

Analysis of the factors influencing the ability of organizational communities to absorb environmental changes.

Bachelor Thesis

Lies van den Eijnden

28-6-2013

Word count: 7053

Supervisor: Allard van Mossel

Summary

English

Disruptive changes in the environment of organizations have been identified as having a major influence on widespread organizational change. Thus far, existing research focused primarily on identifying the specific trigger that caused organizational communities to change. However, the effects of triggering events are often specific to a particular industry or situation. As a result, it often remains unclear why similar environmental changes did not trigger similar changes before or in other industries. Similarly, in ecology, some ecological systems display greater vulnerability to environmental change than others. These observations led some ecologists to adopt the resilience of a system as a main research topic. Resilience characterizes the capacity of a system to maintain itself despite environmental changes. In this paper, the resilience approach is applied in order to find out which factors cause some organizational communities to display greater vulnerability to disruptive change than others. In a systematic literature review, twenty peer-reviewed articles that included an empirical study or case study of widespread organizational change, were analysed. The results revealed thirteen relevant factors that had an influence on resilience and an inverted U-shaped relationship between maturity of the industry and the degree of resilience was found. Young and dynamic industries showed a low resilience, but also mature and inert industries revealed a low resilience in the face of environmental changes.

Dutch

Veranderingen in organisaties worden veelal veroorzaakt door discontinue verandering in de omgeving. Bestaand onderzoek heeft zich tot nu toe met name gericht op het identificeren van de specifieke omgevingsveranderingen die organisatie veranderingen veroorzaken. De invloed van deze 'triggers' zijn echter veelal specifiek voor een bepaalde industrie of situatie. Hierdoor blijft het vaak onduidelijk waarom zelfde omgevingsveranderingen in andere tijden of industrieën niet altijd tot zelfde veranderingen in organisatie gemeenschappen leiden. Net als bepaalde organisatie gemeenschappen vertonen sommige ecologische systemen ook een hogere gevoeligheid voor omgevingsveranderingen dan andere. Deze observatie heeft er binnen de ecologie voor gezorgd dat de zogenaamde 'resilience' van een systeem een belangrijk onderzoeksthema is geworden. Resilience kan omschreven worden als de capaciteit van een systeem om in een zelfde staat te blijven ondanks de invloed van omgevingsveranderingen. In deze paper is de resilience benadering gebruikt om te onderzoeken welke factoren invloed hebben op de gevoeligheid van bepaalde organisatie gemeenschappen voor discontinue omgevingsinvloeden. Doormiddel van een systematische literatuur review zijn twintig peer-reviewed artikelen geanalyseerd. Deze artikelen bevatte allemaal een case- of een empirische studie over verandering in een groot aantal organisaties. Uit deze literatuur review zijn dertien factoren naar voren gekomen die de resilience van organisatie gemeenschappen beïnvloeden. Daarnaast duiden de resultaten op een omgekeerde U-vorm relatie tussen resilience en de leeftijd van een industrie. Zo is gebleken dat zowel jonge en dynamische industrieën en volwassen en inerte industrieën een lage resilience vertonen.

Contents

Summary	2
English	2
Dutch	2
Introduction.....	4
Theory.....	5
Organizational change.....	5
Environmental change.....	6
Resilience.....	7
Methodology	7
The setting of inclusion criteria	8
Data sources en studies selection	8
Results	9
Findings	10
Underlying factors causing high resilience.....	13
Underlying factors causing low resilience	14
Discussion.....	16
Acknowledgements	17
References.....	18

Introduction

A recurring topic in industry evolution and corporate change is the major influence of discontinuous change in the external environment of organizations, such as deregulation, privatization, technological change, or change in customer preferences (Suarez, 2005). Organizational actions need to fit with the external environment. When the environment changes, organizations have to change because existing strategies may become suboptimal when the opportunities and threats associated with those strategies become redefined (Wan & Yiu, 2009). In specific, discontinuous change has been central in explanations of change processes in organizational forms (Hoffman, 1999). They have been described as creating disruptive uncertainty for individual organizations, forcing the initiation of unusual experiments that diverge from established practice. They have also been described as changing the dominant organizational form of entire industries, causing an alteration of the bases of competition (Hoffman, 1999).

Most of the existing research, focuses primarily on identifying the specific disruptive or triggering event that caused organizational change (Suarez, 2005). For example, a study of industry- and organizational level changes that took place in hospitals in the 1980s revealed that the revolutionary changes in the health-care industry were primarily caused by new government regulations intended to contain costs (Armenakis & Bedeian, 1999). Similarly, a study on the transformation of the fundamental nature of the airline industry in 1978 concluded that deregulation was the triggering event (Armenakis & Bedeian, 1999). However, the effects of triggering events are often highly specific to a particular case or situation (Suarez, 2005). As a consequence, it often remains unclear why similar disruptive events did not trigger similar changes before, or in other industries.

In the field of ecology, disruptive events in ecosystems were also considered as having a major influence on environmental transitions (Holling, 1973). For example, drought or fire could lead to a discontinuous and difficult to reverse vegetation response and in a short time a locally stable grassy regime can change in a degraded rangeland (Vetter, 2009). In other cases, a major perturbation only temporarily destabilizes the system and returns to its initial state again. This suggests that some ecological systems display greater vulnerability to perturbations than others (Vetter, 2009). These observations led some ecologists to adopt the resilience of a system as a main research topic (Webb, 2007). Resilience can be defined as “the ability of the system to maintain its identity in the face of internal change and external shocks and disturbances” (Brand & Jax, 2007: 4). Moreover, resilience characterizes the capacity of a system to maintain itself despite perturbations. In ecology, the focus on resilience of ecosystems has resulted in major progress in the understanding of which factors cause some ecosystems to be highly resilient while others are less resilient (Webb, 2007).

