

RESEARCH

Horst Albach  
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Ralf Reichwald *Editors*

# Management of Permanent Change

 Springer Gabler



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Horst Albach · Heribert Meffert  
Andreas Pinkwart · Ralf Reichwald  
Editors

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*Editors*

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## Foreword from the Editors

In recent decades, the exponential growth of world knowledge has rapidly accelerated technological and social progress. As a result, innovation and flexibility in management as well as the best possible design of change management within companies have become a dynamic field of research with high relevance for management practice. In addition to earlier concepts of change management in organizations, numerous other concepts and paradigms from the fields of consultancy and management practice as well as from scientific research have found their way into change management literature.

All approaches differ but are highly similar in relation to one of the pivotal challenges of change management. That is, the elevated pace with which companies, their employees and executives must be able to meet changing requirements resulting from change processes on various levels. This creates both the need and the opportunity for establishing and embedding professional change management on the management and executive level with a corporate culture aligned towards innovation and change.

The more frequently companies actively shape the change process, the more successful will individual and organizational learning be for a well-aimed selection and an effective application of appropriate concepts and methods of change management. For this, of major importance are the chronological order, the extent of the respective changes and, most of all, communication. It is the role of corporate management to take into consideration the manifold consequences of change processes on stakeholders as well as the competitive strengths of the company. Against this backdrop, the questions range from the broadest possible inclusion of employees on specific questions, to the inclusion of regulatory strategies and the influence of change processes on the company brands and their core.

Therefore, the articles compiled in this volume cover a broad variety of topics. Based on a new approach of permanent change and the high relevance of the subject in light of the fourth industrial and the second informational revolution, we will offer a profound analysis of the role of cooperation, worker participation and networks within the process of the best possible design of change management. Unlike some that include the relatively young area of open innovation on the same level with change management, we will analyze the influence of the open innovation approach on change management and the new possibilities and the limits resulting from this development. Another focus of the present

volume will be the impact of regulations on change processes in companies and markets, and we will provide suggestions on how to effectively deal with them.

We would like to extend our gratitude to all authors and reviewers, who have implemented the double review applied here, for their collaboration in the first scientific collective volume about fundamental questions of business administration of the twenty-first century published by the Center for Advanced Studies in Management (CASiM) at the HHL Leipzig Graduate School of Management. CASiM is an interdisciplinary research center with a focus on fundamental research in business economics. Not attached to an individual chair or an individual unit of the university, CASiM connects the various chairs and research areas at HHL and integrates the different economic disciplines, represented at HHL and elsewhere, in its research. It is a major aim of CASiM to actively cooperate with other research institutions in the science region of Leipzig as well as nationally and internationally. This collaboration is supported by scientific conferences and through the scientific advisory board of CASiM, which has greatly supported this book project not only with consultations but also with contributions from individual board members.

Special thanks go to the executive director of CASiM, Dr. Lukasz Swiatczak, who has greatly contributed to the completion of this book project in close collaboration with authors, reviewers, the publishing house and the editors. We also would like to thank the publisher Springer Gabler and Juliane Wagner, in particular, for the very professional and enjoyable cooperation. Finally, we would like to give thanks to the Deutsche Bundesbank and KPMG for their financial support of this publication.

We hope that all audiences from science, management studies and executive practice will find this an insightful contribution and may provide the authors and us with constructive feedback for future projects.

Horst Albach  
Heribert Meffert  
Andreas Pinkwart  
Ralf Reichwald

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**Part I**

**New Challenges for Change Management**

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# Management of Permanent Change—New Challenges and Opportunities for Change Management

# 1

Horst Albach, Heribert Meffert, Andreas Pinkwart  
and Ralf Reichwald

There is nothing permanent except change.  
Heraclitus of Ephesus (around 540–480 BC)

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## 1.1 The Business Theory of Change

Organizational management theory chases after practice. The theory remains rather static, and in practice managers constantly have to adapt their companies under permanent change. Joseph Schumpeter considered the “pioneers” as those companies that accelerate

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change and the “latecomers” as those that fight to keep pace. Schumpeter [63] answered the question of who the pioneers are and what latecomers do for survival in permanent situations of change, calling it a process of “creative destruction”: companies develop new products in their research departments displacing old products from the market.

Joseph Schumpeter lived during the Second Industrial Revolution and he attempted (successfully, as we acknowledge today) to combine the dynamics of developments in the economy along with companies in a so-called “Theory of Change”. Not least of all, the two World Wars (1914–1918 and 1939–1945) also accelerated the pace of change throughout the world. Today, we live in the beginning of the Fourth Industrial Revolution that is generally associated with the digitalization of our lives. We are, therefore, in need of further advancing the Theory of Change. Two clear dimensions of this development are already visible:

- the further development of the “Theory of the Firm”, and
- a new definition of interdisciplinary activities of the change process.

The dynamic theory of companies takes dynamic production processes as its starting point. Up to now, it was mainly applied to the theoretical explanation of change in former East German companies and in companies of the former COMECON countries. The focus of this theory of change management [5] are changes in the dynamic use of human capital, of learning processes and of structural processes in enterprises (corporate governance). This led to the first insights into the dynamics of change: the change process in companies takes place with varying adjustment speeds in the production factors. The adjustment period is longer for employees than the adjustment of capital in companies. The further development of this theory of change has become a great challenge for science, as it has for research at the Center for Advanced Studies in Management (CASiM).

The empirical foundation of this branch of theory is based on the past experience of companies. One of the challenges of this theory of change is the prognosis about future changes in the management sector. The drivers and accelerators of internal and external change processes are of particular interest for analysis. First and foremost, the drivers are the exponential growth of knowledge, an ever increasing world population and the now ubiquitous information technologies that in turn contribute to the further increase in knowledge. Nowadays, the growing number of people that are connected by means of new media not only accelerates knowledge creation but it also reduces the half-life of knowledge as well as the strategy and innovation cycles.

Within this context, the exponential increase of computer server capacities and self-learning software as well as the rapidly advancing digitalization of research are important factors. With the heightened significance of information in our knowledge-based society, the influence of employees, clients and vendors on the innovation and change process is increasing and, therefore, requires new ways of integration. New information and communication technologies open up improved opportunities to effectively prepare, realize and implement industrial change. At the same time, the rate of change is constantly increasing due to the rapid spread of new knowledge [54].

In the theory of dynamic production functions, the output reflects the demand for goods and services driven by consumers. The composition of this output is subject to permanent change. This is referred to as “Dynamic Competition” within the theory of competition. Market studies have found an accelerated change process in the relationship between companies and consumers: ranging from sales in an anonymous mass market, the identification of consumer groups with similar interests, to the advantage certain goods and services have, and the individualization of single customers—the highest possible degree of customer intimacy [47]. These market developments indicate companies need to further promote customer inclusion in their innovation processes. This includes closer cooperation with research and the economy.

Furthermore, the informational revolution creates new opportunities for businesses to adjust to changes with greater flexibility. With decreasing transaction costs (e.g. telecommunication and transportation costs), growing integration within the supply chain and with the advent of social networks, an expanded group of users including suppliers and market observers (there are already over one billion Facebook users), businesses are seeing a continuum of new designs and boundaries between business and market coordination [54] as well as a higher willingness of the company to include clients, cooperating partners from research, industry and also employees in the operational innovation and change process [20, 72]. The analysis of innovation processes identified new ways of informal cooperation with competitors. Those new ways are referred to as “Informal Know-How Trading”. The strategic use of Big Data opens up new opportunities to gain competitive advantage and to increase the innovation potential. This applies both to business and research.

Over the past decades, businesses have achieved manifold progress in increasing flexibility. In the interest of an ideal proactive change management and in response to growing change dynamics, businesses employ a broad set of strategic tools to increase their flexibility [13, 34, 45, 46, 56, 61]. Jacob [34] analyzed optimal action programs for one-period in addition to multi-period planning under uncertainty. The influence of strategic flexibility and strategic change on business value was tested empirically by Burmann [13]. Organizational flexibility can assist companies to achieve “renewals” or adapt and to keep their businesses on track through continuous change. Yet, this leads to higher requirements for corporate governance and the management of employees.

In addition to continuous “incremental” changes, the so-called “radical” changes have also become more important, more so than in the past. Nevertheless, within innovation competition, executive leaders are often confronted with the need to review and, if necessary, cannibalize their business model in order to secure sustainable and continued success of their enterprise. We can find numerous examples for this phenomenon in management literature. As the S&P 500 Index impressively demonstrates, a growing paucity of businesses are unable to withstand the increased pace of change. The average survival rate of the 500 biggest US-companies, as measured by their market value, was 61 years in 1958. By 1980 this had halved to 35 years. Nowadays, it is at only 18 years.

Change management is an active approach within market-oriented corporate governance. The change in companies and operational processes does not only result from an adaptation to changing socio-economic conditions but also follows the objective of broa-

**Table 1.1** Dimensions of change

Frequency	Continuous—Discontinuous
Extent	Incremental—Radical
Intensity	Tuning—Recreation
Levels	Individual—Group—Society
Process	Emergent—Planned
Direction	Bottom-up—Top-down
Motivation	Internal—External
Complexity	Linear—Non-linear
Outcome	Effectiveness—Efficiency—Legitimacy

dening inherent innovation and marketing efforts, through which the company is able to influence its own environment [3]. Therefore, change management supports those in a company that are responsible to overcome rigid behavior patterns to effectively change internal structures and to develop an environment which serve as a flexible guide for businesses together with political and social groups.

## 1.2 Interdisciplinary Theory of Change in Organizations

Business administration does not equal management [2]. An interdisciplinary approach is particularly important for the management of change. Therefore, on the one hand, we will cursorily analyze specific models of change management. On the other hand, we will extensively elaborate those articles in this collective volume whose fundamental statements were discussed during the CASiM conference about “Management of Change” at the HHL Leipzig Graduate School of Management in the summer of 2013 in Leipzig, Germany.

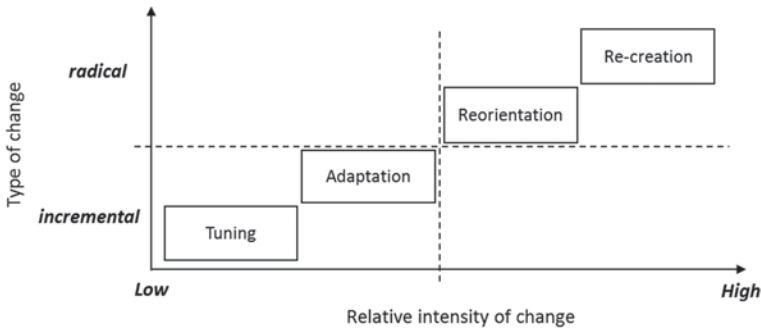
### 1.2.1 Interdisciplinary Models of Change Management

Unlike other business models of change management that are based on “if-then-statements” the interdisciplinary models focus mainly on the categorization and the structuring of the complexity of change. In this context, “complexity” is defined in a more general sense than in Operations Research [6].

#### 1.The Model by Senior

The model by Senior categorizes “permanent change”. We will identify and use essential categories of change management in order to conduct a comparative analysis of different change management approaches and to develop future theories. As a result, we will be able to characterize the main features of change, the frequency of changes, their impacts and their underlying factors. Senior’s categorization is shown in Table 1.1.

Senior’s categories are slightly complemented by several fragmented dimensions from relevant literature in Table 1.1.



**Fig. 1.1** Various intensities of change according to Hayes (2010) and Nadler and Tushman [51]

## 2.The Model by Reiss et al.

According to Reiss [57] we can distinguish between different change processes in relation to the sector level of business activity that either aim at personal, financial or the material resources of the company (change in resources), at the organizational structure (change in structures) or at the far-reaching reorientation of a company (change in strategy).

## 3.The Model by Levy and Merry

The model by Levy and Merry [42] differentiates between “Incremental Change” and “Radical Change”. The distinction between “Basic Innovation” and “Improvement Innovation” was first introduced in 1971 by Gerhard Mensch. While at the time this sparked a lively debate the distinction was eventually accepted [48–50]. Depending on the extent of the fundamental change, it may also be referred to as “Revolutionary Change” or as “Transformational Change” [12, 41, 73]. This indicates a break with the existing development in order to adhere to new competitive conditions and a new environment. This could result from disruptive innovations or from a new fundamental legal framework such as the ‘energy turnaround’ in Germany.

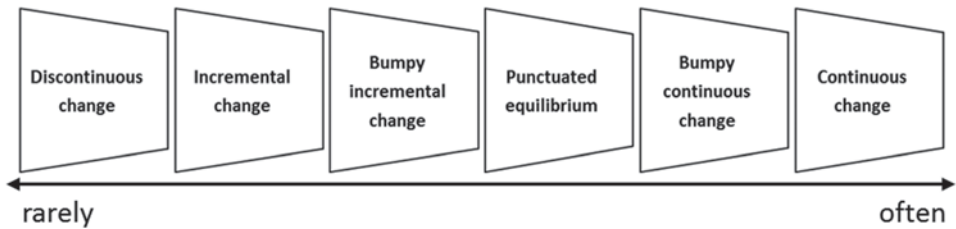
## 4.The Model by Nadler and Tushman

This model discusses the different ways a business can react to change requirements. The authors distinguish between “proactive” and “reactive”. In the reactive case, efforts by all affected parties to successfully manage change are bigger than in the proactive scenario.

This model offers four types of change depending on the intensity of change. Those four types are represented in Fig. 1.1.

A situation in which changes develop incrementally from within the company and move within existing business performance standards of the company is referred to as “Tuning”. The company acts proactively in this respective situation. If it acts reactively, it is referred to as “Adaptation”. Should the changes lead to a fundamental transition of company activities and performance they are called “Reorientation” (proactive behavior) or “Recreation” (reactive behavior) respectively.





**Fig. 1.2** Frequency of change according to By [19]

### 5. The Models by Burnes and By

Those models deal with the frequency of change. Changes can be implemented by management in several planned stages or in a continuous way. A combination of both approaches is also possible. Furthermore, the authors consider the way in which employees and stakeholders meet the continuously changing requirements. According to them, radical changes promote self-satisfaction and inward orientation. They lead to routines that make further radical moves necessary in shorter periods of time.

By's model demonstrates a continuum of various frequency levels between discontinuous and continuous change (Fig. 1.2).

### 6. Models of fundamental change

To Weick and Quinn [73] improvisation, translation and learning are drivers for continuous change. According to this concept, fundamental change can be achieved, if certain requirements are fulfilled. Those requirements are the maximum possible reduction of the time frame between development and implementation of new labor practices, the circulation, continuous acceptance and further processing of new ideas within the organization and the further development of existing thought and reaction patterns by means of learning.

Despite the undisputed important role of continuous change, many studies [7, 15, 55] assume that continuous improvement on an operational level is not enough to reach a fundamental change on the overall company level. Neither are incremental structural changes. As was shown by recent empirical studies about path dependency in networks (see Chap. 5) these types of weaknesses within continuous change occur primarily in businesses with a high degree of interdependencies between the subdivisions as well as a close network with external stakeholders, who limit the development of the company through established and stipulated activities and partnerships [29, 58].

However, the "Gradualist Paradigm" assumes a loose relation between the individual areas so that fundamental change might still be achieved continuously. Nevertheless, it runs the risk that change forces are limited to individual subdivisions [29, 73]. As a result, continuous change in single departments might not be able to change deeper structures of a business such as the corporate culture, the business strategy, the organizational structure or corporate governance.

A combination of discontinuous radical and continuous incremental change is supported by various empirical studies. Referring to the research by Tushman and Romanelli

[68], the so-called “Punctuated Equilibrium Paradigm” approach [15, 29] assumes that continuous incremental changes on the different company levels are substituted by more or less discontinuous fundamental changes in the corporate organization. Grundy [27] and Senior [64] refer to the cyclic alternation between relatively peaceful periods and stronger incrementally generated change periods as “Bumpy Incremental Change”.

In their empirical study on changes in the field of microcomputers, Romanelli and Tushman [58] found out that due to its organizational inertia, a fundamental change on the overall company level can only take place with short phases of radical change that include all essential departments. This indicates that continuous change within single departments is not sufficient to achieve fundamental transformation. Overcoming corporate inertia is most successful during periods of major performance crisis, disruptive changes within the corporate environment or when replacing the CEO.

## 7. Models of a Planned Change Process

A planned change process that was induced from the top has determined change management in research and in practice over many decades. With his research and studies in the 1940s about the significance of different leadership styles and the influence of group behavior on change processes in organizations (see the overview by Burnes [16]) and with his [43] three-step-concept of a planned change process, Kurt Lewin is considered one of the founders of change management as a scientific discipline [27]. His three steps of ‘Unfreezing, Moving and Refreezing’ aim at liberating employees from their old habitual ways and motivating them on a group level to take on new practices and to continue using those within the group after the successful completion of the change process.

Other fundamental contributions about the planned change process are the works by Burns and Stalker [17, 18] as well as by Kirsch et al. [39]. They are essential for the differentiation of adaptation systems according to the roles of the “Change Agent”, the “Client System” and the “Change Catalyst”. In this volume, they are mainly discussed in relation to the role of consultancy and in the context of current challenges for change management. Following Etzioni [25], Kirsch et al. deal with the question of a “Sustainable Organization”. They discuss the planned change process in light of the interest fields and the system of statements of an applied business administration.

Despite the developments of the past decades such as the four-phase-model by Bullock and Batten [11] increasing complexity, insecurity and pace of change in businesses raised critical voices for the concept of planned change processes [14, 19, 35]. Particularly problematic are the insufficient considerations of internal and external insecurities and the poor applicability to situations of fast and radical change. The assumption of quasi-stationary equality before and after the change process within the organization is being criticized. Eventually, the assumed willingness that the main stakeholders will be able to agree on a joint action is rejected [8, 14, 19].

While criticizing the concept of a planned change process, the so-called emergent approach gained more and more attention in the decades before and after the millennium. In addition to some rather theoretical-abstract models, the emergent approach also includes

concepts from consultancy practice such as Kanter's concept of the "Ten Commandments for Executing Change" [35], Kotter's "Eight-Stage Process for Successful organizational Transformation" [40] and the "Seven Steps" proposed by Luecke [44]. Despite the variety of approaches we can define the following similarities. The approaches are based on the assumption that change processes are not linear or nonrecurring, isolated processes, but rather continuous, open-ended, cumulative and unpredictable transitions. They aim at adapting the capabilities and resources of the company to the possibilities and requirements of an insecure and dynamic environment.

### **8. The Manager as the Moderator of Change**

In order to achieve an ideal change process, smaller and medium-sized changes that take place continuously and that are closely intertwined on various levels over a longer period of time across organizations are considered useful, possibly ending in a greater, unplanned transition. According to this approach, change is not an analytic-rational process but develops as the result of political and cultural processes within an organization. The role of managers shifts from that of the decision-maker to the moderator of the change process who structurally and culturally shapes the organization in a way that employees are able to independently make out the necessary incremental changes from the bottom-up, on the various decision-making levels. This happens with the help of appropriate information distribution and communication. They should also be willing and be able to implement the respective changes with an eagerness to experiment, with individual and organizational training as well as with the necessary readiness to take risks [16, 30, 53].

In this relatively young approach, the lack in coherence and the diversity of different models and methods are being criticized. Those models and methods have a similar critical view on concepts of planned change processes [8, 19, 21]. At the same time, the central assumptions of this approach limit the general application. It is, therefore, suggested that turbulences take place in the form of an unstable environment with an unpredictability of internal and external changes. Furthermore, presumably the best way to deal with the before mentioned issues would be a continuous sequence of small and medium-sized changes that are generated from the bottom-up and not from the top-down [16].

### **1.2.2 Multi-disciplinary Contributions to Change Management**

The following paragraph will offer a short overview of the contributions to this theme within this collective volume. They are based on the presentations given during the CASiM conference about "Change Management". The diversity of the aspects on change made this conference a particularly interesting one.

In view of the strategic significance of change towards the so called Industry 4.0, **Ka-germann and Braun** address the following two questions in particular (see Chaps. 2, 4). Firstly, how can cooperation between different partners be designed in the best possible way in the future? And secondly, how can we achieve a new era of Industry 4.0 in view

of the fact that new infrastructure will have to be constructed on already existing, highly developed but potentially obsolete infrastructure. As a response to the growing need of interdisciplinary interconnection and collaboration, the authors suggest a platform of dialogue across sectors promoting a joint understanding of the technical challenges and a systematic development of technical solutions. The authors expect this mechanism to create a higher degree of agreement on objectives and less resistance in general.

Since those immense changes have to be carried out within a highly-developed economy and not on a green field, the authors favor a dual strategy of change. That is, a strategy for realizable and radical innovations that should be developed and implemented systematically on the basis of an equally sustainable and flexible architecture. An architecture that is open to future changes and enhancements that should provide a combination of changes that adapt perfectly to the existing infrastructure. It would also be plausible to implement this entire structure in a new location and in new markets. Furthermore, the contribution clearly shows that the existing change management approaches are not sufficient to successfully meet the challenges of the next industrial revolution.

The studies by Tushman et al. [51] already show that the frequency of change increases across nearly all industries and that the intervals between discontinuous, transformational change periods are becoming shorter and shorter. Hayes, therefore, comes to the conclusion “that all managers will be confronted with an ever greater need to manage both incremental and transformational change” [29]. In light of the new challenges and the possibilities of change management through open innovation that are being examined here more thoroughly, we can assume that continuous, incremental change could lead to more fundamental changes within businesses in the future.

Kagermann and Braun consider the fourth Industrial Revolution to cause profound changes to the world of employment and the human coexistence. In addition to the associated challenges for transformation within businesses and economies, it will result in a new boost for operational flexibilities. Given the economical and socio-political dimensions of change processes, the authors perceive the necessity for additional cooperation in two respects. According to Chesbrough [20], on the one hand the global interconnectedness demands a clear shift from closed to open innovation. This is the only way to ensure customers are included in the innovation process and to promote interdisciplinary exchange between different institutions. On the other hand, an industry that is advancing the new process needs to intensively cooperate with all the various social groups.

In Chap. 6, **Abu El-Ella, Bessant and Pinkwart** mainly analyze new possibilities for the inclusion of employees, customers and suppliers in the innovation and change process (Open Innovation). They consider the openness of businesses towards change and the willingness and capabilities of their employees to successfully shape the change process as pivotal core competencies. Prudent management and continuous learning is necessary to raise this potential even more. Change management with its well-established approaches and methods contributed greatly to this development.

According to the authors, however, change management is increasingly faced with the challenge to critically revise and, if necessary, adjust its own approaches and methods due

**Table 1.2** Increased flexibility of employment circumstances according to Gerlmaier and Kastner [26]

Old labor conditions	New labor conditions
Heteronomy	Self-organization
Standardized occupational history	Flexible, inconsistent occupational history
Regulated employment contract	Dissolution of boundaries—Decentralization to company level
Predictability through high levels of stability	Insecurity, potential for options
Compartmentalized, externally-directed actions	Holistic, responsible activities
Small scope of action, but security	Missing monitoring tools at the workplace, existential fear
Lifelong learning as development potential	Mandatory learning
Monotony	Excessive demand, burn-out

to the profound technical and societal changes that are occurring. The authors thus far see the potential of new social media as being widely underutilized within change management. It opens up new possibilities to include customers, employees and suppliers into the innovation and change process more systematically. For this, we need to substitute the existing, mainly linear and internally concentrated concepts, with more open and dynamic approaches.

**Thallmaier and Habicht** have contributed interesting insights into the possibilities and the limits of social media with the so-called co-evolution using the example of the ‘customer co-design in the mass customization industry’ (see Chap. 7). They trace the relationships that define the perceived benefits of co-design for customers. They also analyze the impact of social media on the perceived benefit of co-design considering the concepts of “Encouraging Discovery, Fostering Creativity and Facilitating Reinforcement”.

Continuous change approaches are becoming increasingly important due to the dynamic and growing pace of change. This is also supported by the fact that the progress which has been achieved in flexibility within companies has led to significant changes in labor conditions, as can be seen in the following overview (Table 1.2), referring to Gerlmaier and Kastner [26]:

A favorable environment, more flexible employment circumstances and an inclusion into the design of operational business activities open up new opportunities for employees to shape the continuous change process and, through this, create a higher level of commitment and job satisfaction. However, in case of poorly oriented resources during change management, employee job satisfaction levels may considerably decline and may lead to significant impairment to health amongst employees, to the loss of highly qualified personnel or to a resistance towards different elements within the change process [37]. The success of organizational change is closely connected to the behavior of each employee and his or her positive or negative influence on colleagues during the change process.

In Chap. 4, **Braun** enlarges upon this topic: She assumes an approach where employee diversity is of increasing importance. She also takes into consideration worker partici-

pation within the company. In the case of change processes there has to be a continuous search for specific solutions that distribute resources equally and efficiently and that adhere to legal requirements. This task is exacerbated, if the group of employees is divided into core personnel and a group of non-core personnel, and if the number of “multiple collective bargaining agreements” rises. In practice, emerging conflicts require a special circumspection and a different understanding of operational inclusion.

Also within this collective volume in Chap. 3, **Finkbeiner and Morner** analyze the significance of employee contribution for successful implementation of change management. They show ways in which organizations are able to improve their ability to change through cooperation on an individual, group and on the corporate level. Within a knowledge-oriented society, the employee willingness to adjust to the process of permanent change represents a pivotal point for business environments that promote learning and dynamic business development resulting from change process on both the individual and group levels. The authors consider the creation of adequate, joint cooperation rules as an essential precondition for change in businesses that occurs on a group level. Employees want to actively take part in cooperation. It is possible to develop a joint view on change with the help of cooperation which has a positive effect on both the willingness to change of the individual and of the organization as a whole.

The cooperative approach presented by the authors in this volume differs from change that is guided hierarchically or by the market, since a general willingness to cooperate cannot be instructed through ‘top-down’ approaches or from outside the company. Therefore, a highly competitive climate often leads to excessive pressure to perform and less willingness to cooperate. While change on the company level can prove to be beneficial or at least without an alternative, it frequently causes greater insecurity and anxiety in employees since they fear it doesn’t take their own interests into consideration or may even adversely affect them. By making use of Ostrom’s anthropological studies, Finkbeiner and Morner show that a willingness to cooperate is possible even in these situations assuming cooperation is conditional.

Both authors suggest to transfer the so-called “readiness model of organizational change” from the systematic perspective to the individual perspective of organizational learning. With positive interaction on an individual level and the creation of a joint understanding of the group concept, it is possible to create a positive learning environment during the change processes as a precondition to generate general openness of all employees towards change.

Following the emergent approach, successful change processes begin on the employee level according to Finkbeiner and Morner, which then continues onto the group level, eventually, influencing the entire organization. Un-involved employees will become involved rather than blocking the change process through consistent inclusion and by motivating all employees. Involved employees on the other hand, turn into active change agents.

In contrast to Finkbeiner and Morner, **Sydow** does not focus his contribution (Chap. 5) on naming the possibilities but rather on accentuating the limits of permanent change

through persistence and path dependencies that were proven in empirical studies of inter- and intra-networks. Management should be aware of those issues and should adopt appropriate counter measures. According to Sydow, those measures could be the correct selection and inclusion of internal and external partners. The allocation and reallocation of tasks, resources and responsibilities belong to these counter measures. Sydow advocates the development of network rules and evaluating cooperation according to their impact on the network and its members. He further recommends a stronger consideration of the down sides of future network research which he uncovered.

**Gehrig and Jaeckel** have contributed in Chaps. 8, 9, both from an economic and from a legal perspective, concrete examples on how regulations can influence individual company behavior and how companies in turn handle and influence regulation. They also show the potential risks of poor or inadequately designed regulations, not only for the respective company but also the market as a whole. They offer tips on how businesses can adapt to existing or expected regulations and how they may even influence them.

Employing medical technology innovations as an example for a functioning competition, Jaeckel illustrates the considerable impact technology-oriented regulations can have on the promotion of innovation activities, and on change dynamics within the particular sector. While technology-oriented regulations and subsidies can lead to undesirable developments in the market—as can be currently observed in the German energy sector—regulations that are targeted towards quality objectives on the other hand, have proved to be highly efficient. With a comprehensive and critical analysis of the legal and market framework taking place prior to the implementation of regulations, such risks can be avoided or at least limited. Depending on the significance of regulation affecting the survivability of the company, the firm must be given the opportunity to influence this analysis within the statutory framework prior to and during consultation and implementation.

The financial crisis in 2007/2008 impressively revealed the devastating consequences of poor regulations in combination with dynamic drivers such as the increasingly globalized world. It originated in part from banks changing their business model from one with a long-term concept backed with significantly more equity capital to one aligned towards short-term decisions for quick returns. Even though stricter regulations are being demanded as a result of the crisis, Gehrig, points out that despite all criticism on the conduct of banks, dispensing with far-reaching regulations for all involved may be the better solution. This would mean that banks would have to compete for equity capital based on adequate risk-bearing capacities and their reputation.

The examples from corporate practice cases offered in this collective volume will provide important tips for a synthesis of planned and emergent change and for successful heuristics in order to meet change process requirements.

On the basis of three case studies from their consultancy practice, **Lattuch and Seifert** demonstrate in Chap. 10 the different possibilities and limits of heuristically-based change methods for dealing with concrete change necessities in businesses. They are following the approach of a closely aligned synergy of soft corporate factors of change management with hard factors of the respective change project. Furthermore, they report on the introduction of evaluation methods for product innovations aiming not only to boost innova-



tion success but also to increase job satisfaction amongst employees. They also provide information on a combination of different heuristically-based tools that were employed for the consolidation and centralization of a DAX-enterprise in the financial sector. The main factors for success were not only the general applicability of the methods employed but also their acceptance and appreciation by particular change leaders who were included in the selection of methods by the external consultants. In the third case, the external consultants used the instrument of crowd sourcing in order to comprehensively include employees into a corporate-wide change project. With this heuristically-based method key issues of the process could be successfully identified in the collaboration between employees and other key stakeholders. As a result, possibilities to address those respective issues were developed.

Making use of practical examples, both authors demonstrate that in cases of successful change processes it appears to be easier to include critical stakeholders into the change process and to overcome resistance through a targeted transfer of individual heuristic onto the superordinate heuristic.

In Chap. 11, **Sharma and Mukherji** discuss the fundamental transformation process of an Indian energy company into an environmentally friendly, global and competitive enterprise. Their theoretical basis is the nine-step-model of organizational transformation by Galpin. This model assumes that fundamental change needs strategic deliverables by top-management as well as targeted inclusion and training of employees, in order to achieve the necessary radical and incremental changes. In light of the consequences of the change process, maintaining strong momentum during the entire change process is also necessary.

Ambitious environmental objectives can be achieved through raising environmental awareness of employees and other stakeholders, through appropriate technologies and their adequate use as well as through the communication of the competitive advantages resulting incrementally from change. This concrete example reconfirms this phenomenon, as well as the fact that this type of transformation process shows a high degree of complexity and requires perseverance by all. However, the case study decisively indicates that those efforts are worthwhile for stakeholders and, most of all, for the environment.

Starting from a basic thematic classification of the different spheres of activity of brand management, **Burmann, Piehler and Löwa** demonstrate in Chap. 12 the possibilities and limits of flexibility in brand management using practical examples in order to be able to react appropriately to different competitive, technological and behavioral changes of framework conditions. Adjustments in brand management are considered a continuous adaptation or dynamic brand management rather than a unique event.

Based on theoretical facts and on the example of a frozen foods company it is assumed that brand identity should not change too rapidly or too radically but rather continuously. This gives customers enough time to understand the transformation process and adapt to it. Companies should also be careful and moderate when changing fundamental elements of their brand identity. They often have significantly more freedom with non-essential components of the brand identity. However, in practice it is often difficult to distinguish between essential and non-essential brand identity components. Another challenge lies in the internal implementation and the transformation of the brand. In the interest of main-



taining high consistency between brand promises and brand behavior, both the inclusion of employees as a target group as well as the coordination of organizational structures and processes with the specific requirements of brand management are of great importance. Case studies illustrate that strong brands and competitive advantages can be generated in this way.

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### 1.3 Conclusions for Future Research

The developments of the last decade have posed many new challenges for the change management of firms and organizations, and have thus also raised many new questions for academic research in business administration. Against this backdrop, overcoming the existing contradiction of planned and emergent change is as important as a new understanding of permanent change within companies. Therefore, global competition is the focus of this new understanding. For example, Japanese companies are under so much pressure in terms of the frequency and pace in which they must innovate that medium-sized enterprises completely abstain from applying for new patents.

Furthermore, it has fuelled the mega-mergers in the USA and in Europe and, quite recently, the takeover of European companies by Chinese competitors. This new perspective is also supported by the influence of open innovation—provided it is not considered as anti-competitive by the relevant competition authorities. In addition, the influence of regulations on change in companies offers great potential for further research. Here, the investigation of the changed role of employees under conditions of permanent change seems to be of particular importance. They have achieved a new kind of self-conception in light of increased strategic flexibility in their respective companies.

Future research on change management and management practice in the field of permanent change will have to deal with the following questions:

- What does “Permanent Change Management” mean on the various levels of management?  
(Effective principles and mechanisms of intervention; securing an adaptive corporate organization and corporate culture; informal authority and development of alliances.)
- Which methods and instruments have to be developed or employed for the support of permanent change?  
(Limits of traditional strategic planning methods, e.g. portfolio analysis; heuristic principles for successful change processes such as creative recombination, use of social networks, revival and further development of values, large-scale recombination, framing and aggressive communication concepts.)
- How can management theory contribute to a best possible design of permanent change?  
(Economic core perspective and interdisciplinary research perspective, investigation of success factors of change, micro and macro analyses of a sustainable organization that is fit for progress and the implication for training and education).

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# Change Through Digitization—Value Creation in the Age of Industry 4.0

# 2

Henning Kagermann

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## Abstract

Digitization—the continuing convergence of the real and the virtual worlds will be the main driver of innovation and change in all sectors of our economy. The exponentially growing amount of data and the convergence of different affordable technologies that came along with the definite establishment of Information and Communication Technology are transforming all areas of the economy. In Germany, the Internet of Things, Data and Services plays a vital role in mastering the energy transformation, in developing a sustainable mobility and logistics sector, in providing enhanced health care and in securing a competitive position for the leading manufacturing industry. This article discusses the impact, challenges and opportunities of digitization and concludes with examples of recommended policy action. The two key instruments for enhanced value creation in the Age of Industrie 4.0 are platform-based cooperation and a dual innovation strategy.

The manufacturing industry is the backbone of the German economy, accounting for 22.4% of gross domestic product (GDP) and employing one sixth of Germany's total workforce [15]. By way of comparison, the manufacturing industry accounts for 11.9% of GDP in the US and just 10% in France and the UK [17]. The German industry continues to produce a huge trade surplus year after year. Indeed, the competitiveness of the German industry played a pivotal role in enabling the country to successfully overcome the recent

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financial and economic crises. Nevertheless, if Germany's manufacturing industry is to remain competitive and the country wishes to maintain its position as a leading manufacturing equipment supplier, then it will need to keep coming up with new innovations. In order for the German model to deliver lasting success, it requires a successful innovation system. If we wish to secure the future of Germany's manufacturing industry and preserve domestic production, then we must initiate and actively shape the next wave of innovation.

Digitization—i.e. the networking of people and things and the convergence of the real and virtual worlds that is enabled by information and communication technology (ICT)—will be the most powerful driver of innovation over the next few decades and will act as the trigger of the next wave of innovation. It will transform all key infrastructures in fields such as energy, mobility, healthcare and manufacturing [18]. As a result, today's value chains and business models will come under increasing pressure. Digitization is having a highly disruptive impact on markets, the world of work and our social structures. For example, will traditional automotive manufacturers be capable of making the leap required to produce smart, autonomous cars, or will the new key players come from the ICT industry? The German business newspaper *Handelsblatt* recently reported that Google has acquired seven specialist robotics companies and is now planning to start making robots [16]. One can only imagine the economic implications of this type of development, particularly for a country with a strong industrial core like Germany.

The process of digitization is already taking place at a rapid pace. There were 113 million new mobile subscriptions in the third quarter of 2013, with 30 million in China, 10 million in India, 6 million in Bangladesh, 5 million in Indonesia and 4 million in Egypt. By the end of September 2013, the total number of mobile users worldwide stood at approximately 4.5 billion. Over the past three years, the ratio of data to speech has risen from around 1:1–10:1. By 2020, it is estimated that 6.5 billion people and 18 billion objects will be connected to mobile networks [11]. The virtual world is thus clearly extending its reach into the physical environment. In a study carried out on behalf of the industry association BITKOM (Federal Association for Information Technology, Telecommunications and New Media), Fraunhofer ISI estimates that the economic benefit of digitization and increased real-world networking in the fields of energy, healthcare, transport, education and government is at a level of 56 billion euros a year [5].

It is thus clear that the impact of digitization in terms of transforming the world we live in will be comparable to past waves of innovation such as those triggered by mechanisation and electricity. Having slowly gathered momentum over the past few decades, the process of digitization has accelerated rapidly in recent years. Even though the technological developments themselves are more evolutionary in nature, their impact will be felt as a genuine revolution. The advantage we have is that we are able to see this “stealthy” or “perceived” revolution coming and can therefore analyze it and play an active role in shaping it. However, in order to do this, we first of all need to understand (1) the impact that digitization is having on Germany, (2) the areas where the first changes are already being experienced, (3) the opportunities and (4) the challenges that it poses for German industry and (5) the role played by the issue of acceptance. This will enable us to deter-

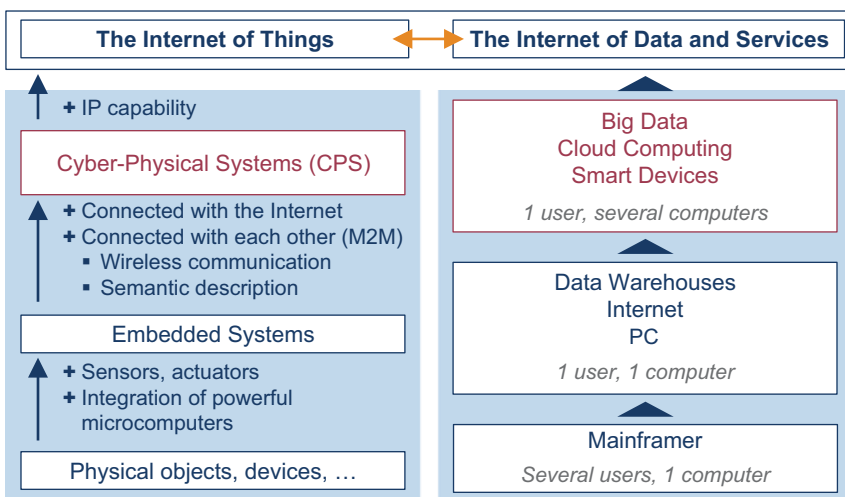


mine (6) how we can shape the economic, scientific, political and social changes triggered by digitization. From studying these questions, it will become clear that there are two key instruments that should be used to support this “stealthy revolution”: increased platform-based cooperation and dual innovation strategies.

## 2.1 The Internet of Things, Data and Services as the Driver of Innovation Over the Coming Decades

The next wave of innovation will be driven by the Internet of Things, Data and Services, an “*Internet of everything*” where subjects and objects alike can communicate in real time. The Internet of Things, Data and Services—i.e. the real-time networking of objects and subjects and in particular the convergence of the real and virtual worlds—has not come about as a result of a single, recent, disruptive innovation. In fact, the relevant technology has been developing continuously ever since the first electronic computers appeared at the end of the 1940s. Whilst this process began slowly, it is now gathering more and more momentum. Processing power, memory size and network capacity are all growing exponentially, while their cost is falling at a similar rate. Looking back, it is apparent that Moore’s Law, which states that computer processing power will double every one-and-a-half to two years, has in fact become a self-fulfilling prophecy [25].

However, it is not just the rate at which these performance parameters are developing that has given rise to the Internet of Things, Data and Services. Far more important is the convergence of various different affordable technologies (see Fig. 2.1) to create synergies that in turn lead to qualitatively different opportunities and impacts that ultimately come to be perceived as a revolution.



**Fig. 2.1** Converging technological developments. (Source: own illustration)

The trend is based on embedded systems, i.e. powerful microcomputers that can be built into every conceivable type of object i.e. billions of powerful microcomputers owing to the exponential growth in IT performance parameters alluded to above. Thanks to the spread of RFID technology, embedded systems have now come to be regarded as a basic technology. At the same time, these embedded systems are now being equipped with sensors and actuators. The resulting systems are capable of recording, storing and processing a wide variety of data from their surroundings that can then be used to enable them to influence their environment. Their size and performance follow “laws” not dissimilar to those governing computers. These systems transform objects into smart objects and environments into smart environments. Even today, 98% of all processors are not found in computers but are instead built into smart objects and increasingly into high-tech products. For example, a mid-range car will on average contain around 150 embedded systems.

At the same time, mobile communications and WLAN, together with the introduction of the IPv6 Internet protocol in 2012, have triggered a major expansion of the Internet. We now have more than enough IP addresses for our current needs. This means that it is easy for embedded systems to connect to each other and to the Internet whenever they like, exchange data and make their capabilities available as online services. The result is an “invisible ‘digital upgrading’ of traditional objects” [26]: the real and digital worlds converge and physical objects are enhanced with the flexible capabilities of digital functions, turning embedded systems into Cyber-Physical Systems [13]. These Cyber-Physical Systems gather a huge amount of data about their real environment and digital processes. Whereas in the past, data had to be recorded manually and then transferred to storage media, with all the errors that are inherent in this process, now it is possible to gather data automatically. Moreover, the continuing development of sensor technology is delivering higher and higher data resolution, enabling fine-grained monitoring of the environment.

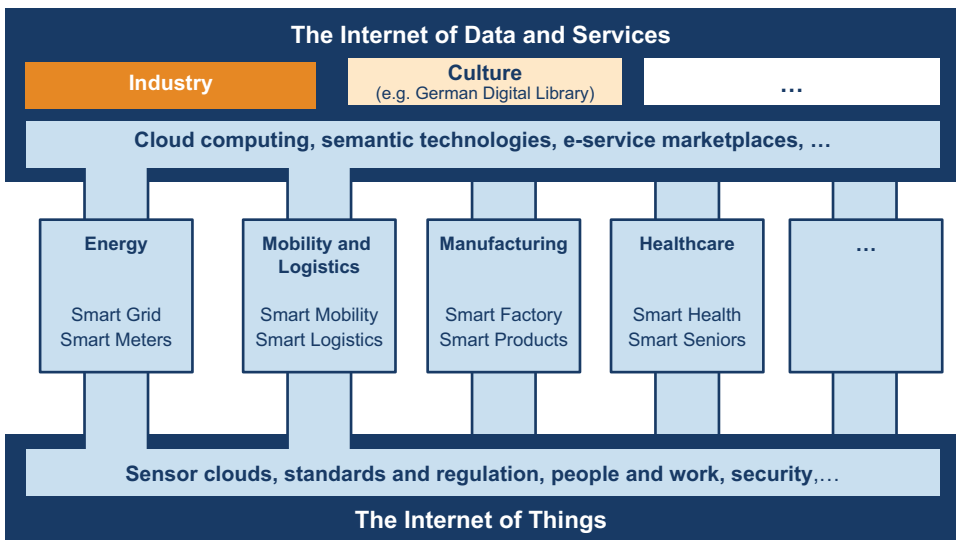
In addition to the above, cloud computing makes affordable storage now available for the exponentially rising volume of data that is being generated by smart objects and subjects. The wealth of data stored in these “data factories”—commonly referred to as big data—can then be mined using smart algorithms based on correlations and probability calculations. The data is analysed and patterns are identified that generate information that can be correlated in order to produce new knowledge. Cloud computing thus provides the basis for developing innovative new services using the knowledge that has been obtained in this way. New service infrastructures are emerging that offer a comprehensive range of smart services for every area of our lives as well as business webs with SOA-based corporate software (service-oriented architecture) that supports end-to-end cross-company business processes and flexible business networks.

In the Internet of Things, Data and Services, any technological device can exchange information at high speeds with any other device or person anywhere in the world. Up-to-the-minute information about the status of individual devices and their surroundings can be retrieved at any time. Technology infrastructure can be monitored and operated even over huge physical distances. Networking enables simultaneous control and optimal coordination of a wide variety of complex technological processes.

As our society makes the transition towards sustainable energy, smart grids allow volatile energy sources to be incorporated by matching supply and demand in real time in a highly complex energy system. In the future, smart navigation systems on board cars, buses, trains and other vehicles will share information about traffic volumes, particulate levels and disruption to local public transport services, enabling traffic in the cities of tomorrow to be managed autonomously. It will also be possible to connect manufacturing systems and business processes in factories and businesses in real time and across different companies—from ordering up to outbound logistics. All of this will ultimately create the benefits for society and industry that are outlined in the following section.

## 2.2 Driving Innovation in Every Area of Our Lives

While the impact of the Internet of Things, Data and Services will undoubtedly be felt in every area of our lives, this chapter will focus specifically on the fields of energy, mobility and logistics, healthcare and manufacturing (see Fig. 2.2). If an object is described as “smart”, this means that its technology is based on embedded systems, sensors, Cyber-Physical Systems, cloud computing and big data: “IT is everywhere—the vision of ubiquitous computing has become reality” [13]. The potential of the Internet of Things, Data and Services becomes particularly apparent when different, formerly separate fields of application converge with each other. In the future, these different fields will have new relationships, interdependencies and interactions with each other. For example, it is impossible to realize a smart factory unless the relevant logistics processes are also “smart”,



**Fig. 2.2** The Internet of Things, Data and Services. (Source: own illustration)

while the reverse is also true: “These interactions will be so extensive that a lack of certain developments in one scenario could result in neighbouring scenarios being unable to create the conditions needed for them to maximise their potential” [13].

### 2.2.1 An ICT-based Energy System

Germany has embarked upon an ‘energy transition’, setting itself the goal of phasing out nuclear power by 2022. And despite this nuclear phase-out, it has also committed to a 40% cut in its greenhouse gas emissions (compared to 1990 levels) by 2020, rising to at least 80% by 2050. At the same time, it has pledged to increase the percentage of solar and wind power and other forms of renewable energy in its electricity mix from the current figure of 17% to at least 35% by 2020 and 80% by 2050 [14].

This fundamental transformation of Germany’s energy supply will trigger major changes in the structure of the energy supply system over the coming decades. There will be a rise in the number of small, decentralized producers providing a highly volatile supply of electricity that is heavily dependent on weather conditions. These changes on the supply side will be accompanied by changes in consumer behavior. Electric mobility, heat pumps and other types of consumption will transform the demands on the distribution grid. It will therefore be important to ensure their smart integration into the system. All of this will pose huge challenges for policymakers, industry, the research community and the public. In short, there will be an unprecedented increase in the complexity of our energy system that we would be unable to manage using today’s methods. Digitization and the potential offered by smart networking nonetheless hold out the prospect of allowing us to meet these challenges and will thus constitute the cornerstone of our future energy systems.

Smart grids respond in real time to calm wind conditions or high levels of solar radiation and incorporate both industrial generating facilities and private consumers. By combining energy technology and ICT, they enable measurement, control and automation to be performed at a high time resolution across the entire distribution grid. Furthermore, the widespread deployment of ICT allows new distribution and business models to be implemented that provide consumers with incentives to change their energy consumption patterns. The result is an Internet of Energy where electricity producers, storage facilities and consumers coordinate and optimize their processes in an independent and automated manner.

In principle, there is nothing to prevent the rollout and expansion of smart grids. However, failure to implement an integrated overall strategy that coordinates all of the key areas where action is required could set the energy transition back by several years or in the worst-case scenario even cause it to fail completely [4]. Smart grids are not just an optional extra but an absolute necessity. Today’s electricity infrastructure is simply not designed to cope with the volatile supply of electricity from renewable energy sources such as wind and solar power that increasingly will need to be incorporated into the grid in the future.

The complexity of the energy transition can thus be addressed through the digitization and integration of the energy system to create an Internet of Energy. However, this will require realistic migration paths and optimal integration of existing infrastructure. If the energy transition is to succeed, it will be necessary to find the right mix of technological, social and business model innovations. The complexity of systems is constantly increasing and this also applies to our energy supply. In order to take full advantage of the opportunities provided by digitization in the field of energy and to ensure that it serves the energy policy goals of Germany's energy transition, it will be necessary to guarantee both coordinated cooperation between all the relevant actors and stringent monitoring (see also Sect. 2.3).

## 2.2.2 Sustainable Mobility and Logistics—Smart Networking

Logistics acts as the main artery of our economy. Efficient logistics networks are keys to securing economic growth and enabling Germany's export trade to do business on the global market. The German logistics industry is worth 222 billion euros and employs 2.8 million people, making it the country's third largest industry [3]. Digitization is transforming logistics into a high-tech industry, as well as enabling environmentally friendly and affordable individual mobility.

The key physical enabler of mobility and trade is efficient transport. This is an absolutely indispensable requirement, since in the Age of Industrie 4.0 (see Sect. 2.2.4), mobility and logistics needs are set to grow rather than fall. The volume of private and freight traffic in Germany has been rising for many years. In Germany alone, it is estimated that private car traffic will grow by 20% and heavy goods vehicle traffic by 34% by 2020 [24]. The causes of this increase include trends such as urbanization and the growth in global trade. Moreover, the rapid growth in e-commerce has led to a sharp increase in transport requirements for delivering goods to private households. This poses a series of new challenges for the logistics industry.

At the same time, dwindling natural resources and the need for energy efficiency and climate protection all mean that modern freight and passenger transport must comply with a different set of requirements than in the past. Mobility and logistics services and transport infrastructure need to match up to the demands placed on them by society. Today's users judge these services based on their quality and reliability—even when the infrastructure is overloaded or affected by disruption—as well as their efficiency, sustainability and environmental and land use impact.

In this area, too, digitization will be a key enabler of a reliable and sustainable future transport system and supply of goods. The principles of the Internet of Things, Data and Services are one of the keys to achieve efficiency in the delivery of individual orders, supplier relationships and mobility service provision. Indeed, it is essential for real-time logistics networking to be developed as an integral part of the Industrie 4.0 initiative. For example, if supply chains are to be networked with manufacturing facilities in real time

so that production can respond instantaneously to supply variability, this will require the integration of manufacturing and logistics via the Internet of Things—in other words, the digitization of logistics. More and more “smart logistics” and “smart mobility” systems are thus emerging, comprising networks of several small-scale entities. These enable efficient and reliable organization of transport between different locations (“door-to-door transport”) and throughout the entire life cycle of goods (production-transport-storage-consumption-disposal). For example, the Effizienzcluster LogistikRuhr has been running a joint project for the past three years called smaRTI (smart reusable transport items)<sup>1</sup> to work on concrete solutions for smart material flows. The goal is to use cloud-based data services to enable real-time tracking of load carriers in order to speed up processes, reduce waiting times and cut out unnecessary costs. Smart load carriers bearing RFID transponders and bar codes were first employed to enable optimization of distribution processes across different companies and even different sectors in the retail trade, where they delivered a two percent increase in turnover worth eight billion euros. Plans are already afoot for applications outside of the retail trade.

The shift away from centrally controlled processes towards decentralized structures and decentralised processes that are adapted to these structures is making it possible to manage increasingly large and complex systems in logistics and especially in the field of private and freight transport. In order to deliver more efficient logistics and mobility, these need to be combined with new, resource-efficient transport technologies such as electric mobility and semi-autonomous urban transport systems. Other strategies include shared use of transport and logistics infrastructure (e.g. transshipment facilities, delivery journeys and goods collection systems) by businesses and service providers, as well as more effective traffic management. All of this requires both operational networking of everyone involved at the process level and collaborative business processes via the Internet.

It is also necessary to make logistics and transport systems more robust so that they are better able to cope with disruption, and to increase their medium to long-term adaptability. Real-time systems capable of recording events and status using Auto-ID and sensor technology will allow early detection and location of any disruption to the system, thereby enabling a rapid response.

Increased mobility also generates more traffic, resulting in higher levels of congestion and noise and air pollution. We will therefore need new mobility concepts and products capable of meeting society’s requirements with regard to environmental protection, efficiency, and the quality of our towns and living spaces. It will no longer simply be a case of optimizing logistics in terms of costs—eco-efficiency and adaptability will be equally important goals. However, this vision will not be realized of its own accord. The logistics trade still doesn’t properly regard itself as a high-tech industry and nowhere near enough attention is currently being paid to logistics as a key R&D theme. Immediate action is needed to ensure that the logistics industry and the relevant research projects and training courses are equipped to meet the requirements of the age of digitization. It is essential to

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<sup>1</sup> More information about the project is available at: <http://www.smart-rti.de/>.

develop competencies with regard to the practical use of the Internet of Things in the field of logistics: “With the advent of the fourth industrial revolution, it is becoming apparent just how profoundly logistics impacts upon the value-added processes of production, trade and services” [28].

