a process perspective to a systems perspective in order to understand how companies' Innovation Capabilities functions, and using that understanding as a basis, they must implement initiatives to further enhance it. A systems approach is thus one way to achieve a greater understanding of what must be done in order to enhance Innovation Capabilities. A system is a collection of components with certain characteristics with connections among the components and among the characteristics of those components.⁴⁷

A company and its management model can be viewed as a system with various organizational components (see Fig. 2.1). Examples of components in a company system are its vision and mission, the board of directors and management team, local managers, company culture, employees, organizational structure and processes, systems for performance evaluation, promotion and recognition and rewards, systems for learning, and openness and networking with the outside world, as well as brand and corporate communication.

In order to describe and understand the differences between the system of a company with a productivity orientation and that of one with an innovation orientation, consider the following fictional examples designed specifically to clearly illustrate the difference between two systems with different overarching orientations.

⁴⁶ O'Connor (2008), pp. 313–330.

⁴⁷ Professor Eric Rhenman, a pioneer in the systems approach, introduced the following definition: A system is a collection of components with certain properties and with certain connections among the components, as well as among the characteristics of those components.

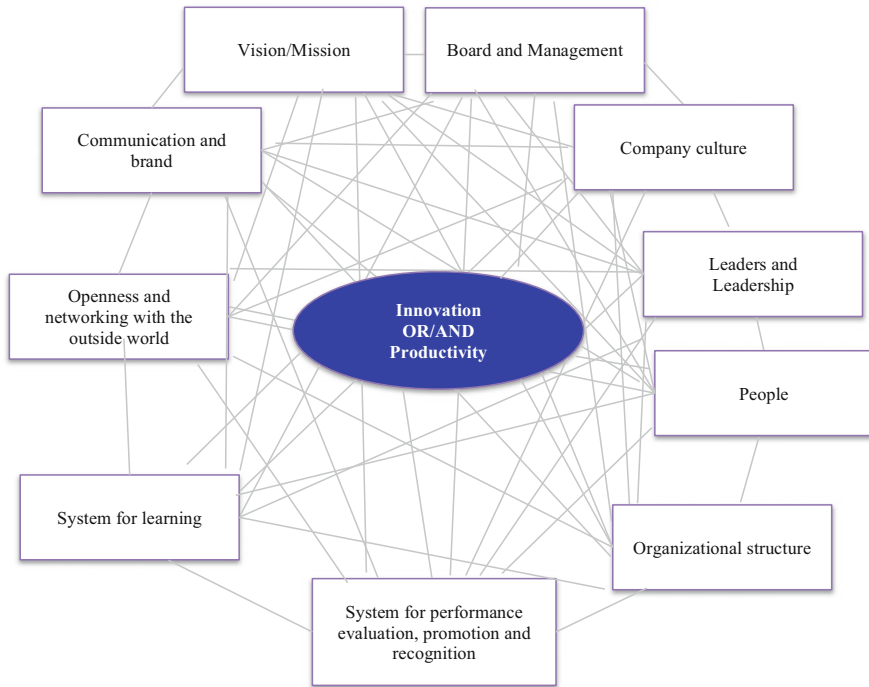


Fig. 2.1 An organization visualized as a company system

Both alternative systems include two features in the main orientation of the operation: productivity and innovation. The productivity company must naturally not neglect its improvement and innovation-related work, just as the innovation company must continuously mind its profitability, which, after all, finances its innovations. The difference between the two types of companies is mainly where the focus lies and what the necessary defining conditions are.⁴⁸ I would not maintain that all productivity companies are one way and all innovation companies are another. This description is exaggerated in order to communicate an idea about how the overarching orientation and the system surrounding it affect both the behavior of the employees and the focus and profit or loss of the company. The two types of companies are described below as they relate to the organizational components of the company system (Fig. 2.1).

⁴⁸ Gestalt psychology works with the concepts *gestalt* and *background*. One classic example is a white goblet against a black background. The goblet is the *gestalt*, or focus, of the picture. The black area is the background. If one gazes at the picture, another image begins to present itself. The viewer sees two faces in profile against a white background. Now the profiles are the *gestalt* and the white area is the background. One can see *production* and *innovation* in a similar manner. In many companies, the production is the *gestalt* and the innovations are the background. Some organizations need to change this and to see the innovations as the *gestalt* and the production as the background that makes the innovations possible.