On the contrary, in organizational behavior theories it remains unclear which factors cause some organizational communities (i.e. interacting organizations) to display greater vulnerability to disruptive events than others (Dobrev & Kim, 2006; Suarez, 2005). As a consequence, no generalizable statements can be made about the probability of widespread change in certain organizational communities in response to triggering events. In ecology, research on resilience of ecosystems led to marked advances in the understanding and management of ecosystems. Since, at its core, resilience is an approach to better access complexity and uncertainty (Walker and Salt, 2006), organizational behaviour theories could as well as traditional ecology be focussed on resilience of a system as the principal outcome variable in studying radical transitions. Against this background, this paper will complement the existing literature by investigating the factors that cause

some organizational communities to be highly resilient and others to be less resilient. In order to examine those factors, a systematic review of empirical research on widespread organizational change will be conducted.

By focusing on the factors that cause some organizational communities to be more resilient than others, statements can be made about which communities are more vulnerable to disruptive events. On top of that, if specific factors are identified, ways in which the resilience of certain organizational communities can be manipulated may be determined. In other words, if policy-makers know which factors affect the likelihood of widespread change within an organizational community, they can try to change those factors to make a system more or less resilient, depending on the aim of the policy. In this way, policymakers can develop suitable policies for change in organizational systems.

This paper consists of multiple components. Firstly, a theoretical framework will be given which will elaborate on organizational change, environmental change and resilience. Secondly, the research methodology will be discussed. The methodology part also includes the general questions that are addressed in the different cases of the literature review. Thirdly, an application of the questions to different cases of widespread organizational change which will lead to the primary results. Finally, the discussion and the conclusion will be given.

Theory

Organizational change

In the field of organizational change, there are two important competing theoretical views. Namely, the adaptation and the selection view (Haveman, 1993). Adaptation theories of organizational change, including organizational learning theory, strategic management theory, metamorphic change models and resource dependence theory, hold that organizational change reflects the decisions and strategic shifts of organizational leaders and dominant coalitions (Haveman, 1993; Tushman & Romanelli, 1985). In sharp contrast, organizational ecologists advocate the selection view and state that organizational forms are subject to strong structural inertia, so that change in organizational structures and activities will be slower paced than environmental change (Haveman, 1993).

Typically, ecological analyses formulate organizational change and variability at the population level (Baum & Amburgey, 2000; Baum & Rao, 2004). Organizational populations are often described as local, coevolving groups of organizations that share a same organizational form (Baum & Rao, 2004; Hannan & Freeman, 1977) The emergence of a new organizational form is defined as the emergence of a novel blueprint, encompassing the organization's patterns of activity, formal structure and normative order (Haveman, 1992). According to organizational ecologists, an important component of organizational change consist of the selection and replacement of existing organizational forms by new organizational forms (Baum & Rao, 2004). One of the limitations of the natural selection theory is that it does not explain how new populations multiply to increase organizational variety. Instead selection theories begin with existing populations and explain how differential survival progressively homogenizes organizational forms (Astley, 1985).

Community ecology combines the views of natural selection and adaptation (Astley, 1985). An organizational community can be defined as sets of diverse, internally homogeneous, organizational populations (Astley, 1985). Populations multiply and survive only as constituent elements of a broader system of community evolution, and investigating this source of change calls for a higher level of analysis than that used by population ecologists (Astley, 1985). For this reason, a community ecology framework of analysis is adopted in this paper. Community ecologists state that new organizational forms, and consequently new populations, arise as the result of processes that isolate a set of organizations from another, for example due to different institutional logics or technological incompatibilities (Baum & Rao, 2004). Institutional logics are sets of socially-constructed assumptions, values, and beliefs and define appropriate structures, practices, and behaviours within organizational communities (Sine & David, 2003).

Environmental change

In the field of organizational ecology the role of the “environmental change” is considered a dominant cause for corporate change in organizational populations (Baum & Amburgey, 2000). A growing body of literature states that organizational environments change in a so-called “punctuated” pattern (Miner, Amburgey, & Stearns, 1990). Organizational forms can face extinction as a result of an accumulation of a series of small, incremental changes in environmental conditions or as the result of one sudden, dramatic change (Haveman, 1992). During periods of relative stability, environmental change is incremental, continuous and slow. These relatively stable periods are called convergent periods (Tushman & Romanelli, 1985). Organizations may fail during this period because of competition for resources or internal forces of decay and disorder (Miner et al., 1990). In contrast, during environmental shock periods, change may be deep, discrete and fast. Environmental changes may involve changes in technology, regulatory shifts, or radical changes in the general social environment (Miner et al., 1990). These changes may involve increased uncertainty, decreased resources in the organization’s local environment and increased threats to survival due to specific competitors (Miner et al., 1990). Tushman and Romanelli (1985) refer to this type of organizational change as a process of reorientation. In short, the punctuated equilibrium model of organization evolution states that organizations evolve through convergent periods punctuated by reorientations which will influence the next convergent period (Tushman & Romanelli, 1985).

Of particular interest have been the cases where major—often called “radical” or “discontinuous” environmental change occurs, as it is under such circumstances that organizations are most challenged to adapt (Haveman, 1992; Suarez, 2005). A significant body of empirical and theoretical literature emerged on organizational adaptation to situations of major environmental change during the 1980s and 1990s (Suarez, 2005). Typically, the roles of institutional change (e.g. globalization, market reforms and industry deregulation), technological innovation cycles (e.g. dominant designs, technological discontinuities), entrepreneurs, and social movements are emphasized as triggers of organizational change (Baum & Rao, 2004). The existing literature only emphasizes those particular environmental changes as triggers for the organizational change of populations (Suarez, 2005). For example, two different studies identified that the loosening of regulatory constraints in the California’s saving and loan industry and demand changes in the enrolment to US liberal arts colleges were specific perturbations that caused widespread organizational change in those sectors (Suarez, 2005). Other studies identified changing market forces, technical innovations and institutional changes as having a major influence on populations shifting from one organizational form to another (D’Aunno, Succi, & Alexander, 2000; Orsenigo, Pammolli, & Riccaboni, 2001). However, some

organizational populations seem to be much more vulnerable to environmental change than others (Hannan & Freeman, 1977). Specific perturbations, such as social, economic and political changes, are long recognized to have a major influence on organizational change. But the broader context that makes this change possible, and especially the factors causing some organizational communities to be more vulnerable for change than others, remains unclear (Suarez, 2005).