Smart networking is also a key to electric mobility—and its role goes far beyond simply providing apps to help people find the nearest charging point. Smart cars will operate as nodes on the Internet, thus being connected to smart transport systems and smart grids as part of the Internet of Things, Data and Services. In the longer term, it will be possible to use the electric cars in this system for storing electricity, thereby making a significant contribution to the energy transition. The vehicles that we use for transport purposes will thus become a cornerstone of our energy system.

Electric mobility thus constitutes a model example of the application fields addressed in this chapter. In this domain, too, it is necessary to define and develop the right interfaces between the systems in order to enable migration towards smart infrastructures. And once again it will be essential to ensure cooperation between actors who previously had nothing to do with each other. In fact, this last aspect cuts across all the fields of application described in this chapter.

### **2.2.3 Personalized Medicine**

In the field of healthcare, digitization and knowledge-based systems will have a lasting impact not only on the healthcare system itself but also on people’s lives. It will be essential to leverage the potential of e-health, among other things, in order to address the spiralling costs that threaten to accompany demographic change. The two priority goals in this area are prevention and personalization. The results of an expert survey conducted this year as part of the Innovation Dialogue coordinated by acatech emphatically confirmed that personalized medicine in particular is considered to have huge innovation potential. By sequencing the genome of individual patients, it will become possible to develop personalized treatments. In the future, individual patient records will not only contain details of their genetic make-up but will also include a wide range of physiological parameters. If this data is to generate useful pre-clinical and clinical information, it will be necessary to combine the relevant algorithms with clinical expertise in order to transform big data into smart data that can serve as the basis for new, knowledge-based services. In the future, personalized medicine will become the norm in our hospitals and GP practices. However, it will also conquer new domains outside the traditional healthcare system where the focus is on patients taking responsibility for their own healthcare. This so-called “third place” describes healthcare outside of hospitals or medical practices where patients take care of themselves with the aid of a burgeoning range of digital services [12]. This approach is set to become increasingly important and can help deliver substantial cost savings for our healthcare system. The experts interviewed in the survey believed that we will see new interactions between the various stakeholders involved in healthcare, with influence shifting



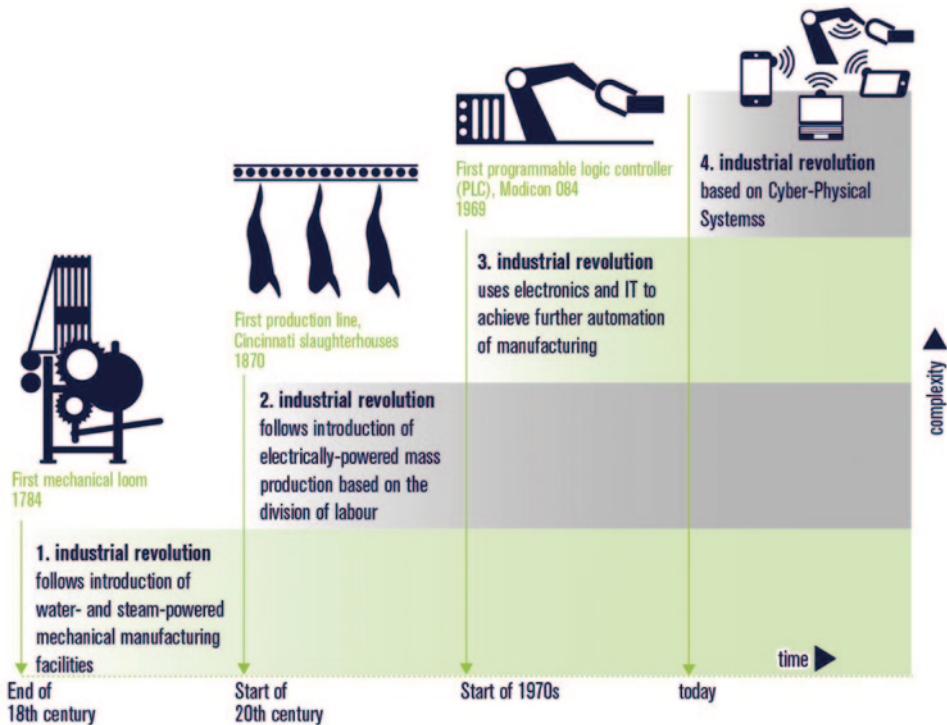
away from healthcare professionals and manufacturers and towards patients and payers. The entire life sciences field is going to require new business models where digitization plays a key role. Non-traditional actors such as Internet and telecommunication providers will enter the healthcare market. The Internet of Things, Data and Services will provide doctors and increasingly also patients with information about their personal health and offer assistance with the selection of treatment options. Moreover, it will help to bring about a change in behavior by creating incentives for effective prevention and treatment of diseases.

## **2.2.4 Industrie 4.0—The Internet of Things and Services in the Manufacturing Environment**

Digitization is also triggering a radical transformation of the manufacturing environment. With the advent of the Internet of Things, Data and Services, we now stand on the verge of the fourth industrial revolution—Industrie 4.0 (see Fig. 2.3; [21]). The first stage of industrialization was ushered in by the invention of the steam engine at the end of the eighteenth century. Towards the end of the nineteenth century, this was followed by the introduction of electrical power and production lines, enabling the mass production of goods based on the division of labor. The subsequent stages are interpreted differently on either side of the Atlantic. Jeremy Rifkin [19] is among those who are currently proclaiming a third industrial revolution characterized by the use of renewable energy and the greening of production. However, it is equally true that we are already in the throes of a third, IT-based industrial revolution that started during the mid-1970s and has continued right up to the present day. This third revolution is characterized by the use of electronics and IT to drive automation of manufacturing processes, as machines take over part of the “brainwork” involved in production. This digital enhancement of proven concepts has undoubtedly delivered a quantum leap in productivity. However, the digitization of manufacturing continues its onward march and is now starting to take on a new quality. It is characterized by highly flexible control of production and associated areas via Cyber-Physical Systems that are networked in real time and are now replacing centrally controlled Computer-Integrated Manufacturing. In view of the timescale involved, many experts prefer to speak of evolution rather than revolution. However, the impact of Industrie 4.0 on economic development and work organization will be just as profound as the previous revolutions that also took several decades rather than just a few years for their full effect to be felt. As such, there will be a shift from competition between individual companies to competition between corporate networks, resulting in increased collaboration between businesses [2, 8].

Germany has one of the most competitive manufacturing industries in the world and is also a leading manufacturing equipment supplier. This is due to its ability to manage complex industrial processes where different tasks are performed by different partners in different geographical locations. It has been successfully employing ICT to do this for





**Fig. 2.3** The four stages of the Industrial Revolution [8]

several decades—today, approximately 90% of all industrial manufacturing processes are already supported by ICT.

The arrival of the Internet of Things, Data and Services in the field of production is allowing factories and everything surrounding the manufacturing process to be networked in order to create a smart environment. Cyber-Physical Production Systems comprise smart machines, warehousing systems and production facilities that have been developed digitally and benefit from end-to-end ICT-based integration, incorporating everything from inbound logistics to production, marketing, outbound logistics and service. In the smart factory, human beings, machines and resources communicate with each other as naturally as in a social network. This turns the conventional approach to manufacturing on its head: products are uniquely identifiable, may be located at all times and know their own history, current status and alternative routes to achieve their target state. Smart products actively support the manufacturing process: the sheet of metal tells the machine how it should be processed. Autonomous, distributed machines, robots, transport and warehousing systems that control and configure themselves in accordance with the needs of the current situation negotiate with each other to establish who has spare capacity at any given moment. Smart factories are vertically linked to the operational processes of individual factories

and companies while being horizontally linked to value networks that stretch across the entire globe, incorporating everything from ordering to delivery.

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## 2.3 Opportunities for Germany

The example applications of the Internet of Things, Data and Services outlined above demonstrate that in addition to economic opportunities, the digital innovation wave will also provide environmental and social opportunities that will help to secure the German success model in its entirety.

### **Economic Opportunities**

Manufacturing will become highly flexible, highly productive and at the same time up to 50% more resource-efficient. It will be possible to make customized products at the same cost as mass-produced products. Resilience—i.e. the ability to withstand and recover from disruption caused by economic crises or infrastructure failure—will increase, since significantly more accurate data will allow more accurate forecasts to be made. Real-time information will make it easier to provide an immediate response to major disruption, for example by allowing ad hoc reconfiguration of value networks. This flexibility will enable more effective and rapid measures to mitigate the potential damage to the economy.

In conjunction with big data, the interfaces within and between the systems will also provide huge potential for new services and innovative business models that will not be confined solely to the manufacturing industry. Smart products will not only actively control the manufacturing process, they will also provide platforms for new services and innovative business models. Industrie 4.0 and the integration of value networks will generate enormous quantities of data. The knowledge obtained by smartly combining and analyzing these data will enable new services and business applications that seamlessly combine things, data and services to create individual packages.

Finally, it will also be possible to tackle the current shortage of skilled labor, for example by employing smart assistance systems to help older workers with their work, thus allowing them to extend their working lives.

### **Environmental Opportunities**

Smart ICT-based networking will also make it possible to use fewer resources more efficiently. This will impact upon all the different fields of application. In smart factories, smart systems such as start-stop functions for machinery will allow the factory's energy consumption to be cut significantly. Data preparation will provide workers with decision-making support, allowing the number of faults and rejects to be reduced. It will also be possible to configure logistics routes and capacity utilization more efficiently. As far as the energy system is concerned, behavioral changes resulting from automation will deliver energy savings of 10% in private households and 20% in businesses [22]. Networked mobility will make it easier to change between different modes of transport, promote in-

termodality, increasingly integrate electric mobility into the transport system and thus help to reduce individuals' CO<sub>2</sub> footprints. Furthermore, for the first time it will be possible to capture a wide range of real and virtual data in order to provide full transparency with regard to products' resource consumption. This will have a variety of valuable repercussions in terms of resource optimization of product life cycles and the move towards a circular economy. Finally, ICT also provides the basis for the trend towards a sharing economy. Internet-based platforms and cloud computing are indispensable for organizing sharing arrangements e.g. in carsharing models. ICT-based 3D printing also promises significant environmental benefits by enabling waste-free production and cutting transport requirements.

### **Social Opportunities**

Ultimately, the Internet of Things, Services and Data serves to improve our quality of life. For example, in addition to securing jobs in Germany's high-wage economy, reducing the consumption of natural resources and making it possible to reindustrialize urban areas, one particular benefit of Industrie 4.0 is that it will improve the quality of work. ICT will allow people to achieve a better work-life balance. Individual workers will be able to manage their own work time, meaning that human beings will once again be at the center of the working environment. Moreover, rather than simply being employed to operate machines, workers will increasingly act as experts, decision-makers and coordinators. This will make their work more varied and interesting.

Opportunities will also arise in the other fields of application: it will be possible to improve healthcare provision thanks to enhanced data transparency and better prevention; it will be possible to deliver a secure and affordable energy supply by taking full advantage of the potential efficiency gains; and it will be possible to meet the basic need of individual mobility by optimizing traffic flows.

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## **2.4 The Challenges Associated with Digitization**

Over the next few decades, the Internet is set to join the transport network and the power grid as a defining—and system-critical—infrastructure. However, this also means that it will only be possible to take advantage of the opportunities it provides if the relevant challenges are addressed from an early stage.

### **Industrial Policy Challenges**

It is apparent in all the fields of application described above that increased networking will be accompanied by integration via dynamic value networks. This will have implications for cooperation both within and between companies. Rather than products and services being provided by individual companies, different businesses, business partners, suppliers and even customers within a particular industry will need to cooperate with each other. Whilst most companies have hitherto only used ICT as a tool for supporting their estab-

lished processes, we are now witnessing a shift towards a digital economy with digital enterprises. In the future, economic growth will increasingly be generated through new business processes and models in the Internet-based services sector. The new forms of collaboration will lead to greater (1) complexity, will call for an (2) architecture framework and will require a (3) new work organization model.

1. It is urgently necessary to adopt a more systemic approach to innovation and (ongoing) technological development. All too often, there is a lack of sustainable long-term strategies for implementing innovations in applications and business models and for ensuring that they are accepted by society. If new technologies are already supported by strategies for implementing them in business models and applications even during their development, it will be much easier to effectively leverage their potential for creating value and jobs in Germany.
2. Since the emerging value networks will comprise several different companies with widely differing business models, it will be necessary to create an architecture framework that brings together all these divergent approaches to create a single, shared strategy by getting all the participants to agree on the basic structural principles, interfaces and data. It will therefore be necessary to promote standardization in order to specify the cooperation mechanisms and the information to be exchanged. The complete technical description and implementation of these specifications is known as an architecture framework. The architecture framework constitutes a general model for the products and services of all the partner companies, as well as providing a framework for the structuring, development, integration and operation of the relevant technological systems [8].
3. Working with these technological systems will confront all workers with significantly higher demands in terms of complexity, abstraction and problem solving. Employees will operate in a highly networked, interdisciplinary working environment and be required to perform a wider variety of tasks. They will be expected to master these tasks after only a brief introduction and learning period. Their work will allow them far more independence and responsibility, while intelligently designed human-machine interfaces will provide assistance for older users. The latest generations of mobile, interactive, smart assistance systems for helping with the operation, installation, optimization and maintenance of CPS components will additionally provide greater scope for increased employee decision-making and participation. All of this will create a new paradigm in the workplace, with job profiles changing rapidly. We need to start shaping these changes today. There can be no doubt that human beings will continue to be at the center of the new model. The vision of workplaces devoid of human beings is an illusion—skilled workers will continue to be indispensable in the future. Workers will play a pivotal role as experts, decision-makers and coordinators and will be able to strike the right balance between efficiency and flexibility. Future employees will increasingly perform white-collar roles in the fields of systems planning, engineering and integra-

tion or coordination and orchestration rather than simply being employed as blue-collar machine operators.

### **Training and Continuing Professional Development**

These changes to work organization and design have direct implications for training and continuing professional development. There will be a greater need for interdisciplinary training, as well as lifelong learning and personalized learning. It will also be necessary to ensure that all users possess the requisite media skills. By digitally enhancing established learning environments, digitization will actually be able to support this process, enabling everything from Massive Open Online Courses at university level to the use of smart glasses by production workers. The employment of big data techniques to analyze online learning behavior will allow learning content to be optimized more rapidly and learning methods to be tailored to individual needs.

### **Basic Requirements**

A comprehensive, fast and secure broadband infrastructure forms the basis of any “data-based” economy and is thus indispensable to achieving a successful transformation and leveraging the opportunities outlined above. This will need to be supported by a modern and trustworthy data organization concept that takes the Facebook and Twitter use cases to the next level and is accompanied by international standards to provide transparency with regard to legal and liability issues. This is because, despite their many advantages, highly networked infrastructures are also more vulnerable to attack. There is a constant stream of data and information passing between smart objects, such as machines, and mobile end devices and this needs to be protected against tampering, sabotage and espionage. Finally, it will also be necessary to create conditions that enable small and medium-sized enterprises (SMEs) and consumers to join in this impending wave of innovation. Whether the networking of everyone and everything and the convergence of the real and virtual worlds that we have outlined above actually become reality will to a high degree depend on the extent to which the Internet of Everything is accepted by society as a whole.

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## **2.5 Acceptance**

The acceptance alluded to in the preceding section is closely related to data security, the way people’s personal privacy is handled and people’s receptiveness to new technologies. These three factors will be the key to developing robust acceptance of the changes associated with digitization.

### **Security**

The tapping of German Chancellor Angela Merkel’s phone by the NSA has put smart network data security back on the agenda and raised awareness of IT security issues among businesses, policymakers and the general public. Easily exploited security vulnerabilities

and increasingly attractive targets have resulted in a dramatic rise in the number of cyber attacks. According to one recent study, 44% of companies suffer at least one cyber attack a month. Only 13% of the companies in the survey claimed that they had never been attacked over the Internet [9]. Different networked systems have very different security requirements. It is of course unrealistic to expect total security in such a complex, networked environment. Nonetheless, it is possible to create security architectures capable of detecting unusual behavior in real time and with a high degree of accuracy, as well as providing an appropriate response to anomalies, e.g. by replacing components that have been tampered with or damaged. Security architectures should be incorporated into solutions for the Internet of Things, Data and Services right from the outset, in keeping with the principle of Security by Design. Furthermore, it is necessary to create a new culture on the Internet where security mechanisms are employed as a matter of course. In order to achieve wider acceptance, the smart devices belonging to end users or employees will, for example, need to be constantly updated with the latest security measures without impinging on user comfort.

### **Privacy**

Besides providing information about products, big data also contains information about people and their behavior and relationships. In the future, values and ethical considerations will play an even more important role in product development. There are many examples of things that are already technically feasible but have not been adopted by some countries because they go against certain values. It is therefore necessary to discuss and arrive at compromises with regard to the values of both individual users and society as a whole. This will include finding the right balance between privacy and comfort, and privacy and the huge economic potential of the Internet. Throughout human history, we have lived in a world where information has been forgotten. This is reflected in our behavior and our social mechanisms. However, in the digital age, information is never forgotten. Trust thus plays a pivotal role in the Internet society [6].

### **MINT education**

The public debate surrounding the importance of the so-called MINT (mathematics, IT, natural sciences and technology) subjects often takes place against the backdrop of an impending shortage of skilled labor in the technological professions. There is no doubt that the key to preserving the prosperity of German society will be to get young people interested in the MINT professions and the associated areas of research. Skilled workers who have received academic education or non-academic training in these subjects are an invaluable source of innovative technological developments within companies, as well as patents and new inventions. As such, they help strengthen Germany as a center of technology and research. It is therefore also clear that the MINT subjects play a key role at every stage of a person's education and should be firmly anchored in educational institutions at every level of the education system. As long ago as 2009, acatech published a strategy for

promoting young people's interest in science and engineering, recommending a systemic approach throughout the entire education system [1].

In addition to its specific role in educating the scientists and engineers of tomorrow, MINT education also has the remit of a wider “public information”. Without a basic education in science and technology, it is no longer possible to understand and evaluate many key aspects of our society and culture. Consequently, the mission statement of the National MINT Forum stresses that MINT education “[is] an essential requirement for participation in civil society, professional development and equal opportunities” [20].

All of the above demonstrates the importance of MINT education, not just because of the impending skilled labor shortage, but also as part of people's personal development in a world where we are increasingly surrounded by technology in everything we do. It will ultimately also influence the climate of innovation that has been the subject of so much discussion in Germany—in other words, people's fundamental receptiveness to scientific and technological developments. MINT education is essential in order to enable people to participate in future developments and allow public controversies surrounding technological problems to be resolved in a rational manner.

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## 2.6 Change Management

In order to manage the revolutions that are set to transform our society, it will be necessary to promote cooperation on two different fronts. Firstly, the phenomenon of global networking is promoting a shift from closed to open innovation systems, to use the terminology coined by Henry Chesbrough. IT can support simple integration of customers into innovation processes or the organization of interdisciplinary exchanges between different institutions [7]. Thus, increased cooperation will be required in order to promote innovation. Secondly, as described in the preceding section, it is extremely hard to achieve public acceptance of an innovation retrospectively. Many future innovations will call for ideological compromises to be struck between private and social goals. It will be necessary to support processes for negotiating these goals right from the outset. Cooperation between the many heterogeneous actors and industries will thus be absolutely indispensable [23]. For example, it will be a key to the success of Industrie 4.0 to ensure that the trade unions are involved and are allowed to have their say so that the flexibility promised by the factory of the future can also benefit employees. To have these discussions without involving employee representatives would be very much a step in the wrong direction.

In addition to the issue of cooperation, it is also important to recognize that the strength of the German economy lies in the export market. It is therefore necessary to ensure that products are developed with both the export market and the domestic market in mind. Consequently, different scenarios need to be taken into account. Developed economies such as the US, the UK, Japan and Germany do not start from scratch when they adopt an innovation. On the contrary, technological innovations are built onto existing infrastructure and therefore require appropriate migration paths. However, things can often be very



different in ambitious developing nations, where it is perfectly possible for the relevant infrastructure to be built from scratch. Germany must be able to meet the requirements of both the brownfield and greenfield scenarios. This will call for a dual innovation strategy in all the relevant fields of application.

The following two questions will thus play a key role: how should we manage the closer cooperation required between the actors? And how can we help to achieve the breakthrough for the “Internet of Everything” despite the fact that it will need to be built onto the existing infrastructure in our developed economies?

### Platforms

Knowledge needs to be shared between actors, industries and sectors belonging to different disciplines in order to enable targeted preparations to be made for future developments. Ensuring broad-based participation from an early stage is a key to creating acceptance of large-scale changes. By networking and establishing a dialogue between the principal stakeholders it is possible to stimulate the continued development of individual areas and promote discussion of rollout strategies. Three different types of cooperation are currently emerging which can be described as cross-industry, interdisciplinary and systemic platforms.

The key feature that distinguishes the different platforms is the actors who are involved in them. Platforms whose actors are exclusively drawn from industry are referred to as (1) *cross-industry platforms*. If the actors come predominantly from the research community, on the other hand, the platforms are known as (2) *interdisciplinary platforms*. Finally, platforms that bring together actors from industry, academia, government and civil society can be described as (3) *systemic platforms*. The following section demonstrates how the systemic platform is the only one capable of managing the entire innovation process, from design to implementation and marketing or commercial product launches.

1. *Cross-industry platforms* support the rollout and marketing of innovations by attempting to promote convergence of the strategies and structures of different companies and industries. One such example is the Industrie 4.0 Platform established by the three industry associations BITKOM (Federal Association for Information Technology, Telecommunications and New Media), VDMA (German Engineering Federation) and ZVEI (German Electrical and Electronic Manufacturers’ Association) (see Fig. 2.4). This platform is seeking to address the recommendations of the Communication Promoters Group of the Industry-Science Research Alliance and the Industrie 4.0 Working Group while actively supporting the implementation of the Industrie 4.0 vision, e.g. by facilitating a cross-industry dialogue with regard to the architecture framework.<sup>2</sup>
2. *Interdisciplinary platforms* primarily comprise actors from the research community and are therefore focused on the design phase of the innovation process. Rather than addressing concrete implementation measures, they tend to concentrate on supporting

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<sup>2</sup> See the Platform’s web site ([www.plattform-i40.de](http://www.plattform-i40.de)).





Fig. 2.4 Industrie 4.0 platform [8]

concepts that may subsequently influence decisions on product development and business model design. Interdisciplinary platforms are particularly suitable for helping to negotiate ideological compromises by providing a transparent overview of existing conflicts. One excellent example of this type of cooperation is the abovementioned interdisciplinary acatech project led by Professor Johannes Buchmann [6] that addresses the question of how to stimulate and promote a culture of privacy and trust on the Internet. The project is a cooperation between academics from the fields of ethics, sociology, law, economics and engineering and companies such as Google, Deutsche Post, Nokia and IBM. A further example is provided by the recently launched “Future Energy Systems” project of the German Academies of Science. Energy systems constitute a highly complex type of infrastructure that must be secure, affordable and sustainable. However, even a change to a single parameter can trigger a whole chain of changes in the overall system that can in turn have an impact on the goals of security, affordability and sustainability. This interdisciplinary initiative of acatech, Leopoldina and the Union of the German Academies of Sciences and Humanities<sup>3</sup> will explore ways of striking a balance between these different goals and values.

3. The most comprehensive form of platform management is the *systemic platform*. In addition to bringing together actors from different industries and sectors in order to actively promote innovations, its broad mandate also enables it to support the entire innovation process from design to marketing, via several implementation loops. Correspondingly, systemic platforms can address a wider range of issues. One example of such a systemic platform is the National Electric Mobility Platform (NPE) that brings

<sup>3</sup> See the web site ([www.acatech.de/energiesysteme](http://www.acatech.de/energiesysteme)).

together approximately 140 key actors from government, industry, the research community and civil society. Engaging with such a broad spectrum of actors is key to promoting acceptance [20]

One feature shared by all three types of platform is their promotion of an intensive dialogue geared towards fostering and achieving a shared understanding of technological concepts. Experts agree that greater emphasis should be placed on systemic and conceptual thinking in order to successfully tackle currently unresolved technological challenges. Change management should therefore play an increasingly important role in businesses, universities, research institutes and government ministries. The platform cooperation mechanisms described above can make it easier to cope with change, since platforms make it possible to arrive at a common understanding of the issues, and to discuss and negotiate common goals.

### **Development of Dual Strategies**

How can we help to achieve the breakthrough for the “Internet of Everything” notwithstanding the existing infrastructure in our developed economies? Greenfield developments are extremely limited—most of our infrastructure has already been built and it is not possible simply to write off the major investments that have been made in the past. In other words, we have to work in a brownfield environment. The key to the success of many innovations will therefore be how easily they can be integrated into existing structures and the extent to which any major changes can be packaged into “bite-sized chunks”. It will therefore be necessary to plan the necessary migration path right from the outset. While architecture frameworks provide a valuable tool for guiding this process, it is essential to ensure their extensibility. The design of architecture frameworks should allow for the possibility of incorporating unforeseen future technological innovations. It is therefore necessary to have an idea of what the end result will be right from the outset.

At the same time, it is essential to have the courage to invest in new—and what Schumpeter would describe as disruptive—revolutionary innovations and to initiate the creative destruction ourselves, before anyone else does. Speaking on the subject of electric mobility, Daimler chairman Dieter Zetsche summed it up as follows: “The internal combustion engine will continue to exist for some time because it needs to pay for its own replacement.” [10] The requirements placed on technologies in other parts of the world may be fundamentally different to those found in Germany. As an exporting nation, we must therefore ensure that we are also equipped to supply technology for “greenfield” scenarios. In view of the different requirements associated with Germany as a leading market on the one hand and Germany as a leading supplier on the other, it is recommended that a dual approach should be taken to innovation processes right from the very beginning.

## 2.7 Conclusions and Outlook

With Industrie 4.0, Germany has formulated a common vision of digitization that is centered around the industrial core of its economy. Amid all the hype surrounding the dotcom industry and the financial sector, Germany has demonstrated the value of never neglecting this industrial core. It makes perfect sense to build on these strengths in the areas of industry and business IT. Nevertheless, the trend towards digitization will have much wider repercussions. Ultimately, the impact of technological enablers like Cyber-Physical Systems will be felt at the interface between different individual fields of application. The networking of formerly separate areas such as energy and transport is already accelerating. The Internet of Things, Data and Services is spreading steadily, albeit stealthily, and the impact of the “Internet of Everything” will be perceived as a genuine revolution.

With a strong industrial core, a successful software industry and its know-how in the field of semantic technologies, Germany is extremely well placed to assert itself in the Internet of Things, Data and Services. It should prove feasible to overcome some of the potential obstacles, such as low acceptance of new technologies. It will only be possible to ensure the future viability of the German success model if all the relevant actors work together to take full advantage of the opportunities provided by the Internet of Things, Data and Services. As far as implementation is concerned, a dual strategy should be adopted: existing basic technologies and expertise should be adapted to the specific characteristics of the different systems and rolled out as rapidly as possible, whilst at the same time innovative solutions for new locations and markets should be researched and developed. The Internet of Things, Data and Services will require businesses to adopt new and heterogeneous forms of cooperation. In connection with the issue of acceptance, it will furthermore be critically important to establish platforms that bring together a wide range of actors in order to support implementation. Given the importance of the imminent wave of innovation to all members of our society, it will be necessary to establish systemic platforms comprising actors from industry, the research community, government and civil society in order to support the entire innovation process and address the issues that are relevant to society as a whole.

Our global partners have recognized the strength of German industry and are acting to strengthen their own domestic industries. This trend towards reindustrialization is not confined to countries such as the UK, France, Spain and the US—in Asia, too, various countries have recognized the need to build their own complete domestic value chains. The competition is only going to get fiercer. In order to win the battle with other companies and nations over the next phase of digitization, it will be necessary to roll out successful technologies and business models. Industrialized nations such as Germany have a clear head start, since they are in a position to use smart products as platforms for innovative services and business models. It will be crucial to ensure that we make full use of this advantage.

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**Prof. Dr. Henning Kagermann** holds a post-doctoral thesis in physics. The former CEO of SAP AG has been President of acatech - National Academy of Science and Engineering since 2009. The acatech, which receives funding from central and regional government, provides independent, science-based advice in the public interest to policymakers and civil society. It advocates sustainable growth through innovation. Mr. Kagermann was appointed Chairman of the German National Platform for Electric Mobility (NPE) when it was established in 2010. Since then, he has chaired the Platform's Steering Committee together with the respective State Secretaries of the Federal Ministry of Economics and Technology and the Federal Ministry of Transport, Building and Urban Development. As spokesperson of the Communication Promoters Group of the Industry-Science Research Alliance and chair of the Steering Committee of the Innovation Dialogue between the German government and the scientific and business communities, Henning Kagermann plays a key role in the promotion of strategic initiatives such as Industrie 4.0 and Smart Service Welt - Web-based Services for Businesses.

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## **Part II**

# **The Role of Cooperation, Co-Determination and Networks in Organizing Change**

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# The Role of Conditional Cooperation in Organizing Change

# 3

## Establishing Cooperation Norms and Practices as Change Enablers

Nadine Finkbeiner and Michèle Morner

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### Abstract

Change initiatives have the tendency to fail in organizations because the employee's central role in the process of change is disregarded. With the focus on the individual in corporate change, management has to create an environment which encourages change in organizations. In this work we recommend cooperation as being one important change enabler in a way that cooperation positively supports and increases employees' participation in change initiatives. We thus show how the conditions can be designed to support employees' cooperation during their change processes – even if the cooperation is against the employee's benefit. Besides a human actor in business who cooperates in change initiatives in the case of colleague's cooperation (conditional cooperation), we refer to the importance of cooperation norms in order to establish cooperation supportive conditions. We conclude by emphasizing how these cooperation norms can create stability in the long-run through cooperation rules and opportunities for participation as important structural components for change.

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### 3.1 Introduction

The success of organizational change is closely connected to the behavior of individual employees and their positive or negative influence on their colleagues during the change process. This being the case, several studies have highlighted the role of change agents (e.g. [9, 36, 39]) and their power to influence human behavior and emotions [37]. ‘Change agents’ are necessary if an organization is to change successfully, whereas their (and others’) resistance may in contrast doom all change initiatives to failure (e.g. [11, 40, 68, 84]). Accordingly, Balogun and Hope Hailey [9] have discovered that around 70% of all change initiatives fail because of individual resistance. The reasons for employees’ resistance are based upon the typical characteristics of change, which include the replacement of familiar organizational and structural surroundings, thus causing uncertainty to employees [16] and presenting them with a potential danger [74] that may generate negative emotions affecting parts of the brain closely linked to the pain center (e.g. [24, 74]).

Change also means new opportunities, learning processes and new knowledge—for individual employees as well as for entire organizations [2]. These learning processes are important competencies for the successful development of the firm (e.g. [14, 53, 80]). However, the development of these competitive advantages requires a general motivation of the employee towards common learning processes and thus towards cooperation with others. Precisely this kind of cooperative behavior is nowadays often impeded by a competitive corporate climate, causing pressure to employees and decreasing their motivation to cooperate [1]. If resources are scarce, cooperation in the interest of organizational change may require an individual actor to act against their individual interest, resulting in the following social dilemma (for the general notion of social dilemma see [38]): for the development of the overall organization, change may be necessary; for the individual employee, however, change represents uncertainty and seems threatening. Thus, in order to support change, management has to create conditions that encourage individuals to overcome their resistance and to support change in a cooperative manner—even when contrary to their individual interests. Or, as change management literature would call it—to make employees ready for change (e.g. [3, 5]).

It is precisely from this research gap that we can learn from Nobel Prize winner Elinor Ostrom, who has shown that cooperative action is possible—even where it counteracts individual advantage. Based on her analysis of rural communities and local institutions, she describes the circumstances that encourage individuals to behave cooperatively—even to their own disadvantage (e.g. [59–61]). In this work we incorporate Ostrom’s insights into an explanation of how to foster cooperative behavior during organizational change. In order to do this, we first show the way in which change processes are dependent on an individual willingness to cooperate, and how management can foster change by cultivating individual cooperative behavior (Sect. 3.2). In a second step, we describe an organizational environment that supports the willingness to cooperate, and the opportunities that are available to management to foster change through cooperative behavior (Sect. 3.3). To this end, we combine organizational and change management literature with Ostrom’s



anthropological research and show possible ways of encouraging organizational change through fostering cooperation in a long-term successful manner.

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## 3.2 Conditional Cooperation and Change

Motivating employees is fundamental for a successful change process (e.g. [11, 40, 68, 84]). However, change often gives rise to negative emotions, creating resistance among employees. And several researchers have shown that motivation for change can seldom be enforced centrally; instead, all that is possible is that the underlying learning processes are ‘enabled’ (e.g. [86, 87]). For this reason, one of the most important tasks of managing change lies in the establishment of conditions that will motivate employees into accepting and supporting the common learning processes underlying change. We show that these common learning processes require interaction between employees, and thus encouraging change means encouraging cooperation (Sect. 3.2.1). And as we know from the anthropological studies of Elinor Ostrom [61], individuals tend to cooperate with each other even if the cooperation has negative impacts on those who cooperate—but only in certain conditions. Ostrom has accordingly coined the notion of “conditional cooperation” [61], showing that the most important motivational driver for cooperative behavior is the cooperative behavior of others. Only if norms of fairness and reciprocity evolve does long-term cooperation take place. We show how these results can be transferred to the issue of change, and how the phenomenon of conditional cooperation can encourage employees into supporting organizational change (Sect. 3.2.2).

### 3.2.1 Encouraging Common Learning as the Basis for Change

The studies of Kurt Lewin [43] have already shown that individuals may be willing to give up their opposition to change if they become part of a group. This sets up the view of change being a group activity that includes cooperative behavior and thus combines the individual with the group level. At the group level, change is combined with common learning processes, as it generally comes with new or altered knowledge and situations [2]. Learning is thus a prerequisite for change and, likewise, employees are expected to learn during change (e.g. [13, 45]). Armenakis et al. [5, 6] refer to five “key beliefs” (discrepancy, appropriateness, efficacy, principal support and valence) which are the positive outcome of the learning processes that are enabled during change. In the first instance, employees reflect a *discrepancy* between the normative-actual value situation in the organization. Then, in the second instance, the individual employee recognizes that the initialized change initiative is *appropriate* to the corporation and the linked goals. If this initialized change initiative is successfully implemented, *efficacy* is reached. The *principal support* is thereby the general support of every superior manager and thus their commitment to the change initiative as well. At the end of the change period, *valence* is generated if

the employee can derive benefit out of the changing event. These five “key beliefs” set up the general change readiness of the individual and are the outcome of common learning processes during change, which are enabled through cooperation and interactive behavior [3, 18].

Organizational learning always includes individual, group and organizational levels, but usually begins at individual level [20]. Combining the organizational learning literature [20] with the phases of the change process (e.g. [5, 18]), enabling the underlying learning processes during change involves diagnosing (individual level), creating readiness (group level) and change adoption/ institutionalization (organizational level). This combination turns the “readiness model” of organizational change of Armenakis and Harris [3, 4] from a system perspective into an individual perspective. While Armenakis and Harris [3, 4] refer to a system readiness of corporate change, it is the individual readiness for change in the organizational learning approach. It is the individual employee who builds up the initial level of change in organizations and then spreads it more or less automatically to the group and later to the organizational level (e.g. [10, 12, 24, 37]). This happens by means of two processes, which demonstrate how the individual interprets corporate’s change initiative: intuiting and interpreting. Intuition lies within the employee themselves since people subjectively perceive and construct their own environments during change. However, in order to affect others, interaction is required. Interaction in change processes takes place by interpreting the intuitively perceived world while starting a conversation or dialog with others [20]. This interaction is a prerequisite for the group level, including shared perceptions and mutual adjustment to change. Positive interaction on the individual level leads to the integration of shared understandings on the group level and establishes a positive learning environment through the processes of interaction [56] and thus establishes a general change readiness among the employees. Whereas the group level still represents an informal basis for interaction, the shift from informality to formality involves the institutionalization of routines, rules, structures and procedures at the organizational level. The newly-established routines and specific structures include individually learned competences, which consequently link individuals to each other and to the organizational level.

In a nutshell, change processes start individually (diagnosing), continue at group level (establishing change readiness), and ultimately influence the whole organization (institutionalization). Consequently, if management wants to enable organizational change it has to start at the individual level and foster individual cooperative behavior, which then spreads to the group and organizational level.

### **3.2.2 Change Readiness and Conditional Cooperation**

Change requires individual and group learning processes based on cooperative behavior. Thus, if management wants to foster change it has to encourage cooperative behavior. Instead of pointing to change encouragement, change management literature also often refers to change readiness (e.g. [4, 7]) in order to introduce the positive aspects of change

processes in firms. Achieving change readiness for cooperative behavior requires establishing certain conditions. Extracting these conditions for cooperative behavior in rural communities and local institutions when common pool resources are being used, has been one of the main achievements of Elinor Ostrom (e.g. [59, 62]). She has shown that most human beings are basically willing to cooperate—under certain conditions. Accordingly, she has created the notion of conditional cooperation, and has shown that the most important condition for cooperation is the cooperative behavior of others [61]. This reflects the results in change management research that emphasize the power of influence as an important change driver [37]. The notion of influence focuses on the role that colleagues and change agents play in using their networks to promote change [10]. Armenakis et al. [7, 6] call this change promotion ‘principal support’ in their “key beliefs” of positive learning outcomes during change. The strength of influence during change processes then means that change initiatives are promoted because the initiatives support others. In her article entitled “Change within change”, Keicher [37] highlights the importance of influence among employees during change processes, and describes the psychological and emotional aspects involved as being crucial for successful change initiatives [37]. This kind of human behavior during change is very similar to the conditionally cooperative behavior defined by Elinor Ostrom [61] which is dependent on the cooperation of others.

Conditionally cooperative behavior, according to Ostrom, is based not only on altruism, but first and foremost on norm-conformism [61]. Accordingly, a conditionally cooperative individual is defined by Ostrom [61] as being a ‘norm-using player’. According to studies, 60% of all people belong to this group of human actors (e.g. [28, 32]). They stay cooperative as long as others cooperate and do not limit their cooperation or play unfair games within the cooperation in the case of missing cooperation norms. The degree to which managerial influence through commitment among employees can affect change processes underlines the importance of a colleague’s behavior and attitude towards them [37]: if others cooperate in the change process, an individual’s willingness to cooperate increases as well [34]. This clearly points on the individual (diagnosing level) and group (creating readiness level) stage of learning during change (e.g. [3, 4]). Within these two stages, new cooperation norms are created and existent norms are used. The learning process and past experiences set up the individual definition of how norms are experienced and accepted—reasonably, if the employee responds in a positive (norm-conform) or negative (norm non-conform) way to change. Norm conformism and thus conditional cooperation is on the whole dependent on existent social norms, especially general norms of reciprocity and closely connected norms of fairness (e.g. [15, 27, 32, 41, 48]).

*Norms of reciprocity* are characterized by a general give-and-take-principle (e.g. [31, 34]). Thus, returning benefits for benefits, respectively, returning wrongdoing with wrongdoing is the underlying content of the norm of reciprocity [34]. If the change process takes place with a positive outcome for the individual, the norm of reciprocity induces the employee to feel indebted and reasonably to respond in a beneficial way for the other persons too, and in this way give something positive back to the change process and the people involved [34]. The basis for this positive reciprocal behavior is a perceived fair process

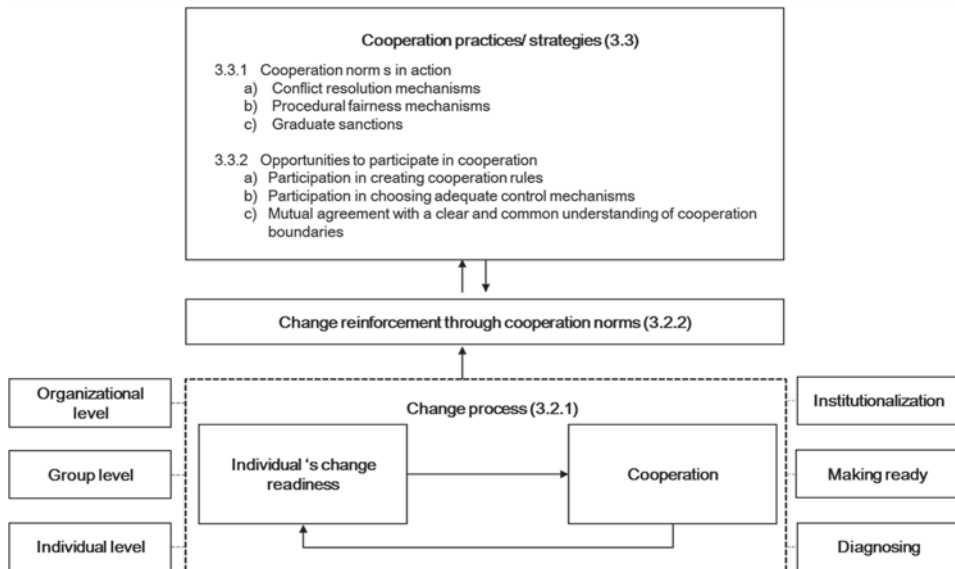
[25] during change initiatives. In addition, the norm of reciprocity is especially important for establishing stability and security during change. Thus, in the presence of stability and certainty, social norms influence an employee's behavior [44]. Norms of reciprocity then enable the establishment and fostering of rules of thumb for fair working procedures [34, 41, 72]. Closely linked to and based upon norms of reciprocity are *norms of fairness*. They are based on the perceived fairness of processes and the subjectively-perceived positive or negative intention of others [25]. In change processes, fairness would mean an even distribution of contributions to and benefits from the change process (e.g. [25, 31]). By this means, 'valence' [71, 85] as one key beneficial outcome of change learning processes is generated. Moreover, fairness within organizational change initiatives is linked to the legitimization of the change process itself (change appropriateness according to the five key change 'believes'. Likewise, an employee's perception of the change initiative as being sensible helps support the change process [51] and points to employee reflection on the discrepancy between the normative-actual value situation in the organization (e.g. [7, 6]; see Sect. 3.2.1).

Norms of fairness and reciprocity build the basis for specific cooperation norms [32] which are developed in and through cooperative situations (e.g. [26, 27]). Elinor Ostrom [59, 61, 63] refers to cooperation practices that enforce the establishment of reciprocity norms and which are likewise reinforced through already existent norms [34]. Positive experiences with the cooperation process and adopting cooperation norms are significant, as they help employees evaluate change situations and to obtain a common understanding of permissions, prohibitions and other common practices (e.g. [60, 69]), so-called do's and don'ts, regarding their behavior in the change period. The experience made within the change process is a crucial element of the learning process beyond change and whether change is perceived in a positive or negative way (see Sect. 3.2.1). Positive perception during change results in cooperation norm conformity.

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### 3.3 Organizing Change Through the Encouragement of Conditional Cooperation

Management cannot centrally enforce the establishment of adequate cooperation norms by direct supervision, but can systematically support their development [52]. According to Ostrom [60], the development of cooperation norms is mainly based on the establishment of trust: on the one hand, cooperation goes hand-in-hand with the perceived trustworthiness of other contributors. On the other, it requires individual acquaintance with the trustworthiness and cooperativeness of the individual. Consequently, individuals only behave according to the norm of reciprocity if they find their colleagues in the field of change to be trustworthy [77]. In their model of organizational cooperation, Morner and Walder [52] add reputation and solidarity as additional requirements, and show that all three so-called 'soft' integration mechanisms foster the establishment of cooperation norms, which again encourage cooperative behavior (see Fig. 3.1).



**Fig. 3.1** A framework for organizing change (following [52])

In her studies of public institutions and ecological systems, Ostrom (e.g. [59, 62, 63]) shows that cooperation norms only develop under certain circumstances. She calls these circumstances ‘best practices of cooperation’ (e.g. Ostrom [59, 61–63]). All long-term successful systems in her studies have established these best practices—in contrast to the unsuccessful systems. Morner and Wälder [52] show how Ostrom’s results can be transferred to firms, and how cooperation practices can be established to foster organizational cooperation. The most important practices of organizational cooperation are the establishment of implicit and explicit general cooperation rules (Sect. 3.3.1) which are activated rules of thumb for fair working procedures [34] and the creation of opportunities for participation by the involved actors (Sect. 3.3.2). In this contribution, we show what this means in organizational change in particular, and how management can foster cooperation in change processes. Successful implementation of Ostrom’s ‘best practices’ is assumed to support change readiness at the individual level, and fosters it at the group level in the organization. The institutionalization of cooperation as change enabler is thus eased.

### 3.3.1 Cooperation Norms in Action

One important driver and outcome of cooperation norms are rules on how to cooperate. These rules set up the basis for cooperation norms in action if they propose to the individual employee that cooperation generally has to be the preferred alternative of behavior [60]. This becomes especially important in change situations. If employees recognize that change is needed (recognizing discrepancy) and that the change initiative is the preferred

alternative to current drawbacks in the corporation (appropriateness), this represents the beginning of change readiness in the organization.

The understanding of how to behave in change situations is based on the corporation's duty to provide its employees with a precise common understanding of the given rules (e.g. [8, 12, 19]). This group level process (see Sect. 3.2.1) is the core stage within change processes, as this level determines an employee's change readiness or change resistance. However, the norms in action should not be imposed centrally, but commonly discussed in order to ensure mutual agreement and shared understanding (e.g. [12, 54, 55, 78]). Involvement in creating new and transforming existing rules should be an ongoing process and thus support change initiatives by establishing a framework for change. Cooperation norms in action have to include conflict resolution mechanisms (a), procedural fairness mechanisms (b) and possibilities for sanctioning unfair behavior (c) (e.g. [59, 62]) in order to result in an effective group level process that makes employees ready for change (see Fig. 3.1):

#### a) **Conflict Resolution Mechanisms**

The establishment of an environment for conflict resolution, or at least establishing a basis for constructive conflict [62], positively contributes to cooperation [81]. A general requirement for this positive contribution is a positive, rather than negative, outcome of the conflict (e.g. [22, 23, 75]). In changing corporate environments in particular, conflicts can arise more easily and transform the critical change situation into a trap [42]. For example, Floyd and Lane [29] worry about role conflicts during organizational change. Conflict intensifies employees' relationships with each other, not at least through communication. This also supports cooperation norms by strengthening social ties and preventing misunderstandings (e.g. [21, 58, 83]).

#### b) **Procedural Fairness Mechanisms**

Falk et al. [25] refer to the significance of procedural fairness mechanisms with respect to cooperation norms. Fair processes lead to a feeling of certainty and security among employees [25]. During change, perceived fair processes are connected to the legitimization of the change process itself, as it supports employees' positive attitude towards the change initiative [51]. A positive feeling regarding change in organizations is important, as this perceived procedural fairness reduces the free rider problems associated with the egoistic and uncooperative behavior of other actors (e.g. [38, 49]). Frey and Osterloh [33] mention procedural fairness as an enabler of intrinsic motivation and as the long-term mode of motivation (e.g. [33, 58]). Intrinsic motivation is mainly responsible for successful change processes with respect to cooperative employees [58]. Change processes should include transparent information about the rules of fairness, as well as steady adjustment of these rules. Fairness monitoring, codes of conduct and additional standards increase the common understanding of the change process and thus strengthen cooperative behavior [46]. Crucial parts for the individual are a balance between their own inputs and outputs to the change process [62].

### c) **Graduated Sanctions**

We have already stated the importance of norms of fairness and reciprocity. Accordingly, individuals reward fair behavior and sanction unfair behavior [25]. As the legitimization of the change process itself goes hand-in-hand with perceived fairness [51], change processes that are perceived as fair are rewarded with employee participation in the change initiative. This behavior derives from the intrinsic motivational aspects of procedural fairness [33]. Fair processes are de facto perceived as fair if there are adequate sanctioning mechanisms in place for maintaining fairness [61]. Graduated sanctions are a tool for maintaining fairness and group identity, and may further lead to group exclusion for unfair behavior (e.g. [61, 62, 70]). Trust, as an enabler of cooperation norms, is strengthened. The more formal the sanctions (in the form of actions and information), the greater their effectiveness [57].

## **3.3.2 Opportunities to Participate in Change**

One important driver for fostering change readiness is participation. In the organizational context, Vroom [88] and Coch and French [17] revealed this more than half a century ago. Strauss [79] similarly highlights the motivational aspects of participating in the creation and monitoring of own tasks. Increased motivation further strengthens individual identification and thus the development of cooperation norms out of this identification process [30]. Accordingly, “engage the unengaged” is a very practical approach to supporting change initiatives within the workforce [67]. Moreover, relaying a sense of participation to employees turns them into active change agents who promote change instead of resisting it [67]. Concrete ways in which management can encourage a willingness to cooperate in change situations include participation in creating cooperation rules (a), adequate control mechanisms (b) and clear boundaries (c).

### a) **Participation in Creating Cooperation Rules**

Participation in creating cooperation rules encompasses at the very least the election of delegates who act in the interest of the main group and take part in the change process [60]. Participation leads to a shared understanding and a code of conduct as to how cooperation should take place and the expected behavior in change processes. This increases trust, reputation and solidarity, as well as cooperation norms [62]. Common tools for implementing facilitated participation procedures in firms are direct feedback on employees’ behavior and employee suggestions for improvement (e.g. [50, 82]). According to Rafaeli [73], employee participation leads to a positive and fair perception of corporate initiatives and thus to a general willingness to cooperate in the corporate interest. Furthermore, the role of change agents, once they are able to actively promote the change initiative, is seen as important for change success [10].



**b) Participation in Choosing Adequate Control Mechanisms**

Enforced cooperation rules need to be secured by means of adequate control mechanisms. However, the involved actors should be integrated into their configuration, creation and implementation in order to create a feeling of trust and further strengthen cooperation norms [62]. The latter serve as a fairness enabler and increase employees' perception of fairness (e.g. [61, 70]). In this way, a guarantee that the change process is fair is provided, and aspects of procedural fairness motivators are put in place (e.g. [33, 62]). The same mechanisms support this process. Direct feedback on employees' behavior and employee suggestions for improvement are also important implementation mechanisms for firms (e.g. [50, 82]) and are closely associated with the executive task of integrating all employees into the change initiative [67]. More recent approaches point to 'open space' methods [66] and focus groups [47], which also increase employees' opportunities to participate.

**c) Mutual Agreement with a Clear and Common Understanding of Cooperation Boundaries**

Participation calls for boundaries: knowing who is part of the game and who isn't is important for employees when it comes to their fairness preferences [62]. Sustainable and successful change processes are therefore linked to clear restrictions. This means that those actively contributing to the change initiative are also eligible to benefit from its positive outcomes and rewards. Likewise, participation shall involve not just rights but also duties [76]. Furthermore, people trust those who are part of this inner 'change circle'. They deem the other members as being trustworthy members of the change process. As these aspects are all tied up with developmental and learning effects, long-lasting relationships and cooperation processes reinforce change initiatives (e.g. [35, 63, 70]).

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**3.4 Conclusion**

Due to employees' potential resistance, firms are often unable to successfully realize organizational change. Thus, creating an environment for the employee that motivates them to support change is an important management task. In this work, we present a framework for a corporate environment that supports the positive change outcomes: learning and corporate developmental progress. By this means, we refer to potential positive learning of change initiatives (discrepancy, appropriateness, efficacy, principal support and valence) that are underlined in individual and group processes during change. As cooperation is an important enabler of change, the individual and their psychological constraints with respect to change should be at the core of change management. Establishing common and adequate cooperation rules and creating opportunities for participation are significant facilitators of cooperation and thereby provide the framework for an adequate change process in corporations at the group level. This interactive process establishes a common and shared understanding about the behavior during change and thus is able to establish change readiness among staff members. The process should encompass participation in



creating and choosing control mechanisms and cooperation rules of thumb (cooperation norms in action), as well as establishing conflict resolution mechanisms and procedural fairness with respect to change. In this way, norms of fairness and reciprocity as important factors for creating new stability and certainty can be developed, which in turn will lead to a positive attitude towards change.

The described way of encouraging change in organizations lies beyond hierarchical and market governed forms of change, since a general motivation to cooperate in change activities cannot be enforced hierarchically or through external incentives [64, 65].