- The guiding star of the company system is the main orientation. For many years, the productivity company's orientation has been toward productivity. This has often been formulated as a vision or mission that expresses itself as cutting costs and ensuring quality. The productivity company's orientation is replaced by continuous innovation in the case of the innovation company.
- The board and management of the innovation company have a clear, long-term vision for the company and consider different time horizons simultaneously: history, the present, and the future. The board and management of the productivity company are primarily occupied with current business and meeting financial metrics.
- The company culture has features that are common to the entire company, as well as features that differ among various units, because of the nature of the work performed. The understanding of how to create and build a strong organizational culture is low in the productivity company. In the innovation company, members of the management team and each local manager must be continuously aware of how he or she affects the culture, as that culture is now embedded in everything the company does and has become an important instrument of control.
- Local managers. The managers who are responsible for the everyday work in the productivity company focus on controlling and monitoring. In the innovation company, they mostly coach the employees and support their independence, their willingness and ability to cooperate, and their initiative and creativity for improvement and continuous change.
- People. The productivity company views people as a resource but emphasizes a kind of docility. Employees should do as they are told, comply with processes, and minimize variation by following instructions. In the innovation company, employees are the company's most important resource. Management stimulates individuals' independence and their mutual collaboration in order to contribute to the fulfillment of the company's mission through their own initiatives.
- Organizational structure, allocation of responsibilities and authority, and the way various units relate to each other. The productivity company looks to find a logically coherent model that can serve as a basis for orderly functioning. The innovation company has a different emphasis and seeks to achieve a dynamic balance that will provide support and a somewhat clear overview of how different parts relate to each other and that will allow a great deal of freedom for employees to make their own decisions and take initiative through flexibility and self-organizing.
- System for performance evaluation, promotion and recognition, and rewards. In the productivity company, Human Resources is a maintenance function for human capital, which is viewed as a resource. In the innovation company, managers bear the responsibility of supporting and developing employees. HR is a strategic and proactive function with responsibility for workforce planning, leadership development, personal development of employees, and overall organizational development. The emphasis on key performance indicators differs between the productivity company, where the emphasis is on delivery times and

costs, and the innovation company, which emphasizes speed and innovative ability.

- A system for learning. The war cry “It has to be right the first time” belongs in the productivity company but not in the innovation company. In the first case, mistakes must be avoided, and when they do occur, it’s tempting to try to hide them. The productivity company strives to avoid risks. The innovation company, like Inspector Clouseau of Pink Panther fame, never repeats a mistake but is always making new ones. Innovation companies willingly take calculated risks, and if no success results, the company must be able to absorb the cost.⁴⁹ Experience recycling is important, and this is done systematically in innovation companies. The productivity company highlights positive experiences and attempts to hide negative ones. And as it is said, *Experience is not what happens to you but what you do with what happens to you*. The innovation company uses what happens to build up an active account of experience.
- Openness and networking with the outside world. A productivity company has traditionally tried to achieve vertical integration in order to lower its costs. It has also used outsourcing to achieve a more favorable cost structure. This is an expression of what we can call *cost management*. The innovation company has an ambition to at least keep pace with external changes. It is more focused on revenue management through seeking out new ways to benefit customers in a qualified manner through new products and business models.
- Communication and brand. The brand is a symbol of the company, an archetype that wakens expectations about not only a company’s products but also how the company’s management and employee should act. A brand is a concept that is much broader than a logotype. The communication system of the innovation company is open to obtaining information and knowledge from outside the company, but this company is also open and aware of what it communicates about its own activities. These focus on innovations and surprises. The productivity company’s brand is meant to be the bearer of quality and dependability.

Summary In order to maintain and improve Innovation Capabilities, a CEO should understand that continuous Innovation Capabilities is created from a complex system of components that mutually affect one another. This system, in turn, is affected by the overarching orientation the company chooses.

⁴⁹ At Gore-Tex, work is done according to four guiding principles: freedom, fairness, commitment, and the waterline, which acts as a restriction of the other three. Risk taking must not be allowed to sink the ship. Gore-Tex does not believe in burning all the bridges. Instead, it carefully considers whether the calculated risks it takes will result in success or will at least teach the company something (Carney and Getz 2009).

2.6 Introduction to Part II: The Case of Google

Many companies, especially large ones, lose the ability to retain and enhance their Innovation Capabilities. They have not yet understood that continuous innovations result from a complex, adaptive, open, ambidextrous system in which the inherent innovative energy among the employees must be released.

In the first part of this book, I have presented six fundamental management principles that I identified while studying the results of other research about successful companies in rapidly changing industries. These fundamental management principles are dynamic capability, a continuously changing organization, a people-centric approach, an ambidextrous organization, an open organization that networks with its surroundings, and a systems approach. In addition, I have presented a company and its management model visualized as a company system consisting of ten interdependent organizational components. The system, and its components, is in turn affected by the overarching orientation the company chooses.