Resilience

In the field of ecology, the observations that some ecological systems display greater vulnerability to perturbations than others, led to an extensive rise of studies about the resilience of ecosystems (Brand & Jax, 2007). In 1973, Holling introduced the concept of resilience to help understand the capacity of ecosystems to persist in their original state (Brand & Jax, 2007). Resilience can be defined as “the capacity of a system to experience shocks while retaining essentially the same function, structure, feedbacks, and therefore identity” (Brand & Jax, 2007: 4). Derived from this ecological description, the resilience of organizational communities will be defined as “the capacity of organizational communities to experience shocks while retaining essentially the same function, structure, feedbacks, and therefore identity”. The identity of organizational communities changes if a lot of organizations in a population adopt a new organizational form, if new organizations enter an organizational community or by a lot of existing organizations in a population going bankrupt.

To apply the concept of resilience to empirical cases, it is critical to specify resilience of “what to what” (Brand & Jax, 2007). The ‘to what part’ of the analysis explicates the kind of disturbance to which a certain ecosystem should be resilient. The subsequent ‘of what part’ explicates the specific regime that changed (Brand & Jax, 2007). Similarly, to examine the resilience of organizational communities, the questions ‘which perturbations led to widespread organizational change?’ and ‘what exactly changed?’ are important.

Originally developed as an ecological concept, resilience is recently applied to social-ecological systems (Berkes, 2007). In this hybrid sense, resilience corresponds to the capacity of an ecosystem to maintain desirable ecosystem services in the face of human use and a fluctuating environment (Brand & Jax, 2007). This development in resilience theory has led to the consideration of the key ideas of adaptive capacity and ability of social systems (such as institutions) to learn and adapt in response to perturbations (Berkes, 2007). The extensive research of social-ecological resilience has led to the identification of factors that are relevant to building resilience in human-environment systems. Nurturing diversity, bringing different kinds of knowledge together and learn from and adapt to the changing environment are examples of identified contributing factors in building resilience (Berkes, 2007). Those identified factors are effective indicators of which human-environmental systems can better cope with change than other similar systems (Berkes, 2007). Similarly, in the field of organizational behavior theories, it will be useful to investigate which factors influence the ability of organizational communities to absorb perturbations.

Methodology

In order to answer the research question, a systematic review of empirical research on widespread organizational change will be conducted. A systematic review has the main purpose of identifying key scientific contributions to a question or field and its results are typically descriptively presented and discussed. In contrast to a traditional narrative review, a systematic review uses a rigorous,

replicable, scientific and transparent process (Bryman, 2012). In this way, applying the principles of the systematic review will help to reduce chance effects, limit bias, enhance the legitimacy and authority of the ensuing evidence and provide more reliable results upon which to conclusions are drawn. Especially two steps are important when doing a systematic review: (1) the setting of inclusion criteria and, (2) the strategy of selecting and locating the potential studies (Bryman, 2012).

The setting of inclusion criteria

Three criteria are used to select and assess the potential studies. To be included in the systematic review, a study has to:

1. Deal with large scale and widespread organizational change that occurred at the industry or system level because a community ecology framework of analysis is adopted in this paper. For this reason, studies of changes at sub-organizational levels are excluded.
2. Be an article in a peer-reviewed journal, in order to increase the liability of the research.
3. Include an empirical study or case study of widespread organizational change. Conceptual and theoretical studies are not retained. However, no restrictions are placed on the data analysis method by the authors, both quantitative and qualitative methods are included.

Data sources en studies selection

The data of peer-reviewed literature was searched through the electronic bibliographic databases ISI Web of Sciences and Google Scholar. The search was not limited by the year of publication and in order to find useful articles multiple keywords were used. The search started at the Web of Sciences database and in the first search the keywords *organization* or *firm* and *change* or *transition* or *adaptation* and *industry* or *sector* or *community* or *population* were used, to focus the search on organizational change in industries, sectors or more specific in communities or populations. Because this led to 26,185 results, the second search also contained the keywords *study* or *case* or *empirical*, so that mainly empirical studies were included. In order to include only widespread organizational change and the triggers that caused the change, the following keywords were added: *discontinuous* or *disruptive* or *radical* and *perturbation* or *disturbance* or *trigger* or *environment*. This resulted in 109 articles.

Those results were further filtered by category because not all research fields contribute anything useful to this topic. The results were refined by Management, Business and Economics literature. The remaining 66 articles were subjected to a double screening. A first screening of the articles' title and summary allowed the exclusion of 39 papers which did not meet the inclusion criteria. The second screening went beyond the title and summary into the main body of the articles and led to the exclusion of 19 articles which did not meet the inclusion criteria. Finally, the reference lists of the articles retrieved after the second screening were searched. By doing so, four potential articles were identified for the systematic review. This left a total of 12 studies which matched all the inclusion criteria. This process was repeated with different keywords. The addition of the keywords *diversification*, *evolution*, *transformation*, *organizational form*, *co evolution*, and *lessons from* resulted in another five articles. Finally, Google Scholar was used to search the last articles. The articles retrieved from the Web of Science database contained information about other industries that changed radically. So the search in Google Scholar was more specific. The used keywords were:

change, Hollywood movie industry, insurance industry, hospitals and banking industry, dynamic, stable, industry, turbulent environment and jolt. This resulted in another five articles.

The full texts of all the 20 articles were then reviewed. In the full text review I searched for evidence of widespread organizational change at system or industry level. And within each article the following questions were asked: (1) which endogenous or exogenous perturbations led to widespread organizational change? (2) what exactly changed?, and (3) which factors made it possible that the perturbation led to widespread corporate change?. According to the theory section, widespread organizational change can be measured by three variables. Organizations within the community can change by adopting a new organizational form, new organizations can enter the organizational community or existing organizations can die. Lastly, the articles were computer managed. A Microsoft Excel database was designed and contains each article's year of publication, the study design, the theoretical perspective, the type of perturbation, the aspect(s) that changed as well as the factors that made the industry more vulnerable to the perturbation.