The theoretical basis of our framework was originally developed by Ostrom for local communities such as water irrigation systems, fisheries, etc. [59]. A next step would be to empirically analyze our propositions in the context of corporations. The presented organizational change drivers try to set up an initial understanding on how change readiness patterns can be considered (cooperation norms) and how corporations can implement change supporting drivers by intrinsically motivating the employee to cooperate in change. Thus, this approach enriches the organizational and change management literature with Ostrom's anthropological research, and shows possible ways of encouraging organizational change through fostering cooperation in a long-term successful manner and thus highlighting the employee's underlying psychical process.

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# Diversity Management and Corporate Change: Implications for Co-Determination

# 4

Susanne Braun

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## Abstract

Workforce diversity has become an essential issue in business. The modification of the personnel structure in companies requires effective diversity management as an integral part of the company. Recognizing and valuing heterogeneity with a view to improving organizational performance is the result of change processes aligning management, employees and co-determination as the representative of employee interests and as an active multiplier for diversity management. There are still specific solutions which have to be found for the operational coordination of equal opportunities and equal treatment on a legal basis. To ensure diversity balance, a relevant question that still remains to be answered is if and to what extent the fair and effective allocation of scarce resources as well as the securing of labor rights can be provided for a diverse workforce given the implementation of core workforces versus non-core workforces and the disturbance of allocative justice inside a company by the increasing number of multiple collective bargaining agreements. In practice emerging conflicting interests require suitable approaches which imply a shifted perspective of co-determination in order to strengthen its role in the company and the change process.

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## 4.1 Introduction

The labor market is becoming increasingly diverse as heterogeneous groups of people offer a wide variety of different skills. Not only are traditional patterns of employment changing but employees have higher expectations and expect future employers will accommodate their needs. Companies have become veritable melting pots of different competencies, cultures, nations, languages, backgrounds, genders, experiences, values and religions. As multicultural organizations, they are faced with the diverging interests of heterogeneous workforces. All stakeholders have to deal with this heterogeneity. It is a great challenge to respect the interests of the individual employee and to use the benefits of diversity, e.g. the economic potential of skilled human resources, in order to create a sustainable competitive advantage for the company. At the same time, the risks resulting from a diverse workforce should not be underestimated. Diversity includes a high conflict potential that could threaten unity in a company and industrial peace. The waste of much-needed and skilled human resources due to high opportunity and transaction costs has to be avoided. Leadership has to manage the execution of current activities and the adaptation of those same activities in order to effectively take advantage of the opportunities and challenges posed by increasing diversity. A more diverse workforce triggers change processes in a company that is attempting to establish a balanced diversity strategy and also to improve company performance. One result of such change processes should be the establishment of a diversity management designed to create greater inclusion for all employees in the company [21]. The diversity management needs to monitor the compatibility of the existing working environment and conditions with diversity requirements and then implement appropriate measures aligning persons across the organization. This process, at least in German public limited companies, could be intensively supported by co-determination because of its key-position and its important impact on the motivation of the employees. But co-determination, its responsibility and competencies has also been affected by the emerging diversity on the labor market. Co-determination, traditionally representing employee interests, must then not only deal with the different interests of other stakeholders in the company, but also the diverging interests of a diverse workforce. The growing heterogeneity and emerging distributional conflicts among employees raise many questions, especially concerning equal opportunity and non-discrimination. This creates legal problems for diversity management that require adequate solutions from co-determination. Currently it is not obvious if co-determination is really able to help individuals and organizations to adapt and thrive in this challenging environment. Despite a large number of studies about the economic benefits of diversity (e.g. [17]) and about diversity management (e.g. [6]), and with the exception of the intensive debate about gender balance on corporate boards [36], these aspects of diversity and diversity management have been rarely discussed until now [39, 60].

This article examines the emerging challenges of diversity management for co-determination and seeks to map out what contribution employee representatives would have to provide in order to harmonize employee heterogeneity with company-specific concerns.



It provides a theoretical framework that reveals the tension between particular employee interests and broader company interests in a diverse company in view of the German labor law and points out implications for further research and business practice. To put the dimension of the diversity discussion into perspective, first of all its implications for corporate change in companies will be described. Although in principle the interdependent economic and legal effects of diversity require an interdisciplinary approach, this article focuses on the legal aspects of diversity management as related to co-determination not treated specifically up to now. Given its responsibility for the whole workforce, its role in allocation processes and in collective bargaining, it will be interesting to see if co-determination will be able to ensure diversity balance, equal treatment and non-discrimination. It seems to be a balancing act in companies with a diverse workforce to sustainably realize “diversity in the unity”.

## 4.2 Corporate Change in Companies with a Diverse Workforce

Workforce diversity can be defined as the division of the workforce into distinctive categories that have a perceived commonality within a given cultural and national context and that have an impact on potentially harmful or beneficial employment outcomes [44]. This employee diversity is the result of a number of different developments [58]. Especially global issues are becoming increasingly relevant for companies and cross-border mergers and acquisitions lead to a growing number of international company groups and a diverse workforce. A further result of globalization is that it is now possible to search for and recruit qualified employees worldwide. The large number of atypical employment contracts for the so-called non-core workforce with fixed-term employment, part-time employment, minor employment and subcontract employees is another reason for increasing diversity. Companies often prefer these types of employment contracts because they offer them more flexibility to react to the requirements of a global market. Table 4.1 indicates that

**Table 4.1** Employment data for 2011. (Source: Statistisches Bundesamt [55])

Employment	Total (in thousand)
Regular workforce (subject to full social insurance contributions)	31,592,000
Core workforce	23,674,000
Men	14,060,000
Women	9,614,000
Non-core workforce	7,918,000
Fixed-term employment	2,805,000
Part-time employment	5,025,000
Minor employment	575,000
Subcontracted employment	775,000



meanwhile, non-core workforces account for a growing share of the total workforce in many companies. In 2011, 45% of all new labor contracts in Germany were fixed-term contracts and this category shows a high rate of increase [27]. Finally, the general change of values towards work-life balance, lifestyle, career commitment, as well as social and demographic changes, are drivers for diversity in companies [15]. The average age of the workforce is rising steadily. Whereas in 1991 43.5% of the labor force in Germany was aged between 40 and 64, in 2010 it was already 57.9% [28].

Because of the intensified competition between companies in a globalized economy and the internationalization of organizational practices, management has to increase investment in human resources. A diverse workforce offers the company human capital with significant potential because of its wide range of values, views, experiences and sets of competencies. A larger pool of human resources influences organizational learning and strategic decision-making [35]. Diversified expertise is needed to ensure that the complexities of global markets, the company's financial objectives and the impact of the business on different stakeholders including employees can be understood [4, 41]. Different experiences, national or regional backgrounds and genders can provide effective means to counteract 'group-think' and generate new ideas. Employees with diverse backgrounds have different approaches to problems so that different perspectives can complement each other and lead to greater innovation. Greater diversity leads to more discussion, more monitoring and more challenges in the company [18]. It will make it easier to gain access to differentiated international markets, to attract competent specialists to the company, to gain new groups of customers and to meet their specific requirements [16, 49]. Further benefits of a diverse workforce include reduced absenteeism and employee turnover, reduced time wasted and lost, increased client loyalty and brand value [17]. The success of diversity can be measured by employee demographics, employee satisfaction and loyalty, staff recruitment and retention, corporate image, consultant and customer perceptions and satisfaction [23]. In principle, these largely economic opportunities may serve to motivate corporate management as well as employees to increase diversity [49]. The German Corporate Governance Codex therefore recommends that diversity, as one aspect of a broad set of criteria—e.g. merit, professional qualifications, experience, the personal qualities of the candidate, independence—should be promoted in public limited companies when hiring executive staff, appointing management board members and electing supervisory board members. It is acknowledged that diversity is necessary for board members to be able to ask knowledgeable questions and to shape managerial decision-making processes and the organization's culture [35].

With a diverse workforce a lot of risks exist for a company. Employees want to be respected for and given the opportunity to use their talents and full potential. Many conflicts may exist because employees are not willing to put aside their differences. Language, cultural or religious differences can create distrust and a lack of cohesion within the workforce [17]. Depending on the employee's background, there may be different attitudes and expectations in terms of output quality or work ethic, which erect barriers to promoting diversity and have adverse effects on the motivation of employees. Employees feel excluded

from actions and informations. Networks of interests were established in a company that strengthens group formation. Increasing conflicting interests may disrupt intracorporate equity objectives or industrial action parity.

In practice more and more companies claim, especially on their websites, that diversity is important to them. But those statements are often merely a reaction to massive discrimination lawsuits and do not necessarily correspond to a company's real convictions [40]. The generation of positive diversity effects in a company is only possible if the targeted use of diversity-relevant factors can be successfully combined with the creation and preservation of homogeneity so as to avoid power struggles inside the company. The realization of this potential in diversity largely depends on framework conditions in the company [6]. In order to take into account the impact of employee differences and resultant structural change in the labor market, change processes are initiated in individual companies. First of all, this requires of all stakeholders—especially corporate managers, co-determination representatives and employees—to fully comprehend the dynamics of diversity and to divest themselves of personal prejudice attitudes [44]. Diversity has to be integrated into corporate strategy and an inclusive corporate culture has to be created [3]. Then the establishment of a diversity management is needed because a collection of partial and isolated measures is no longer sufficient. Diversity management can be defined as the planned systematic managerial process for developing an organizational environment that works for all employees [61]. Managing diversity means managing dynamic changes in employee experiences, motivations, needs and interactions within the context of employment and organizations [45]. The introduction of measures such as quotas or targets to ensure diversity balance in companies or their boards, however, is not sufficient if companies do not adopt diversity policies. Diversity management has to enforce recognition, respect and acceptance for employee diversity in the whole company as a key performance indicator. Effective diversity management should be able to create a win-win situation for all stakeholders. It is supported by some programs, activities and tools, directed towards integration and development of diversity, both physical and job-related, exhibited by members of an organization [5]. The evolution of policy forms assimilation, differentiation and integration, including formal training programs which contains a series of programs and activities that highlight differences among employees and offer strategies for handling them [1].

Meanwhile government and society demand more diversity in companies. The European Commission encourages employers to focus on diversity management [19]. With the establishment of Diversity Charters in Europe, there is now increased support for companies and best practice in diversity management is being promoted in multinational companies. Despite several mandatory legal provisions, the decision to establish diversity management remains above all an entrepreneurial—that is, economic—decision [13]. Especially large companies have already implemented diversity management [2] because there is a greater number of employees and therefore are statistically more likely to have a diverse workforce [59]. Moreover large companies are better able to sustainably implement diversity management, which is both costly and time-consuming.

The concept of diversity management has diffused across German companies since the end of the 1990's [38, 59]. In practice however there is currently a very different scenario. Independent of the size, age or type of organization, companies can be found that deny any serious impact of diversity, e.g. Abercrombie and Fitch show an extreme racial preference in the store in Hamburg, but also companies with a prudent approach see diversity as affirmative action or the role of diversity management concepts above all in labor-intensive industries, e.g. Daimler, Volkswagen, E.ON, IBM Germany, Siemens, Microsoft Germany, Ford Germany, Commerzbank, Lufthansa. Since launching their diversity management program in the summer of 2005, the catering company ARAMARK has conducted extensive training for employees at every level to explore the topic of diversity and increase sensitivity to and appreciation for personnel [31]. A variety of projects has been set up to identify employee potential, to increase motivation by showing appreciation and respect, and to make a real contribution to the company's success. An important innovation was the establishment of a complaint hotline so that discrimination and other conflicts can be identified and resolved as soon as possible. In order to make use of the employees' hidden potential, a database was set up with information on their abilities and talents, such as foreign language skills and other expertise. This information can be helpful for assembling project teams, filling open positions or recruiting young talent or executive staff. The Deutsche Bank established a new division called Bankamiz which offers its Turkish private customers in Germany a bilingual workforce with a range of banking services specifically geared to their needs [31]. The combination of financial expertise, cultural sensitivity and language skills is the basis for the development of mutual trust. Bankamiz is accessible via a Turkish call center and a bilingual website. In addition, the bank participates in local and regional events in the Turkish community.

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### 4.3 Diverse Workforce and the Specific Demands of Management

A diverse workforce puts corporate and human resource policies to the test. It is widely accepted that an organization's success is determined by the decisions its employees make and the behaviors in which they engage [50]. Therefore how employees in the company are managed is very important to gain a competitive advantage [20]. The need for managing employees strategically in the twenty-first century requires a flexible management and organization structure with a flatter hierarchy. As a result of these factors, a diverse workforce has become an essential issue in business with consequences for entrepreneurship and leadership/management in relation to new challenges. Diversity has to be seen as an organizational learning opportunity not only requiring process skills, support and commitment but also as a specific leadership issue involving strategic decisions about employees in order to successfully manage diversity. Beyond human resource planning or developing diverse markets, leaders need to take responsibility for the politics of diversity and need to

engage in adaptive work. They have to encourage an atmosphere in which all employees embrace the benefits of being part of a diverse workforce and to provide a framework for the fair and equal treatment of all employees irrespective of their individual differences or personal characteristics. The more heterogeneous the workforce is the more allocation problems as well as problems of equal treatment and non-discrimination can occur. Especially identical treatment can result in unequal outcomes in certain situations, specifically because it ignores individual differences [24]. Sometimes a degree of non-equal treatment must first be accepted in order to realize equality in a company. But among the employees the acceptance of unequal—even justified—treatment in one company decreases in so far as the activities are similar. In consequence, employees may be unwilling to invest in the acquisition of specific skills and may face serious economic risks in case of dismissal. In order to maintain or even increase employee motivation, solutions have to be found which are at a minimum socially acceptable. Leaders must pay close attention to how activities in their company affect the ability of each employee to make value added contributions. This widely enlarges their role as change agents in the diversity process. They are deeply involved in defining the meaning of the employment relationship, transforming the company, redesigning work processes and rethinking systems of recognition [14]. Fundamental changes are required and not short-term and sporadic actions. Instead of selective staff-oriented measures, a holistic strategic approach is needed [32]. A long established corporate culture is very resistant to change and can block the change process. In this case change forced by compliance imposed by government instead by self-regulation would be an alternative. An organization's diversity may demand responses beyond current capacities.

Leaders have to be flexible in accommodating employee requests, perceptions and emotions. Specific innovative models must be developed to reconcile the interests of the individual employee with the operational requirements. It will be very important for leaders to create conditions which allow trust to develop between groups who may perceive themselves as different. Corresponding to the heterogeneous interests of the employees different—that is, individual—motivation factors will be necessary. Especially for the individual motivation of employees management should actively use the support of employees in key positions or co-determination as a means of reducing transaction costs and negotiating a path through changing circumstances. Moreover the involvement of co-determination is a key to the successful managing of diversity [56]. In order for leaders to effectively address these kinds of issues in a way that enhances organizational performance, they must be able to link such concerns to the on-going (change) processes in companies. A participative and adaptive management that unites flexibility, motivation and creativity can offset internal and external pressures [34] and will have an essential impact on positive results.

#### 4.4 Changed Framework Conditions for Co-Determination by Diverse Workforce

German legislation recognizes employees as a group whose interests have to be respected in corporate decision-making processes by embedding co-determination as the representation of employee interests on the plant and on the corporate level. This provides opportunities for an effective dialogue between employers and employees, promotes equal opportunities for employees and hereby restricts the entrepreneurial freedom [10]. Traditionally, co-determination is situated between participative management, employees and a trade-union orientation [4]. Co-determination on a corporate level means the immediate and active participation of workers in the supervisory board of a German public limited company. But the employee interests cannot then be dealt with by the employee representative but must be handled by negotiations between the company and its employees according to the rules of labor law. The works council, which exercises co-determination on the plant level, has rights concerning the working environment in various areas as personnel, social and economic matters.

Under legal aspects the implementation of diversity management is principally a top-down approach which can be implemented without the involvement of co-determination [30]. In practice there is an increasing interest in co-determination as an active player in diversity management [29]. Because of its high degree of institutionalization and high competency level, co-determination in Germany has a high impact on worker motivation and performance. Principally it can facilitate dialogue and handle conflicts arising from employee diversity. This includes establishing and promoting a culture of mutual trust at work and in social interactions, creating a network of measures to ensure that conflicts are handled in a constructive manner, taking active steps to encourage communication, modeling constructive behavior in conflicts as a component of the corporate culture. Likewise co-determination has to prevent undesirable effects resulting from the complex dependencies between company welfare and trade union loyalty [47]. As the workforce becomes increasingly diverse and heterogeneous, the framework conditions for co-determination will be modified. The role of co-determination will no longer be only to mediate between employer and employee but in addition, because of their increasingly particular interests, between individual employees. For instance core workforces regularly have other ideas about working conditions and the working environment than non-core workforces. For core workforces, co-determination should primarily work to maintain core workforce employment and to avoid its erosion by non-core workforces. It should also try to prevent the redistribution of work to fixed-term employees instead replacing core workforce lost to attrition. On the other hand, part-time, minor or subcontracted employees often have other priorities, e.g. their better integration into the company whereas the assessment of individual integration is problematic because integration resulting from a labor contract is often substantially different from integration in practice. Fixed-term employees often want non-fixed term employment for themselves or want to prevent employers from continually rolling over repeated fixed-term contracts.

In this period of structural change processes, the commitment to co-determination is now being severely tested because of the dual loyalty its representatives owe both to the employees and the employer or company. Of course, employees have never given up their own particular interests and completely subordinated themselves to the company's welfare. But currently the situation has become more complex because of the high degree of heterogeneity and its increasing rate. While some of the emerging barriers can be overcome through the dissemination of information, it is very difficult for co-determination to create a unified employee position representing their combined interests to the employer or management. The current challenge for co-determination is to find as soon as possible suitable and innovative solutions for emerging diversity problems while satisfying the need for fair compensation in companies in order to support management in on-going change processes as a reliable partner.

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#### **4.5 Current (Legal) Problems of Diversity Management: Challenges for Co-Determination**

To respond effectively to change initiative originated by the increasing diversity on the labor market, management supported by co-determination has to face several aspects that currently demand for suitable (legal) approaches. As already indicated the equal treatment and the non-discrimination are the main relevant aspects for the motivation of the employees and therefore the essential requirement of those who practice it. The principle of equal treatment provides equal opportunities for all employees by ensuring that everyone has a chance to participate regardless of differences and prohibits less favorable treatment of individual employees or group formation. It is forbidden that different benefits or conditions are agreed for different groups of employees without its serving a legitimate purpose, being used to attain a given end and being necessary and in proportion to the objective pursued [52].

In practice four legal problems related to diversity in the workforce can currently be identified. They illustrate as a kind of inventory the status quo of the legal situation and the requirements of practice. But they also reveal the lack of adequate implementation of concepts. Currently many problems occur in relation to subcontracted employment and the service contracts. Despite the fact that some of the problems discussed here were not originally related to diversity these problems have been intensified by the presence of a diverse workforce and have now resulted in a need for action. Although technological globalization involves increasing international networking of the political and economic system, the legal system still remains determined by the territoriality principle. Therefore, this paper will focus only on the German co-determination as related to German labor law. Because of the differences between the German two-tier board structure and other one-tier board systems in Europe and the widely differing levels of employee involvement in EU countries, it will not be possible to draw conclusions from this study to the situation of co-determination in other countries.



### 4.5.1 Establishment of Co-Determination

Co-determination can only support the management in the change process and represent diverse workforce if it is established in a company. With view to the increasing diversity it has to be asked to what extent the heterogeneous employees have to be taken into account for the establishment of co-determination.

The works council should be composed as far as possible of employees of the various organization units and the different employment categories of the workers employed in the establishment, para 15 section 1 Works Constitution Act. Works councils are elected in every company with a regular workforce of at least five employees pursuant to para. 1, 5 and 7 Works Constitution Act. Whether a works council can be established in a company basically depends on determining what a regular workforce is. Labor law jurisdiction determines a workforce as the members of the company, with the relevant criterion being the existence of a relationship between employee and employer realized by contract, law or the actual integration into the company's organization (BAG, NZA 2005, p. 1006). Domestic workers, fixed-term employees and part-time employees are taken into account in this calculation; foreign workers are not [33]. The relevance of subcontracted employees is controversially discussed in the academic literature and the judicial practice until the Federal Labor Court takes a clear position. The debate was stimulated by recent jurisdiction of the Federal Labor Court on labor law thresholds: subcontracted employees have to be counted when determining the size of the company according to the Protection Against Dismissal Act (BAG, NZA, 2013, p. 726 BAG), when determining the size of the works council (BAG, NZA 2013, p. 789) and when determining the size of the workforce for para. 111 Works Constitution Act (BAG, NZA 2012, 221). Another aspect is the voting right of the different workforces. Part-time employees as well as employees of German and foreign nationality have an active voting right. Domestic employees (only temporarily not permanently) working abroad retain their active voting right (BAG, NZA 2000, p. 1119). Pursuant to para. 7 section 2 Works Constitution Act, subcontracted employees who have been working for longer than 3 months in the hiring company have an active voting right for the works council in this company. But it must be noted that they have no passive voting right, which means they cannot become members of the works council of the hiring company, para. 14 section 2 Subcontracting Employment Act. Of course, they can be elected to the works council of the subcontracting company. The size of the works council depends on the size of the company. In 2012 there were works councils in 86% of all private-sector companies with more than 500 employees in West Germany and 85% in East Germany [26]. The establishment and the size of co-determination on the plant level and on the corporate level depend on a threshold number of employees.

Co-determination on the corporate level takes place in the supervisory board of the company. The thresholds for the number of employee representatives in the board is determined in special legal provisions such as the Coal and Steel Industry Co-determination Law of 1951, the Co-determination Law of 1976 and the One-Third Participation Law of 2004 (with three different regimes of co-determination on the corporate level). In the few

companies in the coal and steel industries with more than 1000 employees there is full-parity co-determination. In companies with more than 2000 employees there is quasi-parity representation, while there is one-third co-determination in companies with 500–2000 employees. This provides for equal numbers of representatives from the employee side and the company side on the supervisory board. The number of representatives depends on the size of the company. Whether subcontracted employees have to be considered when determining this number remains to be decided by the high courts [33]. If they have been working for longer than 3 months in the hiring company, they are entitled to elect the supervisory board. Here, the above mentioned special provisions refer to the rules of the Works Constitution Act. They do not have a passive right to vote. Subcontracted employees cannot be elected to the supervisory board of the hiring company. This is explained by the fact that the interests of subcontracted employees differ from those of the core workforce (OLG Hamburg, BeckRS 2007, 19416). Subcontracted employees always have the possibility to return to the subcontracting company or to work in another company and so they could be less interested in the corporate policy of the hiring company. The application of the German laws on co-determination on the corporate level is determined by the company statutes (BGH, NJW 1982, p. 933). There is no representation in a foreign company even if it fulfils the German requirements for company representation. Whether the German rules of co-determination on the plant level are applicable is determined by where the company headquarters, and not a branch, are located (BAG, SAE 1978, p. 236).

#### 4.5.2 Securing of Labor Rights for Different Types of Workforces

In many companies the workforce is divided into two groups with different and sometimes opposing interests: the core workforces and the non-core workforces.

The results of a survey in the sector of manufacturing, industry-related services and the skilled crafts and trade sector (Table 4.2) indicate that in Germany subcontracting employment or service contracts—with lower remuneration and extended working time—is intensively used in innovative and export-orientated industries [25].

Furthermore in slaughterhouses only 20% of the employees belong to the core workforce, 5% are subcontracted employees and 75% work with service contracts.

**Table 4.2** Employment data 2013, IG Metall [25]

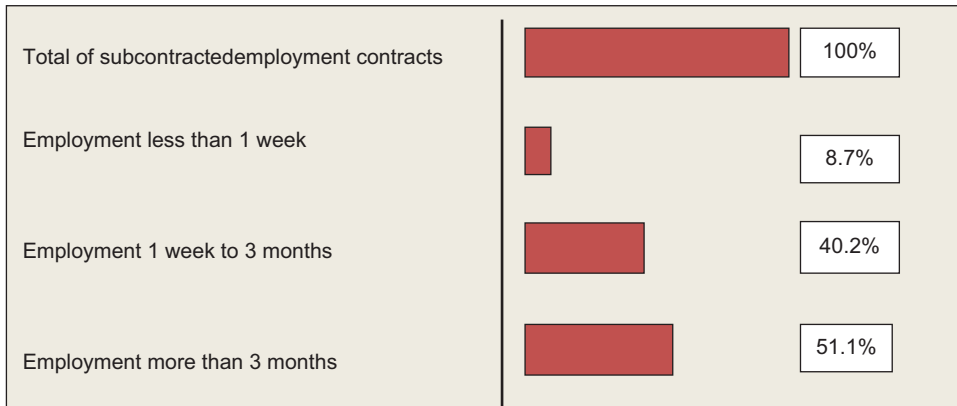
Industry	Core workforce	Subcontracted employees	Service contracts
Automotive industry	763,000	100,000	250,000
Steel industry	61,000	2100	19,000
Aeronautical/aerospace industry	72,400	10,000	10,000
Shipyard	16,800	6500	6500



For its self-image and for reasons of legal clarity it will be important to determine above all, if co-determination is responsible for all groups of diverse employees in a company in order to find out, how to best represent the interests of a heterogeneous workforce. It is the goal of co-determination to influence the composition of the workforce of the company, to secure the best possible labor rights for the workforce and to ensure that different parts of the workforce are not played off against each other. In individual cases the employer could try to exploit the pressures of diverse workforce in order to weaken the representation of labor interests. All operating standards should be applied in a uniform way for the whole company without differentiation according to individual criteria [48] unless differentiations relating to special groups of employees are justified by objective reasons, e.g. in case of subcontracted employees, para. 1 Sect. 1 sentence 2 Subcontracting Employment Act. As in the case of subcontracted employees, increasing diversity has already created problems for the determination of the responsibility of co-determination. An answer could be found in co-determination in the subcontracting company because this is where the employee has his or her labor contract. The typical employer duties (remuneration, social insurance contribution) remain with the subcontracting company because of the temporary employment, para 1 Sect. 2 Subcontracting Employment Act. As the employees are working in another company by reason of an agreement between the subcontracting company and the hiring company, the responsibility for co-determination in the hiring company could also be relevant. According to para. 5 Sect. 1 Subcontracting Employment Act, workers are not employees of the hiring company even if they are completely integrated into this company. Therefore, they should not in general work for longer than 3 months in the hiring company together with its core workforces, with the time being determined in the contract and not the real working period being relevant (BT-Drs. 14/5741, p. 28, 36). Neither the German legislator nor the Federal Labor Court has exactly determined the notion of temporary employment. Therefore in practice, more than 50% of subcontracted employees do work longer than 3 months in the hiring company as indicated in Fig. 4.1.

In practice the hiring company could even substitute the core workforce with (permanently) subcontracted employees in a creeping process. But even if the working period of subcontracted employees widely exceeds the three-month period and despite their complete integration in the hiring company, it is still assumed that they do not have similar interests as relevant to co-determination as the core workforce. The subcontracted employees do not automatically become part of the core workforce. Therefore 2013 Volkswagen announced that 1500 subcontracted employees, after having been employed for 3 years continuously in the hiring company, will become core workforce [12].

Nevertheless, as long as the subcontracted worker is integrated in the company of the hiring company, his interests are mainly represented by co-determination in the hiring company. In 2013 Amazon sued its works council because of its refusal to agree to the continued employment of almost 65 subcontracted employees after the subcontracting company Trenkwalder was in breach of the law [57]. The working time conditions in the hiring company are relevant for the core workforces and the non-core workforces [62].



**Fig. 4.1** Average length of time of subcontracted employees in the hiring company

In practice, there are many difficulties drawing a borderline because it is not possible for there to be a dual responsibility for employees in co-determination. It remains a challenge for co-determination in the hiring company to combat non-compliance with regulations such as the conclusion of so-called “service contracts” between the hiring and the subcontracting company where subcontracted employees are used as agents e.g. to avoid collective bargaining agreements, the establishment of social standards or the payment of standard wages [37]. In Germany such service contracts as well as subcontracting jobs are currently being intensively discussed in relation to a number of companies. After months of criticism in 2013 and intensive intervention by the works council against low-wage dumping, Daimler recently announced [54] it would transfer 1400 service contracts into subcontracted jobs so that minimum social conditions could be defined and collective bargaining agreements and internal company agreements could be applied. Pursuant to an existing collective bargaining agreement, those subcontracted employees will obtain an entitlement to become members of the core workforce after 2 years. Following the death of two service contract workers from Romania, pressure from IG Metall and the government of the federal state of Lower Saxony resulted in the Meyer Werft shipyard signing a company collective agreement extending co-determination to service contract workers and tackling the abuse of subcontracting agreements. Non-compliance with or infringements of the regulations are subject to penalties, including the option of terminating the subcontracting agreement. The collective agreement came into force in October 2013.

In companies with cultural diversity specific working conditions had to be established [31]. For instance Ikea initiated a mentoring program to promote reading skills for employees whose native language was not German after it was noticed that they failed to read posted notices or the internal newsletter. Siemens arranged German language classes because the assemblage of a multinational technical team led to problems. Members were selected based not only on their technical expertise in the field of management development but also on their ethnic background and ability to serve as consultants. All of the employees were recognized experts in their home countries, but only spoke their native

languages. The agreement to use English as a working language in the team put team members on an unequal footing because native speakers of English had an advantage over their colleagues in terms of fluency and vocabulary. German team members felt that these team members should learn German if they were working in Germany, not least because they would be expected as human resource personnel to communicate with German employee representatives. Thyssen Krupp was required to change work routines affecting the time of employee breaks with respect to the Muslim workers fasting during Ramadan. In accordance with the rules of their faith, for 30 days they refrain from eating during the day and break their fast after sundown. While it might appear a simple matter for colleagues to work out such adjustments among themselves, in fact cultural differences often lead to conflict.

### **4.5.3 Fair and Effective Allocation of Scarce Resources**

The availability of many resources and goods in companies is limited, e.g. high levels of remuneration, part-time jobs, and promotion. Allocation among employees has to be fair, transparent and socially acceptable to all employees. Otherwise, the danger is that employees may become more and more demotivated, reducing their natural competitiveness, which would in principle impact company welfare. With a diverse workforce, problems of fair allocation become even more complex [41]. Currently there is a legal action in the labor court brought by an employee of an outsourcing company in Aachen that had a service contract only with one employer and was earning an hourly wage of 8 € whereas the core workforce was earning 14 € for a similar activity. The effective allocation of remuneration among subcontracted employees is determined by the equal pay principle with a minimum wage level of the Subcontracting Employment Act. Supplementary wage is foreseen by the tariffs of the advocacy group Interessenverband Deutscher Zeitarbeitsunternehmen (IGZ) and the employer association Bundesarbeitgeberverband der Personaldienstleister (BAP). Invalid collective bargaining agreements for subcontracting employment have the effect that all subcontracted employees receive retroactively the same remuneration as the core workforce in the hiring company (BAG NZA 2012, p. 625).

There are different approaches that can be used to ensure a fair and effective allocation of scarce resources: the priority principle, the principle of random selection, the merit principle. Neither the priority principle nor the principle of random selection is however suitable in this context. They completely neglect social issues which are very important in German labor law such as the protection of pregnant women, the protection of handicapped persons or protection against dismissal [41]. The merit principle is based on the existence of specific characteristics or qualifications that can be used as criteria for differentiation, a main prerequisite for fair allocation. To enable a formal standardized assessment, these criteria have to be concrete. If this is not possible, as in case of creativity, engagement, capacity or competence [63], then it is not possible to conduct a transparent, differentiated and binding selection. For example, ideas about competence may incorporate social, cul-

tural or personality traits not directly related to executing the job. In consequence, this may impact results and lead to unfairness [51]. A modification of the merit principle by the introduction of a quota system could lead to more allocative justice and fairness [22]. Quota systems are regulations determining that certain groups of persons have to be represented to a certain extent in order to realize effective equality in a functional system; differences in the treatment of individuals are thus allowed [22]. A consequence of the rationality of economic systems is that each employee must adjust to the resulting patterns of behavior and expectations (BAG, MJW 2011, p. 634) and to accept restrictions by a quota system. The decision to introduce a quota system is very complex and involves a number of challenges. It should be noted that there are different forms of quota systems. It is not yet clear whether a strict quota, in contrast to a performance-based quota, is compatible in principle with European and German Constitutional law. In recent years, Germany has seen a lively debate, with explicit participation by co-determination representatives, on the introduction of gender quotas. The arguments in favor of promoting employees based on diversity aspects irrespective of performance-based criteria are however not convincing. Fulfilling fixed quotas could lead to a “reverse discrimination”. For example, a fixed gender quota for boards would have to be fulfilled even if the available female candidates were less qualified than their male competitors. So far the European Court of Justice has accepted merit-based quotas with the preferential hiring of female candidates provided they are as qualified as male candidates. Measures promoting equality of opportunity are allowed; measures promoting equality of results are not (EuGH, NZA 1985, p. 1095). Weighing up fixed quotas against flexible quotas, the flexible quota seems to be a more promising solution to developing policies to enhance diversity balance in a company. Companies will be required to set an individual quota depending on their size and business model what seems to provide for more allocative equality.

#### **4.5.4 Multiple Collective Bargaining Agreements**

Co-determination and collective bargaining are in principle independent regulatory systems but mutually supportive; their interactive relationship, which assumes a different form depending on branch and sector, constitutes the central element of the German system of industrial relations. It is difficult to achieve cooperative relations between the works council and employers without the help of collective agreements. In companies with diverse workforces, different collective bargaining agreements can coexist because the employees are often members of different trade unions or associations. Multiple collective bargaining agreements mean the juxtaposition of diverging, especially between different parties, collective bargaining agreements in one company. In consequence, the employer is bound to several collective bargaining agreements, while only one agreement is applicable for any given individual employee. Jurisdiction once focused on, for reasons of legal certainty and legal clarity, the principle of a uniform collective agreement applying to employee relationships. The Federal Labor Court has since given up this principle as it was an in-

valid restriction of the constitutional right to free collective bargaining (BAGE 135, p. 80). Hence, multiple collective bargaining agreements have to be accepted.

This multiplicity raises issues, such as allocative justice, and has consequences for the role of co-determination. The specific collective bargaining agreement is only binding for the members to the agreement whereas it is not a condition that an employee has to be a member of a trade union: he or she enjoys freedom of association. While works councils represent all the employees of the company, collective bargaining represents only those who are members of trade unions or associations. This means some collective provisions can only be demanded by trade-union members [64]. Therefore, allocative justice inside a company may be disturbed by such multiple collective bargaining agreements, e.g. different remuneration for employees in one company. Fair wage formation by collective bargaining agreement is not a legal duty, because the principle of the free collective bargaining obliges the state to remain neutral. So payment conditions, defined by criteria such as economic and financial factors, different legal and factual conditions e.g. degree of organization or negotiation skills, will be negotiated between the parties to the agreement. Ultimately, the outcome of the negotiation depends on the power of the trade unions or associations involved. Here the competition of trade unions with their differentiated strategies could work to the disadvantage of third parties not directly involved, e.g. non-unionized employees. Currently this power no longer depends only on the number of members but on their role and importance in a company. In recent years professional associations have enjoyed growing influence, especially those representing a small group of employees with great importance for the company [53]. They occupy key positions and, for technical, organizational or legal reasons, are essential to the operational activities of the company. In consequence, such associations have more power than big trade unions and are able to negotiate better payment conditions for their members than, for example, the Deutsche Gewerkschaftsbund (DGB) for its members. Indeed, the dominance of traditional large trade-unions such as the DGB will be weakened by this development. These collective bargaining negotiations are supported by two main principles of the German collective labor law. Collective bargaining rights enjoy constitutional protection and collective bargaining agreements have priority over works council agreements. Pursuant to para. 77 section, 3 Works Constitution Act, collective bargaining agreements on wages and working conditions exclude agreements on the plant level on the same matter unless an opening clause explicitly allows for such an agreement. Furthermore, pursuant to para. 3 section 2 Collective Bargaining Act, a party to collective bargaining representing even only a small number of employees can negotiate an agreement with the employer that regulates the legal relationship with all employees. Ultimately, it is because of the “egoistic” negotiation of one group, such as small professional associations, that the majority of employees organized in the homogenous trade-union DGB will have worse payment conditions. Multiple collective bargaining agreements may thus cause dissatisfaction and conflicts among groups of employees in a company.

There is a danger that co-determination could be completely replaced by multiple collective bargaining agreements and the increasing importance of professional associations.

But co-determination should not become a kind of substitute trade union, with stronger employees negotiating directly with the employer while co-determination is limited to representing only weaker employees [47]. This would deteriorate the importance of co-determination. The growth in multiple bargaining agreements thus increases the necessity for co-determination to find new forms of interaction of co-determination and collective bargaining, which creates a scope for solutions appropriate to individual companies. Reacting to disturbances to allocative justice due to collective bargaining agreements, co-determination can continue to attempt to reconcile interests. But the competence of the works council is blocked by collective agreements on the same matter. Co-determination on the plant level could be given a new significance and greater scope in shaping cooperation arrangements could be provided by the principle of propitiuousness [7]. This principle requires, if there is a conflict between different sources of rights, the most employee-friendly settlement. These sources are the European law, the German Constitution, labor law, collective agreements and the individual employment contract. The principle rules out any unfavorable interpretations or evasion of the law, including internal arrangements between employers and the works council on the plant level [43]. But it does not hold for the relation between a collective agreement and agreements on the plant level. Co-determination on the plant level is not allowed to undermine collective bargaining rights by replacing them with any internal plant-level agreement. Collective bargaining agreements may entail opening clauses permitting individualized agreements on the plant level. Only then will it be possible to shift decisions from collective bargaining agreements to co-determination on the plant level.

#### **4.5.5 Implications for Co-Determination**

The results of scientific research and practical knowledge are relevant prerequisites to identify needed concepts or approaches for further development of co-determination. The changes in employment relations discussed above can undermine important practical conditions for effective co-determination in its prevailing form and threaten to erode its legal basis. It is obvious that an efficient and consensual mode of settling diversity conflicts has to be found providing evidence and at the same time reducing complexity for diverging particular interests mainly focusing on equal treatment and non-discrimination. But currently there is still a lack of concrete approaches that go beyond individual and situation-based actions within the existing mandatory legal framework. Therefore the question rises which internal or external developments could strengthen the position of co-determination as strong representative of all employees. The following procedures would be possible and could have an important impact on co-determination:

##### **4.5.5.1 Modification of the Legal Framework**

One option to strengthen the position of co-determination and to clearly determine its responsibilities and activities for all workforces would be a modification of the legal frame-

work. Pursuant to a draft law of the German Bundesrat for measures against the misuse of service contracts dated September 20, 2013, co-determination would take on responsibility for service contract employment (BR-Drs. 687/13). Therefore the Works Constitution Act would be amended and supplemented. Any further support from a legal policy debate initiated by corporate practice or by legislation is not foreseen. Some time ago a debate was started about modifying co-determination regulation by increasing the relevance of the domestic employees of a company working abroad in order to enhance the performance and competitiveness of the company [46]. But for the time being no major amendments to the co-determination rights of employees are planned.

#### **4.5.5.2 Development a Mechanism of Self-Regulation**

While, in general, binding regulations and sanctions are related to less flexibility and competitive disadvantages, operational participation and communication processes could be introduced by a non-legally binding mechanism of self-regulation instead of a legally binding regulation. But self-regulation requires that diverse workforces comply with and even accept differentiated outcomes. In a globalized world, there is a shrinking demand for regulative intervention and a growing need for deregulation [8]. By contrast, a consequence of the financial crisis is that more and more issues typically covered by self-regulation are turned into binding regulations, e.g. gender quotas in France and Norway [9]. In any case, a legal framework will be critical in preserving legal certainty and legal clarity for decision-making.

#### **4.5.5.3 Modification of the Jurisdiction of the Federal Labor Court**

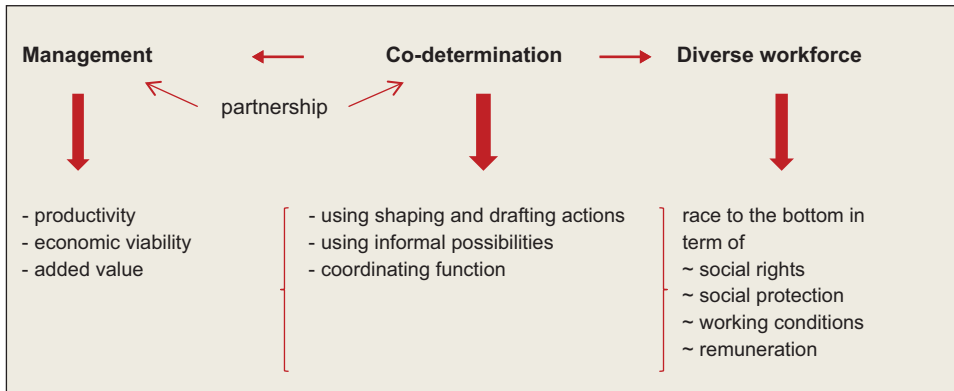
There could be useful implications arising from further modifications of the jurisdiction of the Federal Labor Court, e.g. concerning the outstanding issue of responsibilities. A further modification of labor law thresholds would enlarge both the base of employees and their acceptance of co-determination interaction. But one main disadvantage of this procedure is that there is only a very restricted scope of planning.

#### **4.5.5.4 More Intensive Use of Shaping and Drafting Possibilities**

In principle, the restrictions to the legitimate differentiation depend on the chosen legal arrangement within the existing legal framework. Whereas the individual labor contract offers the most possibilities for differentiation among employees, the collective bargaining agreement secures equal treatment for all members of the contracting parties. Work council agreements between the works council and employees or internal agreements between the works council and the employer serve to promote equal treatment for all employees in a company.

Co-determination has to focus on the more intensive use of shaping and drafting possibilities to face up to the challenges of a diverse workforce and to effectively promote co-determination as illustrated in Fig. 4.2. The development up till now indicates an increasing importance of the informal possibilities arising from co-determination practice in order to harmonize the heterogeneity of worker and company-specific concerns and





**Fig. 4.2** Future positioning of co-determination. (Source: own illustration)

hereby support the management. Co-determination could at least take on the task of coordinating the competitive behavior of trade unions and associations in order to find suitable solutions [47]. In contrast to legal regulation, a coordination process initiated by members to collective bargaining would not be a prohibited restriction of free collective bargaining. This implies that in future the engagement of co-determination seems to be based upon partnership with the management on a 'race to the bottom' in terms of social rights, social protection and working conditions [47]. Moreover allocation conflicts, which could be aggravated by the large number of particular employee interests could be reduced, if instead of the application of the merit principle substantive and procedural criteria for the allocation of scarce resources could be defined and assessed by the employer together with co-determination. This handling would promise transparency, verification possibility and a certain degree of justice (BAGE 105, 107) and avoid arbitrary and discriminating selection procedures. But finding adequate criteria relevant to the selection process is problematic. Selection according to social aspects could lead to an older employee with a longer period of employment receiving preferable treatment than a younger one. This could have an impact on the performance of the company by increasing the cost factor of labor and weakening competitiveness. Neither age nor length of employment is necessarily indicative of the concrete working capacity of the employee. The question then rises if, when allocating scarce resources, it is socially acceptable to base a decision on these criteria instead of finding a person receiving less protection but with greater working capacity and higher motivation. In addition to substantive criteria, precise and detailed procedural rules should be established to ensure a well-ordered and rational procedure for the systematic reappraisal of the opposing interests. Probably the emergence of multidimensional interest conflicts on the employee side cannot be completely prevented but the participation of co-determination representatives could help find a fair and reasonable reconciliation of conflicting interests.

At the present available experiences suggest that the last proposal of the procedures discussed above seems to be the most promising option. Compared to the other options at



least this development can be actively influenced by co-determination. Future empirical studies about the legal problems of a diverse workforce in a company with co-determination have to give more detailed information in order to determine more concrete implications for co-determination inside this framework.

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## 4.6 Conclusion

Increasingly diverse workforces in companies have an important impact on leadership and co-determination. Because of its strategically important position as an interface between management and employees, together with advantages owing to access to information, employee motivation to engage for the company's welfare mainly depends on its activity. Co-determination provides a significant contribution to the efficient use of especially human resources while reducing non-equal treatment, discrimination and finally employee fluctuation. Its activities can lead to a growing integration of employees and increased support for the creation of a common identity. It is thus not surprising that co-determination on the plant level and on the corporate level is essential for the harmonization of the particular interests of a heterogeneous workforce. But obviously there seems to be a lack of suitable approaches or of adequate implementation of already existing concepts. Moreover companies are under pressure to find an appropriate way of tackling the legal problems of diversity management in order to optimize the use of scarce resources and to enhance employer attractiveness in the labor market with view to the expected increase of diverse workforce in the near future.

Co-determination has always been affected by change processes. Due to increasing global competition, regulations concerning employee participation have had a significant effect on the area of jurisdiction in which a company decides to incorporate [42] and of the legal form of a company. Countries without any or without a comprehensive co-determination system were preferred. Alternatively, a *Societas Europaea* or European company could be established with its flexible model of co-determination. In current change processes, co-determination is in principle able to promote both diversity and equal opportunity and face the real competition associated with a culture of diversity. But more than in earlier change processes the commitment to co-determination is being severely tested by the challenges of a diverse workforce.

Co-determination has to meet the challenges of the change processes initiated by the diversity of the labor market, enlarge its traditional concept and shift perspectives. Traditional commitment to co-determination should not hinder a willingness to change the original concept. There is an important opportunity for co-determination to support the decentralization of change processes, shifting from an exclusive focus on management.

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## Abstract

The network form of organizing is usually considered to provide organizations with the strategic flexibility needed to survive in increasingly turbulent environments. At the same time, empirical research demonstrates that the network form—not least strategic alliances, regional networks and clusters, and global production and supply networks—runs the risk of becoming inert over time, reducing not only the networks' strategic flexibility but also making organizational change increasingly difficult. Upon closer inspection, some of the structural inertia or institutional persistencies of this form may turn out to result from organizational path dependencies which are particularly difficult to detect and to overcome. It is argued that the emerging theory of organizational path dependence that builds on previous economic and institutional approaches in this field may be particularly helpful in this respect.

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## 5.1 Introduction: Flexible Persistence?

Permanent innovation and change is seen increasingly as an essential requirement of organizing economic activities, in particular in an environment that was described early on as “turbulent” [16], later as “hyper-competitive” [11] or more recently as “highly volatile” [39]; a label originally reserved for high-tech industries [7] but now applied more widely

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and wildly. Respective demands for designing not only an occasionally adaptable but permanently changing organization, i.e. to institutionalize organizational change [2], point to an immediate dilemma or paradox. For organizations are designed, first and foremost, to guarantee the smooth, thorough and straightforward implementation of strategy, to save on production and transaction costs, to secure continuously high market shares and revenues, and to provide ample learning opportunities through the regulation and routinization of activities.

Organization theory has tried to provide answers for a long time on how to deal with this dilemma in practice: allowing for some informality in formal organizations [47], no matter whether problematic or productive tensions arise from this [23]; finding a balance between bureaucratic and organic formal structures [9], possibly by means of specific differentiation and integration strategies [29]; developing and maintaining a “dualistic organization” [17] that provides space for both innovating and routinizing; endowing organizations not only with adaptability, conceived as the ability to adapt to changed circumstances quickly and effectively, but also more fundamental “adaptive capacity” [49] or a “dynamic capability” [56], allowing for the permanent reorganization even of fairly persistent structures. Currently, organization and management research on how to excel in combining the strategies of exploration and exploitation [33] in turbulent, hypercompetitive and/or highly volatile environments focuses in particular on “organizational ambidexterity” [14], which is believed to finally allow for the simultaneous pursuit of both learning modes with the help of structural, behavioral or leadership means (cf. [44], for an excellent review; [45], for a rather critical assessment).

One organizational form that promised to be more capable of dealing with this dilemma right from the beginning is the network form of organizing, the N-Form [25], no matter whether considered as a hybrid positioned somewhere between market and hierarchy [61] or as a form of organizing beyond market and hierarchy with its own distinct properties [41]. Networks, either internal to a single organization or linking a focal organization to its external partners, seem to provide timely and inexpensive access to resources [22]. And if these resources are not needed any more, relationships can be discontinued or at least put to sleep. This is what has let some protagonists of this organizational form consider strategic flexibility as one of its constitutive properties (most prominently: [41]). Importing some of the abovementioned concepts from organization theory, network research may even ask in the near future whether this particular form is more suitable for balancing exploration and exploitation by organizing for either dynamic capability or organizational ambidexterity on the network level. What typically remains in the background in this flexibility-fixated discourse is the tendency of networks, also in and among organizations, to become persistent or inert over time and possibly finally even locked-in; in this respect, emulating ‘ordinary’ organizations.

This chapter aims at increasing awareness among scholars as well as practitioners of this potentially dark side of networks. Toward this end, I will first introduce the N-form as an internal and external form of organizing in somewhat more detail. Then, based upon

theoretical as well as empirical insights from extant studies, including three in which I was involved myself [8, 32, 55], I will argue that networks, under specific circumstances at least, can become not only persistent or inert but even path-dependent and eventually locked-in. The possibility of the organizational path dependence of networks thus constitutes an antivenum to researchers' and practitioners' beliefs in the nearly unlimited strategic flexibility of this particular form of economic governance. Such path dependencies, however, are not problematic per se but deeply ambivalent: on the one hand, it is highly attractive for networks to provide a stable social texture for the smooth, thorough and straightforward implementation of (in this case: collective) strategies as well as to save on costs and provide learning opportunities through the regulation and routinization of activities that span the boundaries of single organizations. On the other hand, the very same processes—pretty much like those within organizations—may turn out to be sources of hyper-stability and lack of adaptive capacity or dynamic capability. Based upon these insights, some conclusions for network research and managerial practice are drawn.

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## 5.2 Networks as an Organizational Form

Networks seem to be ubiquitous in social life [43]. This comes as no surprise because the notion of a network is often used simply as a metaphor in order to emphasize some decentralized and yet coordinated form of governance. Analytically, and not only in the context of management and organization, a network *perspective* has to be distinguished strictly from this governance view of networks [21]. While the former lets us consider every social system (e.g. a group or an organization) as a network, i.e. as consisting of a small number or a myriad of knots and ties [60], the latter addresses the question of appropriate governance: efficient, effective and/or legitimate.

As a form of governance, networks are usually considered to be of a poly- rather than monocentric, a collaborative rather than competitive, and a heterarchical rather than a hierarchical gestalt. *Polycentricity* implies that a network is hardly controlled from any center but rather influenced by several, though not necessarily all the actors it comprises. This polycentricity unburdens central management, even if some of the network members may well continue to act as leaders or orchestrators, influencing more than others what goes on in the network [38]. *Collaboration* means that the activities in the network originate from individual interests which, however, do not cumulate in “self-interest seeking with guile” [61]. Rather, for the common good, the network members take the interests of others into account when acting in the network or on behalf of the network. More often than not, striving for the common good may be in conflict with the idiosyncratic goals of the network members, especially if the organizational and network domains overlap only partially [26]. More often than not, collaboration among the members therefore requires demanding negotiations and meticulous consensus building activities; this is why collaboration should be conceived as a highly political process. The interaction resulting from this



process, though, is likely to be more frequent and intense cooperation than in other forms of governance, in particular if compared to market-based relationships. Finally, networks represent a *heterarchical* and not a hierarchical mode of organization [24]. This is despite the fact that, especially if orchestrated by a powerful leader, networks may well acquire quasi-hierarchical properties or, as in the case of intraorganizational networks, continue to function in the shadow of the hierarchy anyway.

### 5.2.1 Intraorganizational Networks

Building an internal network organization, which may or may not complement a network organization based on external relationships, can be pursued by at least four approaches, the first two of which are of a more interpersonal, the latter two of a more organizational kind (cf. [51]). First, organizational members, on their own initiative and through their day-to-day interactions, may develop interpersonal relationships within an organization; this activity is typically referred to as *personal networking* but in this particular version it is more or less confined to a focal organization. Second, the formal hierarchy of this organization can be complemented intentionally by an *informal network organization* that does not simply develop in the shadow of the formal organization (via personal networking) but whose development is rather strategically initiated and fostered by a management that is well aware of the limits and dysfunctions of the formal organization. An example of this is to welcome new organizational members with a team-building exercise, well knowing that the newcomers will later take on positions in different parts of the organization but stay in contact informally because of their common encounters during the first days with the focal organization. Third, and this is less an interpersonal than an intraorganizational approach, subunits within an organization are given more autonomy regarding not only their operations but also their strategic decision making procedures. This is typically the case when a *center organization*, more often than not a profit center organization with respective responsibilities and accountabilities, is introduced by management; or an organization even divided up into several more or less self-contained business units that each constitutes a legal entity on its own but continues to belong to and to be coordinated within a corporate group [10]. Fourthly, organizations that internationalize their economic activities may do this in the form of a transnational corporation. A transnational approach to internationalization is distinct from a global as well as from a multinational approach and tries to combine the advantages of the two. Typically, a transnational enterprise develops into an “*integrated network*” [5] that not only provides organizational units in host countries with more autonomy but even allocates to these a specialized leadership role for the whole corporation if they exhibit better capabilities in a specialized domain than the headquarters in the home country. In all these four cases, *intraorganizational networks* become an important mode of organizing economic activities in the shadow of the hierarchical order, although not the only one.