During its first 15 years, Google succeeded in creating and maintaining a very successful management model for continuous innovation. Innovations such as a new search engine (Google Search), AdWords, Gmail, YouTube, Android, Google +, and Google Glass all come from Google Inc. Some of these have radically changed the logic of entire industries and, in the true spirit of Schumpeter, have led to creative destruction.⁵⁰ In Part II, I describe Google on the basis of a nearly 1-year-long study in which I interviewed and observed roughly 30 Google employees about what drives Google's Innovation Capabilities today and into the future.

References

- Antonovsky, A. (2005). *Hälsans mysterium (Unraveling the mystery of health)*. Förlag: Natur & Kultur.
- Argyris, C. (1976). *Increasing leadership effectiveness*. New York: Wiley-Interscience.
- Bel, R. (2010). Leadership and innovation: Learning from the best. *Global Business and Organizational Excellence*, 29(2), 47–60.
- Benner, M. J., & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of Management Review*, 28(2), 238–256.
- Birkinshaw, J. (2010). Reinventing management. *Oxford Leadership Journal*, 1(3), 1–10.
- Brown, S. L., & Eisenhardt, K. M. (1997). The art of continuous change: Linking complexity theory & time-paced evolution in relentlessly shifting organizations. *Administrative Science Quarterly*, 42(1), 1–34.
- Carney, B., & Getz, I. (2009). *Freedom, Inc. - Free your employees and let them lead your business to higher productivity, profits, and growth*. Crown Publishing Group OR in Swedish published by Bokhus.com.
- Chesbrough, H. (2003). *Open innovation: The new imperative for creating and profiting from technology*. Boston: Harvard Business School Press.

⁵⁰ Schumpeter (1942).

- Dallenbach, U. S., McCarthy, A. M., & Schoenecker, T. S. (2002). Commitment to innovation: The impact of top management team characteristics. *R&D Management*.
- Damanpour, F. (1987). The adoption of technological, administrative and ancillary innovations: Impact of organizational factors. *Journal of Management*, 13, 675–688.
- Hamel, G. (2009). Moon shots for management. *Harvard Business Review*, 87(2), 91–98.
- Hamel, G., & Prahalad, C. K. (1994). *Competing for the future—Seizing control of your industry and creating the markets of tomorrow*. Boston: Harvard Business School Press.
- Høyrup, S. (2008). *Employee-driven innovation and workplace learning in small and medium-sized enterprises in Europe: EDI-network-seminar*, Copenhagen, 22–24 September 2008.
- Isaksen, S., & Tidd, J. (2006). *Meeting the innovation challenge—Leadership for transformation and growth*. Chichester: Wiley.
- Kimberley, J. R., & Evanisko, M. J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. *Academy of Management Journal*, 24, 689–713.
- Leifer, R., McDermott, C. M., O'Connor, G. C., Peters, L. S., Rice, M., & Veryzer, R. W. (2000). *Radical innovation: How mature companies can outsmart upstarts*. Boston: Harvard Business School Press.
- Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13, 111–125 [Special Issue: Strategy Process: Managing Corporate. Self-Renewal. (Summer 1992)].
- Nanus, B. (1992). *Visionary leadership—Creating a compelling sense of direction for your organization*. San Francisco: Jossey Bass.
- O'Connor, G. C. (2008). Major innovation as a dynamic capability: A systems approach. *Journal of Product Innovation Management*, 25, 313–330.
- Penrose, E. T. (1959). *The theory of the growth of the firm*. New York: Wiley.
- Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, 68(3), 79–91.
- Rogers, E. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.
- Rosenburg, N., & Steinmueller, W. E. (1988). Why are Americans such poor imitators? *The American Economic Review*, 78(2), 229–234.
- Schumpeter, J. A. (1942). *Capitalism, socialism and democracy* (5th ed.). London: George Allen & Unwin Limited (1976).
- Teece, D., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533.
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350 [Retrieved 23-05-2012].
- Tidd, J., & Bessant, J. (2009). *Managing innovation: Integrating technological, market and organizational change* (4th ed., p. 135). UK: Wiley.
- Tushman, M. L., & O'Reilly, C., III. (1997). *Winning through innovation: A practical guide to leading organizational change and renewal*. Boston: Harvard Business School Press.
- Tushman, M. L., & O'Reilly, C. A., III. (2007). *Winning through innovation: A practical guide to leading organizational change and renewal*. Boston: Harvard Business School Press.
- Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), 339–351.

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