Results

Table 1 summarizes the general characteristics of the reviewed articles. Only one of the retrieved articles is published prior to 1990 (Zajac & Shortell, 1989). The majority of articles were published between 2000 and 2004 (35%). The dominant theoretical perspectives used in the reviewed articles included organizational ecology (25%), neo-institutional theory (25%) and adaptation theories (25%). The remaining 25% of the articles used different perspectives (e.g. transition theory, industrial organization perspective or multilevel-perspective). A few articles used more than one theoretical perspective, for example, a combination of organizational ecology and the adaptation perspective (Dobrev, 1999). Furthermore, the most frequently used study method was the quantitative, longitudinal research design (57%). A lot of articles used an event history analysis.

Table 1: General characteristics

Year of publication	Number	Percentage	Reference
Before 1990	1	5%	(Zajac & Shortell, 1989)
1990-1994	3	15%	(Haveman, 1992; Kelly & Amburgey, 1991; Lamont, Marlin, & Hoffman, 1993)
1995-1999	6	30%	(Alexander, D'Aunno, & Succi, 1996; Djelic & Ainamo, 1999; Dobrev, 1999; Haveman & Rao, 1997; Ranger-Moore, 1997; D. Webb & Pettigrew, 1999)
2000-2004	7	35%	(Amis, Slack, & Hinings, 2004; Fosfuri & Giarratana, 2004; Lampel & Shamsie, 2003; Lee & Pennings, 2002; Sine & David, 2003; Sull, 2001; Windeler & Sydow, 2001)
2005-2009	2	10%	(Tyrrall & Parker, 2005; Zúñiga-vicente, Vicente-lorente, Rey, Carlos, & Salamanca, 2006)
2010-now	1	5%	(Wells & Nieuwenhuis, 2012)
Theoretical perspective ¹ :			
Neo-institutional theory	6	25%	(Haveman & Rao, 1997; Lee & Pennings, 2002; Sine & David, 2003; Sull, 2001; D. Webb & Pettigrew, 1999; Windeler & Sydow, 2001)
Organizational ecology	6	25%	(Dobrev, 1999; Haveman, 1992; Kelly & Amburgey, 1991; Lee & Pennings, 2002; Ranger-Moore, 1997; Zúñiga-vicente et al., 2006)
Adaptation theories	6	25%	(Alexander et al., 1996; Amis et al., 2004; Dobrev, 1999; Lampel & Shamsie, 2003; Tyrrall & Parker, 2005; Zúñiga-vicente et al., 2006)
Other	6	25%	(Djelic & Ainamo, 1999; Fosfuri & Giarratana, 2004; Lamont et al., 1993; D. Webb & Pettigrew, 1999; Wells & Nieuwenhuis, 2012; Zajac & Shortell, 1989)

¹ The articles may have more than one theoretical perspective

Study design²:			
Quantitative: Longitudinal design	13	57%	(Alexander et al., 1996; Amis et al., 2004; Dobrev, 1999; Fosfuri & Giarratana, 2004; Haveman & Rao, 1997; Haveman, 1992; Kelly & Amburgey, 1991; Lamont et al., 1993; Lampel & Shamsie, 2003; Lee & Pennings, 2002; Ranger-Moore, 1997; Sull, 2001; Zúñiga-vicente et al., 2006)
Quantitative: Cross-sectional design	4	17%	(Alexander et al., 1996; Lamont et al., 1993; D. Webb & Pettigrew, 1999; Zajac & Shortell, 1989)
Qualitative: Single case study design	5	22%	(Amis et al., 2004; Sine & David, 2003; Tyrrall & Parker, 2005; Wells & Nieuwenhuis, 2012; Windeler & Sydow, 2001)
Qualitative: Multiple case study design	1	4%	(Djelic & Ainamo, 1999)

Findings

Firstly, table 2 contains an overview of the industry in which the widespread organizational change took place, the main trigger that caused the change and a description of the aspects that changed in the organizational community of the reviewed articles.

As can be seen in table 2, the most common main triggers were regulatory change (e.g. deregulation and privatization), globalization, socio-economic and technological change. In contrast to the identified main triggers, the changes that took place were more diverse. In a few industries a lot of organizations were going bankrupt in the traditional community (Dobrev, 1999; Ranger-Moore, 1997; Sull, 2001). In other industries a lot of new entrants (Djelic & Ainamo, 1999; Haveman, 1992; Lampel & Shamsie, 2003; Sine & David, 2003; Zúñiga-vicente et al., 2006) or changing organizations (Lee & Pennings, 2002; Windeler & Sydow, 2001) changed the organizational community. In the remaining articles a combination of these changes took place (Alexander et al., 1996; Haveman & Rao, 1997) or nothing changed in the organizational community (Wells & Nieuwenhuis, 2012).

² The articles may use more than one study design

Table 2: Summary of overall findings

Industry:	Main trigger:	What exactly changed?	Reference:
Finance	Economic, technological and regulatory change	California Savings and Loan associations have diversified & strategic transformations took place in Spanish banks	(Haveman & Rao, 1997; Haveman, 1992; Zúñiga-vicente et al., 2006)
Electricity	Oil crisis	Industry dominated by a few large firms face competition from new firms	(Sine & David, 2003)
Movie	Pressures from regulators and other industries	The transition from a studio era dominated by integrated hierarchies to a post-studio era dominated by flexible hub organizations	(Lampel & Shamsie, 2003)
Tire	Emergence of a radical new technology	Most of the Akron tire manufacturers ceased to exist as independent corporations	(Sull, 2001)
Airline	Deregulation: removed legislation that controlled industries entries, exits and pricing	The industry did not change while facing environmental disturbances, led to the failure of some large organizations	(Kelly & Amburgey, 1991)
Television	Government deregulation of the established order and privatization	The industry changed from a centralized state-owned broadcasting system to a diversification of established broadcasting stations and the entrance of new (private) ones	(Windeler & Sydow, 2001)
Luxury fashion	Globalization and changed demand	From the predominance of French haute couture houses to the creation of flexible organizational forms (especially through competition from Italy and America)	(Djelic & Ainamo, 1999)
Insurance	Deregulation: the removal of government regulations that protected the industry from competition	Insurers faced increasing competition from new products supplied by other financial services institutions	(D. Webb & Pettigrew, 1999)
Hospital	Changes in reimbursement and regulation	Fully reimbursed hospitals had to change strategically	(Alexander et al., 1996; Lamont et al., 1993; Zajac & Shortell, 1989)
Newspaper	Collapse of state socialism	State-owned Bulgarian newspaper enterprises tried to reorganize their core structures but a lot of them failed and got bankrupt	(Dobrev, 1999)
Life insurance	The panics of 1870	The fall of the giants (or elders) freed space for upstarts	(Ranger-Moore, 1997)
Accounting	-	Widespread adoption of a new organizational form namely, the partner-associate structure.	(Lee & Pennings, 2002)
Automotive	Social and political pressure	Nothing changed because of the systemic continuity in the automotive industry	(Wells & Nieuwenhuis, 2012)
Olympic NSO's	Introduction of the Best Ever Program by the government	A lot of organizations changed from the traditional design of an informal organization to a professional bureaucracy	(Amis et al., 2004)
Railway	Privatization	The transfer of the railways from public to private ownership	(Tyrrall & Parker, 2005)
Security Software	-	High rates of entry and exit of security software organizations	(Fosfuri & Giarratana, 2004)