## 5.2.2 Interorganizational Networks

In contrast to these rather diverse forms of internal network organization, an external or *interorganizational* network consists of at least three formally independent organizations that coordinate their activities reflexively and have only de facto become somewhat dependent on each other in the process of interorganizational collaboration (cf. [54]). Interorganizational networks trade in management research as well as in management practice under the names of consortia, collaborations, coalitions or clusters; production and supply chains, value-added or cross-sector partnerships; and even strategic alliances, at least if they are not only of a dyadic nature. This is important as the presence of a third party, in this case an organization, according to the German Sociologist Georg Simmel [48], makes a significant difference in social life, not least for interacting and coordinating.

Although characterized by a dominance of collaboration or cooperation among the organizations, an interorganizational network—for instance a research and development consortium like SEMATECH [55]—is not at all exempted from competition. Rather, this organizational form of economic activity, characterized by a dominance of polycentric and heterarchical collaboration, tries to combine competition and cooperation and manage the tensions and contradictions resulting from this combination in an intelligent way. The long-term or even open-ended character of these relationships, (which are themselves an outcome of as well as a means of this collaboration), make it easier for the organizations to collaborate, even if relationships fall asleep for a while. This is the case with the “latent organizations” [50] or “project networks” [32] that are popular in many creative and service industries and—together with strategic alliances and networks, regional networks and clusters, and global production and supply networks—constitute the most important forms of external network organizations (cf. [54]).

In most cases, management research on all these interorganizational networks takes a partial instead of a total perspective, investigating either only dyadic relations within the network or those relations that connect a focal organization to their immediate partner, i.e. an ego-centric network. More recently, however, the investigation of “whole networks” is receiving more attention [42], although studies of persistence and path dependence are still confined to partial networks.

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## 5.3 Networks, Persistence and Path Dependence

The concrete form or type of the internal and external network organization, including the number and kind of its organizational members, is likely to matter with regard to strategic flexibility as much as to organizational persistence. The same is true of whether a partial network or a whole network is under scrutiny. Take, for instance, project networks in which three or more organizations collaborate not only within one interorganizational project but also across several interorganizational projects and in which organizational actors are connected by at least latent relationships. While the projects themselves are

commonly and for very good reasons perceived as temporary systems, this particular type of external network when faced with this cross-project collaboration transforms it into a more than temporary system (cf. [4] for an excellent review). Because of the temporariness of the collaboration and the latency of many of its long-term relationships, this form, at least on the surface, promises to be among the most flexible. However, even this allegedly most flexible type of network organization has in face of repeated interactions been shown to exhibit persistencies and path dependencies [32]. Under what other circumstances are networks likely to become persistent over time, perhaps to an extent that is unexpected and problematic in an environment that, rightly or wrongly, is described as turbulent, hyper-competitive or highly volatile? Under exactly what circumstances may a more thorough analysis unearth the fact that these persistencies are actually path dependencies that are likely to result in a lock-in and be almost impossible to escape?

### 5.3.1 Flexible Networks Becoming Persistent over Time

As argued above, networks, internal/intra- as well as external/interorganizational, are believed to ensure strategic flexibility more than other forms of governance. However, a number of empirical studies demonstrate that networks can become rigid or inert over time. One of the first studies by Walker et al. [59], situated in the US biotech industry, found that “network inertia” [27] results from the fact that networks may include more or less inert organizations. These organizations tend to import routines and other inert practices into the network. In addition to the structural inertia rooted in the member organizations, no matter whether anchored in resource or routine rigidities [20], networks potentially may exhibit a kind of “relational inertia” [57], i.e. rigidities rooted in the specific quality of the interorganizational relations. Maurer and Ebers [36], also studying networks in the biotech industry, not in the US but in Germany, came to the conclusion that the very same social capital built within as well as across organizations that help start-ups in this industry to flourish later develops into a liability that hinders growth, at least if not addressed by management. Manning and Sydow [32], who studied the movie production in the German television industry, even found that network inertia built up in relations that are activated only temporarily, i.e. activated during the production project. However, and this is of decisive importance, the relations in this industry are often reflexively maintained beyond single projects; a structural property that characterizes project networks and can be found in particular when television series are produced, as these rely to a significant extent on the repetitive engagement of the same organizational actors. In another study under my guidance, we investigated the coordination within the most important research and development consortia in the global semiconductor industry, SEMATECH [55]. Although the more recent developments of this interorganizational network can only be understood in face of the attempt to create a radically new technological path, in this very process the network itself has had to overcome several persistencies. Some of them result, for instance, from interorganizational routines deeply ingrained in the network col-

laboration, others from relationship-specific investments. Finally, Burger and Sydow [8] also found indications of network inertia of a very specific nature, this time in the bargaining practices of the three networks they studied within an optics cluster in Germany. The practices they unearthed in these networks decide not only on the division of work among the network members but to a large extent also on the distribution of income; nevertheless, they became inert after a while.

Such network inertia results obviously from the binding effects of repeated interaction, relation-specific investments or social embedding mechanisms more generally, and from long-lasting imprinting effects that are somehow reproduced or the emergence of interorganizational routines more specifically. All these mechanisms were relevant in the networks studied in the Berlin optics cluster: the actors had invested early on in the development and maintenance of their network relationships, some of them have even become friends over time. Both effects were influenced by imprints from the original set-up of the networks. What is more, the actors got accustomed to and increasingly enjoyed the benefits of highly routinized forms of collaboration.

Though not studying network inertia in any direct way, the findings of Li and Rowley [31] in the US investment banking industry add another argument to this: more often than not, networks prefer a local over a global search for partners. As already indicated in the introduction, network inertia resulting from these and other causes are of an extremely ambivalent value: on the one hand, they are an expression of successful routinization supporting efficiency goals, on the other “the ties that bind may also turn into ties that blind” [1]. Finally, an important additional source of persistence and even organizational path dependence is the industry or the field structure as demonstrated in the case of the demise of the German apparel industry for instance [46]. Here the relationships between manufacturing firms, retailers, banks and unions as well as industry-wide institutional logics strongly framed the scope for strategic agency on the organizational level.

### 5.3.2 Organizational Path Dependence as a Source of Network Persistence

Under certain circumstances, the network inertia or persistencies described are caused by organizational path dependencies. If this is the case, they are particularly difficult, perhaps impossible to overcome, even if the environmental pressure is great to do so. Persistencies then obstruct adaptation to environmental changes and, in extreme cases, despite the pressure only allow further pursuit of the development path that has been selected already. A development of a technology, an institution, an organization or an interorganizational network is referred to as “path-dependent” if it is set into motion by one or more contingent actions or events (so-called *triggering events*) and subsequently (from a so-called *critical juncture* onward) intensified so that the options for action are constrained ever more greatly. A path-dependent development of a technology or a social system or only a particular

practice leads, at least potentially, to a *lock-in* which, although possibly still efficient in the short term, must already be regarded as problematic from a strategic viewpoint.

In contrast to the seminal contributions of David [12] and Arthur [3] to the theory of path dependence, more recent conceptualizations [28, 35, 37, 40, 53, 55] acknowledge that history already matters before the critical juncture, more often than not in the form of historical imprints that, in organizations as well as in networks, make the choice of some alternatives or actions more likely than others (cf. [34]). At the critical juncture, self-reinforcing mechanisms in the form of increasing returns or positive feedback more generally take over and complement the influence of historical imprints. In particular this particular regime, together with the likelihood that the path may lead into a lock-in, differentiates processes that are persistent or inert from those that are really path-dependent. Coordination, complementarity, learning and expectation effects in particular are thought to be the main drivers of a path-dependent development of networks [53], although other mechanisms like power and legitimacy are also discussed in the respective literature [6]. While coordination effects in networks can result from improved interorganizational routines complementarity effects may have their roots in structural fits (e.g. the fit of various such routines) and the possibly ensuing synergies among the collaborating partners. And while learning effects typically result from repeated applications of more or less identical routines and perhaps lead to improvements in precisely those interorganizational routines, and thereby most likely to reduced transaction or coordination costs, expectation effects lead to a strengthening of the particular preferences of either the network actors themselves or of the network environment; preferences that pave the way for a certain development of the social system.

In their study of bargaining practices in the Berlin optics cluster, Burger and Sydow [8] found evidence not only of the persistence but also of the path dependence of these practices, in particular in two of the three networks studied:

In both networks, the bargaining practices that were initially adopted have been replicated several times, implying that observable movements between alternatives have stopped. Further indicating the end of flexibility, the number of remaining alternatives has simultaneously been diminishing, albeit not down to zero, as the partners actively uphold alternative cooperation partners by occasionally working together with them [8, p. 95].

This tapering process can be explained by learning effects. Beyond the fact that the network actors have got accustomed to and increasingly enjoyed the benefits of highly routinized forms of collaboration, coordination and complementarity effects figured even more prominently in these two networks. Indications of the former were the increased network-wide use of coordination practices. One example that complements the bargaining practices is the practice of road mapping used extensively in both networks. Although practiced first and foremost for coordinating the development of technologies, products or services, it helps to coordinate other activities as well. Complementarity effects result from the fact that the bargaining or other coordinating practices fit together, so that one practice cannot

be changed easily without changes in others. These effects already seem to have led to a lock-in of the bargaining practices in two of the three networks investigated. As in these two cases, these and possibly other self-reinforcing mechanisms often work together when strengthening a path-dependent development of organizations and networks [13].

In extreme cases of lock-in, management is more or less reduced to pursuing the development path once enacted. However, a more modern and more realistic conception has to consider at least two processes that make it unlikely that actors are fully and exclusively tied to an organizational path. One arises in face of the impossibility of reproducing a particular routine or a certain path one-to-one, i.e. without any idiosyncratic changes [18]; the other in face of the omnipresent “dialectic of control” [19] characteristic of social life and because of which actors can always act otherwise. In fact, both these processes are acknowledged by the more recent conceptualizations of organizational path dependence.

In consequence, given the historical imprints and the self-reinforcing mechanisms at work, one could speculate that Toyota’s long-term approach of not only improving vertical relationships in its supplier network but also intensifying horizontal relationships between its suppliers [15], both geared towards strategic flexibility and enhancement of particular innovation or improvements capabilities, can no longer be reversed so easily. A core capability may in fact turn into a “core rigidity” over time [30]. Whether the Toyota case is actually subject to a path-dependent network development that goes beyond general persistencies of a network approach to organizing, however, needs to be examined more closely.

Not only network inertia in general, but even that resulting from organizational path dependencies is ambivalent in nature. On the one hand, organizational path dependencies promise significant advantages: stability and accountability, reduced transaction or coordination costs, routinization and learning, and so forth. On the other hand, the very same mechanisms that make an organizational path attractive to follow have a flip side: the production of persistencies that make it difficult if not impossible to leave a once enacted path or to implement network change in a timely way despite the possibly forceful pressures of a turbulent, hyper-competitive or highly volatile environment.

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## 5.4 Conclusions and Implications

Networks, internal/intraorganizational as well as external/interorganizational, are not per se strategically flexible. Like organizations, and not least because networks connect *organizational* actors, they are prone to persistencies and even path dependencies that, in principle, may fundamentally and deeply question their flexibility. Paradoxically, these persistencies and path dependencies that make it harder or even impossible to adapt to environmental changes are particularly likely to arise in face of repeated interaction, efficient routines and effective learning. The ambivalence of the self-reinforcing mechanisms underlying these very processes and their outcomes (even including dynamic capabilities; see [58], for details on the role of path dependencies in dynamic capabilities) is extremely

challenging from a managerial perspective, as it is hard to detect and even harder to influence. However, it is perhaps even more challenging from a research point of view, since such mechanisms are extremely hard to observe in any valid and reliable way in empirical studies.

The *managerial* implication of the above observations, theoretical reflections as well as empirical evidence, is that management should in practice be aware of the possibility that networks within and among organizations can become persistent over time, even path-dependent and possibly finally locked-in. This has important implications for all managerial network practices: (1) the selection and re-selection of internal and external partners; (2) the allocation and re-allocation of tasks, resources and responsibilities among the partners; (3) the development of network rules and regulations; and (4) the evaluation of the collaboration and its effects on the network and the network members [51, 54]. Regarding the selection of network partners, to elaborate the argument using one example, it may be important to include, at least from time to time, new partners that bring not only novel competencies but also surprising insights and new practices to the collaboration; it may also be decisive to exclude, i.e. either abstain from re-selecting or rather de-select those partners who import their organizational inertia into the network or contribute to the development of network practices in a way that makes them all too persistent, at least in face of a dynamic environment and respective demands for allegedly permanent change. For the very same reason, it may be advisable for network management to substitute (or at least complement) tightly with more loosely coupled ties [57] or, either alternatively or complementarily, to redistribute or even rotate coordination and leadership tasks among network members. Management needs to ponder these alternatives reflexively. The decisive argument in all these respects, however, is that network management should not only be concerned with the overall efficiency and effectiveness of the intra- or interorganizational arrangement but also with the persistencies and path dependencies that may arise in the course of network development, no matter whether they are welcomed or not. For what is welcomed because it increases the efficiency, effectiveness or legitimacy of the network at present may turn into a burden later. It is important here, therefore, to time the “reflexive monitoring” [19], i.e. the organizational actors’ efforts that include not only the observation of one’s own and others’ actions as well as their intended and unintended consequences but also the actors’ attempts to influence what is going on. Under specific circumstances it may simply be too late to fulfill the demands for adaptation and change of the network arrangement and/or particular network management practices.

Network *research* should generally be more concerned with the dark sides of networks, not least to give a more realistic picture of this not really new but still not very well understood organizational form of economic activity. Specifically, more research and, in particular, more detailed research is needed to understand better exactly how organizational persistencies and path dependencies come about in this allegedly flexible form of governance. Due to the extreme difficulties in capturing the self-reinforcing positive-feedback mechanisms not only in organizations but also in networks of any kind [52], more ethnographic and longitudinal research designs should be used before starting, with the help

of extensive rather than intensive research designs, to try and answer questions like how frequent these phenomena are in organizational reality and in which kinds of industry settings or political arenas they are more likely to occur.

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## **Part III**

# **Re-thinking Change in the Context of Open Innovation**

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# Changing Change Management: The New Innovation Imperative

# 6

Nagwan Abu El-Ella, John Bessant and Andreas Pinkwart

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## Abstract

The innovation imperative is clear—organizations (both public and private sector) which wish to survive and flourish in a turbulent environment need to change. But making changes in products, services, processes or business models requires careful management and continuous learning. The responsiveness to and the implementation of change has become a core capability which organizations need to develop. The good news is that we have a variety of proven and tested approaches to the challenge of ‘change management’ which can help organizations in this activity.

But we are also entering an era where, as a result of significant technological and social shifts, the nature of the change process itself is changing. In particular there has been a massive increase in the potential for participation in the process in active fashion, shaping both the rate and direction of innovation. Interactive web-based technologies enable rapid mobilization and articulation of different viewpoints and fast construction of coalitions for action. At the same time the shift towards social network-

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ing is more than a passing fad—in Europe more adults in the population are now active participants on such platforms than not. Across such communities the potential for ‘democratization’ of change processes—whether in company decision-making around product or service development, or amongst citizens shaping and co-creating the services which they consume—is growing.

This chapter explores the implications of this shift for our understanding and management of change and argues that, in the same way as the early (and somewhat static) models for using advanced information technologies gave way to a far more interactive perspective (Web 2.0), we may as well need new models that understand and work with ‘change management 2.0’; those which reflect the rapid shift and openness in the innovation landscape.

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## 6.1 Introduction

It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage than a new system. For the initiator has the enmity of all who would profit by the preservation of the old institution and merely lukewarm defenders in those who gain by the new ones. (Machiavelli, ‘The Prince’)

Innovation is increasingly recognized as a powerful business imperative. But whilst the focus may be on the latest product or service offering or changes to the underlying business model, the real challenge in innovation lies in managing the process of change. Anyone can get lucky once but successful organizations have learned to repeat the trick—they recognize the need to put in place structures, procedures, patterns of behavior which enable innovation to happen. Such behavioral routines represent the accumulation of learning about what works for a particular organization in terms of innovation management [40, 42, 50].

A key aspect of this learning process lies in behavioral routines concerned with ‘change management’—essentially finding ways to ensure timely and widespread adoption of new ideas [48]. This presents as a problem in innovation in a number of contexts—for example, in marketing it is associated with adoption and diffusion of product and service offerings and much has been written about how this process operates and how it can be managed to provide more benefits [37, 47]. But in parallel there is an extensive body of literature dealing with change management within organizations where the primary challenge is to ensure ‘buy in’ from internal stakeholders likely to be affected by new approaches embodied in process innovations [49].

At its heart is the recognition that adoption of new ideas involves a complex individual calculus in which differences emerge about their perceived relative advantages and other attributes and the degree to which they are compatible with an individual’s skills, experience and overall world view. In product innovation this gives rise to the famous s-curve’ of diffusion as early adopters and later the majority take new ideas on board. In process innovation the situation is often more complex since changes in working methods may be imposed from outside and affected employees may not have the direct adopt/reject option. Instead the concerns and individual anxieties find expression in various forms of ‘resistance to change’.

This is not a new phenomenon; in the early nineteenth century the Luddites were skilled textile English laborers (led by Ned Ludd) who expressed in violent form their concerns about the implementation of new machinery which posed perceived threats to their jobs. Whilst the forms of resistance may have modulated, the problem of such resistance remains today [33], especially in the context of radical process innovations which restructure organizations and their underlying patterns of work organization. People generally resist change that requires rethinking their work routines and behavioral patterns and thus try to defend the status quo by developing so-called ‘Organizational Defensive Routines’ (ODR) [3]. This underlines the key importance of thinking and planning around how best to implement process changes to minimize the negative effects and the perceptions of people likely to be affected by them.

In this chapter we first review the evolution of a planned and systematic approach to change management and then examine some of the core prescriptions for effective introduction of process innovation. This is followed by a discussion of the limits of such models in rapidly changing environments where the traditional ‘unfreeze/change/refreeze’ logic may be inappropriate in a rapid and openly-innovating world where social and technological drivers are creating an imperative for wider inclusion, participation and co-creation of change. We conclude with an exploration of an emergent high involvement model for the effective introduction of process innovation which we term ‘change management 2.0’.

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## 6.2 The Emergence of Change Management

Studies of *change management* date back at least to the early days of the ‘human relations’ movement in the 1920s, where an understanding that people have much to contribute especially in improving productivity, started to develop. It also became clear that simply introducing new productivity enhancing-technology was not always effective [35]. Before that, in the early 1900s, approaches typified by Taylorism and Fordism dominated organizational thinking [46]. Taylorism’s basic concept was the ‘task idea’: planning out every job in precise details; giving employees precise instructions on what to do. Employees were not allowed to innovate or bring in new ideas or different tasks, and knowledge was transferred to the manager alone. In a similar manner, Fordism regarded human beings as machines to be closely monitored and whose productivity could only be assured by applying strict sanctions for non-performance. The ‘human relations’ movement (which emerged in the 1920s and grew in influence until the late 1940s) greatly changed management thinking from the ‘hard’ approaches of Taylor and Ford towards ‘soft’ people management [31].

Famous experiments like those of Coch and French [16] highlighted the importance of understanding the sources of resistance to changes in working methods and the need to manage the process of introducing such changes carefully. The socio-technical systems movement of the 1960s similarly demonstrated the importance of involvement of users in the design of new technological systems—for example in contexts as diverse as coal-mining and textile milling [51]. These ideas played an important role in expanding the debate around the effective introduction of computer systems where it became clear that

without adequate preparation of users the anticipated gains were unlikely to appear. Indeed in some cases it was possible through a variety of routes for those affected by the change to sabotage or at least significantly reduce the effectiveness of the technologies being implemented. The theme of ‘participative design’ then emerged where consultation and involvement of users in the design of the systems themselves, coupled with education and training to support their operation became of central importance [20, 38, 39].

And during the 1980s and 1990s the widespread adoption of computer-integrated technologies in manufacturing and later in services was accompanied by many studies showing the importance of ‘parallel implementation’—essentially planning for and considering the impact on skills, working practices, etc. and the need to design these elements into any change program [6, 10, 22, 55].

Coming closer to the concept of change management, the idea of planned change in organizational contexts—whether in structures, technologies or working methods—found expression in an increasingly codified set of approaches loosely grouped under the label ‘organizational development’ (OD) [5, 23, 56]. These studies drew on both practical case experiences and also underlying psychological and sociological theory; they converged around a series of recipes through which practicing managers could more effectively manage the introduction of new technologies or working methods. According to French and Bell [23], organizational development is *‘a long term effort to improve an organization’s problem solving and renewal processes through a more effective and collaborative management of organization’s culture—with special emphasis on the culture of formal work teams...this is assisted by the presence of a change agent, or catalyst, and the use of the theory and technology of applied behavioral science...’*

However, since the mid-1990s change management has grown into a distinct and broader research field, rather than an extension of OD. Several researchers and practitioners have argued that OD has only focused on the human dimension in an organization without an equal focus on other components such as markets and parallel strategies [57, 58]. Change management attempts to integrate the OD perspective and toolkit with other approaches and viewpoints, to provide a framework for coordinated effort linked to strategic innovation.

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### 6.3 Guidelines for Managing Organizational Change

Core prescriptions for managing organizational change typically focus on careful preparation and communication throughout a change program. They recognize that resistance to change is not a blind opposition but rather arises from a variety of sources, and the underlying OD argument is that only by providing relevant inputs to reduce this anxiety is effective introduction of change likely to take place. One important point to note is that we can loosely group these into two types of concern—first, there are those that can be directly addressed: for example, changing the reward system or giving people training for the skills they think they lack. But the second set is less easy: these are the concerns

**Table 6.1** Some sources of people resistance to change. (Source: own illustration)

Source of resistance	Explanation
They don't see the point of changing	People might resist change if they don't see the need for such change
Feeling powerless	People resist change if they believe it's being done to them whether they like it or not i.e. feel powerless to express any views
Feeling a capability-driven fear	People might be scared of change that will make them do things they don't feel capable of or competent enough to pursue
Their jobs are at risk	People might be scared of change that would cost them their jobs or change their jobs to something less pleasant
Worry about losing power	Resisting change can result from people's worry about losing the control they have over what they do
There is a better way	If people are sure there's a better way, they'll probably resist the one being proposed
They don't see what's in it for them	People resist change if they don't see a personal gain of change
Feeling overloaded	People feel already overloaded with what they already have to do and lack resources for anything new

that are deep down and often emotional, sometimes apparently 'irrational' and there isn't necessarily a clear reason for believing them. If someone feels their job is going to change for the worse, then that is what they believe and that will shape the way they behave about the change, whether or not there are any 'rational' grounds for their belief. Concerns of this kind can only be addressed indirectly by creating a climate that is supportive, where they can talk about and explore their concerns and change their own minds about them. Table 6.1 provides some indicative examples.

As Table 6.1 has shown, there are several concerns about change, many of which converge around not having a clear understanding of the change process itself, its implementation and its impact in general. Table 6.2 maps some change management prescriptions on to these concerns:

Smith and Tranfield in their extensive studies of change management around the implementation of large-scale advanced manufacturing technology came up with a series of guidelines around which an effective change management strategy could be built [49]. These guidelines and the rationale behind each are summarized as follows:

1. Establish a clear strategy at top level: This process will itself involve considerable challenge and conflict in order to get real agreement and commitment to a common set of goals. Once this has been done, the next stage is to communicate this shared vision to the rest of the organization—essentially this will involve a cascade process through the organization during which opportunities are set up for others to challenge and take 'ownership' of the shared vision.



**Table 6.2** Prescriptions to some change management concerns. (Source: own illustration)

Concerns	Direct actions	Indirect actions
'I don't know what's happening or why we're changing'	Briefing and communication: take the people through the restructuring model process so they can see for themselves	Encourage two-way discussion about the change, thus giving people the chance to explore it for themselves
'I don't think I've got the skills for this new way of working'	Training for specific skills	Training as a way of giving employees a sense of being valued and worth investing in, as a way of reassuring them
'What's in it for me?'	Reward systems, incentives, participation	Allowing the discussion to emerge and linking it to one outcome linked to the overall strategy of the business—'what's in it for all of us is survival'...
'I feel powerless—this is all being done to me and I have no say in it'	Involvement in designing and implementing	Training and communication in the underlying reasons behind the change and the need for it
'This isn't important so why should I bother myself with it?'	Top management expressing clear commitment and backing	Regular communication to make sure people know what's happening and also so that they have a chance to ask questions or surface their fears about it

2. Communication: Probably the single most effective key to successful implementation but requires a major effort if it is to succeed. It must be active, open (rather than allowing information to flow on a 'need-to-know' basis), timely (in advance of change—the informal communication network will disseminate this information anyway and a slow formal system will undermine credibility), and above all, two-way in operation. Unless there are channels through which people can express their responses and ideas and voice their concerns then no amount of top-down communication will succeed in generating commitment.
3. Early involvement: Managers often resist the idea of participation since it appears to add considerably to the time taken to reach a decision or to get something done. But there are two important benefits to allowing participation as early as possible in the change process. The first is that without it, even if attempts have been made to consult or to inform, people will not develop a sense of 'ownership' of the project or commitment to it—and may express their lack of involvement later in various forms of resistance. And the second is that involvement and encouragement of participation can make significant improvements in the overall project design. One of the keys to the success that the Japanese motor and other industries have achieved is the effective

mobilization of the creativity of all the staff in the company in solving problems of product and process design. Although this may add somewhat to the time and costs of early stages of the project, improvements and problem-solving here is much cheaper and cost-effective than later in the project's life.

4. Create an open climate: In an open climate, individual anxieties and concerns can be expressed thus also generating the ideas and knowledge held within the organization. Once again, this involves generating a sense of 'ownership' of the project and commitment to the shared goals of the whole organization—rather than an 'us-and-them' climate.
5. Set clear targets: With major change programs it is especially important to set clear targets for which people can aim. People need feedback about their performance and therefore, the establishment of clear milestones is an important way of providing this. In addition, one of the key features in successful organizational development is to create a climate of continuous improvement in which the achievement of one goal is rewarded but is also accompanied by the setting of the next.
6. Invest in training: Traditionally training is seen by organizations as a necessary evil, a cost that must be borne in order that people will be able to push the correct buttons to work a particular new piece of equipment. Successful organizational change depends on viewing training far more as an investment in developing not only specific skills, but also in creating an alternative type of organization—one that understands why changes are happening and one that is capable of managing some of the behavioral processes involved in change. This requires a substantial increase in the resources devoted to training, extending them to cover broader kinds of input, much of which is devoted to individual development.

The previous guidelines and others enable organizations to be always prepared for and adaptable to change. Peter Drucker [18] described organizations that are able to do so as 'change leaders'. These organizations adopt five policies "to make the present create the future" (p. 74), these are: (1) The abandonment of yesterday; (2) Acting on abandonment; (3) Organized continuous improvement: "Continuous improvements in any area eventually transform the operation. They lead to product innovation. They lead to service innovation. They lead to new processes. They lead to new businesses. Eventually continuous improvements lead to fundamental change." (p. 81); (4) Exploitation of success; and (5) Systematic policy of innovation: "...a policy of systematic innovation produces the mindset for an organization to be a change leader. It makes the entire organization see change as an opportunity." (p. 84).

Furthermore, the involvement of all members of the organization in observing and evaluating the changing external environment adds potential to cope with the challenges of adaptation and increases the probability of support for major change initiatives—the 'burning platform' effect. The ability to identify "burning" change issues which are different from the routine challenges of the day, will have a great effect on the stakeholders' willingness to accept change and adapt to a new way of thinking [21]. This makes change

management not only a continuous process, but also a step-wise revision that enables organizations to be ready for big “burning” changes that could occur.

A lot of change management models reflect the above principles. For example, Kotter [34] in his book “Leading Change” developed an eight-step model for creating a major change in an organization. The steps are: creating a sense of urgency for the change, building a guiding coalition (i.e. motivated powerful group of people guiding the change), establishing a shared vision for the future, empowering a broad base of people for taking action, producing short-term wins, gathering gains and producing overall changes needed, and finally institutionalizing new approaches to be an integral part of the organizational culture. In a later edition, Kotter [34] referred to this model as still relevant to date, however the increasing speed and magnitude of change nowadays have further implications than before and thus new challenges arise.

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## 6.4 Challenges to the Emergent Change Management Model

Whilst we have learned much about change management there are some challenges remaining in that space. Of particular concern is the implied model, originating with Kurt Lewin [35], that planned change involves a mixture of ‘unfreezing’, changing and then ‘refreezing’ the organization in a new form. The reality of innovation in today’s environment is different, with an emphasis on constant change and no period of stability. This section provides an overview of some of the core challenges of the emergent change management landscape.

### 6.4.1 Challenging Permanent Change

Rather than a binary state change model of freezing and unfreezing as Lewin has proposed [35], there may be a need for models which emphasize *continuous* change. For example, recently Rita McGrath [36] has written about ‘transient competitive advantage’ and the need for organizations to recognize the need for constant adaptation in complex and turbulent environments. As she suggests [36], “*Sustainable competitive advantage is now the exception, not the rule. Transient advantage is the new normal*”. Other earlier studies of high velocity markets and sectors provide similar challenges, arguing for a more fluid organizational form to cope with frequent and unexpected shifts in the environmental context [14]. Here a conflict between continuity and change arises. As noted earlier by Drucker [18], “Change and continuity are thus poles rather than opposites. The more an institution is organized to be a change leader, the more it will need to establish continuity internally and externally, the more it will need to balance, rapid change and continuity” (p. 90). One area in which there is some experience of this lies in participative work systems engaging employees in incremental innovation—the ‘kaizen’ approach typical of Japanese firms like Toyota [32]. Here the emphasis is on a process of continuous challeng-

es and change on a daily basis so that the underlying dynamic becomes one of constant adaptation. Such models are widespread and support the view that change management of incremental innovation may represent a useful building block [7, 13].

Another growing feature of the constantly changing innovation landscape is the wide recognition of innovation as a multiplayer game where the players are not all necessarily within the organization's boundaries. Whilst such 'open innovation' offers significant opportunities for accelerating innovation and enabling the participation of many new actors, it raises significant questions about the appropriateness of current models for managing change and the possible need for newer and more dynamic models.

Underpinning sustainable, long term operation of such models is an architecture based on training, communication, a suitable reward & recognition system, strategic direction and a core process which drives a continuous cycle of problem identification, exploration, solution generation and implementation [11]. It provides a framework within which there is an acceptance of continuous improvement as a cultural norm, but it should be stressed that such systems also carry formal and informal guarantees of employment stability. The organization may change and the current jobs in which employees are engaged may even disappear but there is an underlying contract of co-operation and mutual security.

Other contexts in which there is a recognition of the need for working in an environment of continuous change include product development and, more recently, software development with emphasis on 'agile' approaches which are mainly to promote quick response to changing environments [12, 41]—or as Dybå and Dingsøy [19] put it, "*agile methodologies are developed to embrace, rather than reject, higher rates of change*". Since the early twenty-first century, there has been a gradual expansion in the use of computer-integrated technologies in manufacturing causing a big paradigm shift which is reframing the best practice rules in manufacturing. Recent concepts like Factories 4.0 and others call for new changes and new adaptation policies.

#### **6.4.2 High Involvement of Users and Employees**

Arguably the previous participative approaches are relevant in a business environment that is increasingly demanding continuous change. To add to this key trend in the innovation landscape has been the emergence of users as key players in the process. Far from being passive consumers or recipients the evidence is that users often play a role as co-creators of the products and services which they wish to consume [52]. Extensive research around this phenomenon has highlighted both its widespread existence (in some studies over half of product innovations owed their original idea to users rather than producers) and accelerating application, especially in the field of software. A good example is the case of Linux, the best example for the beginning of open source software, which has become a core part of operating systems around the world and yet owes its existence and continuous upgrading to the efforts of a co-operating community of user-innovators [29, 53]. Examples of such user-led innovation can be found across the board in manufacturing

and services and increasingly in the public sector where ‘citizen innovation’ is growing in importance [4, 9, 43].

Potential benefits of user involvement in innovations go beyond specifying innovation sources to manufacturers. Additional benefits to manufacturers include decreasing or eliminating the need to generate and evaluate ideas, reducing marketing and R&D, and accelerating diffusion by providing an initial user and thus aid in the implementation of new technologies. Thus, empirical research has highlighted the importance of user innovation for both market success and the quality of firms’ innovations. For example, Gales and Mansour-Cole [26] findings proved that user involvement, in terms of the frequency and number of contacts with users, is positively related to innovation project success. Furthermore, individual users were found more efficient innovators, in terms of direct innovation expenditures per innovation developed, than are producer employees [30]. In general, referring to the word “user innovation” could refer to the typical end user of a firm, whose information may be satisfactory for slow-moving markets, or to the lead user, who faces additional specific needs in advance of the general market and whose information is critical for innovating in highly dynamic markets [52]. Lead users provide valuable input at the “fuzzy front-end” of innovation that might contribute to promising product ideas.

Besides the benefits of user involvement research, there is recent extensive literature about the social structures and features of user communities. User communities constitute a social structure resulting from continuous interactions among individuals with shared interests and common practices. Especially users in online communities interact to solve problems collectively, yet just a few innovate and earn recognition for their achievements. This has resulted in several research streams focusing on the classification of the core and periphery of online communities (e.g. [27]), the innovativeness of users spanning several communities compared to single-community members [17], and other related issues. This indicates that firms need to involve users who lead their communities. The direct involvement of customers to create knowledge is not something new. However, for firms the shift from a perspective of exploiting user knowledge to a perspective of knowledge co-creation with users as partners in innovation is recently gaining a lot of attention.

Alongside the recognition of the role which users could play have come a range of tools and techniques to enable such participation—for example lead user toolkits and design methods [8, 24], virtual design competitions [25], and online forums [45]. Furthermore, the recent study conducted by Haavisto [28] suggested that discussion forums offer a potential source for value creation through understanding unmet consumer needs for product innovations. User led-innovation of this kind changes the dynamics of change management. By engaging users early on in the process the issues around adoption and resistance to change can be more easily surfaced and ways of ameliorating these built into the emergent design [47]. It is a form of prototyping in which user input shapes the innovation which is finally implemented—essentially the process of participative design identified back in the 1970s [39]. Crucially early involvement of users can not only improve the design but accelerate its subsequent diffusion, not least through social influence models [33].

Of particular relevance in the emergence of these high participation models have been the enabling technologies of information and communication technology and social networking, which have served very well not only the engagement of external users as previously shown, but also the high involvement of employees in innovation. The new set of tools offers considerable potential for enabling and sustaining employee involvement and indeed in developing an active innovation community rather than a fixed procedural mechanism for identifying and implementing change [2]. Whereas communities of employees as internal user-innovators [1, 59], and customers as external users could be consulted or engaged in earlier generations of technological change, it now becomes possible to extend both the richness and the reach of these encounters. That means that more players can be involved (extending reach) and can share in depth their views and concerns, enhancing the richness of the interaction.

For example in an organization planning to make a major change to its systems it becomes possible to alert employees quickly and in detail to the plans and to invite their comments and constructive suggestions to shape that change. Using internal social networks individuals can ‘like’ changes or make their views known and other members of the community can augment and develop the ideas, resulting in a richer and more firmly grounded set of change proposals. The use of internal ‘innovation contests’ and similar platforms which invite employee participation can also be mobilized in this direction. However, these new tools’ benefits do not come “challenge-free”—they need a parallel change process in different organizational aspects which may not be easy and requires considerable time. Several challenges arise with their use, for example: initial discomfort from new systems—prejudices to established systems and fear of new ones—limited absorptive capacity—sustainability of the offered tools and others (see [2]). The benefits of new technological tools in supporting change as well as the emerging challenges can be summarized in Table 6.3

Overall, what an organization does internally or externally should be systematically and continuously improved, as this exploitation of its full resources and capabilities will eventually lead to genuine innovations [18].

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## 6.5 Summary and Conclusions

Change management has always been at the heart of innovation. Innovation in itself involves bringing something new to the world, and accepting something new always requires some level of change. Innovators confront a variety of change issues whether in their internal market (i.e. within the organization) or in the external market (i.e. to the customers). The greater and more transformative the innovation, the greater the change required, and thus the more effort and organized processes needed to adjust to the new changes. Alongside the issues discussed earlier, a clear reflection of the understanding of leadership and the management culture in global companies is needed, especially in such a time of growing uncertainty and increased complexity [44].

**Table 6.3** Technologies as supporters of change and the emerging challenges. (Source: Adapted from [2])

Benefits of new technologies for change	Emerging challenges
Technologies are recognized as key driver to overcoming traditional boundaries and developing valuable results	Need to deal with emerging fears: Fears of losing power and control; fears of becoming overly transparent; data privacy/data protection concerns
Technologies can help to increase search efficiency (expert localization, keyword search) thus changing the organizational work culture to a faster responsive one	Need to reduce the tension between creativity and efficiency: using new technologies should be seen as a chance to save time, not as extra time
Technologies enhance the ‘richness’ dimension, i.e. support people in further co-developing and submitting change proposals	Need to provide clear use cases: People have to be prepared and educated for using new technologies
Technologies can also help document knowledge ‘on the fly’, thus increasing the knowledge base an organization needs to keep, update and even amend in order to survive change	Need to redesign reward structures
	Need to develop innovation performance measures
	Need to consider that different people have different “digital capabilities”
	Need to carefully roll-out new functionalities
	Need to deal with legacy systems; new tools should complement existing processes

Eric von Hippel’s fundamental work on the user-innovation approach was titled ‘Democratization of innovation’ and in many ways this provides an apt label for the emergent processes of change management [53, 54]. As we have seen the issue is essentially one of innovation adoption (or rejection) by users and in the context of open market places the evidence is that early adoption amongst active users can accelerate the process of downstream diffusion. In a similar fashion users of services and processes could be engaged at a much earlier stage and with positive impacts on the subsequent shaping of the original design ideas. These are well-established principles and they go back to the early days of thinking about change management as an issue. For example, one source of user resistance is that ideas are perceived to come from outside their social group—the social identity processes which lead to ‘us and them’ perceptions, and well-known innovation problems like ‘not invented here’. By engaging a wider community of users at an earlier stage and allowing them to interact with a prototype as a boundary object these issues can be surfaced, explored and resolved rapidly and effectively.

Arguably we are beginning to see these change processes writ large in the context of major societal changes, such as the ‘Arab Spring’ and the ‘Orange revolution’, where citizens (= users) express their views and can quickly organize effective resistance to changes.

We began this chapter by referring to the ‘innovation imperative’—the need for change in order for organizations to survive and grow in complex and hostile environments. Arguably this imperative itself is accelerating—in a world where a competitive advantage often



disappears in less than a year, companies can't afford to spend months developing a single long-term strategy. To stay ahead, they need to devise fluid structures and processes which enable them to exploit many transient competitive advantages simultaneously while opening their borders for bringing in new knowledge. Their ability to do so will depend on having an internal capacity for change management which is embedded in high involvement innovation and participative practices around shared understanding and co-creation. Such trends of employee involvement, user integration, transient competitive advantages, and others compel future research to find new change management models that truly reflect the changes in managing different forms of incremental and radical innovation. 'Change management 2.0' of this kind and later versions (3.0, 4.0 and beyond) are likely to be essential to survival in this kind of environment summed up well by the Red Queen in her encounter with Alice:

"A slow sort of country!" said the Queen. "Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!". (Through the looking glass, Lewis Carroll) [15]

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# Comparative Exploration of Key Challenges in Customer Co-Design using Theories of Social Presence

# 7

Stefan Thallmaier and Hagen Habicht

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## Abstract

In mass customization, customer co-design is the process in which customers and business providers collaboratively map the personal requirements of customers into design specifications for individualized products. Whether this process is realized in-store or entirely via the internet, efficient systems for customer co-design are the linchpin to leveraging mass customization. The increasing proliferation of digital media at this customer interface calls for a better understanding of media impact on the co-design process. Hence, the goal of this study is to explore the impact of digital media on customers' perceived value in processes of co-design. We employ social presence theory for an in-depth analysis of six mass customization providers' co-design processes. Data was collected through web-based documentary research, participant observation, semi-structured expert interviews and two focus groups with customers. Three key challenges are identified and explored: (1) Encouraging discovery addresses the issue that digital media tend to limit discovery yield. (2) Fostering creativity addresses the issue that digital media are better in supporting creative achievement. (3) Facilitating reinforcement addresses the issue that digital media tend to under-serve the need for direct human feedback and enjoyment. Mass customizers need to thoughtfully manage the

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level of social presence in the co-design process, i.e., by providing spaces of low social presence to foster creativity in-store, and by providing high social presence offers to foster positive reinforcement online.

The study reported here is based on a conference paper presented at the 2011 World Conference on Mass Customization, Personalization and Co-Creation (MCPC) in San Francisco [30]. It is also part of the first author's dissertation on customer co-design in the mass customization industry [31].

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## 7.1 Needs and Goals

Customer co-design is a process in which customers and business providers collaboratively map the personal requirements of customers into design specifications for individualized products.

Only [a] few authors have studied the co-design process of customers of mass customization offerings. [24]

Whether this process is realized in-store or entirely via the internet, efficient systems for customer co-design are the linchpin to leveraging mass customization [3]. Until now research in operations management has mainly investigated mass customization from an organizational viewpoint to understand efficiency in terms of production and delivery, i.e. focusing on the trade-offs between costs, throughput time, and product quality [9]. However, Merle et al. [20] argue that these research efforts are not sufficient, because they tend to ignore the customer's value perspective.

The best and most advanced fulfillment system is worthless if it cannot express its added value to the customer. [3]

Hence understanding how customers perceive value through the co-design process is of at least equivalent importance in achieving success in mass customization [27]. From a customer viewpoint, for example, spending less time on co-designing a product due to more efficient interfaces does not necessarily increase efficiency in terms of perceived value. The opposite may even be the case, i.e. it may be that spending more time increases enjoyment. This means that investigations of efficiency from a customer perspective need to reconsider the trade-off between the perceived costs of engaging in the co-design process. We believe that key constructs include perceived costs, such as mass confusion, and perceived benefits, such as hedonism and creative achievement. Thus, it is important to identify mechanisms to decrease customers' perceived costs and concurrently increase perceived benefits in order to foster the attractiveness of co-design processes and with it the success of mass customization.

Undoubtedly, the proliferation of digital media plays a major role in this context. This fact not only concerns co-design processes in the quickly emerging online market, e.g.

through toolkits, social media and live chat, but also in-store processes, e.g. through tablet-solutions, kiosks, scanners and smart-phones. Digital media are applied to serve various customer purposes in the co-design process. For example, media may be applied to provide design inspiration, to visualize the preliminary design, to explore pre-configured products, to discover design parameters, to specify desired requirements, to interact with others on design ideas or to gather customer data such as body measurements, photos, preferences, contact data, payment data, etc [28]. In addition, digital media may either be controlled by the customer (e.g. online) or by sales representatives who are present (e.g. in-store).

Recent studies in mass customization predominantly investigate this proliferation of digital media as a means of increasing the efficiency of co-design processes from an operations management perspective. In the quickly emerging online context, this means following the idea of serving customers anytime and anyplace. However, previous research in the field of mass customization has overlooked contexts, particularly the in-store vs. online setting, in which digital media are used to (positively) impact the customer value perception [26]. Therefore the current study intends to close this specific gap by addressing the research question:

- ▶ **Research Question** What are the key challenges for achieving high perceived value for customers when applying digital media to co-design processes?

To answer this research question, the present study is presented in five sections. Building on the identified research gap, Sect. 7.2 presents the theoretical underpinning. This foundation will firstly consider the concept of customer perceived value in the context of co-design processes in mass customization. Secondly, it will detail the theory of social presence, which accounts for the difference in human and social elements between in-store and online co-design. Section 7.3 describes the selected research design and details the processes of empirical data gathering and analysis. Section 7.4 presents the key findings. In the concluding Sect. 7.5, the results are reflected with findings from related research streams, and avenues for further studies are presented.

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## 7.2 Theoretical Underpinning

Within the literature stream of mass customization it is frequently argued that customers may perceive value from two basic sources [19, 23, 27]. The first source relates to the characteristics of the customized product, which are expected to fit each customer's personal needs. The second source concerns the process of co-design, which is an essential prerequisite to building and receiving the product. The current study focuses on the second source, i.e. the perceived value received from the process of co-design. Important benefits, as well as cost components, which are assumed to originate from the process of co-design,



are introduced, based on a literature review that investigates perceived value within the context of mass customization (Sect. 7.2.1).

As noted earlier, a remarkable difference between applying digital media in-store and online is the existence of human and social elements [14]. It is frequently argued that online interfaces lack the possibility for direct human contact and interpersonal exchange in comparison to processes in-store, in which customers may contact sales personnel or their shopping partners, i.e. family and friends [11]. In order to account for this fact, the theory of social presence will be introduced as underpinning for the subsequent analysis (Sect. 7.2.2). Based on a literature review in the commercial context, selected findings will be presented, which display the current theoretical understanding of how social presence relates to components of perceived value.

### 7.2.1 Customer Value from Co-Design

The customer value derived from co-design is a trade-off between perceived benefits and costs. As Ihl et al. [16] identify, the result of this trade-off significantly influences customer's overall satisfaction with the mass customization provider. Thus it is necessary to identify and to understand each single dimension that contributes to this trade-off. Merle et al. [19] add to this understanding by distinguishing two important beneficial dimensions, i.e. hedonic and creative achievement. According to them, hedonic benefits are widely accepted in mass customization, but few authors refer to the value of creative achievement. Both dimensions are introduced in more detail below.

**Hedonic value** refers to intrinsic motives which are activated by allowing customers to engage in co-design. For example, Schreier [27] attributes a significant part of the value-increment of mass customized products to hedonic benefits which stem from the co-design process. He denotes those benefits with the term *process benefits*, which are expected to meet the individual needs of customers, i.e. experiential needs such as trial and error, by providing the opportunity to select various product-attributes, features or colors, to adapt and change visualizations, to compare and discard ideas, to elaborate and finish a design delivers value to customers. According to Merle et al. [19], this dimension is related to the concept of striving for an attractive shopping experience. Delleart and Dabholkar [4] state that *enjoyment* of the co-design process can be induced either through an attractive technology-based experience or the excitement of creating one's ideal product. Furthermore Fiore et al. [7] argue that the co-design process itself can motivate users to engage as co-designers as it comprises an *exciting experience*. In a same vein, Piller [25] argues that the task of designing one's own product may exhibit a *flow experience* which in turn is expected to mitigate cognitive efforts (i.e. confusion) which may arise during the process.

**Creative achievement** refers to the creativity and pride customers may experience through originating a new or even unique product [24]. This feeling has also been compared to artists or chefs, who experience the feeling of achievement as they create a painting or a delicious meal [27]. The closely related concept we employ is the *pride of author-*

*ship* effect [20]. Merle et al. [20] empirically show that creative achievement is a distinct component of the co-design value, with a positive influence on the overall value perception of the mass customization offer. Hence, co-designing one's own products can be seen as a source of creative achievement and pride.

**Mass Confusion** or paradox of choice is among the most frequently studied cost dimension in customer co-design processes [25]. Mass confusion refers to the fact that customers are not able to make decisions when facing a huge amount of options. The mass of possible choices imposes two potential risks. Customers may not be able to choose, because they are bewildered. Or they may not choose, because they are afraid of regretting their decision. Both cases increase the likelihood of customers abandoning the co-design process. Besides the risk of mass confusion, the effort that is necessary in terms of time and learning to resolve or partially resolve confusion has been shown to reduce customers' perceived value.

Altogether, the literature suggests two beneficial components of a co-design process: first *enjoyment*, and second, *creative achievement* or *pride-of-authorship*. At the same time, three risk components have been described. Customers may perceive costs through *mass confusion* [24], *time effort* [27] and *learning effort* [26], all of which reduce the value of co-design. In sum, customers' perceived value involves a trade-off between benefits and risks and the resulting evaluation is expected to yield the purchase intention and decision.

### 7.2.2 Social Presence Theory

As Hassanein and Head [14] note, a remarkable difference between co-designing products in-store and online is the presence of human and social elements. To account for this difference and to assess the impact on customer value from co-design, the theory of social presence will be employed in this study. The theory of social presence, introduced by Short et al. [29], is among the most frequently used concepts for evaluating and explaining media impact in communication science, including in commercial settings [14]. The theory considers social presence as an inherent element of communication media [29]. Short et al. [19] define *social presence* as the

degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships. [29]

Simply put, the degree of *social presence* in communication is higher if the communication partner perceives the contact as more personal, warmer and more sensitive [5]. According to this perspective, it can be stated that face-to-face interaction usually provides the highest level of social presence, whereas written communication provides a low degree of social presence which provides fewer cues to transmit information. With this interpretation in mind, the theory of social presence is associated with the "Cues-filtered-out" perspective. According to Möslein, the implication is that any kind of mediated com-

munication and interaction is less personal than traditional face-to-face exchange, simply because various cues are not available for information exchange [22].

Applying this theory to the present context, it can be stated that co-designing products in-store characterizes a setting with a high level of social presence. Customers can be served by sales representatives and receive personal consultation face-to-face while in-store. In addition, family members or friends may accompany the potential buyer and be involved in the co-design process. In the online context, co-designing products is often characterized by a low level of social presence. The customer decision to visit the website and to apply an online toolkit to customize the product does not involve direct human contact. This setting mostly comprises the isolated dyadic interaction between the customer and his or her digital device.

It is frequently argued that in-store shopping benefits from direct human contact. The presence of other humans is expected to positively impact customers' perceived enjoyment. In this vein, Hassanein and Head [13] identify that the relationship between social presence and enjoyment depends on the product category being sold. They argue that

[w]eb sites selling apparel (a product for which consumers seek fun and entertaining shopping experiences) benefit from higher levels of social presence. On the other hand, Web sites selling headphones (a product for which consumers primarily seek detailed product information) do not exhibit a positive effect from higher levels of social presence. [13]

Within the previously cited study social presence was investigated as moderating variable between customers' perceived enjoyment and the shopping experience for various standardized products in the same environmental context, i.e. online. It indicates the relevance of perceived social presence on customers' enjoyment in the shopping process. The study at hand transfers this mechanism to co-design processes in the mass customization industry. It argues that in-store and online co-design processes differ in their ability to convey social presence and as thus impact how customers perceive the co-design value, i.e. enjoyment and creative achievement.

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## 7.3 Method and Data

This section details the method and the data of the empirical study. First it introduces the *research approach*. It argues for a qualitative case study design. Second, it describes the steps of *data gathering* and details the applied techniques. Finally, it lays out the process of *data analysis* according to the principles of grounded theory building.

### 7.3.1 Research Approach

Customer co-design is a fairly new phenomenon in innovation research [25]. As a consequence, the current understanding of how digital media impact customers' perceived value

during the process of co-design is still very limited. Against this backdrop, the identification and description of current challenges in the proliferation of co-design services across digital media in-store as well as online requires an exploratory research approach, for which qualitative research designs are seen as most appropriate [6]. In particular, qualitative research approaches allow new facets and nuances of under-researched phenomena to be uncovered. Furthermore, they enable the researcher to place an equal emphasis on the context of the phenomenon which increases the understanding of interdependencies and causality in particular. Hence, qualitative research is suited for exploration, discovery, the deriving of theoretical differentiations and potential relationships in contexts where little is known about the underlying phenomena or mechanisms [33].

We follow the frequently applied case study method. In particular the chosen *embedded multiple case study design*, as described by Yin [33], allows comparing qualitative data from various and heterogeneous sources for in-case as well as cross-case analysis and provides flexibility, especially when data sources contain large amounts of qualitative information, e.g. through semi-structured interviews or customer focus groups with open-ended questions.