Secondly, table 3 summarizes the identified underlying factors that were recognized as causing a high or low resilience in the organizational communities of the reviewed articles. The factors are divided in community level factors, population level factors, organizational level factors and environmental factors.

Table 3: summary of key findings

Factor:	Nature of relationship with resilience:	Apparent in:
<i>Community level factors:</i>		
Prevailing institutional logics	Widespread institutional logics cause organizations to become closed with respect to alternative ideas, leading to a higher resilience.	(Djelic & Ainamo, 1999; Dobrev, 1999; Haveman & Rao, 1997; Haveman, 1992; Sine & David, 2003; D. Webb & Pettigrew, 1999; Zúñiga-vicente et al., 2006)
Government regulation	Restrictive regulation makes the community unable to adapt, leading to higher resilience.	(Haveman, 1992; Kelly & Amburgey, 1991; Sine & David, 2003; D. Webb & Pettigrew, 1999; Windeler & Sydow, 2001; Zúñiga-vicente et al., 2006)
Degree of economic concentration	A high industry concentration makes it hard for organizations to enter the industry and incumbent organizations are often reluctant to change, both leading to communities with a high resilience.	(Sine & David, 2003; D. Webb & Pettigrew, 1999; Wells & Nieuwenhuis, 2012; Windeler & Sydow, 2001)
External commitments	External commitments pressure organizations to continue business as usual and leads to a high resilience.	(Ranger-Moore, 1997; Wells & Nieuwenhuis, 2012)
Economies of scale	The absence of scale economies and hereby often the presence of low sunk cost, creates low entry and exit barriers, leading to communities with a low resilience.	(Amis et al., 2004; Fosfuri & Giarratana, 2004)
<i>Population level factors:</i>		
Competency traps	Persistence of established behaviors and taken-for-granted assumptions while the competitive environment changes. Previously successful routines become inappropriate in novel situations and this frees opportunities for new firms; leading to a low resilience.	(Djelic & Ainamo, 1999; Fosfuri & Giarratana, 2004; Haveman & Rao, 1997; Haveman, 1992; Lamont et al., 1993; Ranger-Moore, 1997; Sull, 2001; D. Webb & Pettigrew, 1999; Windeler & Sydow, 2001; Zajac & Shortell, 1989)
Existence of fringe players	Fringe players can easily seize upon environmental changes and redefine in part the rules of the game, this leads to a lower resilience.	(Alexander et al., 1996; Djelic & Ainamo, 1999; Sine & David, 2003)
Geographic co-location of organizations.	Physical co-location of organizations enhances the possibility of market feedback to produce higher adoption levels, this leads to a low resilience.	(Alexander et al., 1996; Lee & Pennings, 2002; Sull, 2001)
High transparency in the industry	Leads to a higher possibility of spill-overs and thereby facilitates the diffusion of a new organizational form which leads to a low resilience.	(Lampel & Shamsie, 2003)

<i>Organizational level factors:</i>		
Organizational legacies	History constrains the choices available to managers and thereby constraints organizational change, leading to a high resilience.	(Djelic & Ainamo, 1999; Kelly & Amburgey, 1991; Wells & Nieuwenhuis, 2012)
Age of organizations	Young organizations are often dynamic and flexible and do not suffer from increasing inertia because of time-dependent processes like bureaucratization. Organizational communities consisting for a large part of young organizations show a low resilience.	(Amis et al., 2004; Fosfuri & Giarratana, 2004; Ranger-Moore, 1997)
<i>Environmental factors:</i>		
Loss of political and public confidence in the industrial form	Loss of public and political confidence in the industrial form leads to critical questions and the search for alternatives, this leads to a low resilience.	(Amis et al., 2004; Lamont et al., 1993; Sine & David, 2003; Tyrrall & Parker, 2005)
Industry characterized by social or political unrest	Political unrest creates an uncertain and constantly changing social environment which causes a low resilience.	(Dobrev, 1999; Sine & David, 2003)

The identified 13 factors presented above can be divided in factors causing a high and a low resilience and will be shortly explained below. The factors that were found in a lot of articles will be explained in more detail.

Underlying factors causing high resilience

Typically, the majority of the industries mentioned in the articles included in this study were characterized by a longstanding stable industry structure before widespread organizational change took place (Alexander et al., 1996; Djelic & Ainamo, 1999; Haveman, 1992; Kelly & Amburgey, 1991; Sine & David, 2003; D. Webb & Pettigrew, 1999). A lot of these reviewed articles showed that prevailing institutional logics can play an important role in the persistence of the industrial structures because they shape search processes, empower incumbent organizations, and shape organizational and technological strategies (Djelic & Ainamo, 1999; Dobrev, 1999; Haveman & Rao, 1997; Haveman, 1992; Sine & David, 2003; D. Webb & Pettigrew, 1999; Zúñiga-vicente, Vicente-lorente, Rey, Carlos, & Salamanca, 2006). Industries dominated by institutional logics, often cause a taken-for-grantedness of the prevailing industry's industrial form and are thereby often somewhat closed to alternative ideas. In the tire industry, for example, the prevailing institutional logics made companies unaware of the outside technological developments. The institutional pressures stifled innovative action and thereby caused a high resilience (Sull, 2001).

In a highly regulated industry, the government can put limitations on the possibility of organizational change (Sine & David, 2003; D. Webb & Pettigrew, 1999; Wells & Nieuwenhuis, 2012; Windeler & Sydow, 2001; Zúñiga-vicente et al., 2006). In the U.K. insurance industry, for example, organizations operated behind a set of government regulations that effectively protected it from competition. As a result, the fundamental changes seen elsewhere in the U.K. economy had limited influence on the sector. The restrictive regulations made the community unable to adapt and caused a high resilience (D. Webb & Pettigrew, 1999).

Additionally, external commitments were found to restrict possibilities of organizational change (Ranger-Moore, 1997; Wells & Nieuwenhuis, 2012). Organizational courses of action are restricted by accumulated economic agreements with other organizations for example by dependence on support from the government, elites, or other institutions (Ranger-Moore, 1997).

Furthermore, the degree of economic concentration was identified in different articles as having a influence on the resilience of the organizational community (Sine & David, 2003; D. Webb & Pettigrew, 1999; Wells & Nieuwenhuis, 2012; Windeler & Sydow, 2001). A high industry concentration makes it hard for new organizations to enter the industry and powerful incumbent organizations are often reluctant to change. For decades now, incumbent organizations in the automotive industry are able to absorb and control change through acquisitions and alliances with potentially destabilizing entities in a process of niche capture (Wells & Nieuwenhuis, 2012). A high industry concentration is often accompanied with powerful incumbents that are reluctant to change and with high barriers to entry, both causing a high resilience.

Several articles emphasized the fact that strong organizational legacies also reduce the possibilities for organizational change (Djelic & Ainamo, 1999; Kelly & Amburgey, 1991; Wells & Nieuwenhuis, 2012). Strong organizational legacies were identified as causing constraints to the choices available to managers. When organizational memory accrues, efficient retrieval of routines leads to fewer mistakes. This results in a lack of novelties and less learning, which further reduces the possibilities for change and thereby causes a high resilience.

All these mentioned factors have in common that they generally cause stability and conformity and a resistance to fresh insights from fringe players, to the emergence of niches and to the search for alternative processes.

Underlying factors causing low resilience

As mentioned before, the majority of the reviewed articles, discussed industries that were stable for decades. Those mature industries were generally characterized by standardizations of organizational routines, dominated by institutional logics or regulations, a high degree of economic concentration, strong organizational legacies and/or a lot of external commitments. Although, the exact characteristics differed per industry, in almost all cases, the factors first causing high resilience to change, were causing significant constraints for the traditional organizations in the face of environmental disturbances (Djelic & Ainamo, 1999; Fosfuri & Giarratana, 2004; Haveman & Rao, 1997; Haveman, 1992; Lamont et al., 1993; Ranger-Moore, 1997; Sull, 2001; D. Webb & Pettigrew, 1999; Windeler & Sydow, 2001; Zajac & Shortell, 1989). In most of these cases environmental changes, relocated the boundaries of the industry and changed the bases of competition. Previously successful routines that were relied upon became inappropriately in the novel situation and this led to incumbents struggling to adapt to their changed environment. The prevailing industry traditions and norms, and the high degree to which the organizations were embedded within these features, made companies unaware of professional and industry developments. So the factors first causing industries to be highly resilient to change, can on the other hand, in turbulent industries cause competence traps. This frees the opportunity for new entrants and niches to enter the market and thereby this factor can cause a low resilience. In the luxury fashion industry, for example, traditional organizations were for a long period of time able to control entry into the industry by institutionalizing a set of strict rules. However, in the face of global challenges, the institutionalized

practices turned out to create significant constraints for the traditional organizations, narrowing and limiting the range of possible reactions. The prevailing institutional logics made the French traditional organizations reluctant to change. Italian and American fringe players did identify the global challenges as opportunities and thereby managed to redefine in part the rules of the game. In this case the persistence of established behaviors while the competitive environment changed freed the opportunity for new players to enter the market (Djelic & Ainamo, 1999).

As already mentioned in the luxury fashion example, the existence of fringe players can also have an important influence on the resilience of the organizational community. Fringe players nurture diversity, they can bring fresh insights to the industry and when environmental change creates new opportunities fringe players can easily seize upon these changes and redefine in part the rules of the game (Alexander et al., 1996; Djelic & Ainamo, 1999; Sine & David, 2003).

Furthermore, different articles revealed the importance of economies of scale as having an influence on resilience (Amis et al., 2004; Fosfuri & Giarratana, 2004). In industries without economies of scale, large established firms are not able to create high barriers to entry on the basis of cost advantages. Additionally, new entrants are more likely to enter the market because they do not need to sell large volumes before they can compete with existing firms. In the security software industry, due to the absence of economies of scale and thereby low sunk costs, low barriers to entry enabled the entry of a lot of new firms. As a consequence, the industry changed significantly (Fosfuri & Giarratana, 2004). The low entry and exit barriers caused by the absence of economies of scale leads to communities with a low resilience.

The age of organizations was also found to have an impact on the possibility of organizational change (Amis et al., 2004; Fosfuri & Giarratana, 2004; Ranger-Moore, 1997). Young organizations are often more dynamic and flexible, they do not suffer from inertia as a result of bureaucratization, standardization or other time-dependent processes. Thereby young organizations can exploit opportunities more efficaciously and are less reluctant to change. If an organizational community consists of a lot of young organizations, which frequently is the case in young industries, the community has a low resilience.

Geographic co-location of organizations and a high transparency in the industry were both found to cause higher possibilities of spill-overs. Hereby the legitimacy of a new organizational form can be enhanced through positive market feedback. So these two factors can cause a lower resilience in the community because they can facilitate the diffusion of the new organizational form (Alexander et al., 1996; Lee & Pennings, 2002; Sull, 2001; Lampel & Shamsie, 2003).