This is a necessary pre-requisite for our study, since the process of customer co-design represents the interactive value creation between a customer and the providing mass customizer. Thus, exploring the co-design process requires data collection from two perspectives: the customer's perspective and the provider's perspective. In this study data were not only collected from both knowledge domains (providers and customers) but also through a particular combination of techniques, which are detailed below. Each case is one independent mass customization business. The unit of analysis is the respective customer co-design process embedded in the case. Each co-design process is then considered from the perspective of both, the customer and the provider.

### 7.3.2 Data Gathering

The selection of cases followed the strategy of *theoretical sampling* as it was initially proposed by Glaser and Strauss [12]. Theoretical sampling is supposed to best suit a research contexts in which the extent and characteristics of the unit of analysis are unknown [17]. For the present study, we analyzed "The Customization 500" benchmark study by Walcher and Piller [34] according to the use of different online and offline media for facilitating customer co-design. Cases for further data gathering and analysis were selected based on (a) the complexity of the co-design process and (b) the variety of service channels and the media employed to serve customers in designing their own individual products. The sampling process yielded six mass customization cases which deploy various channel strategies and provide heterogeneous media to serve customers in conducting co-design processes of different levels of complexity (Table 7.1).

For each of the cases, we collected data from multiple sources. Data collection started with a description of the MC-offer based on publicly available documents and participant observations of the provided co-design processes. This resulted in detailed descriptions

**Table 7.1** Sample of cases with various customer co-design processes

#	Case name and web presence	Custom product category	Characteristics of customer co-design process
1	Selve www.selve.net	Luxury foot wear for men and women; bags	Co-design in-store and online offered: in-store with sales personnel, online via a toolkit based on solution- and need-information
2	ErtlRenz www.ertlrenz.de	Sports shoes, mainly ski boots and shoes for golf, running, hiking	Co-design purely in-store (retailers) with the help of professional sales personnel; based on need-information
3	Spreadshirt www.spreadshirt.de	Apparel, mainly t-shirts, bags, pullovers, accessories	Co-design strongly focused on online via a toolkit; sporadic in-store workshops are held; based on solution-information
4	DeinDesgin www.designskins.com	Skins for electronic devices	Co-design purely online via a toolkit; Customers may choose between pre-configured or self-designed covers; based on solution-information
5	3Guerteltiere www.dreiguerteltiere.de	Multi-color belts made of fabric or leather	Co-design purely online via a simple toolkit; pre-designed belts also sold via in-store retailers; based on solution-information
6	MyParfuem www.myparfuem.de	Fragrances and flacon for women and men	Co-design purely online via a simple toolkit or a set of guiding questions; based on solution- and need-information

of the co-design processes as well as a list and evaluation of the employed media. This data yielded a very good understanding of the design and structure of each company's co-design offer. In addition, we conducted expert interviews with one to three representatives of each company in order to capture the provider perspective as well as comparative focus groups with customers of Selve AG to collect data on the customer perspective under comparable co-design contexts.

### 7.3.2.1 Expert Interviews

To capture the provider's perspective, semi-structured interviews with managers and management advisors of the founders were performed. The interview guideline was developed a priori in close partnership with two senior researchers in the domain of mass customization.<sup>1</sup> This careful preparation ensured relevancy of questions and allowed a comparable set of answers to be initiated, as all managers received the same initial set of open-ended questions [1]. It followed the systematic structure of explanative questions for clarification, open ended questions for narration, inquiring questions for deeper understanding, and summarizing for self-reflection as proposed by Lamnek [17].

<sup>1</sup> Senior Researchers from Leipzig Graduate School of Management and the RWTH Aachen.

**Table 7.2** List of expert interviews

#	Case name	Number of interviews	Respondents role in the mass customization business
1	Selve	3	Founder and CEO; Marketing Manager; Sales Representative
2	ErtlRenz	3	Technology Manager; Marketing Manager; Management Advisor
3	Spreadshirt	3	Community Manager; Toolkit Developer; Management Advisor
4	MyParfuem	1	Founder and CEO
5	3Guerteltiere	1	Founder and CEO
6	DeinDesign	1	Founder and CEO

All interviewed experts expressed their high interest in the topic under study, as it reflects their daily struggles to increasing customer value. As a consequence, all of them contributed with valuable insights not only into their processes of customer co-design but also concerning the context of their offers, such as their strategic and operational orientation. Every interview was conducted with two researchers. Interviews typically lasted for 1 h and were (with the exception of one) conducted in the offices of the company. One interview was conducted via phone as no personal meeting could be arranged in time. All 12 expert interviews (Table 7.2) were audio taped and subsequently transcribed verbatim.

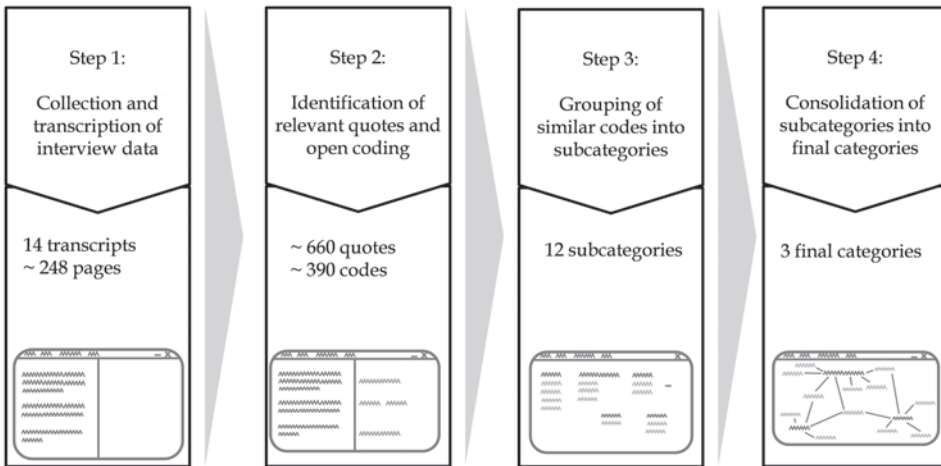
### 7.3.2.2 Customer Focus Groups

In order to cover the customer perspective on the digital media impact on processes of co-design, two focus groups with six selected customers each were conducted. Moderated focus groups are frequently applied as independent instruments for data gathering in combination with surveys, observations or expert interviews [8]. We used this method mainly because

[f]ocus-groups are particularly useful when researchers seek to discover participants' meanings and ways of understanding. [18]

Focus groups profit from the fact that participants inspire each other through mutual feedback. Focus groups also help to elicit counter arguments as well as alternative supporting arguments for relevant issues. Second, and in contrast to the interviewed managers, customers are not constantly involved in co-design processes. Hence, the possibility to reflect upon their individual experiences helps to stimulate more valuable feedback compared to individual customer interviews.

Both focus groups consisted of customers from one mass customization company (Selve AG). We chose Selve for two reasons. First, Selve is a rare example of a company which provides two fully independent methods of media support for the same co-design task. Second, due to a close long-term cooperation between our research institute and the company access to real customers was provided to initiate focus groups for gaining valuable feedback on the currently used media. Selve allows customers to carry out all steps of the co-design process online as well as in-store. Hence, customers were able to report on their perceptions of both fundamental settings. Invited participants received a 50%



**Fig. 7.1** Steps of data analysis from expert interviews and customer focus groups

reduction on their next purchase as an incentive to take part in the group discussion. Both focus groups were jointly moderated by a team of two researchers in order to ensure a high quality of moderation, following the rules of moderation as suggested by Flick [8].

### 7.3.3 Data Analysis

In total, the semi-structured interviews and the customer focus groups resulted in 248 pages of transcribed text. The data were analyzed using professional QDA-software (Atlas.ti 6.2.). Data analysis followed the standards for qualitative research as reported by Eisenhardt [6] as well as by Miles and Huberman [12] using the iterative step-by-step approach of constant comparison as suggested by Glaser and Strauss [21]. Figure 7.1 depicts the performed steps as well as the derived knowledge. During all stages, the researchers constantly compared quotes, codes and code groups in order to achieve a transparent final arrangement. To reduce bias of subjective analysis two researchers independently performed each step of analysis applying the same software tool and the same technique of analysis. Subsequent to each step an investigator triangulation process according to Yin [31] was conducted (Fig. 7.1).

## 7.4 Findings

This section details the findings of the empirical study. Section 7.4.1 presents the six mass customization cases by providing a short description for each company. Each emphasizes the characterization of the respective customer co-design process along with its basic elements. Section 7.4.2 introduces the empirically derived key challenges.



## 7.4.1 In-depth Cases of Customer Co-Design

### 7.4.1.1 Selve | Luxury Shoe

The German mass customizer Selve offers luxury custom shoes, so far mainly for women. Since its foundation in the year 2000, customers have been able to choose from a huge variety of different shoe designs. The customers' choice comprises colors, materials and shoe shapes (e.g. boots, sandals, high heels or peep-toe shoes). Customers receive a personal fitting service to find their individual foot measurements.

The entire **process of customer co-design** may be fully executed either in-store or online. Traditionally the majority of customers chose to inform themselves online and then to contact the shoe designer via phone to arrange an appointment in the showroom located in Munich. During this usually one-hour appointment, customers have an in-depth consultation with a professional shoe designer. Pre-configured shoes as well as the entire range of materials, colors and heel shapes are available to see and feel. After agreeing on design, colors and materials, a systematic fitting with pre-configured shoes from a prepared assortment is conducted. Depending on the desired shoe type, additional individual foot measurements are gathered manually or with the help of 3D hand-scanner technology. In order to decrease costs, Selve developed a now patented size system which is more precise than the traditionally applied size system in the standardized shoe industry. The gathered data is then sent to the production site. Every produced shoe undergoes a quality check in Munich before it is finally prepared for pick-up in store or boxed for postal mail.

### 7.4.1.2 ErtlRenz | Sports Shoe

The German shoe individualizer ErtlRenz offers **customized sport shoes** for enthusiasts and people who do not fit into the standardized sizes and patterns of the sports shoe industry. One major part of the co-design process is the professional 3D-scanning solution, which allows exact individual foot measurements to be automatically gathered in-store.

The core of the **customer co-design process** typically comprises four basic steps. (1) The consumer is requested to select a store from the website and to contact the retailer by phone in order to arrange an initial personal appointment in the shop. (2) During the first appointment, the consumer receives an in-depth consultation with professional sales personnel trained in the sports equipment industry, and foot measurements are gathered with the help of the professional scanning solution. ErtlRenz's 3D-Scanning solution consists of an approx. 2 by 2 m platform which is administered via computer. Customers need to put on specific socks that provide orientation for the sensor, which turns around once for both feet. This process allows the provider to visualize the exact shape of each foot on the computer screen as well as to visualize the accuracy of the scan process to the customer. The measurements are mapped onto basic shoe shapes available for customization. Spots for individual adaption within the production process are identified and marked. (3) A second appointment takes place, during which the pre-produced boots are adjusted and fine-tuned (4) Shoes are finalized and customers receive final advice on the appropriate handling when picking them up from an ErtlRenz store of their choice.

### 7.4.1.3 Spreadshirt | T-Shirts and Apparel

The Leipzig-based company Spreadshirt AG<sup>2</sup> is Europe's largest producer of **customized t-shirts and apparel**. As one of the first large-scale mass customization companies in Europe, Spreadshirt has risen steadily from its modest beginnings in 2002 to currently around 450 employees working at production sites in Germany, Poland and the United States.

The most crucial part in the **customer co-design process** is the online configuration toolkit which is internally called *confomat*. As one of the interview partners explained, there are two main pathways via which customers purchase custom apparel from Spreadshirt. About 50% of customers buy their products from so-called Spreadshirt-shops. These partner-shops typically embed Spreadshirt online services into their own web presence and offer pre-selected products, which are arranged, i.e. designed and customized, by the respective partner. Hence end customers do not necessarily experience a co-design process, as this process has already been carried out by the partner-shop.

The other half of the customers uses an online toolkit to co-design their individual custom products on the Spreadshirt site. This online process typically involves three elements. (1) The customer chooses the basic product category, i.e. t-shirt or bag. (2) Customers may select an illustration or upload an image to be placed on the product by adapting its dimensions and position, i.e. front or back. Additionally, the customer may add an individual message through a text editor. (3) Customers proceed to the check-out process, i.e. purchase and payment. In the backend Spreadshirt then carries out various processes for quality assurance (i.e. correcting typos) and IP rights infringements (i.e. company logos) and corresponds with the customer if changes are necessary. After 3–5 days, the product is delivered by postal mail.

### 7.4.1.4 DeinDesign | Design Skins

The company DeinDesign started its online customization service in 2006. It offers customers the option of creating their own **design skins** for a huge variety of electronic devices, such as mobile phones, tablets or notebooks. The skins are made of vinyl sheeting with an exact fit to the device. Using different graphic techniques, customers can freely design the entire surface.

According to the founder, customers enter the website to create their individual skin, typically are already aware of the basic **co-design concept**. Hence the need for further explanation on the home page is fairly low. In a first step, customers select the device for which they are seeking an individual skin from a prepared selection. This selection is supported by filtering mechanisms. DeinDesign focuses on frequently bought, standardized products. In a thorough preparation process DeinDesign ensures that all ordered skins exactly match the dimensions of the selected object. Hence customers don't need to worry about the physical dimensions of their products. In a second step, customers decide whether to choose from a pre-defined selection of skins (which includes professional illustrations or well-known brand logos), or to individually create their own design with the

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<sup>2</sup> Website for German speaking users: [www.spreadshirt.de](http://www.spreadshirt.de).

help of the online toolkit. Every such individually designed skin is approved manually by DeinDesign upon completion of the purchase. Finally, the design—including information on how to optimally stick it to the surface of the chosen product—is sent to the customer.

#### 7.4.1.5 DreiGuerteltiere | Belts

The mass customizer DreiGuerteltiere offers **customization of belts** made of fabric or leather in a characteristic three-striped design. The production is carried out in a charitable workshop in Munich which guarantees quality and speedy delivery within a few days.

As the founder and CEO mentions, about 60% of the customers enter the online belt-designer and create their individual design. This simple design tool allows customers to choose from three basic belt categories, i.e. two-stripe or three-stripe cloth belts as well as two-stripe leather belts. Next users choose the colors, clasp and size of the belt. All in all, about 15 parameters are available for individualization. One typical challenge in the co-design process, as mentioned by the interviewee, concerns the size: customers who are used to standardized leather belts tend to systematically underestimate the size needed for fabric belts. Hence, the company focuses its development effort on simple and clearly defined information which allows customers to appropriately adapt the desired belt size.

Besides the individual design of belts via an online interface, DreiGuerteltiere also sells pre-designed belts in larger amounts through offline channels e.g. via retailers such as Peek and Cloppenburg as well as to corporate clients who often use these belts as presents or event gimmicks.

#### 7.4.1.6 MyParfuem | Fragrance

MyParfuem is a rather unique example in the broad field of mass customization. The company offers **custom made fragrances in individualized flacons**. Founded in 2008, the internationally renowned company exclusively offers its service via the internet.

Its **customer co-design process** offers two different pathways, as explained by the founder. One way of co-designing is comparable to the majority of online co-design cases. Customers enter the website and move through the design process starting with initial questions (e.g. the recipient's sex and the character of the fragrance) and followed by the selection of up to 6 out of 45 scents (e.g. bergamot, musk or amber). MyParfuem constantly seeks helpful adaptations of this gradual selection process, because the product itself is of a comparably high level of complexity as the founder and CEO mentions. As a consequence, MyParfuem constantly tries to improve the selection mechanism in order to best support customers in creating the desired fragrance and reducing the risk of unwanted creations. As an alternative to this solution-based co-design process, MyParfuem also offers a needs-based approach. During this process, customers answer illustrative questions and finally receive a set of recommended fragrances.

The difference between the two approaches concerns the type of information and design competence that is required from the customer. The solution-based co-design process supports the customer by gradually simplifying the decision about the right mixture of scents. It yields a complexity that a non-expert can cope with. The needs-based process is

designed to elicit customer's personal needs as thoroughly as possible. This information is then used by professional fragrance designers who compose the individual fragrance. Both co-design processes consist of seven steps. They end with the personalization of the flacon, which allows customers to input their own text and to adapt the visualization through provided images or pictures uploaded by the customer.

## 7.4.2 Key Challenges of Customer Co-Design

The in-depth analysis of the six cases under study revealed three challenges of customer co-design. Each challenge addresses one pivotal impact of digital media on customers' perceived value within the process of co-design. The first challenge (*Encouraging Discovery*) considers the impact of digital media on the ability of the co-design process to encourage customer discovery and increase their perceived value through choice. The second challenge (*Fostering Creativity*) addresses the impact of digital media on the co-design process to foster the customer's perceived value of creative achievement and pride of authorship. The third challenge (*Facilitating Reinforcement*) deals with the ability of digital media to strengthen enjoyment through mechanisms of reinforcement within the co-design process.

In the following each challenge is introduced in more detail. The exploration of these challenges is grounded in data by providing appropriate anchor quotes from the expert interviews and the customer focus groups.

### 7.4.2.1 Encouraging Discovery

Encouraging customers to discover the potential solution space in the process of co-design is identified as one key challenge. Mass confusion, burden of choice, and cognitive stress are identified as relevant components of perceived costs in processes of customer co-design [25]. All of these concepts relate to evidence that on the one hand, customers prefer more choice, but on the other hand, they may get confused if too much choice is available. Hence a co-design process which is capable of overcoming this paradox may increase customers' overall perceived value.

The current study adds an important finding to this paradox of choice. The data indicates that customers who explore the solution space with the help of digital media, such as an online toolkit, seem to have less awareness of complexity when compared to those who explore the solution space with the help of non-digital media, such as samples and catalogs. The 'solution space' is a technical term to describe the entire amount of potential product designs that may be specified by the customer. In all six cases, the solution space provides a high number of choices, in some cases millions of possible adaptations and thus design specifications. The data suggest that customers who explore the product design options in-store or by paper catalog have greater awareness of the entire solution space than those who use an online configurator. Concerning in-store exploration, in particular company representatives consider the possibility of touch and feel as well as human contact to be the most relevant elements in increasing solution space awareness:

New design options are available online and are frequently announced via newsletter. But still, it is much easier to present the entire variety of design options in-store through interpersonal communication. (Expert Quote 9:333)

Last year we distributed a catalog for the first time, which we saw circulating quite well, for new customers as well as existing customers, and which resulted in the effect that people suddenly started to order totally different products, not only the figurehead product. [...]. So this is something which definitely impacts the phase of exploration. (Expert Quote 5:20)

One possible explanation for this observation is that catalogs provide a different presentation of potential product designs compared to online toolkits or online product galleries. For instance paper catalogs typically present products in the context of human beings. Customers, for their part, report that catalogs are more convenient compared to e-mail newsletters. Social presence theory delivers a reasonable explanation for this key observation. Digital media with a higher social presence seem to foster discovery in the process of co-design. Human contact, if direct (in-store) or indirect (catalog), incites customers to discover the unexpected. Discovering and exploring options of choice then is a fundamental requirement of becoming aware of the potential solution space in terms of degrees of freedom.

#### **7.4.2.2 Fostering Creativity**

Creative achievement and pride-of-authorship are identified as value creating components of the process of customer co-design [20]. The in-depth data analysis reveals that digital media tend to foster customers' perception of creative achievement and pride through various mechanisms. Our data indicate that customers in-store do not necessarily experience the feeling, that they have created something new. Instead, they attribute the process of co-design and creation to the sales representatives or the business concept of the mass customizer. In the online environment, customers are forced to control the design process on their own. The data indicate that customers tend to perceive the feeling "I created it myself". It may be argued from the analysis that this impact may be explained by applying digital media to customer co-design. Two mechanisms are frequently mentioned in this context. This is customers' perceived control over the co-design process as well as the fact of anonymity.

And I simply realize, that this "may I help you" or "are you searching for something specific", that this actually prevents you from being self-creative and to combine colors, which you would never buy, just to see how stupid this looks. (Expert Quote 13:043)

Both mechanisms can certainly be observed to a large extent in the online co-design cases. However, whether the co-design process takes part online or in-store the impact of digital media on customers' perceived value in terms of creative achievement as well as pride-of-authorship can be identified as the interview data reveal. Even when co-designing products in-store, the customers' value perception in terms of creative achievement profits from active control, e.g. via an iPad solution. In contrast, the customer focus groups indicated that full control over the design process by the sales representatives may be perceived as

a kind of negative dictation. In order to prevent this effect, customers in one case received touch-screen interfaces (e.g. tablets such as an iPad) within the shop environment to gain more control over the design process. A manager of this company stated:

Customers who can engage with our in-Store iPads to create their own designs profit from fast trial and error learning and seem to gain a better understanding about their current status in the co-design process (Expert Quote 3:86)

If mass customizers provide the possibility to hand-over preliminary product designs to customers and allow them to take their own actions, e.g. change colors or get acquainted with their own foot measurements, the perception of “having created something new” increases. The mechanism of “do-it-yourself”, which is actually prevalent in the online environment, is then transferred to the in-store process.

### 7.4.2.3 Facilitating Reinforcement

Further, we found evidence that customers require mechanisms of positive reinforcement to proceed in the process of co-design:

For me the internet can provide a rough indication, of how things might look, it provides certain playfulness, but after a certain time I stopped doing it because the possibilities for combining are very limited and it wasn't fun to proceed in the configuration. (Customer Quote 1:40)

As the statement shows, positive reinforcement—here in the form of fun—is important and at the same time contingent on the employed media. For mass customizers it becomes the challenge of *facilitating reinforcement* in customer co-design. This finding is in line with Turner et al. [32], who argue that

toolkits should be designed with features that enable the user to obtain feedback about the co-design process and positive reinforcement. [32]

The authors, however, differentiate two fundamentally different mechanisms of incorporating reinforcement into the process of co-design. The first relates to the idea of trial-and-error, which is typically realized via immediate interaction through the digital medium, e.g. configurators on a website. Especially in the online environment online tools are provided, which realize instant visualizations after each change made by customers. This mechanism may also be realized in-store, as the co-design cases of Selve and ErtlRenz show, where screen and tablet-solutions provide instant digital feedback through visualization for customers and the responsible sales persons.

The second and, according to the number of mentions, more important mechanism to meet this challenge involves reinforcement through interpersonal feedback via human interaction. As the data reveal, this mechanism of reinforcement is predominantly real-

ized through in-store sales persons in the cases of Selve and ErtlRenz. Further, it can be observed within those two cases, that customers are usually not alone. They are supported by their families and friends to gather feedback.

Especially at a [provider], where you have so many options, one needs an additional second opinion, I believe. (Customer Quote 4:84)

Thus reinforcement through human interaction may not only be provided by sales persons but also by other people, such as friends or peer users. In the online co-design cases of Spreadshirt, DeinDesign, 3Guerteltiere and MyParfuem, experts report that media for direct or indirect human support are provided, e.g. a hotline, e-mail address, contact form, social media. These media are rarely used by customers to gather feedback on their preliminary designs. Customers use them to a much higher rate for inquiries concerning payment and delivery, but not during co-design activities. However, managers from online co-design cases support the idea that more reinforcement through human interaction may increase the risk of postponement or even abandonment and are thus likely to decrease conversion rates. In line with this idea customers argue that they would need more opportunities for consultation while designing products online. As a consequence, the present study implies that digital media for co-design tend to fail in providing the “second opinion” customers often need to proceed with their co-design activities. Furthermore, the study strengthens the argument that reinforcement through human interaction is a substantial driver for perceived enjoyment. Such interaction may be provided by sales professionals, friends or design professionals. From the analysis it can be derived that digital media for co-design tend to neglect mechanisms of human reinforcement and thus may limit perceived enjoyment.

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## 7.5 Conclusion and Future Research

In this study three key challenges of customer co-design were identified, in response to which address the proliferation of digital media in the context of mass customization from a customer perspective. The first challenge considers the ability of the co-design process to further the discovery by customers of the product solution space. The collected data revealed that customers who engage in media with a higher social presence are more likely to discover unexpected product adaptations. It seems that digital media with a lower social presence tend to have a limited discovery yield and thus lower the perception of the potential solution space. When customers felt that they were not aware of the potential solution space, they perceived less value. In addition, managers reported that the variety of individualized products purchased substantially increased after introducing a new medium with a higher social presence. This finding adds confirmative evidence to two related fields. For one, serendipity, defined as discovering something that was initially not looked for, has been shown to be a driver of creativity and innovation [2]. As being creative and



creating something new are also drivers of perceived customer value in co-design [20, 24, 27], facilitating serendipity may serve as a reinforcing mechanism for creativity in the co-design processes. Our finding also relates to the research on the mass confusion problem in customer co-design, indicating that higher social presence reduces this negative effect [24, 25]. Future research needs to consider the way the applied social medium affects the customer's perception of the solution space. This challenge can be addressed in two directions. On the one hand, it is argued that online providers need to develop new mechanisms, e.g. with the help of communities, to foster discoverability. On the other hand, it is argued that physical stores need to be protected and strengthened, because they are not affected by the discoverability issue.

The second identified challenge is the ability of the co-design process to foster the beneficial value components of creative achievement and pride-of-authorship [10, 20, 27]. Our analysis indicates that digital media, which allow customers to retain control over the co-design process, tend to foster these value perceptions. The conclusion we make, which is an interesting counter to social presence theory, is that media with a lower social presence foster customers to carry out their own creative activities in a process of fast trial and error. Online interfaces may fully profit from this mechanism, as they typically pass the control over the co-design process to the customer. This effect may be attributed to the environmental setting where the customer typically uses an online toolkit in an anonym interaction, i.e. a setting with remarkably less social presence of others. Therefore we propose that higher social presence in the co-design process, whether it is carried out in-store or online, may stall customers' perception of creative achievement. This conclusion directly refers to a recent study by Hildebrand et al. [15] who conclude that interaction via social media may stifle customers' creativity and thus reduce perceived value of creative achievement. However, future research needs to consider in-store processes for this impact of social presence on value creation. Our analysis revealed that customers who experienced a co-design process in-store with the support of a sales representative tend to perceive less creative achievement. Future research should therefore focus on how digital media can enrich in-store processes by providing opportunities to foster the feeling of creative achievement and pride-of-authorship.

The third challenge is the ability of the co-design process to facilitate reinforcement through human interaction. The analysis revealed that co-design is generally perceived as a temporary and straining process. Throughout this process customers need to make many decisions. It is likely that moments of uncertainty will occur. Human and social contact either with sales personnel, friends or other peer users may help to reinforce the customer with a second opinion on their own decision or offer design alternatives. This human contact was frequently perceived as a factor which increased enjoyment. Digital media in purely online environments were reported to be rather weak in supporting this mechanism. Hence, in line with social presence theory we argue that media with higher social presence encourage customers to proceed with the co-design process. This conclusion directly relates to Hassanein and Head [14] who identify higher levels of perceived social presence to positively impact customers' perceptions such as enjoyment or usefulness. Hence they conclude that online interfaces which typically lack human warmth need to be socially

**Table 7.3** Three key challenges of customer co-design and future research directions

Challenge	Encouraging discovery	Fostering creativity	Facilitating reinforcement
<i>Explanation</i>	Customers need to be served by media which foster identification and exploration of the individualization offer	Customers need to be served with media, which allow for creative activities	Customers need to be served with media which facilitate reinforcement through human interaction
<i>Impact of digital media on customers perceived value</i>	Digital media tend to have limited discovery yield for individualization offers in general and solution spaces for co-design in particular	Digital media for co-design tend to foster the perceived value of creative achievement	Digital media for co-design tend to neglect the “second opinion” (friends, peers, professionals) and thus limit possibilities for positive reinforcement
<i>Social Presence Theory</i>	Media with a higher social presence encourage discovery of the unexpected—something that customers didn’t initially searched for	Media with a higher social presence prevent customers from being self-creative	Environments with a higher social make it easier for customers to request and receive personal support
<i>Future Research Direction</i>	Understand how combinations of media enhance serendipity	Understand how digital media may enrich in-store co-design processes with opportunities for delivering the feeling of creative achievement to the customer	Understand how digital media based co-design processes may be enriched with reinforcement opportunities through easy access to human interaction

enriched to profit from this mechanism. Customer co-design in-store typically profit from easy and direct access to personal support in contrast to the online environment. Thus to overcome the challenge of facilitating reinforcement mass customizers need to take care for the level of social presence especially in the online context. Future research needs to consider how online co-design may be enriched with mechanisms to reinforce human contact in order to increase the perceived value of enjoyment. Table 7.3 summarizes the key challenges of customer co-design, provides an explanation and displays avenues for future research.

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**Part IV**  
**Influences of Markets and Regulation on**  
**Change**

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# Changing Business Models in Banking and Systemic Risk

8

Thomas P. Gehrig

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## Abstract

The changing economic environment did affect the nature of banking in a profound way. Both easy monetary policy causing low interest rates as well as increasing globalization exerting competitive pressure on lending margin significantly reduced net interest margins in traditional lending. In particular, after the high interest rate period of the late 1980s long-term lending and house-bank relations did suffer severely. As a reaction the banking sector at large increasingly focused on short-term trading and investment banking. This process was accompanied by regulatory incentives and internal governance structures. In particular, the increasing focus on short term compensation based on return on equity, together with the Basle process of capital regulation opened ways of reducing loss absorbing capital and thus undermining banks' stability as well as the resiliency of the banking sector at large. Both, the reactions of business models to a changing competitive environment as well as reactions to monetary as well as regulatory policy significantly contributed to systemic risk in Europe and the US.

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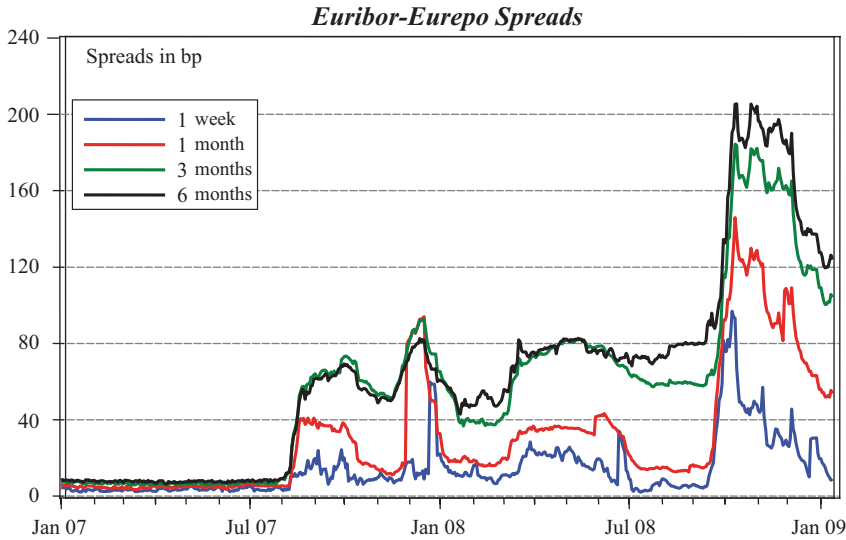
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**Fig. 8.1** Euribor–Eurepo–spreads. (Source: Data provided by Hans-Helmut Kotz, Deutsche Bundesbank [13])

## 8.1 Introduction

The failure of the former rising star Northern Rock marks the end of an unsustainable business model built on exploiting regulatory loopholes and inertia. When markets realized the systemic character of the liquidity problems caused by Northern Rock they instantaneously dried out.<sup>1</sup> Overnight interbank money markets drastically changed their character and function. Even specialized financial intermediaries started distrusting each other so much that they withdrew massive amounts of short term liquidity. For the first time in the post-war economy the nerve of the banking sector’s daily liquidity management, the interbank market came to a complete standstill. Central banks had to intervene at large scale and substitute for decentralized trading in order to provide liquidity to the banking sector. And in fact, interbank markets have never fully recovered since August 2007.

Figure 8.1 shows that up to the Northern Rock debacle the spread between the unsecured Euribor lending rate and the secured Eurepo rate for the same maturity tended to be in the order of just a few basis points. This spread is a measure of the price for the risk of lending on the interbank market. Hence, prior to August 2007 the price for risk was almost negligible for any short term maturity up to 6 months reflecting an enormous, if not excessive amount of trust of banks in their peers and a complete absence of concerns about

<sup>1</sup> More precisely, in this context “drying out” is meant to imply proper pricing of counterparty risk, which apparently and paradoxically did not happen prior to August 2007. Relatedly see Afonso et al. [3] on stressed fed fund markets after the Lehman insolvency.

counterparty risk. This picture changed dramatically after the announcement of liquidity problems of Northern Rock with money market spreads between secured and unsecured deposits reaching almost 80 basis points. The failure of Lehman Brothers added another round of acceleration with pushing even the one-month spreads above 100 basis points. At that point the heart of the financial system essentially stopped operating and was put on life support by massive liquidity injections supplied by central banks. As evidenced by the rising risk premia the major participants in the interbank market had massively lost trust in engaging in trading relationships with their peers, and the market has never completely recovered from this episode. Still worldwide central banks are substituting for much of decentralized trading among banks.

How could such a massive loss of trust have been triggered in the financial crisis of 2007/2008? What went wrong with banks' business models, if at all? Has the crisis just been an accident with considerable collateral damage, or have we been witnessing the consequences of a systemic market failure? Can we still trust in a decentralized banking system or should we call for public banks and governmental support? Is it enough to amend national prudential regulation by taking into account the international nature of business relations or is it necessary to develop a (completely) new regulatory framework for prudential regulation of the global market? What can banks do on their own to avoid future such systemic crises?

In this contribution I will argue that the Financial Crisis of 2007/2008 triggered by the liquidity problems of Northern Rock was a natural consequence of widespread changes in banks' business models. As such it was essentially foreseeable. Both, the international regulatory process, as well as globalization and the internationalization of banking contributed to changes in business strategies that ultimately left banks void of any resiliency and badly prepared for the liquidity problems triggered by completely anticipated and foreseen rises in interest rates in the year 2007. Essentially, banks freed up their balance sheets from risk bearing capital and, essentially, transferred all business risk, including interest risk to depositors, and arguably to the public sector. Thus, in order to minimize systemic crises, effectively, the tax payer has assumed the role of the "risk-taker of last resort" [13].

The next chapter briefly discusses the evolution of banking business models over the past two decades. The subsequent chapters discuss potential public reactions as well as the scope of private remedies to restore resiliency in banking.<sup>2</sup>

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<sup>2</sup> This essay borrows from Gehrig [10], which concentrates on the evolution of the Basle regulatory process and its unintended consequences. In contrast, this essay focusses on the private sector and the banks' strategies plus their business models.

### Bank Borrowing and Mortgage Interest Rates

Rates for both banks and homeowners have been low in recent years.



Fig. 8.2 Developments in US-banking. (Source: Financial crisis inquiry commission [8])

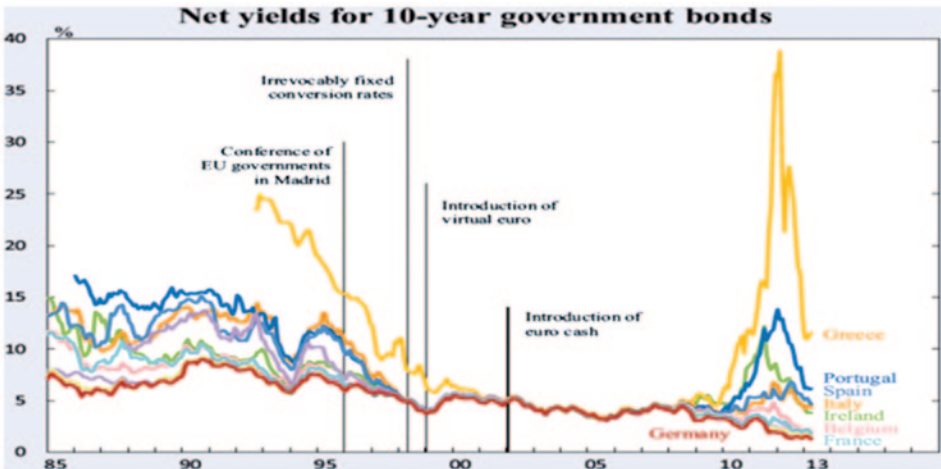


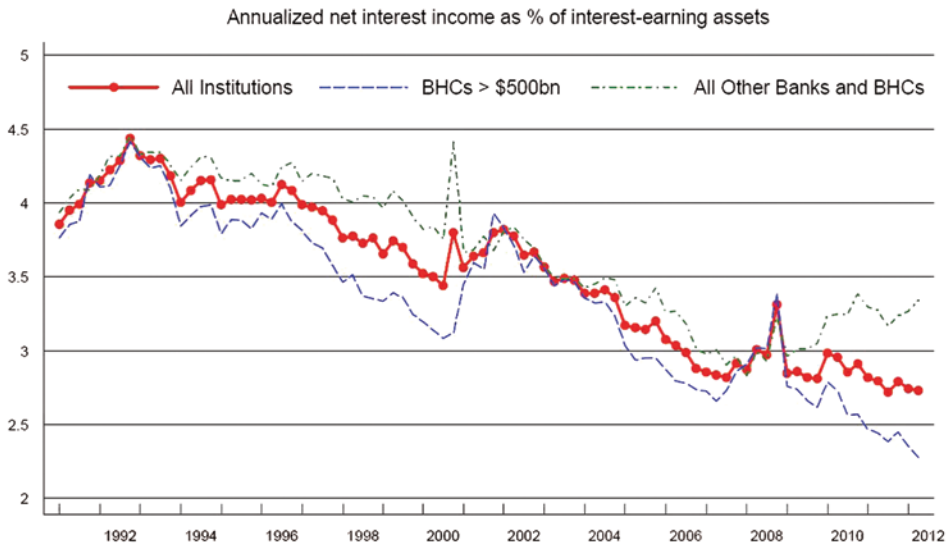
Fig. 8.3 Yields of 10-year European sovereign bonds. (Source: Thomson Reuters Datastream)

## 8.2 From Banking to Trading

After the oil price shocks of the 1980s and after the experience of stagflation in that period, monetary conditions seem to have loosened, and still are rather accommodating, both in the U.S. and in Europe. Figure 8.2 documents a sustained decline in interest rates in the U.S. from about 20% in 1980 to about 5% for 30-year bonds in the U.S. In parallel also short-term rates, i.e. the Fed-Fund rate, declined to almost zero percent currently.

Likewise there has been a prolonged convergence and decline in interest rates of long term European sovereign bonds in Europe before and after the creation of the Euro in 2002 until 2008 (Fig. 8.3).<sup>3</sup>

<sup>3</sup> The financial crisis of 2007/2008 re-introduced heterogeneity in European sovereign bonds.



**Fig. 8.4** Net interest margin U.S. 1980–2012. (Source: Fed. Reserve Bank NY: Quarterly trends for consolidated U.S. banking organizations, 2.Q. 2012)

Since interest income is positively correlated with interest rates, the sustained decline in interest rates also exerted substantial pressure on net interest margins (Fig. 8.4). These dropped in the U.S. from 4.5% in 1992 to about 2.5% in 2012. At the same time globalization and integration of European banking markets exerted extra pressure on banks' lending margins.

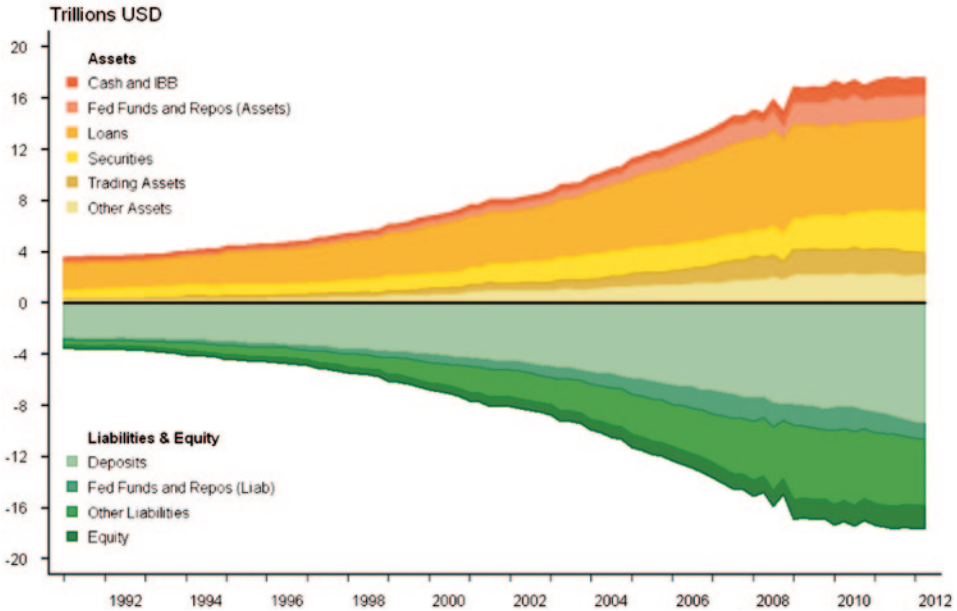
At the same time the international regulatory debate about capital rules focused attention on the harmonization and the regulation of bank capital.<sup>4</sup> The debate about the proper level of capital highlighted the potential costs of capital relative to deposits. The Basel II regulation even resulted in allowing banks to assess their own level of capital on the basis of quantitative models. While the idea was that banks should be given incentives to improve their risk management, the incentive consisted in the possibility to reduce their burden on (costly) capital. While the debate about the (excessive) costs of capital is clearly lobby-driven (e.g. [1, 10]), it did effect banks business strategies profoundly as we will see.

How did these developments affect banks' business models? The evolution of banks' aggregated balance sheets provides first hints. As can be seen in Fig. 8.5 for the U.S., the role of non-traditional assets and liabilities, marked as trading asset or "other assets" or "other liabilities" and Fed-funds respectively, increased substantially. Also bank capital almost seems to have disappeared at 2007 and re-emerged after 2009. Overall, monetary conditions prior to the financial crisis are reflected in hugely expanding aggregate balance sheets.

Figure 8.6 reveals that a large part of that increase in assets consists to asset-backed securities. These are securitized loans intended for sale or resale but not to be kept on banks'

<sup>4</sup> See Goodhart [11] for a description of the early stages of the Basle Committee.

### Balance Sheet Composition

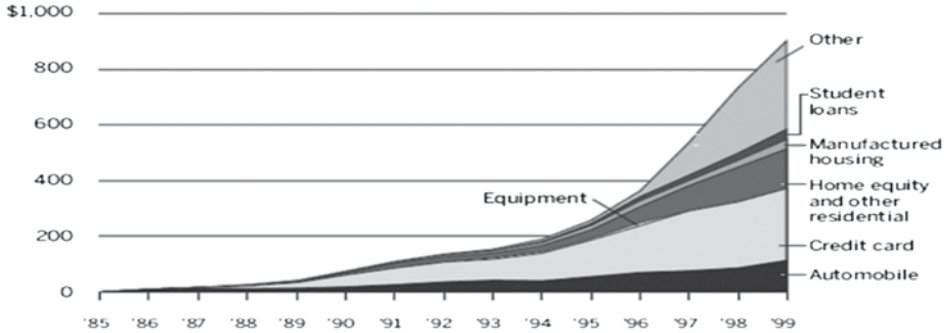


**Fig. 8.5** Trends in US-Banking from 1990–2012. (Source: Fed. Reserve Bank NY: Quarterly trends for consolidated U.S. banking organizations, 2.Q. 2012)

### Asset-Backed Securities Outstanding

*In the 1990s, many kinds of loans were packaged into asset-backed securities.*

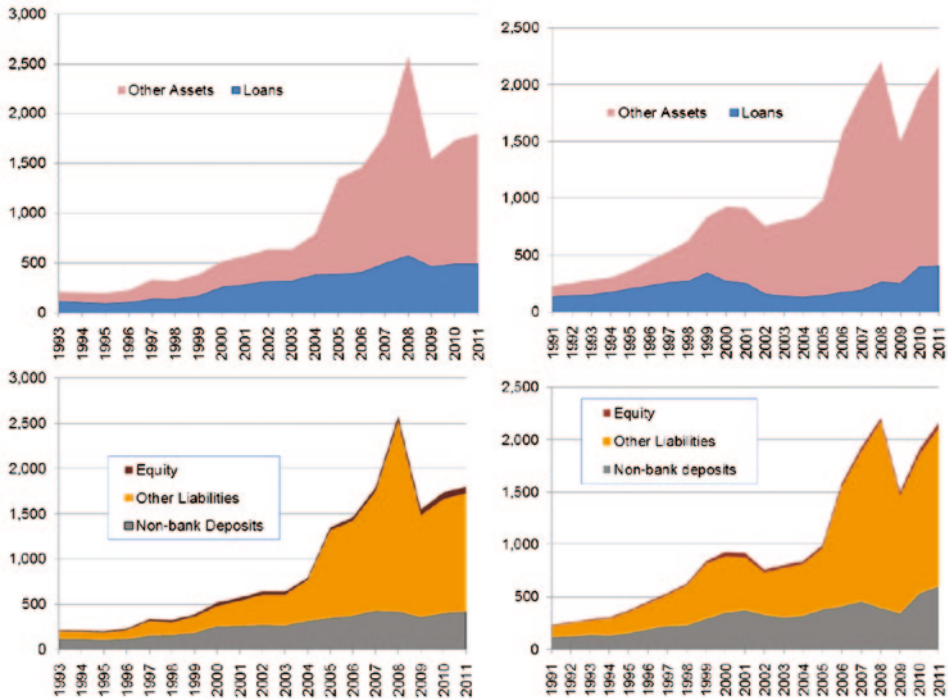
IN BILLIONS OF DOLLARS



**Fig. 8.6** Development of asset-backed assets. (Source: Financial crisis inquiry commission [8])

balance sheets for longer periods. Apparently, long-term lending relations were substituted by short-term loan origination with the purpose of selling securitized loans on the market to other long-term investors (see also [8]).

A similar development can be identified in Europe. Figure 8.7 provides two representative examples, Barclays Bank and Deutsche Bank, as reported in the Liikanen report [15].

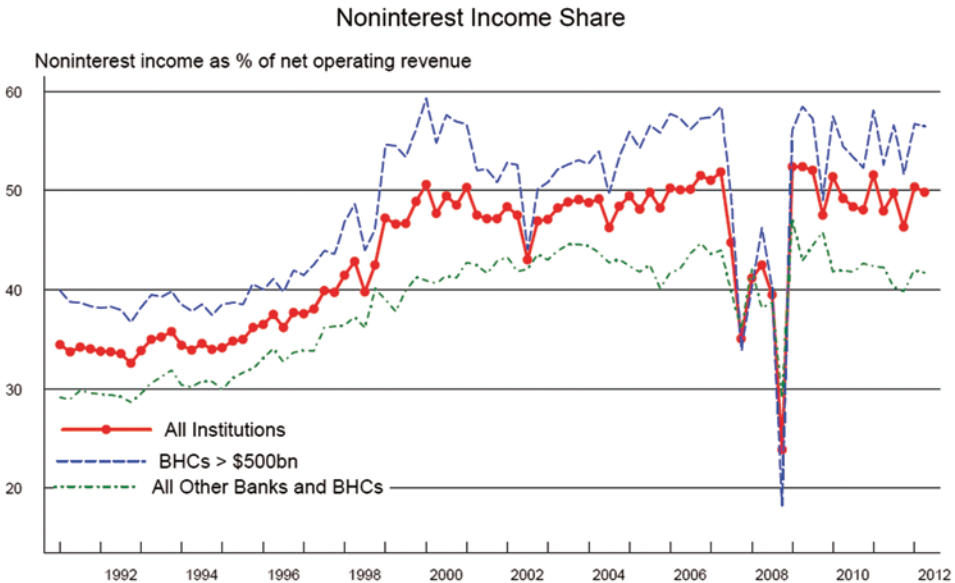


**Fig. 8.7** Graphic Representation of the Balance Sheets of Barclays Bank and Deutsche Bank. (Source: Liikannen Report [15])

Also in those cases, derivatives trading start dominating the balance sheets at about 2004. Moreover, these examples reveal the effective disappearance of bank equity on the liability side. Even after the financial crisis the build-up of bank equity seems relatively feeble.

The change in balance sheet composition reflects a change in earnings. According to Fig. 8.8 non-interest income has risen to major if not source of bank income in the 1990s essentially across all size groups. With the exception of the crisis years 2007 and 2008 noninterest income has leveled at about 50% on average for all institutions at about 2000, while it attains about 60% for large banks and 40% of the smaller banks. This structure of income shares has been interrupted, but effectively not changed by the financial crisis.

Apparently, noninterest income started dominating interest income around the turn of the millennium. This development correlates with the rise of securitization and the change of business models from origination towards trading. While banks started to concentrate on their core-business of information production and loan origination they freed up balance sheets by selling long-term assets to long-term investors. Thus investment banking started dominating commercial banking, or simply, traditional banking. This process seems to have started in the U.S. at around 1995 and, hence, well after the implementation of the Basel I accord.



**Fig. 8.8** Trends in US-Banking from 1990–2012. (Source: Fed. Reserve Bank NY: Quarterly trends for consolidated U.S. banking organizations, 2.Q. 2012 Trends in US-Banking from 1990–2012)

One possibly unintended consequence of this development has been a shift in focus and management horizon. While traditional banking was much more relationship oriented and as such long-term in focus, the trading model was geared towards short-term profitability. While relationships typically require initial investments into a lending relationship by the lender with the prospect of earning fees in the future, the trading model tends to anticipate and cash-in on potential future cash-flows by selling the assets immediately after origination. Thus, the trading model in its very nature is far more short-term than a relationship model of banking.

This increasing focus on trading can also be seen in the nature of originations. So the increase in originations of mortgage loans in the new millennium is essentially driven by the prospect of securitization and trading. The share of non-securitized loans, which remain on banks' balance sheets, remains roughly constant since the 1990s (Fig. 8.9).

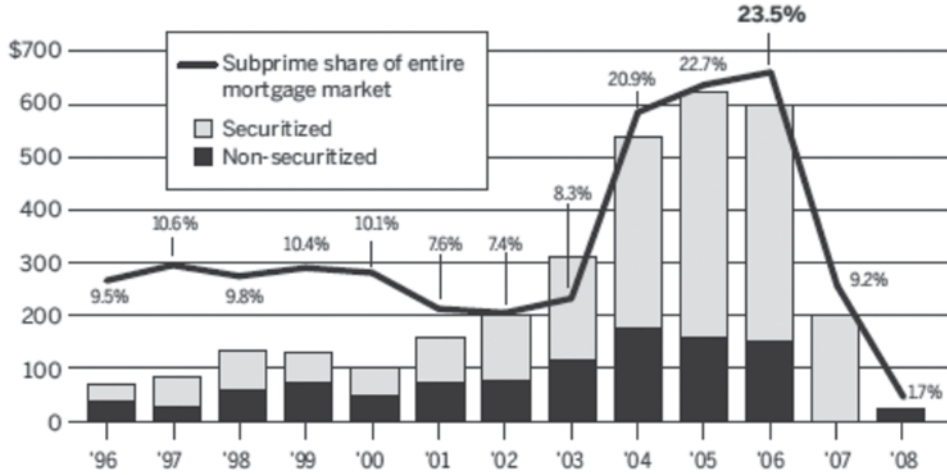
Apparently, this shift in focus was heralded by shareholders of bank stocks. The new paradigm got associated with the new performance measure of return on equity. Northern Rock's rise to fame was related to its ability to generate formidable rates of return on equity [16]. Likewise the success of investment banking units was measured in remarkable rates of return on equity for essentially all the large banks in the U.S. as well as in Europe. Indeed in the 1990 return on equity has become an industry benchmark in the banking industry. Figure 8.10 documents surprisingly little variation in that benchmark across bank size classes. Apparently, the benchmark started to reach around 15% in 1992, where it remained until 2007. After the financial crisis a benchmark level for the return on equity seems to re-emerge, at a substantially lower level though of about 8%.