Lastly two environmental factors were identified to influence the resilience of organizational communities. First, the loss of public and political confidence in the industrial form leads to critical questions and the search for alternative industrial processes (Amis et al., 2004; Lamont et al., 1993; Sine & David, 2003; Tyrrall & Parker, 2005). In the railway industry, the public and government dissatisfaction with the industry led to the consideration of changing the industry from a public service to a private one (Tyrrall & Parker, 2005). Second, industries characterized by social or political unrest are confronted with an uncertain and turbulent political and social environment. A turbulent environment causes a low resilience because organizations constantly have to adapt (Dobrev, 1999; Sine & David, 2003).

Discussion

Remarkably, almost all the reviewed articles examined a case of widespread organizational change around the 1990s. It is clear that, in the last twenty years, a lot of industries have been undergoing radical transformations in their environments. Industries that faced environmental disturbances include airline, health care, television, newspaper, electricity, railway, tire, fashion and financial services in general. In each of these settings, radical environmental changes restructured the industry and changed the bases of competition. In particular, the influence of socio-economic, regulatory and technological change and the subsequent globalization process were widely recognized as triggers in causing widespread organizational change in the reviewed articles. Previous research on widespread organizational change has only focused on determining these specific triggers. The underlying factors that made these industries vulnerable to organizational change remains largely unclear. This review examined the empirical research on organizational change to identify these factors and suggests future research that can inform our understanding of factors underlying industry vulnerability.

Widespread organizational change is a very complex process which is propelled by numerous (interacting) factors. This conclusion is drawn by the majority of researchers in the field. This fact, coupled with the limited number of reviewed articles in this paper, makes analyzing and understanding this phenomenon challenging and any attempt to compare and generalize the results difficult. For these reasons, the results should be considered as suggestions so as not to fall into abusive generalizations. Another limitation of this paper is the fact that a lot of identified factors only cause a higher or lower resilience in combination with other factors. The identified factors interact with each other, which means that the factors may not cause the same influence on the resilience of a system in combination with other factors or if other factors are absent. This makes it hard to conclude when a specific factor actually influences the resilience of the system. Also the specificity of the different industries has to be taken into account, some factors may be more or less influential in different industries. Besides these limitations, too little articles are reviewed to conclude anything about which factors are especially important in causing resilience and which factors just cause a negligible influence. Though I am aware of the limitations of this paper, the results of this study highlight several avenues which would help policy makers in the future to better foster or hinder widespread organizational change. Furthermore, this study can be seen as a first step in understanding factors causing resilience in the organizational field, a research topic that should be further investigated. The main findings and avenues will be summarized below.

The aim of this paper, to examine which factors cause some organizational communities to be more resilient than other communities, led to the identification of 13 contributing factors. The factors institutional logics, government regulation, a high degree of economic concentration, a lot of external commitments and strong organizational legacies were identified to cause a high resilience. On the contrary, the factors competence traps, the existence of fringe players, the absence of economies of scale, geographic co-location of organizations, a high transparency in the industry, loss of public and political confidence, social and political unrest and industries characterized by young organizations are all factors that were identified to cause a low resilience.

These findings seem to show an inverted U-shaped relationship between maturity of the industry and vulnerability to change. The industries dominated by young, informal organizations, in which entry and exit barriers are small, economies of scale play a marginal role and firm's competence and

strategies are placed under a fierce process of selection, seem to show little resilience. In these industries, incumbents face constant competition from new entrants and the industry can be characterized by flexible and dynamic organizations that quickly respond to environmental changes. On the other hand, more stable and mature industries, may become less efficient facing a series of environmental changes. Those mature industries are often characterized by bureaucratization, strong organizational legacies, external commitments, institutional logics and other time dependent processes. Their inability to respond quickly or appropriately to the changing environment leads to competence traps which frees opportunities for new entrants. Thereby these industries are less resilient in a turbulent environment too. So both young and often very dynamic industries and mature and often inert industries seem to show a low resilience in face of environmental change.

These remarkable findings, are partly in accordance with the described factors that cause resilience in ecology. In the theoretical part, the importance of adaptive capacity and the ability of social systems to learn and adapt in response to perturbations were highlighted. The mentioned factors relevant to building social-ecological resilience reflect exactly what mature and inert industries are missing. In a mature and inert industry, the ability of organizational organizations to learn and adapt in response to environmental change is restrained by controlling factors as regulations, pivotal organizations controlling and absorbing change, strong organizational legacies and institutional logics. Especially in turbulent times those factors, restricting their ability to learn and adapt in response to environmental changes, can cause a competency trap and thereby a low resilience.

For policy makers, one of the most important decisions to foster widespread organizational change in inert and inefficient industries is through encouragement of competition by banishing entry barriers and preventing strategies developed by firms from leading to a monopoly or quasi-monopoly situation in the industry. The government should also stimulate alternative search processes by supporting or subsidizing new entrants and alternative organizational forms. On the other hand, if a certain industry structure is very efficient and favorable for the economy, the government can obstruct the possibility of widespread organizational change. The government can set strict regulations regarding the current organizational form or implement policies that support incumbent organizations so that they can obtain more market power. Hereby the government limits the access to fresh insights from fringe players and the emergence of niches and alternative search processes. In addition policies that obstruct the possibility of spill-overs and hereby the diffusion of new organizational also hinders the possibility of widespread organizational change. These recommendations may be useful suggestions but further research regarding this topic is advised.

Acknowledgements

This paper was made possible by the accompaniment of Allard van Mossel and the support of the University Utrecht. The author would like to thank the reviewers Allard van Mossel, Sam de Haas van Dorsser and the anonymous reviewer for their valuable help with this paper.