### Subprime Mortgage Originations

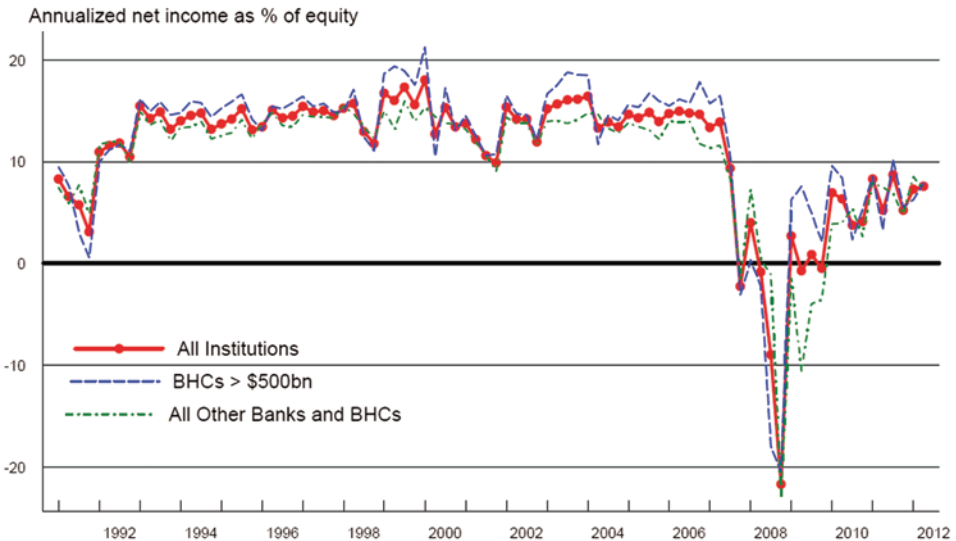
*In 2006, \$600 billion of subprime loans were originated, most of which were securitized. That year, subprime lending accounted for 23.5% of all mortgage originations.*

IN BILLIONS OF DOLLARS

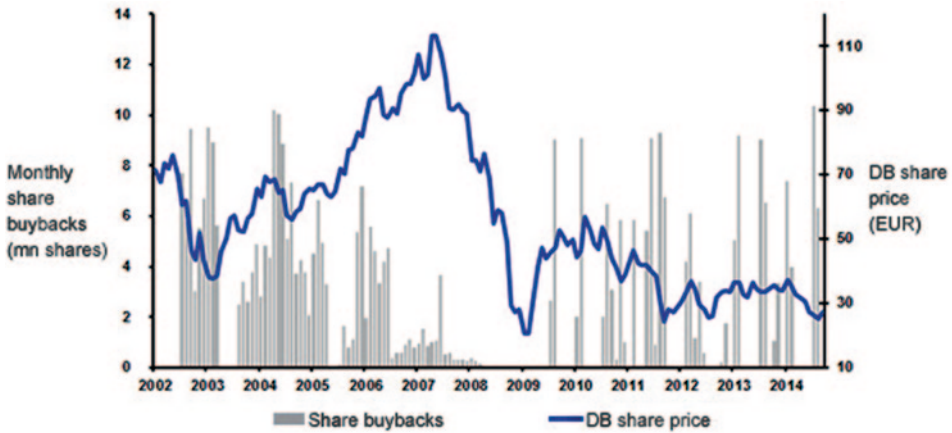


**Fig. 8.9** Developments in US-Banking. (Source: Financial crisis inquiry commission [8] Developments in US-Banking)

### Return on Equity



**Fig. 8.10** Trends in US-banking from 1990–2012. (Source: Fed. Reserve Bank NY: Quarterly trends for consolidated U.S. banking organizations, 2.Q. 2012 Trends in US-Banking from 1990–2012)



**Fig. 8.11** Share repurchases of Deutsche Bank. (Source: Deutsche Bank (Homepage))

How is this benchmark level for the return on equity related to banks' business models? It seems that the regulatory debate of the Basel process has contributed to implementing "acceptable levels" of (low) equity for the banking industry. More importantly, the regulatory process has focused management attention on minimizing bank equity as being a scarce and costly source of funding. So it is little surprise that management compensation was made contingent on the short term performance measure of return on equity. Shareholders were asking for a relatively high return on equity and managers were serving their interests.

Tragically, this change of management focus materially contributed towards eliminating the resilience of the Western banking systems by essentially stripping them of required equity. Still this comes at little surprise; return on equity has never been accepted as a standard performance measure in academic research since it can be easily manipulated by management at will. While a high return in good times *ceteris paribus* is reflected in a high return on equity, seemingly paradoxically, the return on equity can also be enhanced in bad times.<sup>5</sup> For example, a repurchase of stocks in periods with low operating returns reduces bank equity, and, thus, pushes upwards return on equity. In fact, as Fig. 8.11 demonstrates for Deutsche Bank, there had been widespread stock repurchase programs among the major European and U.S. banks. While stock repurchases are a strategy to stabilize the measured return on equity, they are not useful to stabilize a better performance measure such as return on assets, and, even more importantly, the reduce the banks' loss absorption capacity, and, thus, resilience. Repurchasing stocks in periods of weak operating revenues maintains payout to management and shareholders but increases insolvency risk and leaves banks more vulnerable to shocks in precisely those periods where risk capital is required for survival. The increased insolvency risk is deliberately shifted to depositors and fixed claimholders.

<sup>5</sup> There are further weaknesses such as inducing myopia due to the focus on short-term periodical revenues. Alternative performance measures such as returns on assets are less critical.

Obviously, collectively, bank managers have been willing to accept a high level of insolvency risk and a low level of resiliency for the banks they were entrusted responsibility for.<sup>6</sup> It remains speculation to what extent this risk was purposefully accepted and to what extent there was speculation about government bailouts in case a bank failed despite the bank being in full compliance with the new Basel capital regulation. The sudden drying up of the interbank markets in 2007 (Fig. 8.1) at least seem to suggest that not all the systemic feedbacks had been taken into account prior to the crisis. But after the crisis had been triggered, bank managers, and investors alike, obviously became quite concerned about the resiliency of their competitors' business models. This market feedback generated a systemic liquidity crisis that required swift reaction by central banks in order to prevent systemic failure.

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### 8.3 Private Strategies Towards a More Resilient Banking System

Is there scope for banks to re-adjust strategies towards more resilient business models?

Historical evidence in periods prior to regulation reveals that indeed banks may have an incentive to maintain more resilient balance sheets if they are rewarded for the higher degree of safety they offer to depositors. Along this line Wheelock and Wilson [18] find that banks that were not subject to mandatory deposit insurance in Kansas prior to the Great Depression tended to be more strongly capitalized, more profitable and less likely to default.

Also [4] has analyzed the relation between capital and return on equity for American banks. Indeed he verifies for the US that prior to the Basel 1988 Accord well capitalized banks did generate a higher return on equity. Moreover, well capitalized were less prone to liquidity problems in that period in the US.

Similarly on modern date Berger and Bouwman [5] address this issue on the basis of an international bank data set from 1984–2009, which includes several major banking and financial crises such as the S&L-crisis, the dot-com and the 2007/2008 crisis. Their main findings are:

1. In all Western countries capital increases resiliency in crisis periods. This holds for banks of all size groups.
2. In normal times it is especially small banks that profit from capital, and not the larger banks.<sup>7</sup>
3. In normal times the relation between capital and return on equity is statistically not significant for large and medium sized banks.
4. The positive impact of capital is stronger for US banks than European banks.

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<sup>6</sup> It should be noted though that quite a large number of banks with conservative business models had not changed their strategies dramatically such as large numbers of savings and cooperative banks. Nevertheless, they were also affected by the systemic feedback of the actions of a significant number of large banks.

<sup>7</sup> Similarly, Libertucci and Piersante [14] find that capital is particularly important to improve the resilience of start-up banks in Italy.

These empirical findings seem to stand at odds to the claims of modern banking lobbies which almost regard capital as a necessary evil that needs to be minimized. There are no words about the potential benefits of capital in fostering resiliency, or even strategic advantage in funding markets or more long term oriented relationship banking. Maybe the many political reforms related to the Basel reform process have effectively overturned the original positive relation between capital, profitability and resiliency.

The evidence suggests that competitive advantages of capital do not seem to play for large and medium sized banks in normal times. However, capital is important in periods for crisis for all banks, and even more so in the US relative to Europe. This differential finding seems to hint to the importance of the institutional environment. Capital is important because it strengthens funding ability by reducing potential insolvency concerns. This effect is stronger in countries with (a) more effective banking competition and (b) for countries with more pronounced insolvency risk (and hence lower guarantees). Monetary policy and universal guarantees in Europe effectively undermine much of the strategic role of capital. Based on this observation the argumentation of European banking lobbies is well understandable. However, as we can witness in Europe, the increased recourse to state guarantees increases the public interest in generating a more resilient and stable banking system.

And ironically this is falling back precisely on those banks that generate the highest social risk, i.e. those banks that like to present themselves as systemically important.<sup>8</sup>

However, will banks be able to lengthen their investment horizon again? Will they be able to move back from a trading bank to a relationship bank? The answer to this question is more difficult. For one reason, securitization has clear benefits and frees up resources for the original banking activity of information production and origination, while leaving long term funding to long term investors [6]. Moreover, relationship financing seems particularly important in risky start-up phases and in early stages of development. It seems less relevant in low growing and largely satiated environments.

Will banks be able to increasingly service the long-term interests of their depositors and savers? This will largely depend on how much they will succeed to correlate management rewards on trust building long-run performance rather than short-term return on equity. In this regard it seems essential that banks manage well the tradeoff between the interests of short-term and long-term investors. Sound capitalization is a measure of the value of trust in long-term contracts. Low levels of capital clearly compromise long-term contracts to short-term benefits.

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<sup>8</sup> This argument could actually be used in order to support subsidizing bank capital because of its positive externality in periods of crisis. Rather than subsidizing risk taking, the tax payer should have an interest in subsidizing solidity and resiliency. Of course, such considerations would require nothing less than a "little revolution" in the think tanks of the treasuries. In the interest of tax payers an effects-based policy might be worth considering.

## 8.4 Public Strategies Towards a More Resilient Banking System

As the analysis of the past two decades reveals pressure on lending margins was not only exerted from increasing international competition but also from expansive monetary policy. While competitive forces may be a healthy way of discriminating among alternative business models, financial depression and loose monetary policy tend to weaken the competitive value of sound balance sheets. In a truly competitive market economy funding costs are related to the strength of balance sheets and competitive advantage. Weaker banks and risky business models have to pay higher risk premiums, and, thus, funding costs reflected in higher costs of capital. Consequently, insolvency rates are higher and they are more likely to market selection. To the extent that monetary policy intervenes in markets, both by subsidizing funding costs at low rates and by accepting lower quality collateral, the advantage of sound balance sheets as well as the forces of market selection are weakened. Moreover, a policy of bailing out any large enough banks completely ridicules the process of market selection. Both, monetary policy and rescue packages undermine the functioning of markets and raise the question about the role of organizing the banking industry around markets or as a central bureau. If markets are the social solution of choice, it will be necessary to allow market forces to operate. An adjustment of the international financial architecture and self-constraint of national policy interference will be unavoidable. The very fact that European banking markets still are highly fragmented is not only a reaction to local informational advantage [9] but also reflects strong national political interests that disallow markets to function properly.

Also the question about prudential regulation is highly linked to the proper market framework. History has taught us that successful banks in unregulated markets tended to be more resilient than regulated markets (e.g. [18]). To the extent that capital buffers provide a positive externality to others<sup>9</sup>, markets may not be well equipped to provide incentives for optimal capital provision. Even high-quality banks may not have incentives to contribute the socially optimal amount of capital either.<sup>10</sup> As the recent financial crises have shown, the lack of capital is major reason for dwindling trust in the financial sector. Hence, the positive externality of bank capital would seem to constitute a prime reason for public intervention. As done in the Basel III process statutory regulation could mandate minimum levels of capital. Alternatively, policy could provide incentives in a Pigouvian way—e.g. by generating tax incentives—and leave the determination of optimal capital level to the markets. The advantages of the latter approach is a stronger reliance on market knowledge, while the statutory approach easily may fall victim to the "pretence of knowledge" criticism [12] since it requires lots of information to implement the "optimal" minimal levels of capital. Moreover, in case of distress statutory regulation always allows the

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<sup>9</sup> This is similar to liquidity reserves [7].

<sup>10</sup> The vicious public rhetoric against stricter rules in Basel III regulation is vivid evidence of systemically important banks trying to shy away from accepting social responsibility and providing positive externalities [1].

excuse that regulatory limits have been obeyed, thus reducing incentives for prior private initiative to avoid distress. In any case, the recent financial crisis has taught the lesson that equity to asset ratios of 5% and below are clearly deficient to deal with the volatility of modern markets.

Let me add the observation that there has been surprisingly little debate about the public role in subsidizing leverage. The tax exemption of interest payments clearly contributed to the increasing popularity of the performance criterion of return on equity. Bank capital, while contributing to the soundness of balance sheets and resiliency of individual banks as well as collectively to the banking sector was not equally favored, since dividends on bank stocks did not enjoy that tax exemption. Given the fact that bank capital provides a positive externality, typically underprovided in competitive markets, it should be subsidized relative to deposits. So even if the public is not prepared to subsidize bank capital in normal times, at the very least, it should consider to erase the excessive subsidies on bank leverage. This applies to both, tax incentives and to the implicit guarantees for struggling banks. Subsidizing leverage implies subsidizing risk taking and destabilization of the financial system.

Finally, stock repurchases in the banking industry should be viewed as a warning bell by regulators and supervisors. It has been widely forgotten, or neglected, that already the banking crisis of 1931 was triggered by massive stock repurchases [12, 17]. As in the Great Depression, stock repurchases are one way to transfer wealth from depositors to shareholders in critical periods, leaving the banks vulnerable precisely in times when sound balance sheets are required.

Interestingly, many banks that did not resort to such type of strategies did survive the financial crisis very well. For example, the business model of cooperative banks did not require massive bail-outs and proved quite resilient, even without major explicit or implicit government subsidies.

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## 8.5 Conclusion

Globalization, regulation and monetary policy have contributed to a massive shift in banks' business models from long-term relationship based banking to short-term trading of securitized derivatives around the turn of the second millennium. These developments generated an excessively myopic focus and essentially eliminated much of the resiliency of the Western financial systems. Restoring resiliency requires the strengthening of market forces and, especially, market rewards for strategies based on sound balance sheets. Rather than subsidizing bank leverage, Western societies should reward sound and long-term oriented business models. However, even restricting public interventions to proven market failures and relying on market forces otherwise might help to increase management horizon in the banking industry, and, thus, improve resiliency and reduce systemic risk.

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## Abstract

Due to its binding character law has a high impact on change. This article will concentrate on the innovation of products and take an example from the health care sector, the Computer Tomography-Scanner. In this field law has two main roles: It has to ensure the highest level of patient safety while also promoting the innovation and the competitiveness of this sector. To fulfill these contrary tasks and to keep up with the ongoing developments, law for its part chooses the path of dynamization. The article will line out that the legislator and the companies both should follow some rules to achieve an optimal functioning of the interaction between legislation and business.

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## 9.1 Legal Regulation and Business Decisions

At first glance legal regulation is strongly related to the profession of lawyers. Be it a judge in a civil trial giving to the plaintiff and the defendant any directions on questions of law, be it a legal officer in administration setting up a proposal of wider public importance or be it a solicitor concerned with taxation problems in a company, all these professions need a profound knowledge of legal regulations to perform in their legal practices. They have to ensure that the rules enacted by law are respected, they assist in the understanding of the law and very often they have to distinguish general principles from law rules. What

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does this mean for the business sector? Are businessmen or the boards of companies only users consuming law by advice from legal counsel? To allow a serious analysis, especially of the last question, the following article will concentrate on a well-known business subject, the change process. It will follow the thesis that legal regulation has a high impact on change and therefore should be taken into account at any stage of evolution by the responsible bodies in business itself.

When asked if legal regulation has an impact on change, we might firstly refer to a simple fact: its binding character. If the legislator changes the law, companies are obliged to follow the new rules like everybody else. Companies should be aware that, if necessary, they will have to bring their business in line with the new regulations.

Patterns can be commonly observed: changes of law can affect not only the internal organization of a company—for example due to a new regulation of co-determination—but also the production process—for instance by new standards concerning health and safety at work. Further, they can affect the products themselves due to quality demands as well as the relationship with business partners, if contract law is changed. And finally, tax law might have an enormous influence on various structural decisions.

Since it is evident that law has an immense effect on all key points of a business process, it is important to have a deeper look at the way legal regulation works. For this purpose the following sections concentrate on the innovation of products and take an example from the healthcare sector: the CT scanner.

### 9.1.1 The CT Scanner as an Example of Product Innovation

In modern medicine, imaging procedures have become more and more important and the development of the CT scanner is full of innovations. Hardly anyone knows that it was the famous music group, the Beatles, who inspired this development, as by their success, the music company EMI was able to fund research in this medical field [35]. So the first commercial scanner of the world was an EMI scanner, installed in an English hospital in 1971 [36]. Since then, CT technology has seen enormous developments. The main aims were to improve the image quality and to reduce the duration of the examination—especially to allow taking pictures during the short time of breath-holding. New challenges arise with personalized medicine, as CT scanning can be used for specialized diagnostics, particularly in the field of cancer research [33].<sup>1</sup> So far, much has been achieved and CT development can be described as a success story that is still continuing today.

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<sup>1</sup> With special regard to the PET (Positron Emission Tomography), which belongs to the emission-based computer tomography, see [33].

### 9.1.2 Regulations that Govern CT Scanning

Here we can state that the law plays an important role in regulating technical and natural sciences purposes. Let us take an example from European environmental law: the allowed emissions by chemical plants are laid down in EU regulations [9]. These regulations are based on technical expertise, often elaborated by chemists in collaboration with EU legal officers specialized in chemical law. The protection of plants and animals might serve as another example: plant and animal diseases are monitored all over the European Union. The results are discussed in expert groups and may lead to legal regulations for the sake of animal health or the food security of European citizens.

In the light of this, there is no doubt that law also plays an important role in regulating the technical purposes of CT scanning. Therefore, one of the most interesting approaches concerning healthcare regulation is to ask which regulatory framework allowed and supported these technical innovations. In the specific field of healthcare, law has two important roles:

First of all, legal regulations have to ensure the highest level of patient safety [10].<sup>2</sup> All of us rely on getting proven and safe pharmaceuticals and medical devices. The public reacts extremely sensitively if this concern is not sufficiently safeguarded. In this case, the involved company has to face an enormous loss of confidence.

On the other hand, it is important that legal regulation does not slow down the innovative process, but promotes the innovation and competitiveness of the medical sector [10]<sup>3</sup>, as only innovative medicine can cope with future challenges and guarantee adequate patient care in the long run. Furthermore, innovation is the key to growth and jobs.

To fulfil these contrary tasks and to keep up with the ongoing developments, law for its part chooses the path of dynamisation.<sup>4</sup> In the field of innovative medicine as well as in the broader spectrum of natural sciences and technology, legal regulations aim at remaining open for further development.

Rather than laying down the full details, provisions use a broad wording. For instance, the German X-Ray regulation (“*Röntgenverordnung*”) that governs CT scanning simply refers to “the state of the art in technology”,<sup>5</sup> in order to adapt the legal situation to current developments as promptly as possible. The reference to the respective scientific and technical level also leads to a restriction, in the sense that it enables the law to base its

<sup>2</sup> See also [14].

<sup>3</sup> See also as an example from the field of natural sciences and technology § 1 No 3 of the German Genetic Engineering Act, Federal Law Gazette [BGBl.] 1993 Part I p. 2066.

<sup>4</sup> The following expositions concentrate on innovative areas of healthcare such as the pharmaceutical and medical devices sector, while aspects of social law, which follows its own rules, are not considered.

<sup>5</sup> § 2c II RöV, Federal Law Gazette [BGBl.] 2003 Part I p. 604; see also for the PET (Positron Emission Tomography) § 6 II of the German Ordinance on the protection from damage by ionising radiation (Radiation Protection Ordinance—StrlSchVO), Federal Law Gazette [BGBl.] [11] Part I p. 1714 (2002I1459): “state of the art in science and technology”.

decisions on the given knowledge without having to stick to a passive stance waiting for future scientific or technical progress [18]. The German X-Ray regulation also states that the benefit of medical exposure to radiation has to be weighed against potential damages to health [12].<sup>6</sup> Similarly, the EU Directive concerning medical devices says that any risks have to be acceptable when weighed against the benefits to the patient and they have to be compatible with a high level of protection of health and safety [7]. All these phrases allow enough space to make an overall assessment of the circumstances and their possible change.

If limits are set, this happens mainly in sub-statutory provisions, as they can be amended much faster [13].<sup>7</sup> Possible revisions of knowledge and technical innovations could therefore be taken into account by maintaining sufficient flexibility [18].<sup>8</sup> This article is not the right place to discuss the question of what this means for the legislation and the power of parliament. Here it can only be stated that it is for the legislator to lay down the content, rationale and extent of an authorization. Nonetheless, in practice, sub-statutory provisions assume significant importance, especially in the field of natural sciences and technology and thus they are of intrinsic value under the rule of law [8].

### 9.1.3 Entrepreneurial Options

By these means the law keeps all options open to react to further technological developments. For companies operating in this sector, this dynamisation offers a wide frame for product innovations. Manufacturers of CT scanners have the possibility to opt for enhanced imaging techniques, for a shorter duration of the examination or a lower radiation exposure, the latter two often going hand in hand.

For instance, company A might decide to concentrate its research especially on the reduction of radiation exposure. From the legal point of view, this business decision is well-founded: as we have seen, the radiation exposure has to be as low as possible, so the company can be sure to get an authorization for its product. Of course there might be some clients such as university hospitals or research institutes which are not primarily interested in a reduction of radiation exposure but in a better image quality to improve their own research—and we have to bear in mind that it is for them and not for the patients to buy the new medical equipment. Some of them might decide in favor of another product. Nevertheless, a scanner with a lower radiation dose will find acceptance in the long run, as the law requires the necessary image quality to be achieved with the lowest radiation exposure possible [12].<sup>9</sup> Here we can clearly see the dynamic impact of the legal regulation. As it refers to the state of the art in technology, new scanners with a reduced radiation dose will

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<sup>6</sup> § 2a II RöV.

<sup>7</sup> § 16 I RöV.

<sup>8</sup> See for details [18, p. 195 ff.].

<sup>9</sup> § 2c II, § 3 III 2.a) RöV; see also § 6 StrlschVO (for PET scanners).

set the new standards and will lead to reduced legal limits in the long run [13].<sup>10</sup> Therefore a company would be well-advised to invest in the reduction of radiation exposure.

Now let us have a look at Company B, which follows another strategy and invests in the improvement of the image quality. This offers the possibility to become a market leader by innovation and hits the interests of those clients who are active in advanced top-ranking medical research. They might be willing to pay higher prices for a significant leap in image quality. On the other hand, an improved image quality is normally accompanied by a higher radiation exposure—so it is well-known that a computer tomography offers much more accurate pictures than a normal x-ray examination, but its radiation dose can be a thousand times higher. A very high radiation dose increases the risk of obtaining only a limited authorization for the CT scanner, for instance it may only be operated to make special diagnoses. In a narrowly defined market, this leads to a further restriction of sales opportunities.

The history of the CT market shows that most improvements to the image quality have been well-accepted by the market, but there were others which have not been successful, as the better image quality was accompanied by the disadvantage of a long duration of the examination and a high radiation dose [19].<sup>11</sup>

Of course it is also possible to follow both directions and to conduct research on a lower radiation dose *and* improved image quality equally—in our example, the strategy of company C. This way offers the best diversification of risks and chances and might be the ideal solution to become a market leader. But it should not be forgotten that research in this high-tech field is very expensive, so this strategy requires a firm and sustainable financial footing. This is particularly true as CT scanners are very specialized products and the CT market is very narrow.

Referring to the figures in Germany 2500 scanners are already installed. About 200 new scanners are ordered every year. In the European market, less than 700 new systems are sold yearly. The costs of a CT scanner are equally revealing. The respective market is governed by the relationship between supply and demand and it depends on what the client wants to have. A small refurbished 4-slice scanner could be bought for US \$ 75,000 [17], but for a brand new high-tech scanner with all the latest refinements a client will have to pay up to US \$ 2 million or more. Exact figures are not easy to define, because CT scanners are often sold in packages of medical equipment. In any case, there are additional costs for training and service agreements.

So we see that in this specialized market it is very important to develop the right entrepreneurial strategy. Legal regulations are a central factor that has to be considered. They offer opportunities for innovations, but due to its dynamic impact the law also reacts to the

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<sup>10</sup> See especially §§ 16, 17a I and 18 RöV.

<sup>11</sup> See Wikipedia, heading “Computertomographie”, Zwei-Spektren-CT bzw. Multi-Energy-Computertomographie, at <http://de.wikipedia.org/wiki/Computertomographie> (2013-06-18) with reference to Willy A. Kalender, Basic principles of Dual Energy CT (PDF; 665 kB) IMP Uni Erlangen-2011-3-4.

progress that companies make. This is in line with a recent tendency in law to define only the principal objectives, but leave the companies to decide how they are going to achieve these goals. This approach is also known from other fields such as the cap and trade mechanism or the emission limits on carbon dioxide in the car sector. An outdated technology—for instance a CT scanner with a bad image quality and a high radiation dose—will fail because of the competitors' progress and success. And this is true not only from a commercial perspective but also from the standpoint of law: an outdated product will no longer get an authorization. So companies will be measured against the achieved standards.

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## 9.2 The Legislative Process

Companies tend to be competitive with their products, often a result of high investments in research and development. At the same time there exists an established legal system that expects obedience. A legal rule aims at making provision for a large number of cases. Thus it cannot provide in detail for every eventuality, respectively for eventualities during a change process. That is why the following reflections turn to the making of regulations. For an optimal functioning of the interaction between legislation and innovative companies, both parties should follow some rules.

### 9.2.1 The Perspective of the Affected Companies

Firstly there is the position of those who are affected by the new regulation: the companies. From their point of view, there are two important aspects that determine success or failure.

#### 9.2.1.1 Create an Open-Minded Entrepreneurial Culture

First of all, companies acting in a highly regulated area should have a good knowledge of all regulations that might affect them, as a mistake or a misunderstanding in this field may lead to high adaptation costs. It is important to create an entrepreneurial culture which accepts that legal regulation is necessary. We live in a complex high-tech society with high demands for state protection and justice. So in the CT example the general public expects exquisite medical care with low risks.

If the state therefore controls a business field which is accompanied by high risks for human life and health, this control cannot be seen just as an infringement of the rights of the companies, but in a way it is also a service to them [21]. By its control the state ensures the necessary social acceptance and prevents at least some great troubles with defective products.<sup>12</sup> Especially in the field of healthcare it is very dangerous to act only according to an economic logic.

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<sup>12</sup> This statement is meant in the customary sense of everyday language, without implying the automatic assumption of a subjective public right.



A negative example from the pharmaceutical sector is Thalidomide, which in Germany was sold under the name ‘Contergan’—at a time when the German law on the regulation of pharmaceuticals was far less restrictive. The company is still suffering from this loss of reputation although the scandal happened 50 years ago. So companies should bear in mind that the controlling of technic at the same time means enabling of technic [21].

### 9.2.1.2 Engage in the Political Decision-Making Process

Of course, and this leads to the second point, there has to be a fair balance between the objectives and the means of a legal arrangement [31].

Therefore companies should engage in the political decision-making process as early as possible in order to put forward their views. A good time for lobbying should be the discussion of the matter by the working groups of the political parties—even before the parliamentary work officially starts. Contrary to the parliamentary committee or even the parliamentary plenary, in these working groups the members of the respective parties keep to themselves; if necessary the competent minister of the governing party joins the meeting as a guest. Hence the political parties, the parliament and the head of the executive interlock in these working groups.

If, in contrast, the lobbying starts only after the subject has become “official” by the first reading in parliament, it might be too late to achieve a real change in setting the courses. For the political line might have already been defined in the working group. The following parliamentary debate, however, is characterized more by the defence of the proposal against the opposition and what matters politically at this stage is to obtain the majority. At that time it is rare for the executive or even the party which made the proposal to still be willing to modify the draft. Now rather the capacity for political action is of primary importance.

Thus what remains to be noted is that the political party’s working group functions as a ‘transmission belt’ between the parliament and the government in power. In the sense of a theory of power as communication [1] this is a significant center of influence and in the sense of a targeted practice this might be the most appropriate opportunity for the affected companies to bring in their ideas and especially to avoid misunderstandings and unawareness of the entrepreneurial interests by the politicians.

## 9.2.2 The Legislative Point of View

Conversely it is for the legislator to weigh all consequences of a new regulation carefully. He has to consider not only the direct intended effects he wants to achieve, but also the further outcomes of the regulation which may be described as side-effects or adaptive consequences [23].<sup>13</sup> They comprise all kind of reactions people develop in dealing with the new regulations. There might be the interests of those who profit from the new law

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<sup>13</sup> [23] who uses the terms: “Realfolgen” or “Adaptionsfolgen”.

and, by their actions, will intensify the practical effects of this law. But there might also be those who take a critical view of the matter and who will try to avoid negative effects on their business [15]. These avoiding strategies, though legal and allowed, can lead to side-effect consequences which may even counteract the intended objectives of the legislator.

The counter-productive effects may be illustrated by two examples. In the field of environmental protection, many municipalities have a law that forbids the felling of trees that have more than a certain trunk circumference. This law clearly aims at the protection of old trees. But in practice lots of people will fell their trees now at a very early stage, just to avoid that by further growing someday they will fall within the scope of that provision. As a result this regulation costs the lives of many young and healthy trees. That is why in the legal community there are proposals to think more about the ecologically damaging effects of environmental protection law.

Similar examples may be found in the protection of workers, where the reinforcement of an extra protection against dismissal—for example for older or disabled workers—may lead to less recruitment of workers belonging to these groups. In the end such a regulation brings advantages only to those who already have a job, but may put the whole group at a disadvantage in the long run.

So if Aristotle said that law is reason unaffected by desire [2], he is right as far as the general binding character of law is directed. In this respect the fact that a legal regulation exists relieves the administration as well as society as a whole from finding a new justification for every single case. On the other hand, the existence of a legal regulation does not stop people from having their own interests. All these personal motives, ideas and preferences will stay and—within the legal frame—will lead their actions. It is these side-effect consequences that will determine the actual dealing with a new regulation and that can make the difference between success and failure. Therefore the legislator is well-advised not only to reflect on the pursued effects of a new regulation, but also to take a good look at the setting, especially at the interests of the affected companies.

### **9.2.3 Regulation Design: Open up to Behavioral Sciences and Research on Market Design**

However, side-effect consequences are extremely difficult to measure [24] and—what is even more important—jurisprudence lacks an own behavioral sciences research [28].<sup>14</sup> Therefore it is very important that the legislator opens up to the insights of economic sciences, especially concerning behavioral sciences and research on market design.

Of course, economics and law pursue different goals: while economic sciences are marked mainly by the guiding principle of efficiency, law is primarily committed to the objective of justice [3]. Notwithstanding these different purposes, there are considerable similarities concerning the methods of achieving objectives and assessing human behav-

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<sup>14</sup> See also [3, p. 143 and 147]; recently with reflections on regulatory impact assessment also [4].

ior. Here, law, which lacks an own analytic behavioral model, can benefit from the long-standing and sophisticated research of economic sciences. This holds true for the homo oeconomicus model and its modified reinvigorations made particularly in recent times [32]<sup>15</sup> as well as for the studies on market design [26, 29]. Especially this latter discipline examines the interaction of institutions and individuals and that is exactly what legislation is about.

A well-known example is the study of Alvin Roth about a kidney exchange programme [30]. As many people suffer from a kidney disease and are waiting for a transplant, the programme starts with people's motivation to donate a kidney to their own relatives. But often a donation among relatives is not possible, as they have different blood types. Here, the new programme establishes a computerised donor tracking system for kidney exchange that brings together pairs of patients and donors by making up new compatible pairs who are operated on simultaneously. The concept was implemented in New England and works successfully.<sup>16</sup>

Of course, this programme is designed for a very special setting. But it shows some decisive points very clearly, which are crucial for a process which I will call 'regulation design':

- a. First of all it is very important to consider the interests of all affected people or companies from the very beginning. Economic sciences have worked out very clearly that human behavior follows its own rationalities and decision-making mechanisms which can be influenced by various incentives. Predicting behavior systematically and setting incentives by legislation is possible only if the needs and motives of those concerned are known.

Naturally it is not possible to fulfill the expectations of all companies or people involved completely. In view of the diverging interests of all concerned parties this would not be achievable already *de facto*; moreover law remains committed to its inherent objectives, which must not be abandoned even in the face of economic methods. Nevertheless, a sufficient consideration of the various interests involved should help to enhance concordances with the legislative goals and, if necessary, alleviate conflicts.

- b. Furthermore, the details of the special regulation field are of enormous significance. Already a small mistake might change the behavior of lots of people and cause undesirable effects [27]—a little like natural scientists know it from the theory of chaos, from which the metaphor is known that the movement of a butterfly's wing may lead to disturbances in the atmosphere which might end up in a heavy storm on another continent [5].<sup>17</sup> That is why a dialogue between the legislator and all affected parties is of high importance. Only a good flow of information guarantees that even details which seem

<sup>15</sup> See [32, pp. 99–118]. See for details also [20] with further references; see also [16, 34].

<sup>16</sup> See Wikipedia "Alvin E. Roth" at [http://en.wikipedia.org/wiki/Alvin\\_E.\\_Roth](http://en.wikipedia.org/wiki/Alvin_E._Roth) (2013-06-18) referring to "Six-way kidney transplant first" BBC News. April 9, 2008.

<sup>17</sup> See for weather forecasts and their dependency on small details [22]; further [5, 6, 37].

to be unimportant at first sight, but are of great significance for one of the parties, are accommodated sufficiently.

- c. And finally developing a special regulation design is an interdisciplinary task that requires politicians, lawyers and economists to work together hand in hand and exchange their experiences in an open discourse. In practice this means that all involved parties have to acquaint themselves with the terminology and models of the other disciplines at least to some extent. It is important to design the process in a way that it remains open for all ideas, but that it also safeguards all legal requirements.

Not to be misunderstood, the drafting of laws has to be done by specialized and skilled lawyers. The so-called draftsmen are responsible within the settled framework—given by members of parliament or by the government—to prepare a draft in the precise language required. Whoever had the opportunity to follow such a procedure closely—whether it be a consolidating Act in order to tidy up a bill or a new draft—might follow the complaints that the wording of Acts is very complicated and complex. Complexity and a specialized language for necessary details should not prevent other sciences from discussing the reasonable questions. One question concerns the addressee of the consolidating or codifying Act. A ‘regulation design’ well-understood must surely bring in the addressee of the Act. But on the other hand, interested groups or individuals must accept that the legal language has to follow its own rules in order to express accurately the will of the legislator.

- d. By a successful regulation design it might be possible to unite the legislative aims and the interests of the affected companies in such a way that they will support and not obstruct each other. But this is a challenging undertaking, whose effort and diligence must not be underestimated. It is a process requiring intensive analysis and hard work and thus it might not be operable in case of only small or formal amendments. However, a comprehensive regulation design is strongly recommended for complex markets such as the financial sector, the energy market and its renewables and last but not least the healthcare sector. It is surely no coincidence that the detailed reflections of leading scientists in market design—see the example of Alvin Roth above—have concentrated especially on this last-mentioned area.

Also in Germany the healthcare sector would be an ideal object for studies on regulation design, as this field is characterized on the one hand by high amounts of money, but on the other hand also by a multitude of heterogeneous players—doctors, hospitals, pharmaceutical companies and pharmacists, the statutory health insurance and private insurance companies and last, but hopefully not least, the patients—all of them with very different interests. Consequently, a multiplicity of legal relationships converge here—e.g. in the fields of medical law, healthcare contract law and hospital law, pharmaceutical and medical device law and insurance law and social law—which have to be coordinated and balanced. Therefore, we can be sure that regulation design will not run out of work.

### 9.3 Resumé

Summing up, it can be stated that the law has a high impact on change, as legal regulations can affect all key points of a business process. Therefore the legislator should carefully consider the economic consequences of a new regulation and open up to the insights of economic sciences, especially concerning behavioral sciences and research on market design.

Conversely, companies are well-advised to engage in the political decision-making process early on, to anticipate changes in the law and develop positions and solutions, as the knowledge of the theory of evolution is true also for them:

According to Darwin's *Origin of Species*, it is not the most intellectual of the species that survives; it is not the strongest that survives; but the species that survives is the one that is able best to adapt and adjust to the changing environment in which it finds itself [25].<sup>18</sup>

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**Prof. Dr. Liv Jaeckel** has been appointed as chair holder for the Chair of Law of Economic Regulation at HHL Leipzig Graduate School of Management in May 2014. Her *venia legendi* covers Public Law, European Law and Public International Law. Her research focuses on public economic regulation on national, European and international level. Within the Center for Health Care Management and Regulation she will focus her research particularly on regulatory issues in the fields of healthcare, medical devices and pharmaceutical industry. Further research topics can be found in the area of German, European and international environmental law including also interdisciplinary studies of biodiversity from economical, legal and scientific perspectives.



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**Part V**

**From Theory to Practice: New Approaches in  
Consultancy for Organizational Change**

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# Insights from Change Management Consulting: Linking the Hard and Soft Side of Change with Heuristics

# 10

Frank Lattuch and Anna Seifert

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## Abstract

Change management offers different approaches that force organizations to tackle many priorities simultaneously. In doing so leader still fail to rigorously balance hard and soft factors of change. The purpose of this paper is to develop a holistic model that integrates these factors through theory-based methods in order to facilitate effective change management. The approach consists of theory-building and heuristics by drawing upon change and management consulting literature and examining implications for linking hard and soft factors in change management. We found that heuristics and theory-based change concepts can act as the precondition and vehicle for effective change strategies fostering learning, reflection, and self-organizing problem solving activities. This paper helps leaders to be better prepared for shaping their organization's change strategy. Three examples that link hard and soft factors of change provide insights into the means by which organizations applying heuristics can outperform the change efforts of their counterparts.

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## 10.1 Introduction

Although effective organizational change is so desirable, few organizations actually know how to make it happen. Think of the many CEOs in recent years who struggled to successfully drive a major organizational change. Or think of people working as consultants helping their clients to carry out a challenging change program. Think about yourself in exercising leadership in times of change at your organization. Have you ever felt uncomfortable about change programs, their concepts or overrated results that were expected to be achieved?

Clearly, designing effective change programs is easier said than done. Organizations often do not have ad-hoc resources available for undertaking major change projects or seek people who stay out of organizations' politics during these endeavors. As such, top-executives more than ever request external advice to manage major changes with state-of-the-art tools [24, 33]. In seeking this expertise clients show a higher interest in theory-based and heuristic approaches than they did a decade ago. In this vein, they tend to apply heuristics to allow different members of the management team to contribute in furthering them towards a commonly accepted change paradigm.

From a practitioner's point of view, designing and carrying out thought-out communication strategies, profound stakeholder management and continuous project evaluations are as important as maintaining the hard factors such as timeline and budget. Management scholars reported this balance of hard and soft factors often as not sufficiently carried out at firms undertaking major changes [42]. Therefore, our understanding needs to be focused on systematically linking these elements through theory-based approaches [23]. Such approaches enable leaders to make better decisions on deliberate data collection, analysis and implementation methods. Thus, this paper responds to the call for an exploration of different theoretical approaches in management consulting [33]. By focusing on change it explores a new perspective for theorizing change management concepts in day-to-day business.

With our discussion paper we reflect on current literature and three case examples to provide a better informed picture on the change paradigm to effectively execute organizational change. The three cases are narrative in nature and may enable propositions to be developed for further study. Thereby our discussion provides insights into the means by which organizations applying heuristic methods can outperform the change performance of their competitors.

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## 10.2 Theory-Based Models in Management Consulting

Many organizations have become mature users of professional consulting services [24]. As such, the consulting market significantly increased during recent years and an oversupply in management consultancy is highly visible [33, 38]. In line with the commonly held discussion in general public, management scholars display a controversial understand-

ing of management consulting. While [44] criticize consultancies as highly influenced by management fashions and inferior in their understanding of organizations and change [4], argue that management consulting plays an important economic role in helping organizations trigger and deal with organizational change. However, in line with other scholars including [24,33, 38] it can be contended that external advice during major changes is an important source for top-executives' decision making.

In practice, management consultants experience an increased demand for theory-based and heuristic change concepts. These approaches do not occur as side-effects of management fashion but are based on profound theoretical considerations [37, 41]. While academia offers ideas to manage change more effectively, these ideas often remain theoretical considerations as scholars often have limited access to organizations' top executives or limited capacity to adapt, operationalize, apply and establish them in large scale changes. With their inroads and capacities management consulting may bridge such shortcoming.

Researchers classified consulting instruments into approaches, methods and tools. While management consultants raise general attention of their clients through approaches, their actual practice in consulting is more analytical and data-driven through methods and tools, rather than general models [33, 49]. Within the change management context common tools are stakeholder mapping and analysis, change risk assessments and communication checklists. In this vein, Greif and his colleagues [18] found that change tools applied as a method mix show a high influence relation towards success patterns of change. They based their research on deliberate theoretical considerations from behavioral science, social psychology and coaching. Therefore we argue that if methods and tools derive from profound theoretical considerations, the entire consulting approach can be considered as theory-based. Using heuristics allow organizational members to breathe life into such approach thereby contribute in developing them towards a commonly accepted change understanding.

Since methods concern the *what*, *when*, *how* and *by whom* they can systematically link hard and soft factors of change. This involves budgeting, timing as well as communication, motivation and leadership. We observed that co-creation can be the bonding between these two dimensions and the client [11, 14]. This observation is in accordance with the commonly shared definition of consulting as a methodological and competent support during a problem solving process. During change programs we experience high acceptance of validated tools that are theory-based. However, consultants' suggestions often face skepticism when presenting methods that are new to the organization or questioning the old ones. However, when the client discusses the new methods internally and then approaches the consultant by saying: "The approach you came up with may not really work here, but..."—with this *but*-phrase the client inserts experience, expert-knowledge and ideas that can shape the method toward the firm's idiosyncratic needs. Hence, this paper argues that when combining a heuristic based perspective, consultants' change expertise and company specific experience, a synthesis can be created that will result in the achievement of solid ideas and deliberate actions, reconciling the two forces of hard and soft factors, their interests and positions.

## 10.3 Hard and Soft Factors Driving Organizational Change

The predominant focus on hard or soft factors is often attributed to project management research and behavioral science research [26, 41]. Within the context of change management the latter can be described as one with a focus on culture, leadership, and motivation. Project management research, in turn, proposes that change projects need to be managed by time measures, the performance of people involved, and financial results. Although these concepts are frequently discussed in the literature, many change efforts fail to follow a balanced strategy when shaping their *modus operandi*.

### 10.3.1 Hard Factor Perspective on Change Management

Frequently discussed hard factors in change management represent the *time* necessary to complete the change [20], the *number* and *skill-set* of employees required to carry it out [6], and the *financial results* that change efforts are expected to accomplish [42]. These management scholars argue that hard factors bear distinct characteristics that can influence the outcomes of many change programs. This includes the ability to measure them directly or indirectly, the easy communication of their importance within and outside the organization, and capability to quickly adjust to them.

Although organizations commonly report concerns about the time it takes to implement change programs, research found that it is often not the duration itself, but the time between reviews that is crucial for success [10]. For instance, Jacobs and her colleagues [21] found that planned project evaluations accompanying the change can effectively help to implement improvements to meet the project's milestones and timeline. Therefore it can be argued that it may not be the duration that makes people forget objectives or lose their enthusiasm during change but ineffective or irregular project reviews.

Successful change execution also relies on project teams. Researchers stated that it is not enough to deliberately pick team members on the basis of previous project records or their social networks [42]. More importantly team members' roles, responsibilities and commitments need to be clarified. Richter and his colleagues [39] argued that a team's composition is key for its performance and can easily be measured. Constructing the right portfolio of change and business knowledge, task-specific skills, and accountability are parameters that can be actively managed by change sponsors.

Financials are moreover a common factor often raised by executives. Large scale change programs are cost and resource intensive [5]. They need to be managed accurately. According to Sirkin and his colleagues [42] change results must also speak for themselves when it comes to productivity or revenue increases. However, stressing the importance of such hard factors does not necessarily mean that they alone make change succeed, but without such elements change may break down before soft features come into play.

### 10.3.2 Soft Factor Perspective of Change Management

During the last decades researchers and management consultants devoted much effort on soft change management issues along the individual, group and corporate level. Most frequently reported elements represent motivation, leadership and culture [17, 43, 47, 50]. Although these concepts have a lot to offer they also force organizations to tackle a plethora of priorities simultaneously. Providing answers to these issues when supporting change management teams is crucial to rigorously organizing these factors.

The general consensus held by researchers and practitioners is that employees need to be willing (motivation) and able (cognitive abilities) to support change. In particular the latter has been found to be a mediator through which personality types determine change friendly behavior [36]. From a practitioner's point of view it can be contended that sense-making and top-management commitment clearly influences motivation to follow change initiatives. In particular commitment needs to take into account the enthusiasm of employees dealing with new processes, structures or systems [29]. Commitment as well as project information on the need for change can be transferred to employees through deliberate communication. As such communication strategies are key to spreading out information, as something that senior managers believe is a good thing can often be seen as a bad thing by other employees. In fact, communication becomes a critical matter of importance during global change initiatives. Therefore, thought-out communication waves to different stakeholder groups with clear and unambiguous messages is crucial to maintain motivation along the change program.

Research also stressed the importance of leadership during change [50]. Leaders' encouragement to their teams to challenge existing assumptions and reframe problems to approach old situations in novel ways cannot be overestimated. With an inspirational motivation those leaders provide meaning to followers' work by expressing an appealing vision for the team. The charismatic attitudes of team leaders with mentoring and coaching behavior illustrate the focus on both the individual and the team. From a change management point of view, transformational leaders can serve as role models for change [12]. However, in practice change leadership is a challenging endeavor. Leaders do not only steer change as part of their role, they are also individually affected by these programs. As such, change leaders need to be clear about their roles and responsibilities and need to receive change specific treatment and tools in order to perform in their position. Hence, the enabling of leaders to guide their teams through the change and providing avenues for feedback is crucial.

Culture is the third commonly reported soft factor in change management [43]. Case studies have shown that aspects of an organization's culture can be recognized as a source of change capabilities that might lead towards a competitive advantage [28]. In this vein, three features can be frequently observed in practices that are salient to change-supportive cultures. First, employees must trust management and feel that management is supportive. A clear cultural framework broken down towards functions and team levels that answers the question of "where to go?" can help to provide effective guidance. Second, a cultural

understanding needs to be implemented into the organizational incentive and reward systems. And third, excessive workload pressure needs to be managed wisely as it may inhibit change behaviors. In line with [25] we found these elements foster proactive behavior in workplaces that are directed towards change, and thus contribute to a change friendly culture. Therefore, deliberate culture analysis can effectively identify gaps and improve change readiness of corporate cultures in the long run.

While the eligibility of soft and hard factors of change is not questioned, practitioners and management consultants still struggle to effectively balance the two sides of the same coin. In the following it is argued that theoretical considerations and heuristics are the precondition and vehicle for effective change strategies incorporating the two elements.

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## 10.4 Examples from Theory that Enhance our Practical Change Management Understanding

Most change approaches portray simplifications of reality and therefore make assumptions or focus on certain features as critical. As this may lead towards a biased change analysis, the principal concepts and methods need to be carefully chosen prior and during change programs.

Practitioners experience represents a rich field of information about how organizations function and perform. Their responses on dimensions that are associated with change effectiveness include the external environment, strategy, structure, and change climate. For external consultants the information provided by the client is crucial for shaping and defining the specific change management approach. From a broader psychological basis our understanding follows Kelly's [22] social constructivist theory and Festinger's [16] theory of social comparison processes. George Kelly noted that all individuals may be construed as scientists developing their own particular theory about the world and their own network of constructions and proceed to act on it. This understanding is crucial since all efforts external consultants initiate prior and during change programs rely on the information and data that is provided by the client. In this vein, we construe respondents as experts in being themselves and perceiving organizational issues in their own way, whether or not the individual capabilities involved in doing this are recognized by others as being of special value. We moreover draw on Festinger's [16] work who stated that people have a need to evaluate situations and events. To reduce uncertainty during complex situations that cannot be assessed on the basis of facts, people tend to evaluate their opinions by comparing them with other peoples' thoughts and judgments. In social psychology this behavior is described as social validation. Most of change tools (see examples below on: change evaluation, change gates and crowdsourcing) focuses on interactions with key people. Their social influence might be intentional or unintentional, but always influential on other people's behavior and therefore important for effective change management.

In order to provide a holistic perspective helping practitioners to better analyze and manage real-life change, selected theoretical considerations are reviewed in the following including historicity and the idiosyncratic nature of change processes, success of change



as social construction, subjective change heuristics as well as multi-level perspective. According to research by Greif et al. [18] and Jacobs et al. [21] they can underpin change efforts by integrating hard and soft factors of change. They have been broadly discussed in previous studies by Lattuch et al. [28, 30] and are briefly highlighted here.

#### **10.4.1 Organizations' Change Background and Configurations of Key People**

The management of change processes and their individual analysis is determined by the situational context. Therefore, management scholars claim the importance of taking these contextual features into consideration when investigating organizations [41]. For instance, Greif et al. [18] claimed that every organizational change (e.g. innovation, downsizing, reorganization, etc.) is influenced by its individual antecedent, external and internal contextual conditions, and the involvement of key people. Particularly these key people are influenced by their perception and interpretations of a change process [22], their specific experience [45], and their relationships within the organization [35]. Taylor and Greve [45] found that experience in change management (historicity) produces novel combinations that explain innovative outputs of high average performance. Additionally, it has been argued that experience with previous change processes has an impact on stakeholders' subjective process evaluation. Besides experience, this appraisal might also be influenced by structural and cultural factors. Therefore, in line with Engwall [13] it is argued that change projects are history dependent and organizationally embedded.

Individual configurations of key people are also critical for managing change processes [21]. They are particularly influenced by social relations, organizational roles, and status. Yet, key people are considerably affected by their individual perceptions, reconstructions and interpretations as well as previous experience with change processes. Greif et al. [18] argued that the knowledge and competence of key people relates to their individual networks within organizations and the resulting power influence in these configurations. Moreover, Shenhar et al. [40] found in their analysis of project managers that these configurations have a significant impact on the project success. Therefore, the specific element of key peoples' configuration might be critical to the success of change processes, and consequently individual configurations need to be taken into consideration when analyzing and shaping change efforts. Clearly, historicity as well as the role of key people represents critical elements for analyzing change management. The selection of key people and deliberate project budgeting based on firms' experience influence hard factors while historicity and organizational embedded culture and leadership influences soft factors.

#### **10.4.2 Success of Change Processes as Social Constructions**

Considering hard factors in change programs practitioners often noted the degree of efficiency [42]. From a theoretical point of view the evaluation of change efficiency can be

generally differentiated based on the system model or goal model perspective [15]. While the goal model evaluates the degree to which organizations are attaining defined goals, the system model additionally evaluates the organization's abilities to acquire resources, to sustain system stability, as well as to interact with the environment effectively. Although the system model advances the success appraisal towards an abstract construct, the goal model has been proven to possess high practice relevance in the change literature as it can be applied towards concrete change programs [46]. Therefore, this paper defines success as the degree to which the goals of a change process are attained.

Whereas objective figures such as cost savings or number of processes reduced can be assessed on precise figures, organizational members may also be asked to report their personal perception of the degree to which goals are achieved including perceived leadership, change culture and individual motivation. Within the management literature, both objective as well as subjective success measures are represented likewise [21, 27, 34]. Although comparability is a major advantage of objective performance measures, this paper argues that economic figures are important, but to arrive at a complete perspective of the change success, issues of complexity and uncertainty need to be incorporated by human observations and perceptions. Empirical research moreover provides evidence of high correlation between subjective and objective success measures [8, 48]. According to other change scholars it is less important how top management officially defines success and more important how organizational members informally appraise a process at all levels of the organization [41]. Change efforts need to be accepted and driven by organizational members within the organization. Therefore success of change can be described as a social construction.

When a change project is assessed a great success by key people in an organization, it can be contended that organizational members are generally more willing to support further diffusion and associated change activities. In contrast, organizational members who evaluate such a project as a failure tend to be less willing to support a project that might consequently lead towards passive or active resistance. Consequently, not only the enforcement of a change process is important, but also the satisfaction with it. Therefore, subjective success measures represent highly relevant considerations in change research and need to be incorporated by practitioners in change programs.

Since "success means different things to different people" [40] and organizational members justify their opinion of individual subjective heuristics, perceptions, interests, and experience, it can be argued that change management can be considered successful when the different perspectives of all organizational members involved are taken into consideration thereby arriving at the same success judgment. Therefore the appraisal of organizational change is based on the subjective perception of individuals within the organization. This perspective is also associated with Kelly's [22] social constructivist theory and Festinger's [16] theory of social comparison processes. In line with leading change scholars it is contended that the comparison of organizational results with expected goals is based on objective data (e.g. financial results) and soft factors due to the social validation of subjective opinions and estimations with accepted key people and groups.

### 10.4.3 Subjective Change Heuristics and Multi-level Perspective

In practice, change management also needs to consider that individuals develop subjective change heuristics in order to explain organizational change. They can be described as intentional illustrations and explicit statements by individuals about organizational change. This involves assumptions of subjective causes and outcomes. Such understanding is based on Argyris and Schön's [3] concept of theories of actions which is a set of rules that individuals use to plan and apply their own behavior. The two researchers differentiate between espoused theory and theory-in-use. As an example, while people in an interview situation articulate the rules they use to govern their action (espoused), Argyris and Schön [3] argued that this theory often does not match the actual behavior. Investigators who determine rules from this behavior may discover a different theory of action (theory-in-use). Clearly, "people consistently act inconsistently, unaware of the contradiction between their espoused theory and their theory-in-use, between the way they think they are acting and the way they really act" [2]. These subjective heuristics evolve from complex personal and contextual features that influence subjective perceptions. As analyzing the complete picture of these complex features is difficult, heuristic change approaches aim to analyze a fragmentary practical picture. This perspective enables the consultant to analyze real-life experience based on qualitative data.

In doing so, different organizational levels need to be incorporated when combining hard and soft factors of change. In line with Cranach [9] it can be argued that facilitators of change processes need to be described at different organizational levels. As an illustration of this understanding, Cranach [9] pointed out that it might be misleading to assume that a forest is only the sum of individual trees. In other words, a particular forest cannot be reliably described by means of features or frequencies of observed trees. It is critical how they stand together or form a group of trees. He further pointed out that every level is special with characteristics that cannot be unlocked from other levels. Following his example, these multilevel considerations may even lead to the finding that a group of trees can create a specific climate that is either change friendly or unfriendly, affecting features at the corporate, group and individual levels. These theoretical considerations of studying an organization in its entity clearly illustrate differences to approaches with single observations. This view deepens the understanding of soft factors along the organization when combining them with hard factors such as financial results.

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## 10.5 Assumptions of Heuristics in Change Approaches

When designing heuristic-based change management approaches consultants and their clients need to be aware of assumptions and associated limitations. Based on our experience the theoretical bases of change management need to be person-oriented heuristics that aim to foster self-reflection in change processes [3]. By involving employees in change management approaches including elements such as co-creation always need to be adjusted to organizations idiosyncratic characteristics.

As outlined earlier in this paper we argue in line with Kelly [22] that all individuals at the client may be construed as experts in being themselves and perceiving organizational issues in their own way. However, their individual perception and observation is not objective but influenced by feelings, emotions, expectations, and the social context.

Moreover it needs to be noted that the presented theoretical consideration might have a varying impact on the scope and content of individual knowledge. When integrating change concepts such as success as social construction or configurations of key people, the implicit and explicit appraisals and subjective change heuristics of informants and groups cannot be reported completely and unbiasedly. Clearly, there is no silver bullet (best practice) in applying heuristic-based methods. It is up to the consultants and clients experience and discretion to adapt such methods to the organizational context when integrating hard and soft factors in change approaches.

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## 10.6 Enabling Change Management: Examples from our Clients

The first example describes change evaluation of product innovation: In order to improve a client's innovation management process, evaluation tools were implemented. Our focus of interest here was not only to assess the innovation success, but also the employee's satisfaction about it as outlined above. This paradigm shift enabled employees to make considerations based on their individual change management heuristic.

For in-depth interviews the starting point, therefore, were key employees' success ratings of the product innovation ("How do you personally assess the success of the innovation project?"). Based on their individual success ratings they were asked for indicators that led to their judgments ("Which indicators led to your judgment?"). Then, by asking for the causes of these indicators, we systematically arrived at the success factor level ("What do you personally think set the stage for this indicator or are causes of these indicators. Are there people, groups, situations, or actions responsible for this indicator?"). In doing so hard (economic) and soft (non-economic) factors were integrated in one approach leading to company specific patterns of success and failure. During group sessions with the firm's key people findings were discussed indicating concrete ideas for improvement. Moreover, by conducting evaluations after major milestones project efforts were openly tracked ensuring the timeline was met.

From a theoretical point of view several of the theoretical concepts highlighted above ensured systematic analysis in this example: Individuals are experts in their field of work and individual configurations were considered, success was understood as social construction, subjective change heuristics were investigated due to semi-structured interviews and multi-level perspectives were ensured by conducting interviews with blue and white collar workers. As such the applied evaluations clearly helped the client to evaluate and unbundle complex organizational processes and insert elements of improvement to become more innovative. Improving the innovation management was the originating event in this example. Elements of individual interviews resulted in findings that were discussed

in group interviews. By discussion and reflection procedures during group sessions, information was directly fed back to influential levels in the organization enabling learning, reflection, and self-organizing problem solving activities that formed a larger and more relevant heuristic for the whole innovation team. The proposed method acted as precondition and vehicle for change as it was carried out after critical milestones to ensure project effectiveness and led to ideas for improvement to better initiate and design further change programs.

Our second example concerns change-gates in large scale change: During a global reorganization at a German DAX-listed technology organization the finance function was re-bundled and centralized. As part of this transformation, specific gates along major milestones were defined. Advised by external consultants selected heuristic-based change tools were applied as method mix to successively ensure the timely achievement of each gate within the given budget. Due to the change programs' success the project was awarded 'best project of the year' and won the most prestigious price for project management at the organization.

During this project a set of change tools including key stakeholder mapping and management as well as several communication methods was jointly defined with the client and adjusted to his specific needs. The roll-out of this tool box across countries and regions enabled local change agents as well as the central project team to systematically support and steer the timely achievement of defined gates. During this project a high acceptance of heuristic-based methods was experienced that were closely linked to the firm-specific change context as well as aligned with firms existing HR methods. In fact, the vast majority of key employees appreciated change tools that were perceived by them as being of particular and tangible value. In order to achieve such perception, change leaders were asked prior to the change implementation for their concerns, their expectations and concrete requirements to carry out the program. Based on their feedback precise tool packages for each country and region were designed helping leaders to drive change efforts in their specific area of concern. As an example, the initial communication briefing clearly described to change leaders how the agenda needs to look like, which substantive questions need to be answered and how the distributing information to employees should be structured as part of the first wave of communication. Hence, heuristic-based methods supported project management to pass each major gate in a timely manner thereby fostered employee engagement through involvement and deliberate communication at all organizational levels.

Based on the discussion in the previous sections, the described change-gate approach describes the effective combination of time component as hard factor and leadership component as soft factor. Change leaders' perception and interpretation of the change process was actively surveyed in order to provide them with support necessary to drive change efforts in their teams. Based on key peoples subjective change heuristics these tool sets enabled the project team to roll-out the finance re-bundling across countries and regions, in a tailored way. By early involvement of clients existing tools and alignment with its HR methods company's specific characteristics and historicity were taken into consid-

eration. In addition, by actively involving all levels of the organization it was found that communication is most effective when it (a) happens as early and as open as possible, (b) answers individuals' question of "what does this mean for me?" and (c) ensures avenues for feedback.

Our third example concerns crowdsourcing: Open source production via the internet has proven itself as a collaborative method for designing superior software products [7, 31]. Such collaborate method can be employed for different organizational issues [1, 32]. We conducted crowdsourcing to enable the employee participation process in a company-wide change management project. As part of a global finance transformation at one of our clients a need for new ways in knowledge and learning management occurred at an early stage. Crowdsourcing helped to identify and address critical issues for a new knowledge management system. In order to collect data prior and during the change program we experienced crowdsourcing as a powerful heuristic-based tool to deliver insights from key stakeholders. Together with the client we defined the business challenge regarding the importance of knowledge management as part of the the finance transformation and asked the crowd what needed to be changed in order to tackle this challenge effectively. Ideas, comments and ratings from the crowd were collected on an intranet-platform. Then they were categorized by a panel of key stakeholders and external consultants. Highly regarded ideas for solutions derived from this analysis were then fed back to the crowd. In a second round these ideas were again discussed on the online intranet platform. And so on. Over a short period of time the topic of a revised knowledge and learning management systems was narrowed down to ideas and concepts that were precise, specific and generally accepted by the crowd—the true experts in their field—the employees.

We found this approach to be collaborative as it nurtures ongoing conversations among employees and other key stakeholders. For change managers it provides the opportunity to seek deeper employees' expert insight with thought leaders. It also has continuity since it provides a repeatable channel that can be repurposed throughout the entire change program for effective change evaluations. In our experience this approach made involvement more compelling; it delivers actionable, filtered and evolved ideas for implementation and creates awareness in the process. Besides idea and solution generation, another concrete change outcome of crowdsourcing is the identification of change agents and innovators through the use of badges awarded for specific behaviors demonstrated during online community activities. Participants therefore select themselves as high value contributors within specific crowdsourcing programs by virtue of their behavior within that community. These identified change agents might be the first pool of individuals considered to participate in offline activities when implementing the change process to increase the likelihood of success. Besides soft features such as self-selection, people engagement and culture improvement, hard factors also became apparent during this project. It significantly reduced time and costs for in-depth global insights on the client's change program with quick and commonly accepted results. Moreover, real-time reporting of this IT tool made management effective and ensured change improvements in a timely manner.



Based on the theoretical change considerations presented above, employees were actively engaged in contributing suggestions towards defined business challenges. Similar to the first example individuals were understood to be experts in their field of work. Irrespective of their hierarchical level their input was valued and could be considered as multi-level. Social validation moreover was enabled through commenting and rating of ideas and concepts. As such the heuristic-based method led to outcomes such as capturing opportunities, solving problems and promptly delivering results.

In summary, the examples display the involvement of theoretical considerations and heuristics to better understand real-life change efforts. After sketching three examples it is still worthwhile to ask what this discussion contributes to our understanding of change management. First, the approach is flexible. Theoretical considerations are not based on a set of standardized questions or actions, but propose specific procedures that might be modified by the practitioner. Therefore, they enable him to systematically investigate change processes to capture change knowledge across countries and cultures.

Second, the approach considers firm specific idiosyncratic characteristics. It acknowledges the voices of employees including supervisors, middle and top management across hierarchical levels and departments involved in real-life change programs. Their individual perspectives and expertise are systematically assessed through interviews or crowdsourcing to clarify critical facilitators that support change.

Third, by discussion and reflection procedures during individual and group interviews or online crowdsourcing dashboards, information is directly fed back to influential levels in the organization enabling learning, reflection, and self-organizing problem solving activities. In particular, by activating ideas and resources during interviews or crowdsourcing activities, the center of intervention mechanisms shifts from a deficit perspective towards a positive skills and capabilities perspective. This approach advances earlier models as the present framework even reflects on interaction effects.

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## 10.7 Conclusion

The proposed framework is one that most leaders should find useful. It highlights hard and soft factors of change management in one concept. These considerations embed the company-specific soft factors with change project specific hard factors to illustrate that change efforts will fail if these two forces are not synchronized. It also describes the role of change consultants and stresses theoretical concepts that can help to effectively integrate the two opposing factors. And finally three brief examples illustrate change methods that are clearly derived from change heuristics and may act as preconditions and vehicles to support effective change. The examples moreover display how individual perceptions of the change event can enlarge individual heuristics into a larger overarching heuristic (e.g. during crowdsourcing or change evaluation). Organizations managing this process well may satisfy critical stakeholder by having contributed to that larger heuristic which will underlie future strategies. That way, ultimately, everybody has contributed to the change and, inadvertently, has become a supporter of the new paradigm.

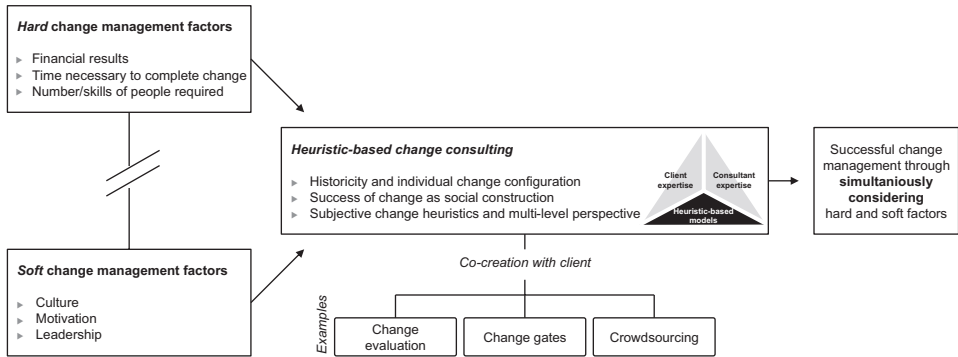


As such the foregoing discussion has many useful lessons:

- Without thought-out assessment prior and during change projects all consequent actions may not be based on informed grounds and misguide hard factors such as time planning, budgeting as well as soft factors including leadership, motivation and culture.
- Be aware of hard and soft change factors when running change projects. Ignoring the seemingly meaningless soft factors while purely focusing on hard factors can make people forget objectives or lose their enthusiasm during change and put the entire endeavor at risk.
- Do not underestimate the power of combining change elements on the basis of theoretical considerations. Heuristic-based approaches integrating soft and hard factors enable organizations to tackle a plethora of priorities simultaneously thereby providing an unstoppable momentum for change efforts.
- Clarify assumptions on theory and heuristic-based methods with your client and be aware of potential influence on findings. Also inform your client about theoretical limitations when shaping your methods towards client's models through co-creation. Experience shows that clients highly appreciate such deliberate and involving approaches.
- Employ state-of-the-art technologies such as crowdsourcing when initiating and implementing change. Theory and heuristic-based concepts can frame such approaches and ensure that business questions are clearly articulated as well as actively promote and stimulate self-organizing problem solving activities. By activating employee involvement the center of intervention mechanisms may shift from a deficit perspective towards a positive skills and capabilities perspective.

The presented framework illustrates that theory and heuristic-based approaches are a prerequisite and vehicle for effective change management and can combine hard and soft factors of change. Each of these perspectives is important in developing an integrated change understanding. They indicate the broad nature of change and need for approaches that address change in an integrated manner. This may enable consultants to extend the analysis from a restricted outsider view that limits actions to one that is more insightful and provides explanations of why actions occur, decisions are made and what needs to be done in order to improve change efforts. Figure 10.1 presents the linking concept on issues discussed in this paper that form the components of the proposed model.

We must accept that stressing the importance of hard factors does not necessarily mean that they alone make change succeed, but without such elements change may break down before soft factors come into play. Since major clients often have their own approaches in place a clear mirroring of clients' and consultants' approaches is crucial for successful change implementation. We experienced heuristic-based considerations to result in higher acceptance if these models were built on a solid foundation and empirically verified. Adopting these models with clients' approaches through co-creation [11] may enable the systematical linking of hard and soft factors with a promising likelihood for project



**Fig. 10.1** Linking concept through heuristic-based change consulting

success. During such interactions opinions emerge that would have been omitted by more structured methods.

This paper has given us, not an enormous, but a greater insight into theory and heuristic-based change management. However, for those applying the developed framework a closing consideration is needed to remind the reader of Habermas' [19, p. 36] concern about the direct derivation of organizational action from theory: "No theory and no enlightenment can relieve us of the risks of taking a partisan position and of the unintended consequences involved in this".

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# Organizational Transformation for Sustainable Development: A Case Study

11

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*This is an adapted version of the paper presented at Academy of Management conference, USA.*

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## Abstract

The paper presents a case study of organizational transformation adopting Galpin's model of Change Management Process. Oil and Natural Gas Corporation (ONGC), a public sector enterprise, is a 'maharatna' (the greatest corporate jewels of India), an Indian multi-national, which contributes to 72% of the nation's crude oil and 48% of natural gas production. It has been responsible for building up 7 billion tons of in-place hydrocarbon reserves of the country. All its installations were certified for Quality, Health, Safety and Environment Management (QHSE). The paper traces ONGC's evolution, growth and transformation with focus on green management and triple bottom line. It had received several awards, inter alia, Golden Peacock Award several times including one in 2013 for its health, climate, safety and impeccable record in the climate change mitigation. Thus, a traditional government owned organization, ONGC,

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has emerged as a leading global player in the energy sector. It had successfully faced competition and had been recognized as one of the most respected companies in India with the 3 Ps—people, profit and planet without losing focus on green management.

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## 11.1 Introduction

It is well accepted that the long term economic progress of a society is ensured only if it is linked with the protection of the environment. Thus conservation and management of environment has emerged as one of the major social responsibilities for the organizations in recent years, as environment is considered as one of the important stakeholders in development. Over the years various initiatives, laws and regulations have been formulated viz., Montreal Convention (1987), Declaration of Rio Earth Summit (1992), Kyoto Protocol (1997), Sustainable Development Announcements of Johannesburg World Summit (2002); and ratification of triple bottom line (People, Profit and Planet) by United Nations and International Council for Local Environmental Initiatives have developed international awareness about environmental issues in economic development. Besides, national laws and regulations, pro-environmental organizations, activists and social workers have put tremendous pressure on organizations to include environmental aspects in their organizational values. Also, Global Reporting Initiatives (GRI) provide guidelines for sustainability reporting through which an organization discloses its strategy, socio-economic and environmental parameters along with its profile. Consequently, there is increase in number of organizations which address environmental concerns in their strategy, policy, processes and practices through appropriate organizational change.

The escalating conflict between economic growth and environmental degradation has given birth to a principle called “sustainable development,” which implies balancing the two objectives: economic development and improvement in environmental performance. It is widely recognized that this bi-criterion problem may never be solved optimally due to its interdependent nature. Everyone must continually strive towards obtaining a desirable solution. Similar to the total quality movement, the concept of “environmentally sustainable economic growth” has received worldwide attention from governments, corporations, consumers and academics, with the result of being accepted as the ultimate goal of environmental management by the international, national and regional economies.

### **The Model of Change Management Process**

Lewin's [12] argument that a successful change must involve three distinct phases—unfreezing, moving, and refreezing was taken forward by several researchers who came up with steps and processes for implementing organizational change [2, 7, 10, 11]. Maon et al. [14] in their case research on designing and implementing corporate social responsibility have added a fourth stage to Lewin's model labeling it 'sensitizing' which precedes the unfreezing stage. In their view this stage is necessary where the top management develops awareness about the significance of sustainability issue. Walker et al. [29] posit that



change efforts are influenced by content, context, and process issues as well as the individual differences that exist among the change targets. The paper presents a case study of organizational transformation for sustainable development adopted by one of the leading Indian oil exploration and production company, Oil & Natural Gas Corporation (ONGC). There are many models of change but these are out of the scope of this case study but one model of change that explains the process of organizational transformation at ONGC has been described below.

The Model of Change Management Process [7] focuses at two levels (i) strategic level and (ii) grass root level and provides a process for successfully implementing change in an organization. The strategic change involves senior management, consultant and a small group of employees who take the initial critical decisions for organization wide change involving technical/analytical aspects and ‘soft aspects’ for creating momentum. The grass root level change focuses on driving the change deep into the organization by implementing and sustaining change to bring about the desired results. The change process, according to Galpin goes through nine stages. These are:

1. Establishing the need for change;
2. Developing and disseminating the Vision for change;
3. Diagnosing/analyzing the current situation;
4. Generating change process;
5. Detailing recommendations;
6. Pilot testing;
7. Preparing recommendations for roll out;
8. Rolling out changes; and
9. Measuring, reinforcing and refining change.

### **The Context of Social Responsibility**

We observe that industrial and socio-economic development of a country largely depends on affordable and reliable sources of energy. Fossil fuels—coal, oil and gas—constitute the most common sources of energy in today’s world for travel, transport, personal and organizational activities. In the first two decades of the twenty-first century the countries which had lagged behind in development due to energy shortage had to strive hard to catch up. Thus demand for energy had been increasing by leaps and bounds. While demand for energy had been growing, awareness about harmful effects caused by over consumption was also increasing. The concern for harmful effects of rising levels of carbon dioxide in the atmosphere (global climate) in these years has drawn the attention of one and all to the replacement of fossil fuels by non-CO<sub>2</sub> emitting energy sources such as solar, wind or nuclear energy.

Scientists have been unanimous in their opinion that emission of green house gases alters the climate, therefore, unless positive and determined actions are taken to counter this problem, the world will face severe consequences. Working out the carbon footprint and working towards a ‘carbon neutral’ classification, has become a priority for most

businesses across countries. The notion that ‘buying carbon offsets’ was a good way to neutralize the effect of emission is not correct as offsets could not remove the carbon emission which had been created. Organizations adopt new ways of doing business when committed to carbon neutrality. These steps include cutting travel in favor of videoconferencing, replacing light bulbs and boilers with energy efficient ones, reducing printing, using more recycled products, procuring materials from local and sustainable sources and reducing waste and the like. Green management is finding new ways of doing business by identifying new opportunities. Research by Npower Business [1] has shown that in UK, 51% of businesses rated energy management as the highest priority and 69% employed full time staff to oversee energy management. Alcock is of the opinion that energy use must be monitored so that opportunities for energy improvement can be identified and then broken down into specific and deliverable actions supported by continuous monitoring. French [6] comments that 80% of carbon savings can be achieved by effective designing of the supply chain. This could possibly come about by combining shipping with rail transportation.

The term ‘triple bottom line’ coined in the 1990s requires organizations to adopt a three dimensional approach to business and include in their annual reports:

- Traditional financial bottom line,
- Social/ethical performance, and
- Environmental performance.

The concept of corporate social responsibility (CSR) has been garnering attention of both scholars and practitioners [5, 13, 30]. Over the years organizations have started integrating CSR into their strategy and are adopting policies, programmes and practices to improve their social and environmental performance and to communicate their values to various stakeholders such as employees, local community, govt. and the environmental groups.

The case study first reviews the environmental impact of oil and gas exploration and traces the evolution Oil and Natural Gas Corporation (ONGC). It then looks at the business challenges faced by ONGC and analyses the change initiatives adopted by it. It also reviews ONGC’s efforts towards green management and triple bottom line for sustainable business growth, while going through organizational change.

### **Environmental Impacts of Exploration and Production of Oil and Gas**

The UN conference on Environment and Development (the Earth Summit) held in Rio de Janeiro in 1992 drew the world’s attention on the close links between socio-economic development and the environment. The summit came up with two conventions—Framework Convention on Climate Change and Convention on Bio Diversity. A plan of action called Agenda 21 was also drawn up to deal with the various environmental issues. This 41 chapter document set the direction on the basis of which governments could take regulatory action and organizations could adopt initiatives [20].

Exploration, production and transportation of oil impact the environment and disrupt human, animal and aquatic life of the region. Terrestrial, atmospheric, aquatic and ecological impacts have been observed through instances of oil spills, waste dumping, incidents of air and water pollution, accidents and fires and damaged land. Also, there are socio-cultural effects of these activities especially on communities in remote areas. Scientific exploration of oil began in the modern sense in 1912 with the discovery of the Cushing Field in Oklahoma, USA [28]. Though the fundamental process remains the same, modern technology and engineering have vastly improved performance and safety. Operations are normally divided under two sectors—upstream, which deals with exploration and production; and downstream, which deals with refining, distribution and marketing. Locating petroleum resources is a complex task as these are usually not found in convenient places conducive for easy extraction and processing. A large part of the world's petroleum production comes from offshore sites under the sea bed. Identifying the risks and environmental impacts and developing detailed management plans to avoid, prevent or minimize these is a vital and integral part of planning for exploration. There are mainly three phases in exploration of petroleum:

- a. Exploratory surveys—geological, geophysical, geochemical
- b. Exploratory drilling
- c. Exploitation of petroleum

The onshore geological survey is carried out mainly for delineation of prospective areas and involves mapping of various formations and outcrops. Geological maps are reviewed to identify major sedimentary basins. Aerial photography may then be used to identify landscape formations such as faults and anticlines. The net impact on the environment is not significant. Setting up camps may cause some amount of waste generation which needs to be dealt with. The onshore geophysical survey is mainly for finer mapping of prospective areas. It comprises shot hole drilling, recording of seismic reflections using vibrations from explosion of explosives or other implements like vibroseis for creation of shock waves. The activity may also lead to disturbance of wild fauna and disturb the flora.

Offshore geophysical surveys carried out by seismic survey vessels use air guns as acoustic energy sources in seismic arrays and this might have marginal impacts. The seismic survey sounds are of high energy and low frequency. They are produced in short or 'impulsive' series, rather than long, continuous sounds, and this minimizes any impact they may have. The Independent Scientific Review Committee, Australia looked into all aspects of the possible effects of seismic surveys on marine life; from whales to plankton [28]. The sounds made in seismic surveys are in the range of many natural sounds produced by winds, waves, earth tremors and the sounds made by many marine animals. Most invertebrates would only be able to 'hear' seismic survey sounds at very close range—perhaps less than 20 m. Other experiments have shown that fish can be exposed directly to the sound of seismic survey without lethal effects. Marine mammals such as small toothed

whales, sea lions, fur seals, little penguins and dugong have poor hearing at the low frequencies produced in seismic activity.

The effects of oil on marine life are caused by either the physical nature of the oil (physical contamination and smothering) or by its chemical components (toxic effects and accumulation leading to tainting). Marine life may also be affected by clean-up operations or indirectly through physical damage to the habitats in which plants and animals live. The animals and plants most at risk are those that could come into contact with a contaminated sea surface: marine animals and reptiles; birds that feed by diving or form flocks on the sea; marine life on shorelines; and animals and plants in Marine-culture facilities. Runoffs from petroleum processing and petrochemical plants have dumped tons of toxic wastes into nearby waters. Gas and oil pipelines have stanching many creeks and rivers, swamping prime pastures and crop land. Furthermore, entire bays and lagoons along coasts have been fouled by oil spills and runoff of toxic chemicals.

Drilling operations carried out onshore may result in temporary acquisition of land. Farmers may lose crops and forest cover may be depleted. Drilling fluid discharges need to be managed carefully to avoid contamination. Sudden blowouts, noise pollution, air contamination also need to be dealt with. Offshore drilling operations may cause localized damage of the sea bed. Suspended sediment in the water column may reduce the amount of light reaching the sea floor. This may reduce primary production until the particulate material settles. Exploration and production activities result in the release or emission of several greenhouse gases, notably carbon dioxide and volatile hydrocarbons. Greenhouse gas emissions emanates from flaring, venting and fuel consumption. Oil spills may have toxic and/or smothering effects for some species on contact.

Large scale effects however, are brought about by economic, social and cultural changes. Land use patterns may be affected as a result of acquisition for exploration. Unplanned settlements and exploitation of natural resources may be a secondary consequence. Population levels may be affected with influx of new labor force. New employment opportunities may lead to income differentials, inflation, differences in per capita income. Influx of foreigners may impact social structure, cultural heritage, and change in value systems. Availability of and access to goods and services such as housing, education, healthcare, water, fuel, electricity, sewage and waste disposal may be affected. There is possibility of an ongoing conflict between development and protection of the environment which will be difficult to resolve. It would be interesting to see how ONGC addressed these environmental issues while achieving economic results.

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## 11.2 Evolution of ONGC

Prior to independence in 1947, India had two oil producing companies – the Assam Oil Company, engaged in the north east and the Attock Oil Company in the north west. Post independence, the Indian government realized the importance of developing the oil and gas resources for industrialization and defense of the country and framed the Industrial

Policy Statement of 1948. In early 1950s, exploration of India's hydrocarbon resources rested predominantly with private oil companies. The Assam Oil Company was engaged in oil production in Digboi, Assam—the field having been discovered earlier in 1889. The Oil India Ltd., a joint venture between Government of India and Burma Oil Company was exploring the fields of Naharkatiya and Moran in Assam, which had been newly discovered. The third player was Indo-Stanvac Petroleum, exploring in West Bengal. A large part of the country's sedimentary basins remained unexplored, as foreign companies considered the location unfit for development of oil and gas resources. In 1955, the Oil and Natural Gas Directorate, comprising of geo-scientists was set up as a subordinate office under the aegis of the Ministry of Natural Resources and Scientific Research. The corporate culture at ONGC has been conservative with most people having traditional mind set. It was raised to the status of a Commission (under the Government) in August 1956 with enhanced powers. The Commission was then converted into a statutory body by an Act of Parliament on October 15, 1959, which delineated the functions of the Commission as the following:

To plan, promote, organize and implement programs for development of petroleum resources; to carry out necessary surveys for the exploration of such resources and the drilling and other prospecting operations required for this purpose; to promote the production, refining and sale of petroleum products and; to undertake, assist or encourage the collection, maintenance and publication of statistics, bulletins and monograms. [16]

During 1960 to 1990, ONGC found newer resources in Assam, established the new Cambay Basin, Gujarat oil province and added new resources in the Assam–Arakan fold belt and the East coast onshore and offshore basins. With its discovery of the giant Bombay High oil field in the 1970s and subsequent discoveries of potent oil and gas fields in Western offshore, ONGC contributed to the discovery of over 5 billion tons of hydrocarbon in the country. ONGC also explored various opportunities overseas. ONGC's self-reliance and core competency in exploration and production (E&P) activities soon projected the company into the arena of global competition and competency.

A major corporate planning exercise was initiated during 1981–1989 and a conceptual plan for 20 years which included the company's mission and objectives, was formulated. ONGC's first mission statement read as follows:

To stimulate, continue and accelerate efforts to develop and maximize the contribution of the energy sector to the economy of the country.

Achieving self-sufficiency in oil and self-reliance in technology were primary objectives. Development of equipment and services for oil related jobs was important. Conservation of oil, developing alternate sources of energy and environmental protection were necessary objectives. To survive and thrive in its milieu, it was imperative to deal with change.

In July 1984, ONGC carried out structural changes on the lines of the business group model (functional structure), after an in-house SWOT analysis. The structure was designed to bring about synergy in the operating regions and was based on functional specialization. ONGC was structured into four business groups namely Exploration, Drilling, Operations (production) and Technical (engineering & material), which in turn were supported by Personnel and Finance functions. Each business group had autonomous powers along with associated support services. Being based on functional lines, the areas had been regrouped according to the common basin approach. The interdependence of the business groups was based on commercial transactions that involved economic evaluation of services.

The 1990s saw ONGC undergoing a period of volatility in its production. While production peaked in 1990, it touched an extreme low in 1993 and mid 1990s saw the company struggling to recover from losses. It was actually facing a threefold challenge.

- Not only was it plagued by malfunctioning assets but was also suffering from organizational atrophy. In its day to day functioning, ONGC's business group structure led to delays in proposals (as they required signatures from the different functional heads), delays in matters which required urgent decisions on fields and subsequent wrangling over responsibilities. Group loyalties often took precedence over the requirements of tasks. The performance evaluation criteria based on business group yardstick were completely at loggerheads with requirements on the fields.
- Countries across the globe were becoming focused on the environmental challenges. Oil companies were more and more under the scanner. Efforts towards environmental protection were being measured critically.
- Competitors entered the market. Reliance and Cairn were getting into the upstream field with newer technologies. ONGC no longer had the monopoly of oil exploration. The Government launched the New Exploration Licensing Policy in January 1999 and invited bids for 48 blocks. (NELP VIII has been launched in 2009).

Breakthrough economic reforms by way of opening for international trade and investment, deregulation, initiation of privatization, tax reforms, and inflation-controlling measures were initiated by the then government led by P. V. Narasimha Rao as Prime Minister and Manmohan Singh as Finance Minister after the external payment crisis of 1991. The Government of India partially disinvested its equity and ONGC became a limited company (under the Company's Act, 1956) by 1994.

ONGC had spent the latter half of the 1990s in introspection. In November 1995, the Ministry of Petroleum and Natural Gas had organized a seminar on 'Petroleum Industry Restructuring: Sharing of Global Experiences' in order to familiarize with the prevalent and emerging global trends in the oil industry. The government also had appointed a 'Mumbai High Review Committee' in 1996 to examine ONGC's competence in managing

Mumbai High problems. It recommended that ONGC should take technical assistance from consultants. ONGC commissioned Gaffney, Cline & Associate—stalwarts with experience of having worked at over 200 different sites spanning the globe—as its consultants to study and recommend enhanced oil recovery plan. Thereafter, consultation was sought from McKinsey & Co. The mandate was to evolve an organizational structure that was far more responsive to its business needs than that based on business groups. The purpose was to bring more efficiency and accountability.

McKinsey's intensive companywide diagnostic survey in ONGC in 1996–1997 brought to light certain revealing facts. Working very closely with the officers of ONGC, McKinsey prepared a detailed report. Excerpts from McKinsey's report titled 'ONGC—A Crisis at Hand' said

Without making necessary changes in its performance (marred by increasing costs and declining production), ONGC is likely to become a marginal, loss making entity in the Indian petroleum sector within the next 3–5 years." It identified areas for radical change such as technology, organizational structure and systems, unrealistic cost estimates and inadequate geological/reservoir data.[15]

### **Organizational Transformation Initiatives**

McKinsey's report was submitted to the Ministry of Petroleum on January 19, 1997. It strongly recommended that ONGC shift from volume/activity orientation to commercial goals for which organizational structure and the system needed revamping. In March 1997, ONGC initiated internal restructuring on the lines of Organization Transformation Project (OTP) designed by McKinsey with the goal of meeting the challenges of liberalization of the hydrocarbon sector amalgamated with the introduction of the market driven pricing mechanism.

The OTP recommended shift to an asset-based structure. This implied restructuring into four heads:

1. **Producing assets** (focusing on optimal exploitation of known reservoirs).
2. **Exploratory assets** (responsible for reserve accretion).
3. **Services** (responsible for provision of activities such as drilling, geophysics, logging and logistics).
4. **Corporate functions** (to provide policy and non-operational supports to assets and services).

The change delineated by the report was on the lines of 'radical change' and not incremental one. In addition, it underlined an imperative need for significant decentralization of authority and accountability within the organization. The corporate centre needed to change from being a large, centralized administrative support function to a small group focused on core value-adding activities. Implementation of OTP also implied the reallocation of Directors' portfolios, implementation of performance management system, fine tuning of the new structure and changes in human resource and material management processes,



amongst other changes. Statistically speaking, McKinsey predicted that such restructuring could improve ONGC's recovery factor by 10–20% or an addition of 2.5 million tons of oil per year and foreign exchange savings of \$ 360–370 million annually [3].

Thus the OTP implementation was organized in three phases:

- Diagnostic phase,
- Redesigning of the organization and setting up pilots, and
- Trial implementation of pilots.

With the aim of restructuring the organization, improving the systems and procedures, and supporting and speeding up effective decision making, OTP (that emphasized the asset-based structure) was implemented in the moribund Neelam offshore field as a pilot project in January 1998. The results of Neelam assets were highly encouraging especially in the area of cross-functional trouble shooting and asset management. Neelam's success led to the OTP implementation in the Western onshore region in April 1999. The rest of the organization continued working on the business group model. Overall, the organization faced a duality with respect to its structure and in due course uncertainty grew amongst members regarding the complete rolling out of the new structure throughout the organization.

Earning of 'Navaratna' (Corporate Jewel) status in April 1999, gave ONGC's management the leeway it needed to evolve and bring together strategies required for successful change implementation. The organization-wide change-implementation process needed to take into account several inconsistencies in the consultant's recommendations (such as co-ordination issues related to commonly shared services) before rolling out the recommendations throughout the organization. July 2001 onwards, ONGC also saw several rounds of intense deliberations between and amongst its officers and workmen on implementation of asset-based structure at its various forums that reflected its current situation, the sentiments and aspirations of the employees throughout ONGC and the feedback from the pilot projects.

McKinsey had guided the strategic change initiative at ONGC. Under the leadership of the then newly appointed Chairman & Managing Director (CMD), Subir Raha, in 2001, OTP was re-conceptualized into the Corporate Rejuvenation Campaign (CRC) which had a broader focus and was rolled out throughout ONGC. With the basic structure and principles carried over from the consultant's recommendations, CRC incorporated elements that were specific to the country and its public sector. Also, rather than being period specific (an inherent characteristic of such a project) hence limited in its approach, the corporate rejuvenation 'campaign' envisaged ONGC as a living organism, in constant need for rejuvenation. Broadly, CRC aimed at re-organizing the business, operational, technical, management and decision making processes to improve performance and to keep pace with the dynamic business environment and environmental concerns.

Focus on environment has been an integral part of CRC. In August 2001, CRC was rolled out throughout the organization after it had integrated the feedback as well as the external and internal consultations that had been deliberated under OTP till then [23, 27].

It took into account:

- Changing over from being business group in structure to asset based structure.
- Sharper focus on technical audit, safety, occupational health and environment.
- Integrated approach to functioning with emphasis on multidisciplinary team work.
- Need for empowerment befitting accountability down the line.
- Rationalization of services aiding better performance and cadre specialization.
- Service Level Agreement (SLA) between user and provider of services.
- Integration of information technology and communication environment.
- Need for a Director in charge of Corporate Services, responsible for critical activities (namely material management, business development, engineering services, equipment management, technical audit, infocom services etc.).
- Exercisable authority by asset/ basin managers over service providers within a matrix of functional and administrative relationship with the Chiefs-of-Services.
- Asset/ basin as a virtual corporate, that is self-contained with clear one- stop accountability and commensurate authority.
- Redefining regional roles include the common services of estate, regional recruitment, promotion, pay roll etc.

Post CRC, ONGC adopted a matrix structure that consisted of 14 assets and 11 centralized services. The implementation phases included the restructuring of the Board, allocation of key managers and sub-managers, delegation of assignment, specific power and streamlining and redefinition of reporting channels. The CRC eventually led to the adoption of a generic structure throughout the organization. The roles and responsibilities of key executives were clearly defined and they were assigned the responsibility of initiating and submitting performance/ service contracts. Amongst the key performance indicators, environment concerns were given importance.

- Satisfying safety, health and environment concern; and
- Promoting corporate image including community development.

### **Analysis of Organizational Transformation at ONGC**

As the environment within and outside the organization changes at a rapid pace, strategies for dealing with the change need to be adopted by organizations. Change may be brought about by either adopting a top down approach when the onus rests primarily on senior management to push through a sustained effort. Conversely a bottom up approach may be adopted wherein the leader provides the vision and the group or individuals internalize and make the change an ongoing process [24, 25].

**Table 11.1** Application of model of change management process at ONGC

Scope of change	Strategic change	Grassroots change
Leadership	Top management	Local management
Infrastructure	A select few	Management and all employees— “the masses”
Diagnostics	The entire organization	Specific sites
Comparison points	External benchmarking to internal best practices	Implementation of best practices
Tools	Application of data collection tools to a select few	Application of implementation tools to “the masses”
Training	Assessment of needs, some design and delivery	Assessment of needs, extensive design and delivery
Outcome Goals	Recommendations for change and momentum building	Implementation of changes

Adapted from [7, 25]

Galpin [7] posits “even the most carefully planned organizational changes can fail if individuals are not taken into consideration”. He proposed a nine step process that shows how to effectively combine the people side and the technical side of change. Galpin’s model discussed above has been used to explain organization transformation that took place at ONGC at both strategic and grass root levels, in Table 11.1.

As mentioned above organizational transformation at ONGC was addressed at strategic level as well as at grass root level. It was the then CMD, Subir Raha who felt the need for a diagnostic study to identify areas needing change. It is not common to expect a CMD of a public sector organization to challenge the status quo but Raha had a vision and adopted exemplary transformational leadership style [4] for leading change at ONGC. He sensitized the employees of ONGC through face to face communication and also through e-mails, print media and other forms of communication for the need for change. Any employee could send an e-mail to him directly regarding any issue relating to the change and he would respond. It is not a norm to write to CMD directly in an Indian public sector organization. For an organization of the size of about 35 thousand employees it was unheard of. He was passionate and committed and created a campaign for change involving employees at all levels. He also identified change champions on specific sites. To change the mindset of a large number of middle/senior middle level of management, he organized large scale training initiatives within the organization and also involved leading management institutes of India to cater to the large size of the organization. The focus of these management development programs was developing transformational leaders for organization building and creating work culture for competitive edge. ONGC also went through major restructuring at the project level. For technological change global benchmarks were adopted. Technological changes were pilot tested at one site and later adopted organization wide.

The key focus areas were improvement in team infrastructure, mapping a communication strategy, integration of the change process into the culture of the organization, setting

goals for change implementation. The key attributes for leading change were identified as creativity, team orientation, listening skills, coaching skills, accountability, and appreciativeness. Thus all the nine stages of change given in Galpin's model viz., (i) establishing the need for change; (ii) developing and disseminating the Vision for change; (iii) diagnosing/analyzing the current situation; (iv) generating change process; (v) detailing recommendations; (vi) pilot testing; (vii) preparing recommendations for roll out; (viii) rolling out changes and (ix) measuring, reinforcing and refining change were adopted by ONGC.

### **Impact of Change Initiatives**

ONGC witnessed significant changes in the new millennium after the successful implementation of Corporate Rejuvenation Campaign. It bounced back to number one position in the country. The company saw its market value rise from INR 176.81 Bn (US \$ 3.65 Bn) in September 2001 to INR 492.87 Bn (US \$ 10.16 Bn) in April 2002 as per the third Business Today-Stern Stewart study [8] in a span of approximately six months. In 2002–2003, ONGC diversified into the downstream sector after taking over Mangalore Refineries and Petrochemical Ltd. and further forayed into other countries such as Vietnam, Sakhalin and Sudan by making huge investments as the ONGC Videsh Ltd. (an ONGC subsidiary). ONGC continued as a flagship public sector enterprise and India's highest profit making corporate, that is credited for being India's first corporate to register a five digit profit figure of INR 15,643 crores (US \$ 3.23 Bn) in the year 2006–2007 [22]. ONGC had successfully fuelled the ever-increasing energy requirements of India's economy by producing more than 600 million metric tons of crude oil and supplied more than 200 billion cubic meters of gas since its inception. ONGC in 2009 emerged as the most valuable company in India contributing to 78% of nation's crude oil and natural gas production. The company was responsible for building up 6 billion tons of in-place hydrocarbon reserves of the country. It had to its credit more than 300 discoveries of oil and gas [17].

### **Green Management Strategies for Sustainable Growth at ONGC**

The International Organization for Standardization (ISO) promulgated the international ISO-14000 (1996) series of environmental management standards, enabling organizations to focus environmental efforts against internationally accepted criteria. Companies realized the importance of integration among environmental information, environmental performance and financial performance for achieving the goal of "green" business operations. If a company was unable to implement a flawless environmental auditing procedure, thus posing a danger to society, in addition to being penalized by the government, its reputation was dented which was detrimental to the company's goal of sustainable business operations [26]. ONGC was aware of the various risks and consequences that are associated with petroleum exploration and production activities and has been conscious of its responsibility towards conservation of the environment and had adopted ISO 14000.

ONGC formulated its Environment Policy as early as 1983 and adopted environment protection as one of its objectives in 1988. It created the Department of Environment (DoE) to ensure that environmental safeguards were in place. ONGC set up the Institute

of Petroleum Safety, Health and Environment management in 1989 with the objective of improving the safety, health, and environment standards in India's petroleum industry. The institute had been offering training courses in safety and environment management and a special training program for off-shore personnel.

ONGC adhered to the rules and acts promulgated by the government for ensuring safety, health and environment standards.

#### **Environment Rules & Acts**

- The Water (Prevention & Control of Pollution) Act, 1974
- The Air (Prevention & Control of Pollution) Act, 1981
- The Environment (Protection) Act and Rules, 1986
- Hazardous Wastes (Management & Handling Rules), 1989
- Manufacturing, Storage & Import of Hazardous Chemical Rules, 1989

#### **Ambient Noise Standards Rules & Acts**

- Public Liability Insurance Act, 1991
- National Ambient Air Quality Standards, 1994
- Oil Drilling & Gas Extraction Industry Standards, 1996

#### **Focus on Occupational Safety: Rules and Acts**

ONGC's Safety Policy sought to provide safe and healthy working conditions and enlist the active support of all staff in achieving these ends. The aim has been to provide a safe and healthy place with adequate facilities, systems and methods to safeguard employees, contractors and the public from all foreseeable hazards. The company also sought to equip the staff with the information, instructions, training and supervision needed for safe working.

The Environment Policy of ONGC was based on sound ecological principles taking into account matters of air and water quality, noise, land use, afforestation etc. in the design, construction and operation of all facilities of the corporation. The company sought to control the release of hydrocarbons, chemicals and other materials to avoid disturbing the flora and fauna. Releases containing viruses, pathogenic bacteria and parasites, which survive in marine life, were to be prevented from entering marine waters. Coastal marine areas were protected from unplanned salutation, erosion, changes in flow pattern. Efforts were made to avoid disturbance of aesthetic, cultural and social patterns and historical characteristics of the areas covered by or adjacent to the ONGC's installments to ensure preservation of scenic landscapes, historical heritage and cultural monuments.

#### **Processes and Practices for Green Management**

Having ensured that policies were in place for meeting environment management standards, ONGC followed processes and practices for implementation of the same. Some of the practices were:

- Environmental Impact Assessments to identify and predict areas of environmental concern and provide the basis for the development and implementation of an environmental management strategy.
- Baseline studies to accurately describe the environment before initiating any activity.
- Regular monitoring of direct and indirect environmental effects, which might affect the ecology of particular site or area and whose source could be easily identified.
- Conducting mock drills to enhance preparedness for any eventuality.

The ship movement including anchoring, drilling, routine discharges including kitchen wastes, noise, artificial lights, and air emissions and physical effects of equipment were all matters that were carefully considered in ONGC's environment management program. ONGC has been pursuing clean coal opportunities systematically through Coal Bed Methane, Underground Coal Gasification and Surface Coal Gasification exploration. ONGC has also been associated with National Gas Hydrate Program. While remaining focused on Oil and Gas E&P, it was setting up an Energy Centre at New Delhi for holistic research in new energy sources which could be brought to the market. To counter dangers of Oil Spills, most offshore platforms were built at considerable distances from sensitive species. A range of safety features such as automatic shutdown valves ensures that the risk of a significant oil spill from production facilities is extremely small. ONGC has been a part of the National Oil Spill Disaster Contingency Plan. As per plan the operators of the facilities were to have combat preparedness for:

- Tier I (from 100–700 t of Oil Spill and within 500 m of the facility) and Local Contingency Plans.
- Tier II (above 700–2000 t) preparedness for larger spills were coordinated by India's Coast Guard by pooling resources of the various operators and Coast Guard under "Regional Contingency Plans" for Western & Eastern Offshore.
- For much larger spills Director General of India's Coast Guard has been the central coordinating authority. ONGC and some other Oil Companies had back up support of International Spill Combat organizations like East Asia Response Limited, Singapore and Oil Spill Response Limited (OSRL), UK. OSRL has been a non-profit cooperative of 33 global oil multinationals such as Chevron, BP, BG, Shell, ExxonMobil, and ONGC as shareholders working to combat major oil spills.

Seismic survey sounds are of high energy and low frequency. They are produced in short or 'impulsive' series, rather than long, continuous sounds, and this minimizes any impact they may have. To avoid adverse impacts, surveys were adapted or scheduled to avoid seasonal migrations or key breeding locations. If marine mammals or turtles were present the operations were delayed till they move out. Throughout the survey lowest possible power levels were utilized.

Temporary acquisition of Land for construction of drill sites might have impact on standing crops for which adequate compensation was paid to the land owners. For exploratory sites in forest lands with already existing trees which may be required to be felled, the organization endeavored to provide compensatory forestation in an alternate site.

In onshore areas it provided waste pits with impervious lining for accumulation of drill cuttings and other effluents. Efforts were made to contain effluents within the site and to recycle the same for operational use. On completion of activities the waste pits were covered with top soil and sites were restored as stipulated by local PCB's. Water based Drilling fluids which comprised of clays, and included only minor heavy metals such as Barium and a range of low toxic additives were used. Surface casings were generally lowered to avoid ground water contamination.

During drilling, major cause of accidental release of oil and gas is due to blowouts which can lead to fire and consequential impact on the environment. Strict adherence to safe practices and routine mock drill exercises reduce them. Routine measurements of Noise level in the operational areas and providing adequate personal protective equipment to the employees ensured limited impact. Periodical medical examination of the personnel also was being practiced to eliminate occupational health hazards. Regular measurement of Ambient Air Quality in the areas of activity was carried out to identify deviations and initiate remedial action.

As part of its new sustainable development program, Oil and Natural Gas Corporation Ltd. was making efforts to become carbon neutral in its oilfield business, R.S. Sharma, the later Chairman and Managing Director, revealed in his address to ONGC employees on Environment Day in 2009 that whatever greenhouse gases ONGC was generating to produce crude oil and natural gas was compensated by environment-friendly measures like eco-forestation. To make its operations carbon neutral, ONGC had chalked out an elaborate plan to contribute to a better environment, as shown by its bamboo plant initiative in the Himalayan range in Uttarakhand [21]. The corporation had also been developing and conserving mangroves to protect soil erosion in coastal areas of the country.

ONGC also had in place an extensive Green House Gases (GHG) program. The initiatives under this program were:

- Developing GHG inventory, accounting and information system,
- Identification and development of GHG programs and projects and monitoring the existing ongoing registered CDM projects,
- Carbon disclosure in the company balance sheet,
- Development of climate protection strategy and policy,
- Strategic management of climate change and business opportunity thereof,
- Sustainability reporting,
- Consultancy to ONGC JVCs on CDM projects, and
- M2M (Methane to Markets) Program.



ONGC conducted the following regular training programs to ensure understanding and implementation of its safety and environmental policies by all its employees.

- Basic/Advanced Safety & Environment Management Program for petroleum industry executives
- Offshore Safety & Survival Training
- Safety Auditors Course
- Loss Control Management

ONGC has been operating 11 institutes for research in cleaner drilling technology and for training its personnel and sensitizing them to environment issues. Chemists at the ONGC's Institute of Drilling Technology in Dehradun had developed an organic drilling fluid (using molasses instead of chemicals) to contain environmental damage while flushing out loose rock and gravel from oil wells. ONGC scientists and The Energy and Resources Institute in Delhi had also developed an oil sludge-eating micro-organism called Oil Zapper. When sprayed onto oil spills or contaminated soil, Oil Zapper detoxifies the spill in a process called bio-remediation. Going a step further, the company wanted to do its bit in fixing the oil industry's biggest problem—the acceleration of climate change from the burning of fossil fuels. It had entered into a 3-year deal with Norwegian company Statoil Hydro to develop carbon capture and sequestration technologies.

Objective measure of green management of a firm is its assessment by external agencies. ONGC's good work in combating climate change had won it several international and national recognitions; some are mentioned below.

- Golden Peacock Award for Health, Safety and Environment (HSE) Practices (2012, 2013)
- Golden Peacock Award for Sustainability (2011)
- Oil Industry Safety Directorate (OISD) Awards—5 different category (2009, 2010, 2013)
- Gold Trophy for Corporate Social Responsibility (2013)
- PetroFed Oil & Gas Industry Awards (2012)
- Golden Peacock Award for an impeccable record in the Climate Change Mitigation (2008)
- Golden Jubilee Award for Corporate Social Responsibility in Emerging Economies (2006)
- National Mines Safety awards in Oil Mine category (2004, 2005 and 2006) [18].

The Hazira Gas Processing Complex of ONGC had also won the following awards for excellence in environment preservation and pollution control:

- Award for Excellence in Environmental Preservation and Pollution Control for 1996, by Federation of Gujarat Industries, Baroda.
- The Golden Jubilee Memorial Trust Award for outstanding pollution control program for 1996–1997 organized by Gujarat Chamber of Commerce and Industry.
- RoSPA Bronze award for 1998 by Royal Society for Prevention of Accident (RoSPA), UK. Award for outstanding contribution towards pollution control conferred by South Gujarat Chamber of Commerce and Industries (SGCCI) for 1997–1998.

### **Sustainable Growth of ONGC in the Twenty-first Century**

In over 50 years of its existence, ONGC has scripted India's hydrocarbon saga by discovering 6 of the 7 producing Basins. It had been exploring for and exploiting hydrocarbons in 26 sedimentary basins of India. It operates around 568,300 km<sup>2</sup> of exploration area—holding 58% of licensed exploration and 56% of leased production area of the country. To double its In-place reserves from 6 to 12 billion tones and improve recovery from 28 to 40% by 2020, ONGC has been aggressively pursuing its E and P projects, spending 99.7% of its CAPEX (highest among India's corporate) on them. It spent over US \$ 1.75 million (INR 8 crore plus) every day on exploration. The investment on enhancing production was around US \$ 3 billion. It had recoverable reserves exceeding 1 billion tons of Oil and Gas and produces more than 1 million Barrels of Oil Equivalent (BOE) per day.

ONGC's wholly-owned subsidiary ONGC Videsh Ltd. (OVL) had been India's biggest multinational, with 44 Oil and Gas properties in 18 countries, with a committed overseas investment of over US \$ 5 billion (INR 23,000 crores). Its target bringing was in 60 million tons of equity oil by 2025 [9].