References

- Alexander, J., D'Aunno, T., & Succi, M. 1996. Determinants of profound organizational change: choice of conversion or closure among rural hospitals. *Journal of Health and Social Behavior*, 37(3): 238–251.
- Alexander, J., D'Aunno, T., & Succi, M. 2000. The Role of Institutional and Market Forces in Divergent Organizational Change. *Administrative Science Quarterly*, 45(4): 679.
- Amis, J., Slack, T., & Hinings, C. 2004. The pace, sequence, and linearity of radical change. *Academy of Management Journal*, 47(1): 15–39.
- Armenakis, A., & Bedeian, A. 1999. Organizational change: A review of theory and research in the 1990s. *Journal of management*, 25(3): 293–315.
- Astley, W. 1985. The Two Ecologies: Population and community perspectives on organizational evolution. *Administrative Science Quarterly*, 30(2): 224–241.
- Baum, J., & Rao, H. 2004. Evolutionary dynamics of organizational populations and communities. *Handbook of organizational change and innovation*: 212–258. New York: Oxford University Press.
- Berkes, F. 2007. Understanding uncertainty and reducing vulnerability: lessons from resilience thinking. *Natural Hazards*, 41(2): 283–295.
- Brand, F., & Jax, K. 2007. Focusing the meaning (s) of resilience: resilience as a descriptive concept and a boundary object. *Ecology and Society*, 12(1).
- Bryman, A. 2012. *Social research methods*. New York: Oxford University Press.
- Djelic, M.-L., & Ainamo, A. 1999. The Coevolution of New Organizational Forms in the Fashion Industry: A Historical and Comparative Study of France, Italy, and the United States. *Organization Science*, 10(5): 622–637.
- Dobrev, S. 1999. The dynamics of the Bulgarian newspaper industry in a period of transition: organizational adaptation, structural inertia and political change. *Industrial and corporate change*, 573–605.
- Dobrev, S., & Kim, T. 2006. Positioning among organizations in a population: Moves between market segments and the evolution of industry structure. *Administrative Science Quarterly*, 51(2): 230–261.
- Fosfuri, A., & Giarratana, M. 2004. Product strategies and startups' survival in turbulent industries: evidence from the security software industry. *Universidad Carlos III de Madrid Business Economic Working Paper*, 16(4).
- Hannan, M., & Freeman, J. 1977. The population ecology of organizations. *American journal of sociology*, 82(5): 929–964.

- Haveman, H. 1992. Between a rock and a hard place: Organizational change and performance under conditions of fundamental environmental transformation. *Administrative Science Quarterly*, 37(1): 48–75.
- Haveman, H. 1993. Organizational size and change: Diversification in the savings and loan industry after deregulation. *Administrative Science Quarterly*, 38(1): 20–50.
- Haveman, H., & Rao, H. 1997. Structuring a theory of moral sentiments: institutional and organizational coevolution in the early thrift industry. *American Journal of Sociology*, 102(6): 1606–1651.
- Hoffman, A. 1999. Institutional evolution and change: Environmentalism and the US chemical industry. *Academy of Management Journal*, 42(4): 351–371.
- Holling, C. 1973. Resilience and stability of ecological systems. *Annual review of ecology and systematics*, 4(May): 1–23.
- Kelly, D., & Amburgey, T. 1991. Organizational Inertia and Momentum: A Dynamic Model of Strategic Change. *Academy of management journal*, 34(3): 591–612.
- Lamont, B., Marlin, D., & Hoffman, J. 1993. Porter's generic strategies, discontinuous environments, and performance: a longitudinal study of changing strategies in the hospital industry. *Health Services Research*, 28(5): 623–640.
- Lampel, J., & Shamsie, J. 2003. Capabilities in Motion: New Organizational Forms and the Reshaping of the Hollywood Movie Industry. *Journal of Management Studies*, 40(8): 2189–2210.
- Lee, K., & Pennings, J. 2002. Mimicry and the market: Adoption of a new organizational form. *Academy of Management Journal*, 45(1): 144–162.
- Miner, A., Amburgey, T., & Stearns, T. 1990. Interorganizational linkages and population dynamics: Buffering and transformational shields. *Administrative Science Quarterly*, 35(4): 689–713.
- Orsenigo, L., Pammolli, F., & Riccaboni, M. 2001. Technological change and network dynamics: lessons from the pharmaceutical industry. *Research policy*, 30: 458–508.
- Ranger-Moore, J. 1997. Bigger may be better, but is older wiser? Organizational age and size in the New York life insurance industry. *American Sociological Review*, 62(6): 903–920.
- Sine, W. D., & David, R. J. 2003. Environmental jolts, institutional change, and the creation of entrepreneurial opportunity in the US electric power industry. *Research Policy*, 32(2): 185–207.
- Suarez, F. F. 2005. Environmental change and organizational transformation. *Industrial and Corporate Change*, 14(6): 1017–1041.
- Sull, D. 2001. From community of innovation to community of inertia: The rise and fall of the US tire industry. *Academy of Management Proceedings*, 42(3): 507–537.
- Tushman, M. L., & Romanelli, E. 1985. Organizational evolution: A metamorphosis model of convergence and reorientation. *Research in organizational behavior*, 7: 171–222.

- Tyrrall, D., & Parker, D. 2005. The fragmentation of a railway: a study of organizational change. *Journal of Management Studies*, 42(3): 507–537.
- Vetter, S. 2009. Drought, change and resilience in South Africa's arid and semi-arid rangelands. *South African Journal of Science*, 105(2): 29–33.
- Wan, W. P., & Yiu, D. W. 2009. Research Notes and Commentaries: From Crisis to Opportunity: Environmental Jolt, Corporate Acquisitions, and Firm Performance. *Strategic Management Journal*, 30(11): 791–801.
- Webb, C. T. 2007. What Is the Role of Ecology in Understanding Ecosystem Resilience? *BioScience*, 57(6): 470.
- Webb, D., & Pettigrew, A. 1999. The temporal development of strategy: Patterns in the UK insurance industry. *Organization Science*, 10(5): 601–621.
- Wells, P., & Nieuwenhuis, P. 2012. Understanding continuity in the automotive industry. *Technological Forecasting & Social Change*, 79(9): 1681–1692.
- Windeler, a., & Sydow, J. 2001. Project Networks and Changing Industry Practices Collaborative Content Production in the German Television Industry. *Organization Studies*, 22(6): 1035–1060.
- Zajac, E., & Shortell, S. 1989. Changing generic strategies: Likelihood, direction, and performance implications. *Strategic Management Journal*, 10(5): 413–430.
- Zúñiga-vicente, J. Á., Vicente-lorente, J. D., Rey, U., Carlos, J., & Salamanca, U. De. 2006. Strategic Moves and Organizational Survival in Turbulent Environments: The Case of Spanish Banks (1983–97). *Strategic Management Journal*, 43(3): 485–519.