ONGC has been the first Indian Corporate to cross US \$ 1.85 billion (INR 9,000 crores) in net profit, with a remarkable net profit to revenue ratio of 29.8% in 2009. To secure more value from its business, ONGC had integrated into refining, taking up 71.6% equity in 9.69 million metric tons per annum (mmtpa) Mangalore Refinery and Petrochemicals Ltd. (MRPL). Under ONGC, MRPL was undergoing an expansion-cum-up gradation to 15 mmtpa at an investment of US \$ 1.7 billion (INR 8,000 crores). It had planned an integrated Aromatics Complex (ONGC holding 49% equity) to produce 0.9 mmt pa of Paraxylene at an investment of US \$ 1.1 billion (INR 5,000 crores) and an integrated Olefin Complex at an investment of US\$ 2.6 billion (INR 12,000 crores). ONGC was implementing (holding 26% equity) another global scale Petrochemicals Complex at Dahej in Gujarat—investment of US \$ 3 billion (INR 13,600 crores) [9].

It owned and operated more than 11,000 km of pipelines in India, including nearly 3,200 km of sub-sea pipelines. It is noteworthy that all its installations had been certified for Quality, Health, Safety and Environment Management (QHSE).

### 11.3 Conclusions

It is possible to bring about organizational transformation in a traditional firm if the leader has vision, passion and commitment and adopts a nine stage processes (Galpin's model) for organizational transformation. It is important to have realistic assessment of the organization through a diagnostic study to identify areas needing radical or incremental change. In case of radical change buy in of the people is important. Therefore, communicating the vision to all concerned is an important step in organizational transformation. There ought to be a team steering the organization wide change. It is desirable to pilot test the initiative so that if any modification is needed, can be made. The transformation would be successful if the initiatives are taken at both strategic and grass root levels and a momentum is built. For sustainable growth of an organization it is essential to address concerns of the stakeholders including environment.

The influence of consumer and investor opinions for green corporate accountability and the creation of new government regulations in favor of protecting the environment have pushed green issues onto the radar of all corporate boards. The visible changes in global climate and rising energy prices make it imperative for organizations to focus on environment issues. The green management issue gains further impetus as a fall out of investment analysts embracing strategies that correlate environmental performance with a firm's financial performance. Investment dollars have been flowing to companies that would gain an edge through efficiency-related cost reductions, and that will face less risk from environmental liability. Eco-responsible companies can gain a competitive advantage over their peers through cost reductions, quality improvements, increased profitability and access to new and growing markets.

Wee and Quazi [31] posit that a combination of top management commitment and involvement of all employees is critical for successful implementation of environment management. ONGC had succeeded in achieving this two pronged approach. The vision statement and policy guidelines reflected the commitment of top management for integrating environmental issues in critical business operations. Environment oriented projects were budgeted in the annual plan outlay. Employees were empowered to handle environmental problems and recognized for their contribution to improve environmental performance. Training was imparted to ensure they were equipped to fulfill their environmental responsibilities. Production processes were designed to reduce negative impacts of waste and emissions. ONGC had entered into a number of partnerships with government agencies and other corporate for environment related projects. For every INR 100 it earned in profits, the INR 86,267 crores company returned 75 paise back to the communities where it operated. This money went towards schools and hospitals, community centers and rural development projects.

It is interesting to note that ONGC has been operating in a fairly monopolistic environment for the first fifty years of its existence. Environmental pollution is a part and parcel of the oil and gas industry. Conservation and environment management have not been in the priority list of majority of the firms. Therefore, stringent laws have been intro-

duced during the past 20 years or so. Yet, environmental management had been intrinsic to ONGC's growth. It has been ranked thirty-ninth among the world's 105 listed companies in 'transparency in corporate reporting' by Transparency International.

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### Abstract

Brand management of companies has to maintain flexibility to be successful in an environment, which is characterized by changing technologies, changing consumer needs, organizational changes, and a changing competitive environment. The state-of-the-art brand management approach, which explicitly views brand management as continuous task considering a feedback loop in the brand management process, is identity-based brand management. In context of flexibility and change in brand management there are two challenges companies have to overcome to adapt successfully. The first challenge is related to the component and the level of change in brand identity. The first question to answer in this context is which component of the brand identity can be changed without damaging it. While the core of the brand identity, i.e. essential identity components, must not be changed, the periphery of the brand identity, i.e. nonessential identity components, can be changed. The second question to answer in this context is how much a brand identity can be changed without damaging it. Overall, the level of brand identity change must not be too radical because customers cannot connect the new brand identity with their current brand image if the change is too radical. The case study of FRoSTA illustrates this first challenge of dynamic brand management: Radical

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changes of the brand identity especially regarding essential identity components can lead to economic failures. The second challenge is related to the internal implementation of the brand, its identity, and change of the identity. The question to answer is how the brand identity and subsequent changes of the brand identity can be communicated to employees as internal stakeholders responsible for living the brand and for communicating the change to external stakeholders. In order to implement the brand within the organization companies have to engage in internal brand management (IBM), which is a concept that implements the brand cognitively (brand understanding), affectively (brand commitment), and behaviorally (brand citizenship behavior) at employee level. Managerial tools to implement the brand within the organization are internal and external brand communication, brand-oriented leadership, and brand-oriented human resource management. The case studies show that companies engaging in these activities are able to create strong brands and competitive advantages.

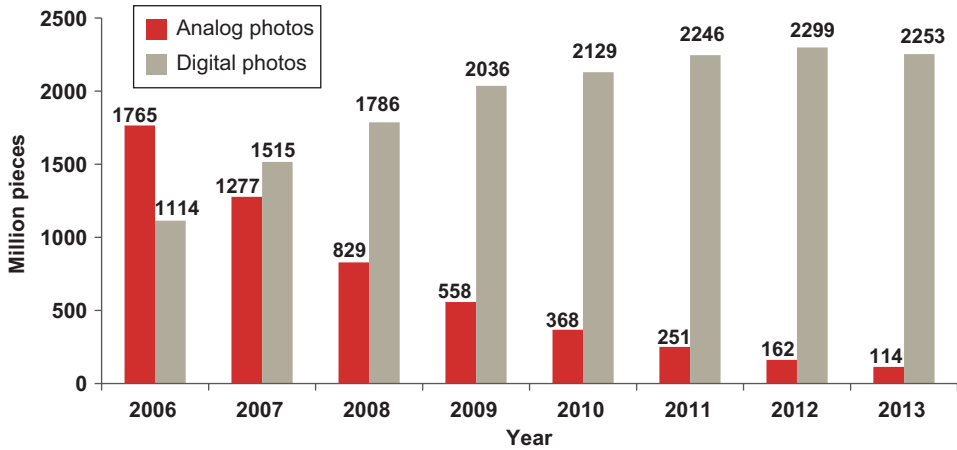
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## 12.1 The Relevance of Flexibility

In psychology, flexibility is understood as the ability to quickly adapt to changing situations [71]. In business economics, (strategic) flexibility represents the behavioral potential of a company to **exploit future growth opportunities** by changing the product and service program [10]. As **best practice example** of strategic flexibility and, therefore, mastering the challenges of change **CEWE Stiftung & Co. KGaA (CEWE)** can be pointed out. The photo service provider which was founded in 1961 and is based in Oldenburg, Lower Saxony, has been focusing on the industrial production of personalized photo products. While the company grew by entering international markets and by taking over other companies by the end of the twentieth century, it pursued the development of the digitalization of photography and adapted to the market changes accordingly. CEWE agreed on international commercialization of the DigiFilm concept with Agfa in 2002 and received the marketing and innovation award of FOTOWirtschaft. In 2005, the photo service provider introduced CEWE FOTOBUCH. It gained acceptance in Europe in 2008 as the most popular photo book and achieved a sales volume of 2.6 million units the same year. At photokina 2012, CEWE introduced videos in the CEWE FOTOBUCH in addition to photos. From now on also videoscans were integrated with the help of OR codes. Figure 12.1 illustrates the consumer behavior change due to **technical change in the photo industry** which CEWE managed to adapt successfully. While CEWE developed 829 million photos from films in 2008, the number dropped to just 162 million photos by 2012. During the same period the number of digital photos rose from about 1.8 billion photos to about 2.3 billion photos. Other companies in the industry like Kodak did not adapt to the dramatic change successfully [11].

The **necessity for flexibility** is the result of

- constantly changing technologies,
- changing consumer needs and the necessity to attract new consumers,



**Fig. 12.1** Photo development of CEWE. (Source: CEWE Stiftung & Co. KGaA)

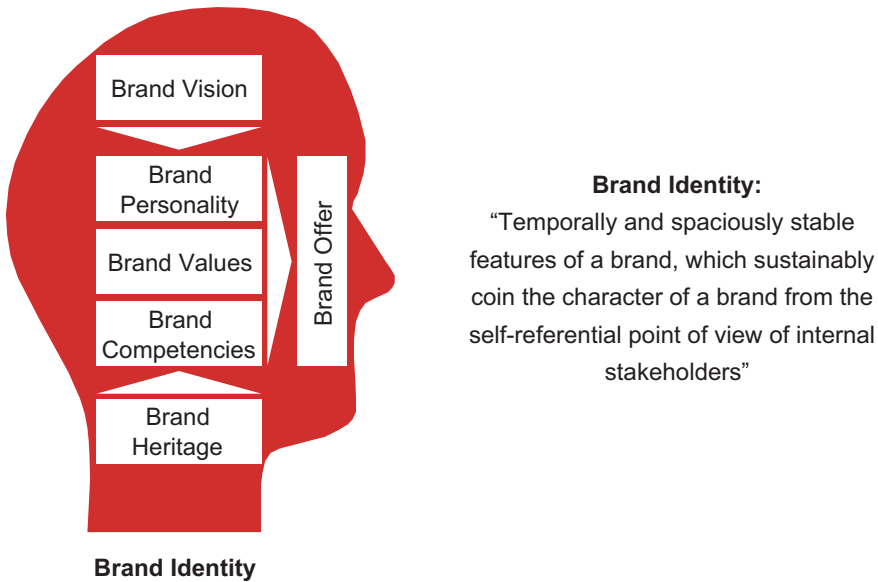
- organizational changes caused by mergers and acquisitions, and
- frequently changing situations regarding the competitive environment caused by changes in competitor positions and new competitors entering the market.

Besides radical changes like in the photo industry, there are also less radical changes every business function of a company has to deal with. Brand management as a central function at the interface between the organization and the market is not a singular change management task. It is rather a **continuous adaption** to a constantly changing environment. Brand management of companies exposed to changes has to maintain flexibility in order to successfully operate in such an environment. The state-of-the-art brand management approach which explicitly views brand management as continuous task considering a feedback loop in the brand management process is **identity-based brand management**.

## 12.2 Identity-Based Brand Management

### 12.2.1 Brand Definition

The identity-based brand management approach was developed parallel by Kapferer [37] [1] as well as Meffert and Burmann [47]. According to identity-based brand management, a **brand** is understood as “a bundle of benefits with specific attributes that—from the view of relevant target groups—differentiate this bundle from other bundles that fulfill the same basic needs [14]. By considering the brand identity as internal perspective the approach goes beyond typical brand management approaches which only consider the brand image as external perspective of the brand. Therefore, identity-based brand management integrates the inside-out perspective and the outside-in perspective [15].



**Fig. 12.2** Brand identity. (Source: Adapted from [14, 15])

### 12.2.2 Brand Identity

The **brand identity** comprises those “temporally and spaciouly stable features of a brand, which sustainably coin the character of a brand from the self-referential point of view of internal stakeholders” [15]. Four fundamental characteristics constitute a brand’s identity [16]:

- **Reciprocity:** An identity can only emerge through relationships with external groups. These interactions are decisive for the composition of a brand identity.
- **Continuity:** Essential characteristics, i.e. core attributes of the brand identity, have to be maintained over time.
- **Consistency:** Consistency means that there should be no contradictions among identity components.
- **Individuality:** A brand identity should differentiate itself from the identity of competitor brands.

According to identity-based brand management, the brand identity comprises six components which are shown in Fig. 12.2:

- The basis for a brand’s identity is the **brand heritage** [16]. Brand heritage answers the question “Where do we come from?” It is closely connected to the brand history. In contrast to brand history, which is not manageable, brand heritage only emphasizes cer-

tain aspects of the history of a brand and is, therefore, manageable [6]. Brand heritage can be based on regional, company, and industry origin [5].

- The **brand vision** provides the long-term direction for the development of the brand [16]. It gives orientation and direction and answers the question “Where do we want to be?” The brand vision can be seen as an umbrella, which addresses important motives of internal and external target groups. In contrast to brand goals, the brand vision is less detailed but covers a larger period of 5 to 10 years.
- **Brand competencies** represent specific organizational capabilities, which help to obtain competitive advantage in a market [6, 16]. Brand competencies answer the question “What are we good at?” Through its competencies, a company is able to deliver unique products or services that cannot be easily imitated by competitors.
- **Brand values** represent the basic beliefs of management and employees [16]. They answer the question “What do we believe in?” and bring an emotional component to the brand identity. Brand values are important for brand authenticity [58].
- The communication style of a brand is expressed by the **brand personality** [16]. It answers the question “How do we communicate?” It is defined as „a set of human characteristics associated with a brand“ [2].
- These five components of brand identity are the foundation for the **brand offer**, the sixth component [16]. It answers the question “What do we offer?” and determines the type of products and services a company offers. A high congruence between the brand offer and the other five components of the brand identity is essential for the credibility and authenticity of a brand.

### 12.2.3 Brand Image

While the brand identity is actively formed through internal stakeholders, the brand image, which represents the perception of the brand in external stakeholders’ minds, develops through their experiences with the brand at various brand touch points [16]. Therefore, the **brand image** is defined as a multidimensional construct that consists of attitudes toward a brand [16, 23, 62]. It results from processing brand relevant information.

The brand image consists of three components [16, 38, 39, 47], which are shown in Fig. 12.3:

- **Brand attributes** are the descriptive characteristics of a brand.
- **Functional brand benefits** result from the functional characteristics of a brand.
- **Symbolic brand benefits** result from additional benefits, which are not related to functional characteristics, e.g., prestige. They become more and more important because functional benefits do not deliver sufficient reasons for differentiation from competitors in industries with high saturation.
- **Brand awareness** is not a part but a prerequisite of the brand image because a brand image can only develop if the external stakeholders are aware of the brand [16].

**Brand Image:**  
Multidimensional construct that consists of attitudes toward a brand

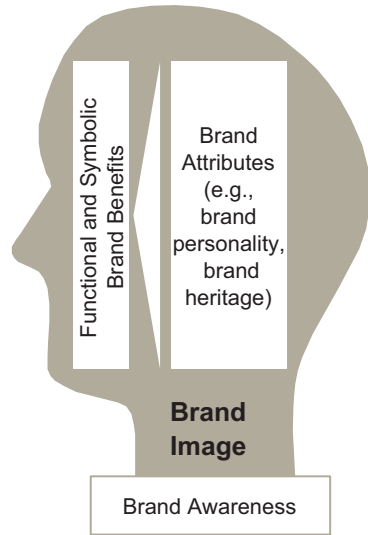


Fig. 12.3 Brand image. (Source: Adapted from [48])

### 12.2.4 Interrelationships Between Brand Identity and Brand Image

The interrelationships between brand image and brand identity are shown in Fig. 12.4. While **customer needs** are addressed by the **brand promise**, which is the condensed core of the brand identity, the actual **brand behavior** determines the **customer experi-**

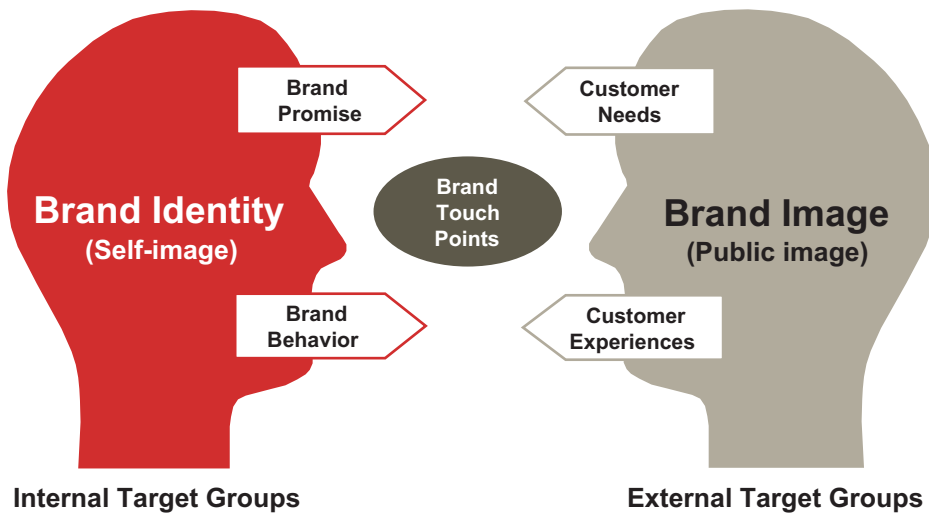


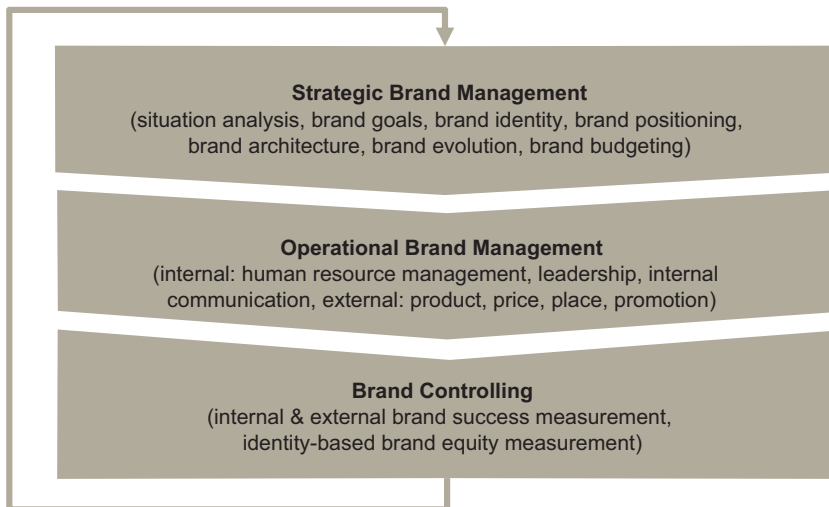
Fig. 12.4 Basic idea of identity-based brand management. (Source: Adapted from [47])

**ence** with the brand. Brand identity, brand promise, and brand behavior are perceived by external stakeholders at various brand touch points. Those brand touch points include any contact between the brand and its external stakeholders. This may include media impressions, contacts at the point of sale, customer service, brand outlets and many more [16].

### 12.2.5 Management Process

For planning, coordination, implementation, and controlling of identity-based brand management a management process with strategic brand management, operational brand management, and brand controlling is available [12, 16] as can be seen in Fig. 12.5.

The first step is **strategic brand management**, which contains the situation analysis, the definition of brand goals, brand identity, and brand positioning as well as decisions about brand architecture, brand evolution, and brand budgeting. The second step is **operational brand management**, which contains internal tools of human resource management, leadership, and internal communication as well as external tools of the marketing mix (product, price, place, promotion). The third step of the management process is **brand controlling**, which contains internal & external brand success measurement and identity-based brand equity measurement. Finally, the feedback loop from brand controlling to strategic brand management constitutes the understanding of identity-based brand management as continuous task.



**Fig. 12.5** Management process of identity-based brand management. (Source: Adapted from [16])

## 12.2.6 Flexibility in Brand Management

In context of flexibility and change in brand management there are two challenges companies have to overcome to successfully adapt. The **first challenge** is related to the **component and the level of change in brand identity**. As the brand identity is the core of identity-based brand management change is related to change of brand identity. The first question to answer is which component of the brand identity can be changed without damaging it. The second question to answer is how much a brand identity can be changed without damaging it. The **second challenge** is related to the **internal implementation** of the brand, its identity, and change of the identity. The question to answer is how the brand identity and subsequent changes of the brand identity can be communicated to employees as internal stakeholders responsible for living the brand and for communicating the change to external stakeholders.

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## 12.3 Identity-Based Brand Management and Change

### 12.3.1 Dynamic Brand Management

Changes in the internal or external environment require the application of a dynamic brand management approach. Dynamic means some kind of flexibility which enables the brand to adapt to changing environments. With the brand identity being the core of identity-based brand management dynamic brand management is related to changing the brand identity, the subsequent brand benefits and brand promise, and the brand implementation through the marketing mix.

Regarding the brand identity, every component of the identity can be object of change. A company can decide to change its **brand heritage**, i.e. to change focus on other aspects of the brand history. For example, Burger King Germany does not emphasize its American origin anymore because it is of no relevance for German customers. As a consequence, the new restaurant look does not reflect the typical American Diner style anymore. Another example is LVM insurance company in Germany, which do not emphasize their agricultural origin anymore to attract non-agriculture customers as well. But it is not only possible to remove aspects from the brand identity. The city of Bremen added aspects to the brand heritage. The brand heritage does not only cover historic hanseatic city now but also aspects like city of science, aerospace, and infotainment from recent city history. In addition, through mergers and acquisitions companies can acquire new **competencies** or develop new **visions**, which can be implemented in the brand identity.

A very common change of brand identity is related to a change of **brand values**. Due to changing consumer needs companies may come to the conclusion that current brand values do not support relevant benefits or that new values have to be added in order to attract consumers and stay ahead of competitors. As a consequence of the growing relevance of socially and ecologically responsible behavior of companies for specific target groups these values are often added to the brand values.



Another very common change of brand identity is the change of **brand personality**, i.e. the change of the communication style. A well-known example of the change of brand personality is the Jägermeister brand. Until the end of the last century, the target group of the Jägermeister brand were mostly old male customers. In order to attract new customers the Jägermeister brand radically changed its communication style and made use of below-the-line communication. Finally, a company can also decide to change its **brand offer**, i.e. to change the products and services offered to customers. A well-known example of such brand identity change is McDonald's Germany. The company adapted to changing consumer needs and increased the product range by offering more salads, wraps, and the products of McCafé. This change of identity also had an impact on the marketing mix. The new restaurant look contains more natural colors and the communication shifted towards the promotion of healthier products.

As a consequence of brand identity change the brand benefits and the **brand promise** may change to better meet customer needs. To communicate the change to customers, the **marketing mix** is adapted, e.g., changing product, price, place, promotion, physical evidence, people, and process.

The difficult question to answer is which component of the brand identity can be changed without damaging it. In literature, there is a simple answer for that question [16]: The core of the brand identity, i.e. **essential identity components**, must not be changed. In contrast, the periphery of the brand identity, i.e. **nonessential identity components**, can be changed. In practice, it is more difficult to answer the question because it is not generalizable which components of the brand identity are essential and which are nonessential. In some cases, the brand heritage may be an essential component of the brand identity. In other cases, the brand heritage is a nonessential component of the brand identity. Therefore, companies first have to analyze which components are essential and which are nonessential.

The second question to answer is how much a brand identity can be changed without damaging it. Overall, the **level of brand identity change** must not be too radical because customers cannot connect the new brand identity with their current brand image, which leads to confusion [8, 16].

### 12.3.2 Case Study of Dynamic Brand Management: FRoSTA

#### 12.3.2.1 FRoSTA AG

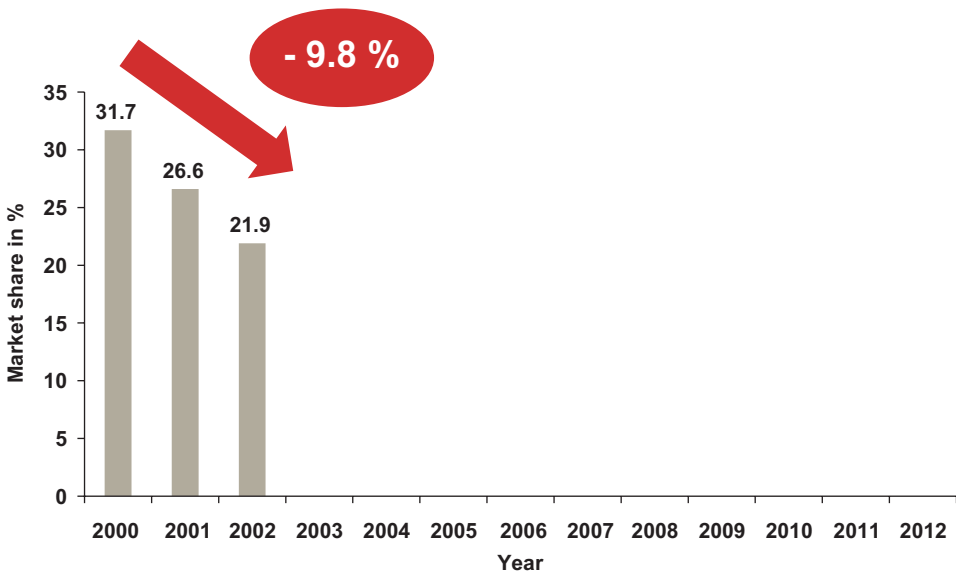
A very good example of the pitfalls of dynamic brand management is the FRoSTA brand. It belongs to FRoSTA AG in Bremerhaven (Germany) which is **one of the largest producers of frozen foods** in Europe. FRoSTA Tiefkühl Kontor GmbH, a company founded in 1962 in Bremerhaven, introduced the brand FRoSTA for frozen fish, fruits, and vegetables in 1978 in Germany. The company extended its production to frozen meals in 1982 and expanded production of frozen vegetables due to the acquisition of Raiffeisen Tiefkühlkost GmbH (later Rheintal Tiefkühlkost) in 1986. In 1988, FRoSTA, Schottke, Rheintal Tiefkühlkost, and Hochseefischerei Nordstern AG merged and renamed to Nord-

stern Lebensmittel AG. The first TV spot for FRoSTA frozen meals was launched in 1994 in Germany with the famous advertising character “Peter from FRoSTA”. Nordstern Lebensmittel AG was renamed in 1997 to FRoSTA AG [27]. In 2013, FRoSTA AG had 1523 employees, a turnover of 386 million € of which approximately one fifth can be attributed to the FRoSTA brand, and a group result of 12 million € [26]. Today the **FRoSTA brand** offers frozen ready meals, frozen fish, frozen vegetables, frozen fruits, and frozen herbs [28].

### 12.3.2.2 Situation of the FRoSTA Brand Before Repositioning

The FRoSTA brand experienced a considerable **decline in turnover and market share** in the late 1990s and early 2000s. At this time, the FRoSTA brand was in “sandwich” or “**stuck in the middle**” position. On the one side, the FRoSTA brand was under pressure from the Iglo brand, which was quality leader at that time. Belonging to Unilever, the Iglo brand had a significantly larger marketing budget than the FRoSTA brand. On the other side, the FRoSTA brand was under pressure from private label brands, which already had a market share of more than 50%. As a result, the FRoSTA brand turnover dropped from 125 million to 71 million € between 1998 and 2002. The market share also dropped significantly as can be seen in Fig. 12.6.

The management analyzed the development and came to the conclusion that it was the result of **decreasing brand differentiation** from private label brands. FRoSTA was perceived as good quality brand and with a more reasonable price than Iglo top quality brand. With the rise of private label brands and brand management of retailers becoming



**Fig. 12.6** FRoSTA market share 2000–2002. (Source: FRoSTA AG)

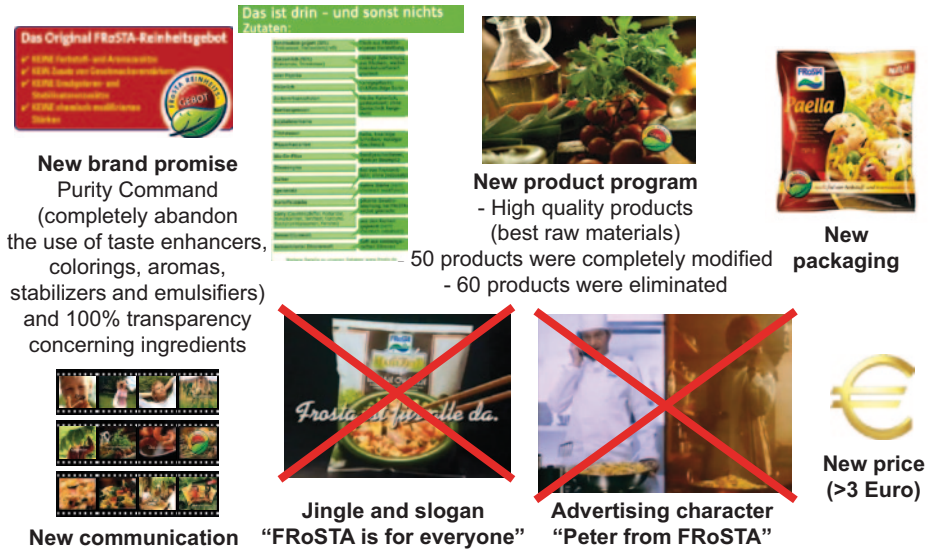
more professional, the private label brands were perceived as good quality as well but to an even cheaper price than FRoSTA. In addition, it was difficult for FRoSTA to defend the shelf space against Iglo and the upcoming private label brands. As a result, the distribution rate of the FRoSTA brand was clearly lower than those of the Iglo brand. Being aware of the negative development the management decided to change the FRoSTA brand identity as well as the FRoSTA brand promise and to reposition the brand.

### 12.3.2.3 Repositioning of the FRoSTA Brand

The core of the new brand positioning was the promise of the **FRoSTA Purity Command** [24]. It guarantees the customer that FRoSTA only uses high-quality raw products and ingredients thus enhancing the products' taste. In addition, FRoSTA completely abandons the use of taste enhancers, colorings, aromas, stabilizers, emulsifiers, and chemically modified starches. Furthermore, the company lists every ingredient of the product with detailed information about the origin and processing guaranteeing 100% transparency, which goes well beyond the legal requirements. Market research suggested that the benefits of the new brand promise were relevant for customers and that the new position had the potential to differentiate FRoSTA from its competitors [11].

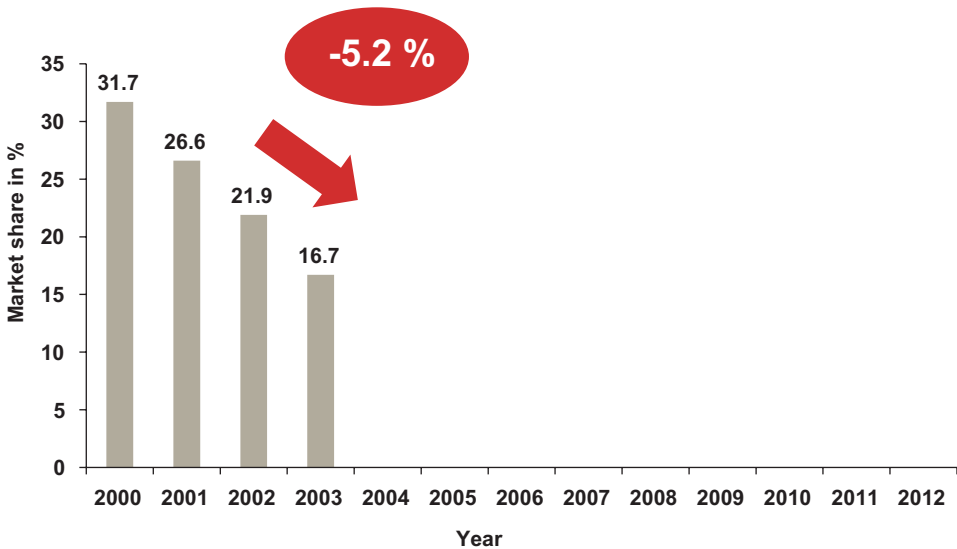
From identity-based brand management perspective the FRoSTA brand changed its identity in several components. Instead of the **competency** to produce good quality food for a reasonable price FRoSTA now promoted the competency to produce high quality food without taste enhancers, colorings, aromas, stabilizers, emulsifiers, and chemically modified starches and with 100% transparency. In line with the competencies, there was also a change in the **vision**, which became to combine delicious taste with the highest level of quality and peace of mind in order to offer customers an incomparable eating pleasure. FRoSTA also change its **values** by adding transparent, trustful, honest, and pleasure. The brand personality was also changed radically. The **brand personality**, i.e. the communication style, changed dramatically with a completely new advertising abandoning the use of the split screen, the old jingle and slogan "FRoSTA is for everyone" and the chef "Peter from FRoSTA" which was a famous advertising character. Consequently, the **brand promise** of good quality food for a reasonable price was changed as well. The new brand promise is the FRoSTA Purity Command, which in combination with high-quality raw products and ingredients results in better tasting products.

As a result of these changes in brand identity and brand promise, the **marketing mix** was also adapted radically as can be seen in Fig. 12.7. More than 30,000 h of work were invested for the revision of the **product** program with 50 products being completely modified and 60 products being eliminated. In addition, a completely new packaging was developed for the products as well. Due to the high quality of raw products, the **price** had to be increased to 3.49 € exceeding the psychological relevant threshold of 3.00 € for 750 g packages. Finally, the **communication** also changed with a completely new advertising campaign without using the split screen, the old jingle and slogan "FRoSTA is for everyone" and famous advertising character "Peter from FRoSTA". Overall, in the 2002 annual report FRoSTA claimed "the new FRoSTA does everything differently" [24].



**Fig. 12.7** Changes of FRoSTA brand identity, brand promise, and marketing mix in 2003. (Source: FRoSTA AG)

Although FRoSTA expected to regain market share in 2003 the company experienced one of the **worst years in its history**. The market share of FRoSTA dropped further from 21.9 to 16.7% (as can be seen in Fig. 12.8) which also resulted in the loss of market leadership. The brand turnover decreased by 42% (from 71 million € in 2002 to 41 million €



**Fig. 12.8** FRoSTA market share 2000–2004. (Source: FRoSTA AG)



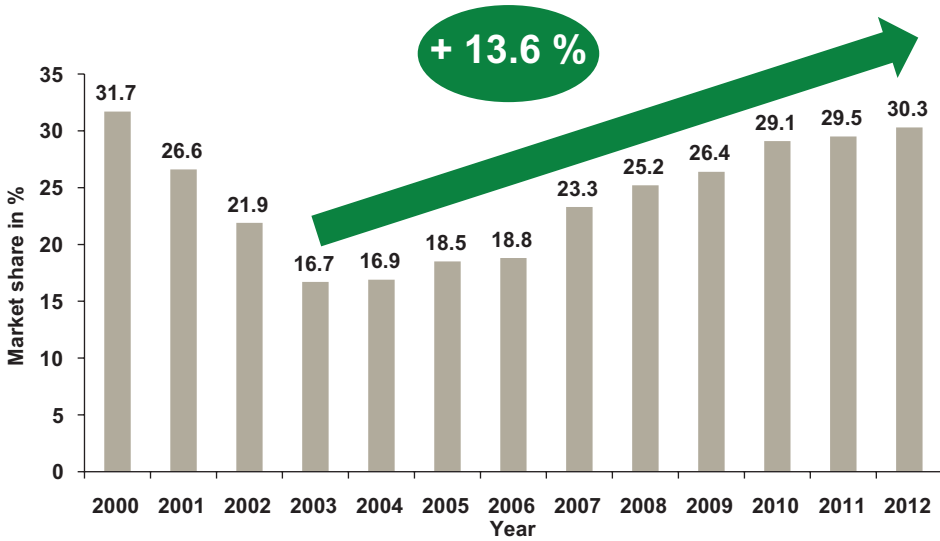
**Fig. 12.9** Changes of FRoSTA brand repositioning. (Source: FRoSTA AG)

in 2003) leading to a loss of 7.7 million € which was the first loss of the group since 1988. The stock price decreased by 37%, no dividends were paid, and the company even had to cut jobs [25].

#### 12.3.2.4 "Re-repositioning" of the FRoSTA Brand

A research project with students of the Chair of innovative Brand Management at the University of Bremen came to the conclusion that despite the relevance of the new brand promise for customers the repositioning was not successful because the **change** of the brand identity **affected essential identity components** and was **too radical** overall [11]. Therefore, the company took back some of the changes [25] as can be seen in Fig. 12.9, especially regarding the brand personality which is one of the identity components which is most prominent in customer contact. FRoSTA reintroduced the split screen, the jingle and slogan "FRoSTA is for everyone", and the famous advertising character "Peter from FRoSTA" revising the whole advertising campaign. FRoSTA also changed the package sizes so that the price per unit could be reduced below the critical threshold of 3.00 €.

Together with measures to improve the awareness of the FRoSTA Purity Command and measures to increase distribution rate and regain shelf space the changes of FRoSTA brand repositioning were successful leading to a **constant increase in market share** as can be seen in Fig. 12.10. In 2013, 10 years after the launch of the FRoSTA Purity Command, the FRoSTA brand had a very positive development in Germany, where it was the strongest growing brand in the frozen food category [26]. In the 2014 advertising campaign,



**Fig. 12.10** FRoSTA market share 2000–2012. (Source: FRoSTA AG)

the company even abandoned the last “artificial” ingredient of the brand when “Peter from FRoSTA” makes clear that he is actually not a chef but an actor. In doing so, the company demonstrates the customer 100% honesty and transparency not just concerning the food but also concerning the advertising. In the TV-ad the actor says that FRoSTA has not been using any artificial ingredients for 10 years now and demonstrates it by pushing away artificial ingredients in a laboratory and by saying “No tricks, no secrets.” Nevertheless, essential brand identity elements are even kept in 2014 with the split screen, the advertising character “Peter from FRoSTA”, albeit in a different role, and the jingle and slogan “FRoSTA is for everyone”. Therefore, the brand evolves constantly without radical changes.

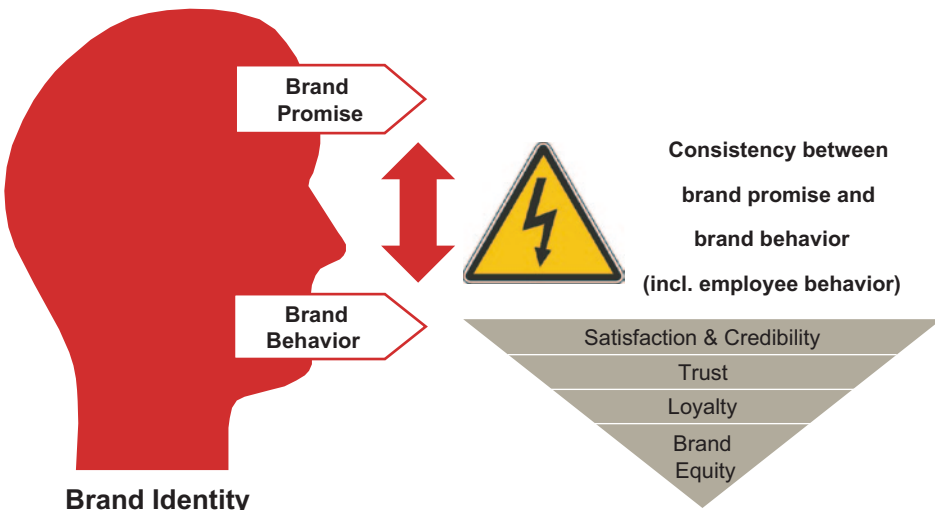
The example FRoSTA shows that radical changes of the brand identity especially regarding essential identity components can lead to economic failures. This is the result of a poor fit between brand identity and brand image, which led to brand confusion and loss of brand trust at the customers’ side. As exemplified by this case study, **brand identity changes must not be too radical** but should rather be gradual so that the customers have time to learn the changes and to adapt their brand image. In addition, companies have to be very **careful with changing essential elements** of the brand identity, as they are the core of the brand. Brands, which have been successful over a long period of time (e.g., Coca-Cola), have managed to successfully change their brand identity and brand promise constantly over time without the customers being aware of the change.

## 12.4 Identity-Based Brand Management and Internal Implementation

### 12.4.1 Internal Brand Management

#### 12.4.1.1 Relevance

In addition to the challenge related to the component and the level of change in brand identity, a second challenge is related to the **internal implementation** of the brand, its identity, and change of the identity. Before changes can be communicated to external target groups, they should be implemented internally. The question to answer is how the brand identity and subsequent changes of the brand identity can be communicated to employees as internal stakeholders responsible for living the brand and for communicating the change to external stakeholders. This question is of utmost importance for successful brand management especially for service companies. In order to create brand credibility and brand satisfaction—important prerequisites for brand trust, loyalty, and brand equity—the company has to ensure that the brand promise is fulfilled by the actual brand behavior [53]. Due to the fact that brand behavior is in part employee behavior, employees play a crucial role in building and maintaining brand-customer relationships [17, 33, 36]. For this reason, managing employee behavior is becoming a crucial success factor in brand management [49, 64]. This will be even more relevant in future, because employees will become the actual object of sustainable differentiation and competitive advantage when products and services become more and more similar [51]. The **consistency between brand promise and brand behavior** is an important requirement in identity-based brand management as can be seen in Fig. 12.11.



**Fig. 12.11** Consistency between brand promise and brand behavior. (Source: own illustration)



In order to implement the brand within the organization companies have to engage in **internal brand management** (IBM). Internal brand management is a concept that implements the brand cognitively, affectively, and behaviorally at internal stakeholder level, i.e. at employees [12].

#### 12.4.1.2 Outcomes

The final aim of internal brand management is brand consistent employee behavior [13, 56]. Having been referred to as brand-supporting behavior [42, 56, 63], brand consistent behavior [34] or brand behavior [61] such brand consistent behavior has mostly commonly been referred to as brand citizenship behavior [13, 45, 52]. With its theoretical foundation clearly established in the organizational behavior literature, brand citizenship behavior is considered to be the coveted outcome of IBM practices. The construct of brand citizenship behavior is adapted from organizational citizenship behavior, a construct that is central in organizational behavior research. **Brand citizenship behavior** (BCB) can be defined as all employee behaviors that are consistent with brand identity and brand promise and in sum strengthen the brand [53]. It consists of three dimensions [53]:

- Brand compliance (i.e., the compliance of brand related rules and instructions) implies behaviors to follow brand related rules and instructions to avoid damaging the brand.
- Brand endorsement (i.e., conscious espousal and advocacy of the brand) implies behaviors to build up a positive brand image, positive word of mouth, and defending the brand.
- Brand development (i.e., actively affecting development of the brand in order to improve customers' brand experience) implies proactive and discretionary behaviors to improve the brand experience.

In order to show brand citizenship behavior as behavioral IBM outcome employees need to have brand commitment, which is the affective IBM outcome, and brand understanding, which is the cognitive IBM outcome. **Brand commitment** (BC) of employees is defined as their emotional attachment to the brand. Consistent with brand citizenship behavior, this construct which has been examined in several IBM publications [41, 43, 44] also has its origins in the organizational management literature. Several empirical IBM studies were able to validate the effect of brand commitment on brand citizenship behavior [13, 44, 45, 53].

The construct of brand understanding is also implicitly or explicitly considered in several publications of internal brand management [17, 40, 60]. **Brand understanding** (BU) is defined as employees' comprehension of brand related information [53]. It consists of four dimensions [53]:

- Understanding of brand relevance, i.e. employees' comprehension that the brand is important for their organization and their organization's success.
- Understanding of behavior relevance, i.e. employees' comprehension that their behavior has an effect on the brand and its perception.

- Brand knowledge, i.e. employees' knowledge of what the brand stands for (brand identity and brand promise).
- Brand confidence, i.e. employees' knowledge of specific operational brand strengthening behaviors.

Piehler was able to empirically validate the effect of brand understanding on brand citizenship behavior [53].

#### 12.4.1.3 Moderators

The alignment of employee attitudes and behavior is not something that happens within a vacuum. Therefore, factors that facilitate or hinder employee brand-related actions have to be considered, i.e. moderators of the relationship with brand citizenship behavior. On the one hand, employees need to have the necessary **skills** in order to behave in a brand consistent way [13, 53]. Even if employees have brand understanding and are emotionally connected with the brand, they will not be able to show brand citizenship behavior if they lack the necessary skills. On the other hand, organizations have to facilitate employees to engage in brand, citizenship behavior. **Organizational structure and processes** have to be aligned with the brand identity and have to enable employees to behave brand consistent [53]. Again, employees will not be able to show brand citizenship behavior if organizational structure and processes are in the way.

#### 12.4.1.4 Managerial Tools

Managerial tools of internal brand management include internal and external brand communication, brand-oriented leadership and brand-oriented human resource management [12, 13, 53, 61].

**Internal brand communication** is an important tool to inform employees about the brand and their role thus increasing brand understanding [13, 53, 60]. In addition, internal communication is also considered as tool to increase brand commitment [13, 53–55, 60] and brand supporting behavior [55, 57]. Internal brand communication tools comprise all internal communication tools, e.g., e-mail, intranet, employee magazines, workshops, and interviews [9].

Although **external brand communication** is mainly directed at external target groups, employees have to be considered as “second audience” [30]. The discussion of internal effects of external communication can be traced back to the 1980s [3, 30–32, 69, 70]. Like internal communication, external brand communication affects employees' brand understanding, brand commitment, and brand citizenship behavior [12, 13, 17, 35, 53]. External brand communication tools comprise all external communication tools, e.g., advertising, out-of-home media, online communication, direct communication, sales promotion, fairs and exhibitions, public relations, event marketing, sponsoring, and product placement [48].

Besides specific leadership styles like brand-oriented transactional and transformational leadership [12, 13, 50, 53] and brand-oriented empowering leadership [12, 53], role modelling of management is regarded as important **brand-oriented leadership** tool to



**Fig. 12.12** Internal brand management model. (Source: Adapted from [12, 13, 53])

affect employee brand understanding, brand commitment, and brand citizenship behavior [12, 13, 53]. This effect is based on social learning theory, which posits that people learn new attitudes and behaviors by observing the behaviors of other people [4].

Finally, **brand-oriented human resource management** is also an important managerial tool to effect the IBM outcomes because it contributes to brand-oriented socialization of employees in all stages of the employee life cycle [12, 13, 53]. Depending on the socialization phase specific tools of brand-oriented human resource management can be applied, e.g., job advertisements or job interviews [12, 13, 53, 68], brand-oriented trainings or entry events for new employees [12, 13, 53, 57], and coaching or mentoring [12, 13, 46, 53].

The full model of internal brand management including relevance, outcomes, moderators, and managerial tools is shown in Fig. 12.12.

## 12.4.2 Case Studies of Internal Brand Management

### 12.4.2.1 Internal Brand Communication

A best practice case for internal brand communication as tool of internal brand management is TUI Germany. When the company implemented new values they not only used traditional internal communication tools like online newsletter, staff magazine, and intranet but also a more interactive communication approach with a workshop program. With overall 140 workshops, the company reached 1500 employees in Germany successfully implementing the new values. In addition to interactivity [17, 53], another requirement of internal brand communication is quality of communication, i.e., accuracy, timeliness, usefulness, completeness, and credibility of the information [53].

#### 12.4.2.2 External Brand Communication

An example of the positive effect of external brand communication on employees are **Deutsche Telekom** with the “Paul Potts” TV advertising [73] and **TUI** with the “Joachim Löw” TV advertising [72]. Both TV spots produced positive employee feedback within the organizations. In addition, **FedEX** can be regarded as good example how external brand communication considers employees as target group. With FedEX “I am FedEX” campaign, the company uses stories of actual employees to communicate the brand identity and the brand promise of FedEX [22]. In order to affect employees in a positive way the external brand communication (1) has to be aligned with internal brand communication; (2) must not make exaggerated promises about products and services employees will not be able to fulfill; and (3) must not portray employees, values, and culture that does not match actual employees, values, and culture [3, 30, 32, 46, 53, 69, 70].

#### 12.4.2.3 Brand-Oriented Leadership

Sir Richard Branson, which is the founder and chairman of Virgin Group, is a good example of brand-oriented leadership. The brand **Virgin** stands for “value for money, quality, innovation, fun and a sense of competitive challenge” [66]. Sir Richard Branson especially lives up to innovation, fun, and competitive challenge. He pushes innovations, e.g., with the commercial spaceflight company Virgin Galactic [67], is always to have for fun, e.g., by wearing a pair of butterfly wings at the Virgin London Marathon [67] or by dressing as a stewardess after losing a bet with AirAsia chief Tony Fernandez [74], and challenges himself with many record breaking adventures, e.g., the fastest ever Atlantic Ocean crossing, hot air balloon adventures, and kitesurfing across the English Channel [65]. Another example of good brand-oriented leadership is retailer dm (dm-drogerie markt GmbH + Co. KG). According to a 2012 employee survey, the employees value the management-employee relationships and the dialogic leadership, which supports proactivity and individuality [19]. As a result, the company not only won several awards for the leadership style, e.g. the Lifetime Award for the founder [18] and the German Leadership Award for the company [21], but also achieves excellent results regarding employee commitment, satisfaction, loyalty, and behavior [19]. Therefore, it is no surprise that dm was voted as best employer in the retail industry by employees [59] and as best company in the industry in five categories, e.g. regarding customer satisfaction [20].

#### 12.4.2.4 Brand-Oriented Human Resource Management

Finally, hotel company **Ritz-Carlton** and automobile, motorcycle, and engine manufacturing company **BMW** are good examples of successful brand-oriented human resource management. Ritz-Carlton does not only translate the brand identity into criteria for personnel selection in the QSP (Quality Selection Process) but also conducts brand-oriented orientation about the culture and philosophy of the brand for new employees [29]. BMW created a brand academy in 2002 in order to increase employee brand orientation. Employees and selected business partners experience the brands of BMW (BMW, MINI, Rolls-Royce) in a seminar and workshop combination. In the first 3 years of operation, about 7500 people participated in the one-day event [7].

## 12.5 Conclusion

**Flexibility in brand management** is necessary in order to adapt to changing environments as a result from changing technologies, changing consumer needs and the necessity to attract new consumers, organizational changes caused by mergers and acquisitions, and a frequently changing competitive environment. Brand management as a central function at the interface between the organization and the market must not be understood as singular change management task but as continuous adaption. **Identity-based brand management** is an approach, which explicitly considers **dynamic brand management**. With the brand identity being the core of identity-based brand management, dynamic brand management is related to changing the brand identity, the subsequent brand benefits and brand promise, and the brand implementation through the marketing mix.

The case study of FRoSTA shows one challenge of dynamic brand management: Radical changes of the brand identity especially regarding essential identity components can lead to economic failures. Based on theoretical considerations and case study evidence, it is argued that **brand identity changes must not be too radical** but should rather be gradual so that the customers has time to learn the changes and to adapt his brand image. In addition, companies have to be very **careful with changing essential elements** of the brand identity, as they are the core of the brand. In contrast, the periphery of the brand identity, i.e. nonessential identity components, can be changed. Unfortunately, it is not generalizable which components of the brand identity are essential and which are nonessential.

The second challenge is related to the **internal implementation** of the brand, its identity, and change of the identity. In order to ensure consistency between brand promise and brand behavior it is necessary to consider employees as target group in context of **internal brand management**. To achieve such consistency employees have to engage in **brand citizenship behavior**, which can be affected by **brand commitment** and **brand understanding**. Companies have to ensure that employees have the necessary **skills** in order to behave in a brand consistent way. In addition, organizations have to make sure that organizational **structure and processes** are aligned with the brand identity and enable employees to behave brand consistent. The internal brand management outcomes can be affected by managerial tools of **internal & external brand communication**, **brand-oriented leadership** and **brand-oriented human resource management**. The case studies show that companies engaging in these activities are able to create strong brands and competitive advantages.

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**Dr. Rico Piehler** Since 2013 Dr. Rico Piehler has been working as Assistant Professor at the Chair of innovative Brand Management (Faculty of Business Studies & Economics, University of Bremen, Germany). His current research focus is in the area of brand management, especially internal brand management and employer branding. From 2010 to 2012 he worked as Consultant and Senior Consultant at the KEYLENS Research Center at the Chair of innovative Brand Management. During that time he also worked as guest researcher at Griffith Business School (Griffith University, Gold Coast, Australia) in 2011 and 2012 and at Temple University (Philadelphia, PA, USA) in 2012. Rico Piehler received his Doctor of Philosophy degree with "summa cum laude" from the University of Bremen in 2010. His PhD thesis was about internal brand management and resulted from a research project in cooperation with The German Brands Association and four of the largest German service companies. Before he worked as Research Assistant at the Chair of innovative Brand Management from 2005 to 2009 he studied Business Studies and Economics at the University of Bremen. He went to school in Gifhorn, Lower Saxony, and Stralsund, Mecklenburg-Vorpommern, where he was born in 1978.

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